INHERITING SUSTAINABILITY

World Heritage Listing, the Design of Tourism Development and the Resilience of Social-Ecological Complex Adaptive Systems in Small Oceanic Islands

a comparative case study of Lord Howe Island (Australia) and Fernando de Noronha (Brazil)

Leonardo Nogueira de Moraes

Submitted in total fulfilment of the requirements of the degree of

Doctor of Philosophy

Produced on archival quality paper

October 2014

Melbourne School of Design

Faculty of Architecture, Building and Planning

The University of Melbourne

Abstract

Tourism development and sustainability are pressing issues to small oceanic islands featuring important and scarce natural heritage assets; these islands normally present small geographical areas with clearly defined boundaries, typically limited economic development alternatives combined with environmental systems and resources that are fragile and difficult to restore, once modified. Nevertheless, however paramount and highly interdependent the conservation of natural heritage and the obtaining of economic and social benefits through tourism might be, they do not seem to be subject of easy control; tourism development sustainability is dependent on the behaviour of many different agents, with not always complementary but rather, quite often, competing interests.

From a *Social-Ecological Complex Adaptive System* – SECAS perspective, this research sought to understand how different forms of interpersonal and inter-organisational relationships of cooperation and competition influence the sustainability of *Tourism Development - TD* in small oceanic islands. Additionally, it sought to identify strategies that could influence these drivers and inhibitors within different social economic *contexts*, the influence of *World Heritage Listing – WHL* investigated as one possible global strategy for *Localised Conservation – LC*.

Structured as a qualitative multiple case study, this research took place in two small oceanic island tourist destinations: *Lord Howe Island – LHI* in Australia and the *Fernando de Noronha Archipelago – FDN* in Brazil. With relatively similar geographical, tourist, regulatory and environmental characteristics, these sites presented the researcher with cases that have experienced the effects of *WHL* in different time spans and under different circumstances. They are also microcosms of the distinct social and economic *contexts* deriving from the different development models of the countries they are part.

Aiming to contribute to the body of knowledge on the dynamics of sustainability transitions within tourism development in tourist destinations, this research: provided an overview on the evolution of the multiple concept of sustainability and proposed a working definition; carried a discussion on tourism development in the *context* of sustainability and developed an associated explanatory model and working definition; developed and applied a conceptual working model for researching the dynamics beneath the resilience of SECASs; bridged different areas of knowledge and applied *Grounded Theory – GT* methods to the research of SECASs; developed a transdisciplinary approach to research on *Sustainability*; concluded that *Local Empowerment*, *Local Social Cohesion*, *Attachment to Place* and *Local Identity* are fundamental to the resilience of Local SECASs and therefore to the sustainability of *TD*; and concluded that, when analysed from a SECAS approach, *LC* can both increase and decrease the resilience of global and local social-ecological systems.

Declaration

This is to certify that

i. the thesis comprises only my original work towards the PhD,

ii. due acknowledgement has been made in the text to all other material used,

iii. the thesis is less than 100,000 words in length, exclusive of tables, maps, bibliographies and appendices.

Leonardo Nogueira de Moraes

Preface

The world we face is constantly evolving and posing new challenges and opportunities to human survival and self-fulfilment. On top of nature's complex environmental systems, humans have developed their own systems that keep growing in complexity in impressive ways. The complexity of today's technology and information systems has allowed us to expand collective knowledge and increase efficiency. However, the complexity reached by human systems meant their dynamics have become increasingly harder to grasp and their behaviour more unexpected – e.g. the *Global Financial Crisis – GFC*. Humankind has long been concerned with reducing uncertainty and guaranteeing survival by gaining knowledge to allow changing environmental conditions to their best interest. Paradoxically, we now deal with greater uncertainty deriving from our very own attempts to make the environment more predictable and suitable to our survival – e.g. anthropogenic climate change. From that perspective, current challenges are posed by the complexity of environmental and human systems. The first, in regard to the way it responds to our interventions (or impacts) and the second, in terms of how we can control the levels and types of our impacts.

Tourism is an emerging *phenomenon* running parallel to the increasing complexity of human systems. It is driven by a more connected social system, the same way it promotes the increase of connections. It provides individuals with a wider understanding of the world we live in, but also contributes to greater environmental impact by exporting processes of human development from central to peripheral areas. As a result of greater awareness of the complexity of environmental systems and the *consequences* of our impacts, the global conservation movement emerged. In an attempt to control human impact on the environment, the concept of *Localised Conservation – LC* through the implementation of *Protected Areas – PAs* also emerged, leading to the appearance of *National Parks - NPs*, *Natural World Heritage Properties – NWHPs* and *Biosphere Reserves – BRs*, among others. Offering contrast to highly urbanised centres of human development, *PAs* are usually of great interest to tourists. In a *context* where sustainability is pursued in the midst of uncertainty deriving from complex environmental and human systems, the interaction between *Tourism Development – TD* and *PAs* is a relevant topic. Acknowledging these two properties emerge as products of human relationships established under specific *contexts*, this research sought to investigate sustainability challenges arising from the interplay between *Competition* and *Cooperation* and the implementation of *TD* and *PAs*.

Targeting sustainability, this research is relevant for choosing a contemporary and transdisciplinary topic that deals with questions related to the survival of the human species. Focusing on *PAs* and *TD*, it contributes to knowledge about two growing drivers of global and local change.

> *"By 2008, there were over 120,000 protected areas covering a total of about 21 million square kilometres of land and sea, an area more than twice the size of Canada. While the terrestrial protected areas listed in the World Database on Protected Areas cover[ed] 12.2% of the Earth's land area, marine protected areas [...] cover[ed] 5.9% of the Earth's territorial seas and only 0.5% of the extraterritorial seas"* (UNEP-WCMC, 2010, p. 2).

As for tourism, not only is it "the fastest growing industry in the world [but] the fastest growing component of it is ecotourism" (Newsome et al., 2002, p. 8).

> *"[In 2011,] tourism continue[d] to be one of the world's largest industries [,][...] contribut[ing] to 9% of global [Gross Domestic Product –] GDP, or a value of over US$ 6 trillion, and account[ing] for 255 million jobs. Over the next ten years [it] is expected to grow by an average of 4% annually, taking it to the 10% of global GDP, or some US$ 10 trillion. By 2022, it is anticipated that it will account for 328 million jobs, or 1 in every 10 jobs on the planet"* (WTTC, 2012, p. iii).

The significance of this research rests in the value it adds to the field of complexity by exploring how different types of competition and cooperation among tourism stakeholders can influence the sustainability of *TD*, while also looking at how the implementation of *PAs* can interfere with the way competition and cooperation take place. It is envisioned here that more effective strategies aiming at sustainability as a societal goal can be formulated through greater knowledge of the dynamics of *Social-Ecological Complex Adaptive Systems – SECAS* in the global and local levels.

The research presented here consisted of a qualitative embedded multiple case study that took place on the small oceanic islands of *Fernando de Noronha – FDN* in Brazil and *Lord Howe Island – LDH* in Australia, both tourist destinations listed as *NWHPs* by the *United Nations Educational, Scientific and Cultural Organisation – UNESCO*. The *units of analysis* were the *Local SECAS* of each island, where three levels of embedded cases were taken into consideration: the tourist destination level, the local social networks level and the local individual or agents level. Core *variables* were: types of inter-personal and inter-organisational competition and cooperation (as the *phenomenon* under investigation); sustainability challenges (as inter-related *consequences* of the *phenomenon*); *TD* and *LC* through the implementation of *PAs* (as *(inter)action strategies* for development and conservation); national structural conditions (as *national contexts*); local demographic and environmental conditions (as *intervening conditions*); and the most relevant historical events that have shaped competition and cooperation for each island (as *causal conditions*). To contextualise the two case studies internationally, an account of the emerging global nature conservation structure is provided (global *context*) – despite reflecting on the two case sites in different ways through their national *contexts*, this structure was considered as a fixed variable as it was the same for both cases. Data collection included access to secondary sources, direct observation and semi-structured interviews with analysis being carried out by means of *Grounded Theory – GT* methods.

It is important to note that the development of this thesis also depended on a series of life events that preceded the period of my PhD candidature, without which, this work would never have been possible. I was born in Brazil in **1978** and was 13 years of age when the *United Nation's Rio Conference on the Environment* took place in my country in **1992**. Being born and having lived in the largest metropolitan area in South America (São Paulo) for most of my life gave me the opportunity to connect to diverse groups of people and ideas, ability I could only see to increase as I watched the evolution of technology and the emergence of the *Internet*. It also exposed me to tourism – aiming to frequently escape this highly urbanised city environment, my parents built a holiday house by *Itamambuca Beach* on the North coast of the State of São Paulo in the early **1980s**. Not only did frequent holidaying in *Itamambuca* led to great family memories, it also sparked my passion for nature (specially the marine environment) and a plan to study (marine) biology, since my early boyhood. However, the opportunity to live in Australia for a semester in **1995**, as a secondary school exchange student, opened up my mind to a new culture and to a social structure constructed in a different way. By the last year of my secondary school, I had decided to pursue a *Bachelor of Tourism*, which I did at the *University of São Paulo – USP*, graduating in **2002**. Despite initially holding an interest in the operational aspects of tourism, I was introduced to tourism development planning during my undergraduate course, spotting a great opportunity to deal with tourism, conservation and social inequality issues. In **2003**, this led me to start a consultancy firm with 3 other partners in the area of tourism development research and planning. Parallel to that, I also pursued an academic career, leading me to a

tenured position as lecturer of the *Tourism Management* undergraduate course at the *Instituto Federal de Educação, Ciência e Tecnologia de São Paulo* – IFSP in **2006**.

In **2008**, I became a PhD candidate at the *University of Melbourne - UoM* in the field of urban and regional planning, where I focused my thesis on *PA*s and the sustainability of *TD*. This choice was not only linked with my professional and academic, but also my personal background, as social inequalities, development and conservation issues had always been my concerns. My life experience in Brazil and long-term relationship with Australia were helpful in understanding the way social structures were formed in these two countries and essential to grasping the *context* influencing the two case studies that are part of this thesis (*FDN* in Brazil and *LHI* in Australia). To learn more about *Complex Adaptive Systems – CASs*, I attended a short course on *Complexity* offered by the *Santa Fe Institute* in Albuquerque in May **2011**. To gain an outside perspective of Brazil and Australia and further knowledge on *Sustainability Research*, in July **2011**, I moved to Lund (Sweden) for six months as a guest PhD candidate at the *Lund University Centre of Excellence for Integration of Social and Natural Dimensions of Sustainability – LUCID*, when I also visited the *Stockholm Resilience Centre*. To better grasp the complexity of the *Global Tourism and Nature Conservation Institutional Structure*, throughout the year of 2011, I travelled to the United States of America, France, Spain, England, Switzerland and Germany, where I visited some of the peak international organisations that are part of this structure, interviewing some of their relevant representatives.

As part of my PhD candidature, I have written a book chapter (Nogueira de Moraes, 2012a) and have presented parts of this research in 3 international conferences (resulting in 2 publications: Nogueira de Moraes, 2009, Nogueira de Moraes, 2012b):

- *XI Seminário Internacional de Turismo* in Curitiba, Brazil – 6th-7th November 2009.
- *Heritage 2012 – 3rd International Conference on Heritage and Sustainable Development* in Porto, Portugal – 19th-22nd June 2012.
- *10th International Small Islands Conference (ISIC 10)* in Fernando de Noronha, Brazil – 4th-8th June 2014.

I hope the history and the dynamics of *Lord Howe Island* and *Fernando de Noronha Archipelago* and the associated theoretical models portrayed here will inspire provoking reflections on the current state and future prospects of local and global social-environmental relationships.

Leonardo Nogueira de Moraes — Melbourne, 28th October 2014.

Acknowledgements

The thesis you are about to read is just the tip of a massive iceberg comprising my own research work, but also the contribution of many people and organisations I would like to thank. I am grateful for all the emotional and, many times, financial support received from my father, my mother and my brother in Brazil. Together with my sister-in-law and my niece, you were constantly encouraging me and making me believe I could do this. I also thank my Australian family for all your support and hospitality since my first visit to Australia in 1995. Along with all my Australian (citizens or international residents) friends, fellow ABP RHD students and the big *Graduate House* family, you made me feel at home whenever I was living in this extraordinary country. Among these friends, I am thankful to *Zoe Lake* and *Jade Bee* for their valuable support with some of the interview transcriptions. My friends from *Lund University* have also played a very important role into making me feel at home while living in Sweden as part of my PhD. I also thank all the Brazilian friends I made in Australia and Sweden, for sharing this temporary expatriation experience with me. I thank my colleagues and friends from the *Instituto Federal de Educação, Ciência e Tecnologia de São Paulo* for their support during the first four years of my *PhD candidature*, when I was absent from work and living overseas. I also thank the *Brazilian Government* for believing it was worth investing in my PhD by granting me leave from my job as a public server for these same four years and my friends and former professors from the *University of São Paulo* for providing me the needed foundations for my research experience in Australia.

I must also acknowledge the support received from the *University of Melbourne*. My overall experience with the facilities, courses and services offered to PhD candidates was outstanding. I thank the *University of Melbourne* for granting me a *Melbourne International Research Scholarship* that helped funding my stay in Australia, a *Melbourne Abroad Travelling Scholarship* that supported my fieldwork in North America and Europe and an *Overseas Research Experience Scholarship* that allowed me to spend a semester at *Lund University* in Sweden. I also thank the *Faculty of Architecture, Building and Planning* for the faculty funded *Melbourne International Fee Remission Scholarship* that covered most of my university fees and for the conference and fieldwork grants that allowed me to visit *Lord Howe Island* and *Fernando de Noronha* as well as present and publish part of my research at the *Heritage 2012: 3rd International Conference on Heritage and Sustainable Development* in Portugal. I am thankful to the administrative staff of the *University of Melbourne*, who were always very cordial and helpful, specially the librarians and those working at the *ABP Research Office* and *ABP IT and Facilities*. Among those, *Jane Trewin* and *Sally Jones* deserve a special acknowledgement for their genuine interest in the overall welfare of ABP RHD students. As for the academic staff, I am most grateful for the commitment and ongoing intellectual support received from my main supervisor, *A/Prof. Alan March*. I also thank the support and contributions of my co-supervisor *Prof. Ray Green*, of my supervisory panel members *Dr. Ana Hürlimann* and *Ms. Lindy Joubert*, of the chair of the confirmation panel *A/Prof. Hannah Lewi*, and of my host supervisor at *Lund University*, *Prof. Eric Clark*. I would also like to thank *Dr. Jennie Day and Dr. Clare Mouat* for the teaching experience opportunities within ABP during my candidature.

In regard to the fieldwork carried out on the islands, I must also acknowledge the invaluable support of the *UNESCO Observatory for Multidisciplinary Research in the Arts*, *Instituto Chico Mendes de Conservação da Biodiversidade*, of *Administração do Distrito Estadual de Fernando de Noronha* and of the *Lord Howe Island Board*. Finally, I am also thankful for the hospitality and time offered by all those interviewed for this research. Without your stories and perceptions, my overall view of *Lord Howe Island*, *Fernando de Noronha* and the global institutional structure behind tourism and the conservation movement would be lacking a wealth of relevant details.

LEONARDO NOGUEIRA DE MORAES

Table of Contents

Introduction 1

Part 1 | Laying the Foundations 3

References 3

Chapter 1 | Sustainability 5

Ecology and Environmental Conservation 6

Human-Environment Relations 9

The Construct of Earth's Limits 12

Limits to Growth, and Inequality 15

Sustainable Development and the International Arena 18

Priorities, Degrees and Dimensions of Sustainability 24

Complex Adaptive Systems and Sustainability Science 26

Plural Concepts, Divergent Implementation Strategies 28

The concept of Sustainability employed by this research 32

Chapter Conclusion 39

References 39

Chapter 2 | Tourism and Sustainability 47

Contextualising Tourism 48

Tourism Explanatory Models 49

Tourism Development Explanatory Models 52

Tourism Development and Sustainability 63

Tourism (Development) in the Context of this Thesis 66

Tourism Development Sustainability Challenges 68

Chapter Conclusion 70

References 71

Chapter 3 | Social-Ecological Complex Adaptive Systems 75

Social-Ecological Complex Adaptive Systems – SECAS 76

Competition and Cooperation 80

Structure and Agency 83

Networks 85

Tourism Clusters 88

Resilience, Sustainability and Tourism Development 96

Conceptual Model used to frame the research 99

Chapter Conclusion 107

References 109

Chapter 4 | Planning the Journey 113

Overall Context for defining the Research Focus 114
Research Focus 116
Formulation of the Research Questions 117
Choice of Research Approach 118
Choice of Case Study Sites 120
Cases, Units of Analysis and Variables 126
Data Collection 127
Fieldwork 131
Data Analysis 134
Resources Employed 139
Chapter Conclusion 143
References 144
Part 2 | The Evolution of SECAS 149
Chapter 5 | Global Context and Strategies 151
The Global Meta-Context 153
Foundations of Global Cooperation, PAs and TD 155
Rise of Global Tourism 157
Rise of the Global Nature Conservation Movement 160
Protected Areas as a Global Strategy for Conservation 163
Global Tourism and Conservation Interfaces 168
Chapter Conclusion 174
References 176
Chapter 6 | National Contexts 183
Brief Background on Brazil and Australia 184
The Evolution of Tourism in Brazil and Australia 186
Conservation and PAs in Brazil and Australia 194
National Participation in Global Conservation Schemes 200
Chapter Conclusion 207
References 208
Chapter 7 | Intervening Conditions 219
Location and Isolation 220
Foundations for Life 221
Climate Features Breaking Isolation and Sustaining Life 225
Key Species and Key Ecosystems in Place 231
Human Settlement and Development 236
Resulting Key Social-Ecological Groups 240

Chapter Conclusion 242
References 244
Chapter 8 | (Inter)Action Strategies – Fernando de Noronha Archipelago 255
Strategic Location, Penal Colony and Dictatorship 256
Democratisation, Civil Government and the Social-Environmental Agenda 258
Political Dispute: Social and Environmental Rupture 259
Biased Cooperation and The Rise of Tourism 266
Local Empowerment and the Rise of a New Social-Environmental Agenda 274
Chapter Conclusion 281
References 283
Chapter 9 | (Inter)Action Strategies – Lord Howe Island 303
Strategic Location, Economic and Scientific Interest and Authority 304
Land Tenure and the Rise of the Kentia Palm Industry 305
Land, Transport Development and The Rise of Tourism 307
Local Administration 313
Protected Areas and Development Control 316
Chapter Conclusion 321
References 323
Chapter 10 | Causal Conditions and Phenomenon 331
Causal Conditions 332
Identification of Key Causal Conditions for FDN 332
Identification of Key Causal Conditions for LHI 337
Comparison and Contrast of FDN and LHI Main Causal Conditions 341
Phenomenon 343
Chapter Conclusion 352
References 353
Chapter 11 | Consequences 355
Sustainability Challenges Identified 356
Sustainability Challenges Categories 360
Community 362
Material and Energy Flows 364
Environment and Conservation 374
Population and Tourism 375
Chapter Conclusion 377
References 379
Part 3 | The Whole Picture 383

Chapter 12 | Beneath Sustainability 385
Competition, Cooperation and Sustainability 386
The Influence of Localised Conservation and Tourism Development..... 387
The Role of History..... 389
The Role of Local Environment and Local Human Population..... 390
The Role of Global and National Contexts.....391
Crosscutting Conclusions..... 392
Research's Contribution to Knowledge 395
Future Research Opportunities 396
References..... 398
Full Bibliographic List 385
List of Appendices.....431
Appendix 1 | IUCN Categories Conversion Table..... 433
Appendix 2 | Plain Language Statement – Fernando de Noronha Archipelago 434
Appendix 3 | Plain Language Statement – Lord Howe Island..... 435
Appendix 4 | Plain Language Statement – Global Organisations..... 436
Appendix 5 | Consent Form – Fernando de Noronha Archipelago 437
Appendix 6 | Consent Form – Lord Howe Island..... 438
Appendix 7 | Consent Form – Global Organisations 439
List of Attachments 441
Attachment 1 | IUCN Protected Area Categories 443
Attachment 2 | UNESCO World Heritage Criteria..... 444
Attachment 3 | Ten Principles to Guide Management of Tourism in World Heritage Properties 445
Attachment 4 | Extract from Johannesburg Plan of Implementation action on Sustainable Tourism 446

List of Figures

Figure 1 | Maslow's Hierarchy of Human Needs 11
Figure 2 | Reinterpreting Maslow's Hierarchy of Human Needs 11
Figure 3 | The Earth seen from Apollo 17 15
Figure 4 | Reshaping through Human Ecological Systems 32
Figure 5 | Reshaping through human social-ecological systems 33
Figure 6 | Scales of Environmental Perception 34
Figure 7 | Feedback process of reshaping 36
Figure 8 | Dynamics of human-environment interaction 38
Figure 9 | Basic Tourism System 50
Figure 10 | Tourism System – SISTUR Reference Model 51
Figure 11 | Tourist psychographic personality typology 54
Figure 12 | Tourism Area Life Cycle Model 56
Figure 13 | Exploration of multiple tourism segments over time 57
Figure 14 | War Distorted Destination life-cycle curve 58
Figure 15 | The diamond-shaped trend model 60
Figure 16 | Systemic Model of Tourism within Sustainability 68
Figure 17 | Analysis of UNWTO Composite Indices 69
Figure 18 | Multi-Level Perspective on Transitions 79
Figure 19 | Simple representation of a network 86
Figure 20 | Degrees, paths and centrality in networks 86
Figure 21 | Network Communities 87
Figure 22 | Filling structural holes 88
Figure 23 | Progression of economic value 91
Figure 24 | Example of a tourist horizontal clustering 94
Figure 25 | Example of a vertical tourist clustering 95
Figure 26 | Example of diagonal tourist clustering 96
Figure 27 | Organisational Network 99
Figure 28 | Relational Structure 100
Figure 29 | Institutional Structure 102
Figure 30 | Social Structure 103
Figure 31 | Contextualised Social Structure 104
Figure 32 | Social-Ecological Complex Adaptive System 105
Figure 33 |Global-Local SECAS 106
Figure 34 | Contextualised Global-Local SECAS 108
Figure 35 | Overall Framework for Defining the Research Focus 115
Figure 36 | Research Focus 116
Figure 37 | Case study selection criteria 120
Figure 38 | Data Collection Process 128
Figure 39 | Strauss and Corbin Coding Paradigm 136
Figure 40 | Coding paradigm in light of SECAS 138
Figure 41 | Interview Room Layout 141
Figure 42 | Example of Discussion on Group Interactions 142
Figure 43 | Example of Discussion on Relationships 142
Figure 44 | Methodological framework for the research 143
Figure 45 | Tourism actual trend and forecast 1950-2030 158
Figure 46 | Growth in nationally designated PAs (1911-2011) 163

Figure 47 | Growth in number of designated PAs (1911-2011) 164
Figure 48 | International Tourist Arrivals 1946-2012 190
Figure 49 | Domestic Tourist Arrivals....190
Figure 50 | PAs Coverage by IUCN Category – Brazil 197
Figure 51 | PAs Coverage by IUCN Category – Australia 197
Figure 52 | PAs Coverage by Territory – Brazil Vs. Australia 198
Figure 53 | PAs Proclaimed by Government Level – Brazil 199
Figure 54 | PAs Proclaimed by Government Level - Australia 199
Figure 55 | PAs coverage by Territory and Government Level - AUS 200
Figure 56 | Brazilian National System of Conservation Units – SNUC 215
Figure 57 | Australian National Reserve System – NRS incorporating the Commonwealth Marine Reserve Network....216
Figure 58 | Geographical location of the two case study sites 220
Figure 59 | FDN Regional Location....221
Figure 60 | LHI Regional Location 221
Figure 61 | Topographic Profile of FDN Hot Spot Volcano 222
Figure 62 | Topographic Profile of LHI Hot Spot Volcano 222
Figure 63 | FDN satellite view 223
Figure 64 | FDN Landscape View.... 223
Figure 65 | LHI Landscape View 224
Figure 66 | LHI satellite view.... 224
Figure 67 | Marine Currents Affecting FDN 225
Figure 68 | Marine Currents Affecting LHI.... 226
Figure 69 | Wind Probability & Dominant Direction FDN & LHI.... 227
Figure 70 | Monthly Average Wind Speed for FDN & LHI.... 227
Figure 71 | Wind Patterns FDN.... 228
Figure 72 | Wind Patterns LHI.... 229
Figure 73 | Monthly Mean Temperature (°C) FDN and LHI 230
Figure 74 | Monthly Mean Rainfall (mm) FDN and LHI 230
Figure 75 | Monthly Mean Number of Cloudy Days LHI and FDN....231
Figure 76 | Resident Population Growth in LHI 237
Figure 77 | Resident Population Growth in FDN.... 238
Figure 78 | Key Ecological Groups for FDN and LHI 251
Figure 79 | Key Social Groups for FDN and LHI 252
Figure 80 | FDN Passenger Arrivals 257
Figure 81 | FDN Protected Areas - Federal Level 261
Figure 82 | New Accommodation Business per Year in FDN 265
Figure 83 | FDN Protected Areas - Biosphere Reserve.... 266
Figure 84 | Yearly Tourist Flows to FDN 267
Figure 85 | Average Monthly Tourist Flows to FDN per Year 268
Figure 86 | Yearly Number of Tourists per Length of Stay for FDN 268
Figure 87 | Monthly Average Tourist Length of Stay for FDN.... 269
Figure 88 | Yearly and Monthly Average Number of Tourists per Day Vs. TCC and TCC +50% for FDN 269
Figure 89 | FDN Protected Areas - Natural World Heritage 271
Figure 90 | International Tourist Growth Post FDN WHL.... 272
Figure 91 | Tourist Motivation - FDN.... 273
Figure 92 | Average Length of Stay (Days) per Motivation - FDN.... 273

Figure 93 | Average Expenditure per Motivation – FDN 273
Figure 94 | CONAPA-FDN Composition 276
Figure 95 | CONPARNAMAR-FDN Composition 277
Figure 96 | Tourism Advisory Board Composition 278
Figure 97 | Growth Trend of Cruiseline Tourists to FDN 279
Figure 98 | FDN Archipelago Terrestrial and Marine Zoning 1500 – June 1986 291
Figure 99 | FDN Archipelago Terrestrial and Marine Zoning June 1986 – April 1988 292
Figure 100 | FDN Archipelago Terrestrial and Marine Zoning April – September 1988 293
Figure 101 | FDN Archipelago Terrestrial and Marine Zoning September 1988 – October 1990 294
Figure 102 | FDN Archipelago Terrestrial and Marine Zoning October 1990 – October 2002 ... 295
Figure 103 | FDN Archipelago Terrestrial and Marine Zoning October 2002 – June 2005 296
Figure 104 | Land Management Responsible Organisations in FDN 297
Figure 105 | FDN Archipelago Terrestrial and Marine Zoning June 2005 – October 2007 298
Figure 106 | FDN Archipelago Terrestrial and Marine Zoning October 2007 – Now 299
Figure 107 | FDN Archipelago Terrestrial and Marine Zoning October 2007 – Now (Zoomed Out) 300
Figure 108 | Yearly Tourist Flows to LHI Vs. FDN 311
Figure 109 | Licensed Beds per Accommodation Provider – LHI 311
Figure 110 | Average Monthly Tourist Flows to LHI per Year 312
Figure 111 | Yearly and Monthly Average Number of Tourists per Day Vs. TCC for LHI 313
Figure 112 | LHIB Current Membership 315
Figure 113 | LHI Protected Areas: all layers currently valid 319
Figure 114 | LHIMPAC Membership 320
Figure 115 | LHI Protected Areas Currently Applicable 327
Figure 116 | LHI Terrestrial and Marine Zoning Currently Applicable 329
Figure 117 | Relationships among contextualised selected FDN Causal Conditions 336
Figure 118 | Relationships among contextualised selected LHI Causal Conditions 340
Figure 119 | The Interplay between Causal Conditions and (Inter)Action Strategies affecting Self-Organisation for FDN 346
Figure 120 | The Interplay between Causal Conditions and (Inter)Action Strategies affecting Self-Organisation for LHI 349
Figure 121 | Theoretical Model for the Researched Phenomenon 350
Figure 122 | Average Rainfall Vs. Average Tourist Flows to FDN 367
Figure 123 | Average Rainfall Vs. Average Tourist Flows to LHI 368

List of Tables

Table 1 | Economic Distinctions 90
Table 2 | Research design references for the research 118
Table 3 | Case study sites shortlisting process overview 123
Table 4 | Case study sites shortlisting process in detail 124
Table 5 | Islands characteristics and similarities 125
Table 6 | Sources and types of data collected 128
Table 7 | Composition of Local Thematic Forums by Category 132
Table 8 | Composition of FDN's and LHI's Local Councils 132
Table 9 | Sum of interviewees per category for FDN and LHI 133
Table 10 | Sum of interviews for International Organisations 133
Table 11 | Direct Observation of Meetings for FDN 133
Table 12 | Direct Observation of Meetings for LHI 134
Table 13 | Core variables and the Axial Coding Paradigm 136
Table 14 | Basic Sequence of Sociocultural Evolution 154
Table 15 | Australian World Heritage listed properties 202
Table 16 | Brazilian World Heritage listed properties 203
Table 17 | WH Committee Membership: Australia and Brazil 204
Table 18 | Demographic Densities for FDN and LHI 236
Table 19 | Accommodation Categories and Classification for FDN 265
Table 20 | Licensed Beds per Accommodation Provider – LHI 312
Table 21 | Stated Ranking of Causal Conditions to FDN Social Structure 333
Table 22 | Theoretical Coding of Drivers and Inhibitors for FDN 337
Table 23 | Stated Ranking of Causal Conditions to LHI Social Structure 338
Table 24 | Theoretical Coding of Drivers and Inhibitors for LHI 341
Table 25 | Comparison of Theoretical Coding of Causal Conditions for FDN and LHI 342
Table 26 | Tourist Employment in FDN in 2007 347
Table 27 | Sustainability Challenges Identified 357
Table 28 | Sustainability Challenges Ranking for FDN and LHI 358
Table 29 | Sustainability Priority Challenges for FDN 359
Table 30 | Sustainability Priority Challenges for LHI 360
Table 31 | Categorisation of Sustainability Challenges 361

List of Acronyms

10YFP - 10-Year Framework of Programs
ABATUR - FDN Tour Boats Association
ABAV - Brazilian Travel Agents Association
ABIH - Brazilian Hospitality Industry Association
ACITUR - FDN Tour Conductors and Information Providers Association
ACS - Area of Ecological Conservation
ACT - Australian Capital Territory
ADEFN - Fernando de Noronha State District Administration
ADR - Atol das Rocas Reserves
AFTA - Australian Federation of Travel Agents
AHDFN - Fernando de Noronha Bed and Breakfast Providers Association
ANA - Australian National Airways
ANAC - National Agency for Civil Aviation
ANPESCA - FDN Fishermen's Association
ANTA - Australian National Travel Association
APA - Environmental Protection Area
APN - People's Assembly of Noronha
APP - Areas of Permanent Preservation
APT - Area of Ecological Preservation
ART - Area of Ecological Restoration
ASCOT - Australian Standing Committee on Tourism
ATC - Australian Tourist Commission
ATEC - Australian Tourism Export Council
AUO - Area of Use and Occupation
AWHAC - Australian World Heritage Advisory Committee
B&B - Bed and Breakfast Providers
BAI - Brazilian Atlantic Islands
BAI NWHSP - Brazilian Atlantic Islands Natural World Heritage Serial Property
BAI-FDN NWHP - FDN portion of the Brazilian Atlantic Islands Serial Natural World Heritage Property
BBP - Business and Biodiversity Programme
BLG - Biodiversity Liaison Group
BOM - Bureau of Meteorology
BR - Biosphere Reserve
BTR - Bureau of Tourism Research
C&C - Competition and Cooperation
CAS - Complex Adaptive Systems
CBD - Convention on Biological Diversity
CBD-COP7 - 7th Conference of Parties of CBD
Centro TAMAR - National Centre for Research and Conservation of Marine Turtles
CGR - Spinner Dolphin Centre
CITES - Convention on International Trade in Endangered Species of Wild Fauna and Flora
CMA - National Centre for Research and Conservation of Aquatic Mammals
CMRN - Commonwealth Marine Reserve Network
CNPPA - Commission on National Parks and Protected Areas
CNTur - National Tourism Council
CoAG - Council of Australian Governments
COBRAMAB - Brazilian Commission for the MaB Program

COMBRATUR - Brazilian Tourism Commission
CONAMA - National Environment Council
CONTUR - Fernando de Noronha Tourism Advisory Board
CPRH - Environmental Agency of Pernambuco
CRC - Cooperative Research Centre
DAC - Department of Civil Aviation
DDT - Dichlorodiphenyltrichloroethane
DEFN - State District of Fernando de Noronha
DMO - Destination Marketing Organisation
EBSA - Ecologically or Biologically Significant Area
ECA - Escola de Comunicações e Artes
EL - Environmental Levy
EMFA - Chiefs of Staff of the Armed Forces
EPBC Act - Environment Protection and Biodiversity Conservation Act of 1999
EPHC - Environment Protection and Heritage Council
FAO - Food and Agriculture Organisation
FDN - Fernando de Noronha Archipelago
FFLCH - Faculdade de Filosofia, Letras e Ciência Sociais
FLONAS - Brazilian National Forests
Fundação Pró-TAMAR - Foundation Centre for Protection and Research of Marine Turtles
FUNGETUR - Tourism General Fund
G20 - Group of Twenty
GBR - Great Barrier Reef
GDP - Gross Domestic Product
GEF - Global Environment Facility
GFC - Global Financial Crisis
GNTDNC - Global Network for Tourism Development and Nature Conservation
GOBI - Global Ocean Biodiversity Initiative
GOST - Global Observatory of Sustainable Tourism
GPST - Global Partnership for Sustainable Tourism
GSTC - Global Sustainable Tourism Council
GSTC - Global Sustainable Tourism Criteria
GT - Grounded Theory
HDI - Human Development Index
IATA - International Air Traffic Association
IBAMA - Brazilian Institute for the Environment and the Natural Renewable Resources
IBDF - Brazilian Institute for Forestry Development
IBP - International Biological Programme
ICAO - International Civil Aviation Organization
ICCA - Indigenous and Community Conserved Area
ICCROM - International Centre for the Study of the Preservation and Restoration of Cultural Property
ICMBio - Chico Mendes Institute for the Conservation of Biodiversity
ICOMOS - International Council on Monuments and Sites
ID - Inclusive Democratic
IFSP - Instituto Federal de Educação, Ciência e Tecnologia de São Paulo
IICI - International Institute of Intellectual Cooperation
ILO - International Labour Organisation

IOPN - International Office for the Protection of Nature
IPCC - International Panel for Climate Change
ISO - International Organisation for Standardisation
ITC - International Trade Centre
ITF-STD - International Task Force on Sustainable Tourism Development
ITR - Department of Industry, Tourism and Resources
IUBS - International Union of Biological Sciences
IUOTO - International Union of Official Travel Organisations
IUOTPO - International Union of Official Tourist Propaganda Organisations
IUPN - International Union for the Protection of Nature
IWC - International Wildlife Coalition
JPOI - Johannesburg Plan of Implementation
LAC - Limits of Acceptable Change
LC - Localised Conservation
LDCs - Least Developed Countries
LEP - Local Environmental Plan
LHI - Lord Howe Island
LHIG - Lord Howe Island Group
LHIG NWHP - Lord Howe Island Group Natural World Heritage Property
LHIMP - Lord Howe Island Marine Park
LHIPPP - Lord Howe Island Permanent Park Preserve
LHITA - Lord Howe Island Tourism Association
LTC - Linking Tourism and Conservation
LUCID - Lund University Centre of Excellence for Integration of Social and Natural Dimensions of Sustainability
LUCSUS - Lund University Centre for Sustainability Studies
MDG - Millennium Development Goal
MF - Mooring Fee
MFA - Materials Flow Analysis
MIC - Ministry of Industry and Commerce
MLP - Multi-Level Perspective
MMA - Ministry for the Environment
MP - Member of Parliament
MPA - Marine Protected Area
MPOG - Ministry of Planning, Budget and Management
Mtur - Ministry of Tourism
MWHP - Marine World Heritage Properties
NGO - Non-Governmental Organisation
NORTAX - FDN Taxi Drivers Association
NP - National Park
NRSMPA - National Representative System of Marine Protected Areas
NSW - New South Wales
NT - Northern Territory
NTA - National Tourism Alliance
NTPlan - National Tourism Plan
NTPolicy - National Tourism Policy
NWHP - Natural World Heritage Property
OEA - Organização dos Estados Americanos

OUV - Outstanding Universal Values
PA - Protected Area
PARNAMAR-FDN - National Marine Park of Fernando de Noronha
PARNAS - Brazilian National Parks
PAVIM - Protected Area Visitor Impact Management
PE - State of Pernambuco
PGR - Spinner Dolphin Project
PNMT - National Program of Local Tourism Development
PR - Republic's Procurer
PRODETUR-NE - Northeast Region Tourism Development Program
Projeto TAMAR - Brazilian Program for the Conservation of Marine Turtles
PV - Photo-Voltaic
QANTAS - Queensland and Northern Territory Aerial Service
QEA - Qantas Empire Airways
QLD - Queensland
RAAF - Royal Australian Air Force
RBMA - Atlantic Forest Biosphere Reserve
REBIO-ADR - Rocas Atol Biological Reserve
REBIO-ADR - Rocas Atoll Biological Reserve
REBIOS - Brazilian Biological Protection Reserves
RET - Department of Resources, Energy and Tourism
ROS - Recreational Opportunity Spectrum
S&A - Structure and Agency
SA - South Australia
SCEP - Study of Critical Environment Problems
SCP - Sustainable Consumption and Production
SCTD - Steering Committee on Tourism for Development
SECAS - Social-Ecological Complex Adaptive System
SEMA - Special Secretariat for the Environment
SGP - Small Grants Programme
SIHD - System of Home Bed and Breakfast Accommodation
SPU - Federal Real State Secretariat
STCRC - Sustainable Tourism Cooperative Research Centre
STSC - Global Sustainable Tourism Stewardship Council
TA - Mooring Tax
TAA - TransAustralian Airways
TAC - Heads of Agreement
TALC - Tourism Area Life Cycle
TAPAS - Tourism and Protected Areas Specialist Group
TAS - Tasmania
TCS - Social Contribution Tax
TD - Tourism Development
TE - Tourism Evolution
TFC - Tourism Forecasting Council
TFFN - Federal Territory of Fernando de Noronha
TI - Entrance Fees
TOA - Trans Oceanic Airways
TOI - Tour Operators Initiative for Sustainable Tourism Development

TOMM - Tourism Optimization Management Model
TPA - Environmental Preservation Tax
TPU - Permission of Use Term
TRA - Tourism Research Australia
TSA - Tourism Satellite Account
TSC - Tourism Sustainability Council
TTA - Tasmanian Tourist Association
TTF - Tourism and Transport Forum
UAM - University Anhembi Morumbi
UN - United Nations
UNCED - United Nations Conference on Environment and Development
UNCTAD - United Nations Conference on Trade and Development
UNEP GRID Arendal - UNEP Global Resource Information Database in Arendal
UNEP-DTIE - UNEP Division of Technology, Industry and Economics
UNESCO - United Nations Educational, Scientific and Cultural Organisation
UNF - United Nations Foundation
UNIDO - United Nations Industrial Organisation
UNOP - United Nations Office for Partnerships
UoM - University of Melbourne
USA - United States of America
USP - University of São Paulo
VAMP - Visitor Activity Management Process
VERP - Visitor Experience and Resource Protection Framework
VIC - Victoria
VISIT - Voluntary Initiative for Sustainability in Tourism
VM - Visitor Management
WA - Western Australia
WCED - World Commission on Environment and Development
WH&ST - World Heritage and Sustainable Tourism Programme
WHA - World Heritage Alliance for Sustainable Tourism
WHF - World Heritage Fund
WHL - World Heritage Listing
WHO - World Health Organisation
WHP - World Heritage Properties
WHP Act - Word Heritage Properties Conservation Act of 1983
WSSD - World Summit on Sustainable Development
WTO - World Tourism Organisation
WWF - World Wildlife Fund

Lord Howe Island

Introduction

The content of this thesis has been divided into three parts. *Part 1* (chapters 1 to 4) deals with the literature review and the research design. *Chapter 1* and *Chapter 2* review the theoretical foundations of *sustainability* and *tourism development* as contributions to the conceptualisation of the *consequences* and *inter-action strategies* variables, while *Chapter 3* reviews the concept of *Social-Ecological Complex Adaptive Systems – SECAS*, contributing to greater understanding of the *unit of analysis* for this thesis. *Chapter 4* presents the research design that was developed based on chapters 1, 2 and 3. By presenting the evolution of the concept of sustainability, *Chapter 1* also explores the understanding of the conceptual dimension of the global nature conservation institutional structure, therefore contributing with the framing of the *global context*.

Part 2 (chapters 5, 6, 7, 8, 9, 10 and 11) starts by situating the cases by presenting their *global context* in *Chapter 5*, their *national contexts* in *Chapter 6*, their local *demographic* and *environmental characteristics* in *Chapter 7* (*intervening conditions*) and their history of *TD* and *LC* in *Chapter 8* for *FDN* and *Chapter 9* for *LHI*. *Chapter 10* provides analysis of the *phenomenon* focused by this research (processes of self-organisation by means of competition and cooperation) as well as its main *causal conditions*. Finally, *Chapter 11* identifies the main *consequences* or *sustainability challenges* faced by each site and how they relate to the researched *phenomenon* and associated *conditions*.

Part 3 (*Chapter 11*) addresses the research questions proposed in *Chapter 4*, also presenting some cross-cutting conclusions, discussing findings' implications to tourism planning, presenting some of the main challenges experienced and strategies applied by the researcher when dealing with SECASs, as well as acknowledging the research's limitations and future research opportunities.

References cited on the thesis are provided at the end of each chapter so as to group them by topic[1]. A full reference list is provided at the end of the thesis containing both the references cited in this document and those relevant others with which the author had contact during the research process.

[1] With the exception of the references cited in the *Preface*, which are listed only in the *Full Bibliographic List*.

Fernando de Noronha Archipelago

Part 1 | Laying the Foundations

Posing the Question and Constructing the Research Design

As the world grows more urban, tourism to the remaining natural areas of the globe is also increasing considerably, reaching three times the average growth for the whole tourism sector (UNWTO, 2004 cited by TIES, 2007). Whether this is a reaction to urbanisation or the result of an ever-growing world population, tourism plays an important role in the process of globalisation. Tourism helps breaking the barriers that once isolated and protected remote areas comprising important world natural and cultural heritage elements. Not only is tourism driven by a more connected world, it also promotes it. By bringing both opportunities and threats to local areas, globalisation through *Tourism Development – TD* is therefore a subject of considerable importance for planners. As an economic sector and a social *phenomenon* of scientific interest, tourism has sought to bring the debate on sustainability to its arena. However, as pointed by *Miller & Twinning-Ward* (2005, p. 3).:

> *"Despite more than two decades of research, there is still little consensus on the nature, objectives and applicability of sustainable tourism, and few discussions on the theoretical underpinnings of the concept. One reason for this is the reluctance of tourism researchers to do more than scratch the surface of the sustainability development literature and uncover the wealth of information and knowledge that has been generated in this area by scholars of both environment and development. It is argued here that the recent history of sustainable tourism is so brief, and its antecedents so essentially part of the chronology of sustainable development, that an understanding of the origins, philosophies, issues and contemporary explanations of sustainable development can provide vital clues to the appropriate implementation of sustainable tourism".*

To bridge this gap, *Chapter 1* starts by reviewing the emergence of the concept of *sustainability*, followed by a contextualised discussion of *TD* in *Chapter 2*. *Chapter 3* discusses important concepts for research into *tourism development sustainability*, including *Social-Ecological Complex Adaptive Systems - SECAS*, *competition* and *cooperation*, *structure* and *agency*, *social and organisational networks*, *resilience* and *tourism clusters*. As a result, a *SECAS* theoretical model is developed and then used to construct the research design presented in *Chapter 4*.

References

Miller, Graham, & Twining-Ward, Louise. (2005). *Monitoring for a sustainable tourism transition: the challenge of developing and using indicators*. Wallingford, UK; Cambridge, MA: CABI Publishing.

TIES. (2007). Fact Sheet: Global Ecotourism (pp. 1-6). Washington, DC: The International Ecotourism Society.

Fernando de Noronha Archipelago

Chapter 1 | Sustainability

The emergence of a plural and evolving concept

The **term** *sustainability* (*'Nachhaltigkeit'* in German) seems to have been originated from the field of silviculture – originally meaning not removing more wood from the forests than they were able to grow back in the long run – and first appearing in this *context* in a book published by German tax accountant and mining administrator *Hans-Carl von Carlowitz* in **1713** (Klöpffer, 2003, p. 157). However, it is hard to define when exactly the **concept** of *sustainability* was first considered, as human dependence on scarce resources and the limits of the natural environment are conditions civilizations have always had to face in different times and *contexts*.

Despite the term being young, *sustainability* as a construct has been discussed by different audiences and in different *contexts* resulting in many wide and non-aligned concepts with plural meanings and translated into distinct objectives to different groups and organisations. However, the conceptualising of *sustainability* from multiple stances has also enriched debate on the relationships between the present and the future of global human society and its built and natural environments. Consequently, *sustainability* is a concept continuously evolving, constantly aggregating and challenging different points of view.

One way humans differ from other animals is through their conscious capacity to considerably alter their surrounding environment in a process of niche construction aiming to satisfy their needs and try to secure their future existence. This capacity to alter the natural environment has grown so greatly in the past century that it has led to the identification of a new geological era, the *Anthropocene* (Crutzen & Stoermer, 2000). From an anthropocentric point of view, the quest for *sustainability* can be interpreted as the quest for survival of the human species. However, managing the reshaping of the natural environment in a way to secure both short-term and long-term existence poses a great challenge.

Easter Island and the *Rapanui* people make 'the clearest example of a society that destroyed itself by overexploiting its own resources' (Diamond, 2005, p. 118). The process of deforestation led by its human population, allied to a very low degree of regeneration imposed by specific spatial and climate conditions and by introduced exotic predators resulted not only in a treeless island with the extinction of some of its native trees, but also in the only example of a Pacific Island which 'ended up without any native land birds' (ibid, p. 106). 'Immediate *consequences* for the islanders were losses of raw materials, losses of wild-caught foods, and decreased crop yields' (ibid, p. 107), which consequently led to the practice of cannibalism, shifts in religious views and the

establishment of new political and social orders. The combination of these factors led to a dramatic decrease of the population from a supposed peak of 30.000 to something around 6 or 8 thousand (op. cit.). By the late **1800s**, with the exploitation of the island by the Europeans starting in **1722** (bringing diseases, genocide and the capture of some of the population as slaves), numbers dropped to little more than a hundred (Hunt, 2006, p. 418).

Considering the quest for survival faced by our own modern global civilization, understanding how its view of the concept of *sustainability* has evolved is paramount to grasping its present meaning and, therefore, the challenges we face. There is a chronology of published works starting in the **16th century** that, when contextualised, can provide a clearer picture of this evolution. *Kidd*'s (1992) account of this evolution is a relevant starting point, in particular his listing of the roots of the concept of *sustainability* (the ecological/carrying capacity root; the resource/environment root; the biosphere root; the critique of technology root; the "no-growth/slow-growth" root; and the ecodevelopment root). However, since it has been produced about 20 years ago, it requires augmenting and revision.

Overall, this chapter illustrates the emergence of the concept of *sustainability* starting through fragmented discussions via different points of view of particular problems that humankind faces. As the inter-relationships between these problems were becoming more evident, they started being integrated and more comprehensively studied. To facilitate visualisation of the meaning behind this chronology, this chapter groups events by themes. The main themes identified by this research are understandings of ***ecology and environmental conservation***, of ***human-environment relations***, of ***Earth's limits*** and of ***limits to growth and inequalities***. These themes led to the emergence of the concept of ***sustainable development,*** which becomes centre stage in the ***international arena***. The debate around the ***priorities, dimensions and degrees of sustainability*** further expands the concept. This process is aided by the development of ***complex adaptive systems*** thinking and the emergence of ***sustainability science***. Being a ***plural concept***, diverse (and many times divergent) ***implementation strategies to sustainability*** have emerged throughout its evolution.

Ecology and Environmental Conservation

Emerging in response to *consequences* of the industrialisation process, the nature conservation movement gained strength in the **1800s** with a milestone being set by the creation of the world's first national park in the United States of America in **1872** – *Yellowstone*. This movement was boosted by (as well as the ignition for) further discussions and increasing publications in fields related to the study of natural environments. Among which, representing a watershed for the understanding of how

species had come to being, *On the Origin of Species* was published by naturalist *Charles Darwin* in **1859**. By proposing an evolutionary theory based on the natural selection of the fittest, his work plays a significant role in the debate of *sustainability*. On one side, it reinforces the linkages between humankind and other living organisms – raising the idea that humans are part of an environment of relationships among different species, space, matter and energy, which shapes the way evolution takes place (an important argument towards defending biodiversity, as well as the environment and its essential life cycles). On the other side, his theory helps explaining – and for some even justifying – the way the capitalist model operates (through the survival of the fittest) and it is used as an argument for development (as part of evolution).

In **1866**, *Ernst Haeckel* coins the term *ecology* to name a particular field of investigation into the relationships between living organisms and their environment. The labelling of this new field was an important step for the conservation movement, as with new names, discussions on their meaning arise, thus fostering further investigation, making it stronger the knowledge available in the field it represents. *Ecology*'s previous name to that of *Haeckel* was the *economy of nature* (Worster, 1977). In **1921**, the term *human ecology* first appeared in a sociological publication, demonstrating the raising need to better acknowledge and understand the continuous process of reshaping between humans and their natural, social and built environments (Park & Burgess, 1921, p. 558; Schnore, 1958, p. 620). In the early **20th century**, opposed to the mechanistic view of the world that had become dominant with the *Industrial Revolution*, biologists and ecologists opened up to a new kind of thinking to make sense of the life web of relationships – systems thinking. In **1950**, *Bertalanffy* set the foundations of a *General System Theory* in an article published in *The British Journal for the Philosophy of Science*.

It was then in the **1960s**, in a decade heavily impacted by the *Vietnam* and *Cold Wars* (imminent nuclear war threat included) and marked by social revolution and the rise of a counterculture movement and of feminism, that the *ecology movement* gained strength. In **1962**, biologist *Rachel Carson* published her book on the effects of chemicals (especially *Dichlorodiphenyltrichloroethane - DDT*) in the natural environment and their *consequences* to life and to ecological life cycles. Despite the term *ecology* being almost a hundred years old by then, it had only been the subject of academic investigation and interest. *Rachel Carson*'s *Silent Spring* (1963) is the first book to have taken the *ecology* debate to a greater audience, fostering further and more interdisciplinary investigations. It contributes to the early discussions on *sustainability* through a natural environment perspective, thus promoting the quickly growth of the *ecology movement.*

In **1967**, *Arthur Koestler* published *The Ghost in the Machine*, where he coined the term *holons:* subsystems that are at the same time whole systems on

their own but also part of higher hierarchy systems[2]. According to him, *holons* would struggle to balance an integrative tendency to function as a part of a larger whole and a self-assertive one to preserve their individual autonomy[3]. As *Capra* (1983, p.27) interprets, in

> *"a biological or social system each holon must assert its individuality in order to maintain the system's stratified order, but it must also submit to the demands of the whole in order to make the system viable. These two tendencies are opposite but complementary. In a healthy system - an individual, a society, or an ecosystem - there is a balance between integration and self-assertion. This balance is not static but consists of a dynamic interplay between the two complementary tendencies, which makes the whole system flexible and open to change."*

This concept of *holism* was quickly adopted by the *ecology movement* as one of the main underpinning justifications to *biodiversity conservation* and the protection of *ecosystems*. Challenging the idea of humans as masters of nature and instead understanding them as being part of nature, the concept saw humans as highly related to their environment and therefore dependent on the conservation of its resources and systems, and the maintenance of its processes.

In **1973**, *Arne Naess* published a summary of his *Introductory Lecture* at the *3rd World Future Research Conference in Bucharest* (3-10 September **1972**) entitled *The Shallow and the Deep, Long-Range Ecology Movement*. There, he recognised and named two distinct ecology movements: a shallow one, pursuing the resolution of problems associated only with pollution and the depletion of the resources, and a second, *deep ecology*, concerned with it in a more profound and holistic way, considering the adherence to a total of 7 principles (Naess, 1973, p. 95-8):

- "the rejection of the man-in-environment image in favour of the *relational, total-field image*";
- "*biospherical egalitarianism* – in principle";
- "diversity and symbiosis";
- "the anti-class posture";
- "the fight against pollution and resources depletion";
- "complexity, not complication"; and
- "local autonomy and decentralisation".

By coining these two terms, *Naess* identified two different movements that were already occurring. He also differentiated *ecology as a science*, from the

[2] This idea is further explored in Chapter 3 where social-ecological CASs are characterised as comprising subsystems and being part of higher-level systems.
[3] This struggle is further discussed in Chapter 3 where the concepts of structure and agency are presented.

ecology movements – which he characterised as *ecophilosophical*, explaining later that '[b]y an *ecosophy*, [he] mean[t] a philosophy of ecological harmony and equilibrium' (ibid, p. 99).

Also in **1973**, *Holling* published his paper on the *Resilience and Stability of Ecological Systems*. Arguing that populations are part of systems that can present different *domains of attraction* leading to extinction, stable numbers or unstable cyclical numbers, *Holling* suggests that these systems can be analysed according to their *resilience* and *stability* – shifts from one domain of attraction to another being caused by external forces to the system such as climate variation. By *stability*, he refers to "the ability of a system to return to an equilibrium state after a temporary disturbance; the more rapidly it returns and the less it fluctuates the more stable it would be" (Holling, 1973, p. 14). As for *resilience*, he suggests that it "is a measure of the persistence of systems and of their ability to absorb change and disturbance and still maintain the same relationships between populations or state variables" (ibid). He argues "instability, in the sense of large [population] fluctuations, may introduce a *resilience* and capacity to persist" (ibid, p. 15). He also highlights the role of spatial heterogeneity in the *resilience* of systems and that of barriers that impede dispersal between parts of a universe resulting in what he calls the *spatial mosaic*: the more diverse the *spatial mosaic* is[4], the greater the chances of the resulting uneven population distribution to act as a driver for system *resilience* through migration/invasion whenever populations of certain areas go below a certain threshold that could lead to their extinction. Overall, *Holling*'s (1973) contributions to the concept of *sustainability* include: the recognition *ecological systems* are dynamic and diverse, and the importance of instability and diversity to their capacity to persist; that once disturbed, systems may not go back to their original state after the disturbance is withdrawn; and, the concept of *resilience* and resulting thresholds to human development impacts on *ecological systems*.

Human-Environment Relations

In **1968**, French-American microbiologist *René Dubos* published *So Human an Animal*. Featuring as a contribution to the thought that humans are part of nature, his work discussed how the environment reshapes humans and therefore why humans have to be cautious with the way they reshape their environment in a process of niche construction. Arguing the environment has a comparable importance to genetics in determining human beings, he states that concerns with pollution, noise, overcrowding and specially the way urban environments are conceived

[4] In terms of "distinct biological, physical and chemical characteristics that are linked by mechanisms of biological and physical transport" (Holling, 1973, pp. 16).

are, in fact, concerns with the way humans are being reshaped by the environment they are creating (Dubos, 1968).

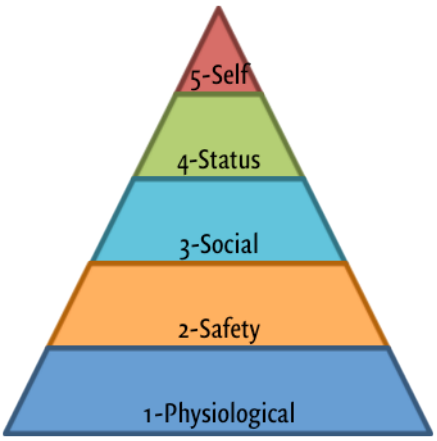
Further to that, concerned with the reasons behind humans' destructive behaviour towards nature, *Paul Shepard* published *Nature and Madness* in **1982**. His psycho-historical thesis claims that the developmental process of human beings from children to mature adults in terms of finding their place in nature and in a community is compromised once humans are abducted from *Mother Nature* (or their natural environment) and start reshaping their environment. According to him, this human pathology starts with the development of agriculture and the rise of civilizations. He believes, however, that these developmental ruptures can and must be repaired through a process of reconnection with and resignificance of nature through the breaking of spatial borders[5] and the search for understanding the environment as a unity in itself.

In respect to why humans reshape their environments, *Maslow*'s (1943) *Theory of Human Motivation* is a starting point. He suggests human behaviour can be explained by a number of determinants including their motivation (inter alia their environment and the specific situation they are in). While he believed that all behaviour is determined, he also suggested that behaviour can be highly motivated, weakly motivated or not at all motivated. He argued that motivation takes place by means of basic human needs that could be organised in a hierarchy of importance (see *Figure 1*), namely physiological, safety, love (or social), esteem (or status) and self-actualization needs. An underlying desire to know and to understand (or the search for meaning) would manifest as a *consequence* of humans trying to satisfy these different categories of basic needs. If one takes a closer look at these categories, one will notice that these human basic needs (or motivational drivers) are all triggers to action that have the sole purpose of guaranteeing the survival of our species.

While the satisfaction of our ***physiological needs*** supports the continuance of human life through ourselves and our children, the satisfaction of ***safety needs*** caters for a less uncertain future, which leads to higher levels of satisfaction of physiological needs. To boost our capacity to make future less uncertain, we have been provided with needs to live in groups (***social needs***), to search for and understand our place in this group (***status needs***) and to perform what we can do best and what brings the best rewards to ourselves and to our group (***self-actualization needs***). This approach to the interplay between the 5 categories of human needs and their organisation in 3 interdependent levels can be better comprehended through the observation of *Figure 2*.

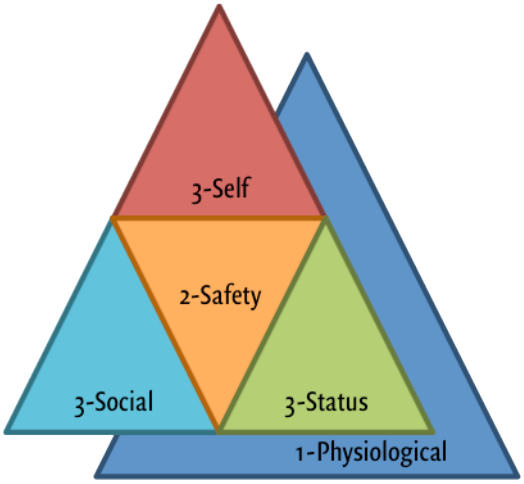
[5] See reference to the aboriginal practice of walkabout on page 52 as an illustration of this concept and its applicability to the role tourism can play in regard to repairing one's developmental rupture.

Figure 1 | Maslow's Hierarchy of Human Needs



Source | Based on Maslow (1943)

Figure 2 | Reinterpreting Maslow's Hierarchy of Human Needs



Source | Author's own reinterpretation of Maslow (1943)

From another perspective, one could infer that while physiological needs guarantee that the human body will carry out the necessary material, information and energy exchanges with the environment and other humans to support the survival and continuance of our species, all the other needs act as facilitators for that to happen. This conclusion suggests a conflicting situation in which humans reshape their environment motivated by needs that are meant to guarantee their survival while also being subject to *consequences* of such reshaping that can put in risk the continuance of the species.

In **2001**, as a result of a series of workshops held with the participants of the *Resilience Network*, *Gunderson and Holling* (2002) edited the book *Panarchy: understanding transformations in human and natural systems*. Building on the concept of *resilience* previously introduced by *Holling* in 1973, the term *panarchy* is coined to "rationali[s]e the interplay between

change and persistence, between the predictable and unpredictable" through a "cross-scale, interdisciplinary, and dynamic theory" (op. cit., p. 5), aiming to understand changes occurring globally. Their proposed theory attempts to understand the source and role of economic, ecological, social and evolutionary transformations in systems of human and nature by looking at them from an inherently integrative perspective, therefore acknowledging the process of mutual reshaping between human and environmental systems. They argue that adaptation takes place through cycles and that "three properties shape the pattern of [their] dynamic change" (Gunderson & Holling, 2002, p. 62): *potential* (or the systems limits), *connectedness* (or the degree to which a system can self manage its future) and *resilience* (or the degree of vulnerability to external changes). They further suggest that these three properties could be used to structure a three dimensional model where cyclical processes of *exploitation*, *conservation*, *release* and *reorganisation* (and then back to exploitation and so forth) would follow as long as the system was resilient enough. Each process would move through different degrees of *potential*, *connectedness* and *resilience* resulting in a three-dimensional eight-shaped flow. Their model contributes to the debate on *sustainability* by attempting to look at *ecology*, *society* and *institutions* from an integrated perspective.

Attempting to bridge the gap between social and ecological theory, *Sieferle* (2011), looks at industrial transformation through socio-metabolic analysis, understanding socio-metabolic systems as the product of coevolution between ecosystems and social systems, a process he believes is "mediated by human culture as an autopoietic system" (Weisz & Clark, 2011, pp., p. 285).

The Construct of Earth's Limits

First (**1914-1918**) and *Second* (**1939-1945**) *World Wars* confirmed that global resources were scarce, therefore subject not only to individuals' dispute, but also to countries rushing to industrialisation. This rush was to become more intense and polarised in the years of *Cold War*. The **1929** *Stock Market Crash* and the *Great Depression* reaffirmed how interconnected the world as whole was becoming, demonstrating the weaknesses of an economic model that was subject to great instability, and was capable of deeply affecting populations of any countries with local economies more dependent on exports and foreign investment than on their own domestic markets. The process of globalisation that had started back in the age of discovery was to present a new interconnected reality in which the way humans reshaped their own regional environments affected all humankind.

In **1956**, the *International Symposium on Man's Role in Changing the Face of the Earth* was opened in Princeton, New Jersey. Organised by the *Wenner-Gren*

Foundation for Anthropological Research and supported by the *United States National Science Foundation*, the symposium was organised in three main streams: a **retrospect** of the relations of man with the Earth; a discussion of the main **processes** involved in this relationship; and finally the **prospects** related to the *Limits of Man and the Earth* as well as *The Role of Man*. The discussions were in a way polarised: 'on one hand (...) the concept of equilibrium, of the necessity of adapting to the processes that maintain equilibrium, and, on the other hand (...) the importance of change, of development, of progress" (Thomas, 1956, p. 1136). According to the co-chair of the **prospect** stream, the future of humans and the Earth would be "not a straight line movement but one full of twists and turnings, of false starts, strategic retreats, and tangential explorations (op. cit.)", the way humankind faced its self-posed opportunities and threats being what would define its future. According to him, "[i]f we are to achieve some degree of ecological balance, we must aim at human balance too" (ibid, p. 1146) as "within the limit of earth's resources and man's biological nature, there are as many different possible futures as there are ideals, systems of values, goals and plans, and social, political, educational, and religious organi[s]ations for bringing about their reali[s]ation" (ibid, p. 1150). The idea that there are many different possible futures gives rise to the concept of different future scenarios and therefore different pathways to *sustainability*.

In **1966**, economist *Kenneth Boulding* published his essay on *The Economics of the Coming Spaceship Earth*. Through a systems approach, *Boulding* calls for a new type of economy to allow the survival of humankind. He called the current economy as "the open economy [or] the *cowboy economy*, the cowboy being symbolic of the illimitable plains and also associated with reckless, exploitative, romantic and violent behaviour, which is characteristic of open societies" (Boulding et al., 1966, p. 9). As for the new economy, he calls it a *closed economy of the future*, or

> *"the 'spaceman economy', in which the earth has become a single spaceship, without unlimited reservoirs of anything, either for the extraction or for pollution, and in which, therefore, man must find his place in a cyclical ecological system which is capable of continuous reproduction of material form even though it cannot escape having inputs of energy' (ibid).*
>
> *"The essential measure of the success of the [spaceman] economy is not production and consumption at all, but the nature, extent, quality, and complexity of the total capital stock [...]. In the spaceman economy, what we are primarily concerned with is stock maintenance, and any technological change which results in the maintenance of a given total stock with a lessened throughput (that is less production and consumption) is clearly a gain" (ibid, pp. 9-10).*

This concept reappears in *Schumacher's Small is Beautiful – A Study of Economics as if People Mattered*, published in **1973**. He argued natural

resources should be treated as *natural capital* rather than income resources, hence their finitude and human dependence on them. From his studies of Buddhist economies, he suggested economic efficiency should be understood as the capacity to deliver the most well-being, with the least consumption, challenging *Gross Domestic Product – GDP* as an index of economic success. To him, "small-scaled operations, no matter how numerous, are always less likely to be harmful to the natural environment than large scale ones, simply because their individual force is small in relation to the recuperative forces of nature" (Schumacher, 1973, p. 31).

Also in **1966**, economist *Barbara Ward* publishes *Spaceship Earth*. By suggesting that 'the forces leading towards a certain unity of human experience are stronger than the forces leading to increasing difference and division' (Ward, 1966, p. 13), she analyses the way globalisation takes place in a world divided and unified by *Cold War*. She identifies three energies of our society that push us to unity: "the energy of science and technological change, the energy of curiosity and research, of self-interest and economics, [and] the energy (...) of potential aggression and destruction" (ibid, p. 14) – the later meaning that countries have no other choice than to talk, negotiate and be prepared to discuss with others within a *world community*, in a situation where a nuclear war could quickly put the planet and therefore our species into non-existence. However, *Ward* pointed that, so necessary and important to the perpetuation of the human species, reaching the state of a *world community* and a new *world order* would demand a balance in power, wealth and ideology. Acknowledging having borrowed the comparison from *Buckminster Fuller*, she suggests that '[t]he most rational way of considering the whole human race today is to see it as the ship's crew of a single spaceship on which all of us, with a remarkable combination of security and vulnerability, are making our pilgrimage through infinity[,] [and as] (...) [w]e are a ship's company on a small ship[,] [r]ational behavio[u]r is the condition of survival' (ibid, p. 15).

In **1969**, architect *Buckminster Fuller* published the *Operating Manual for Spaceship Earth* (Fuller & Snyder, 2008). He proposed that to operate the *spaceship Earth* we all live in there is a need for a broader and more comprehensive view of the world and the universe, achievable through the synergetic application of a *general systems analysis* approach. He suggested that until then, humanity had had access to abundant resources in accordance to its premature understanding of how nature operated – before that time, humans still had not had the chance to understand the world comprehensively and therefore been able to address more complex issues appropriately. In his own words, "[t]his cushion-for-error of humanity's survival and growth up to [then] was

apparently provided just as a bird inside of the egg is provided with liquid nutriment to develop it to a certain point" (ibid, pp. 55-56).

On 7th December **1972**, the first full shot of the Earth (*Figure 3*) was taken by the *Apollo 17* crew as they left the Earth's orbit for the moon (NASA, 2010). Although humankind had known the spherical shape of the Earth for centuries by then, this image brings an important contribution to the collective sense of the Earth's limits, further backing up *Boulding*'s (1966), *Ward*'s (1966) and *Fuller*'s (2008) metaphors on the *spaceship Earth*, being appropriated as a very impacting icon by the *ecology movement*. It reinforces concepts like *biosphere*, *ecosphere*, *technosphere*, *econosphere*, *noosphere (or knowledge sphere)* and *sociosphere*, among others.

Figure 3 | The Earth seen from Apollo 17

Source | NASA (2010)

Limits to Growth, and Inequality

Following the age of discovery (**15th** to **17th centuries**) when most of the world's new lands had been mapped and claimed by European countries, a new age of newly independent countries (including the *United States of America – USA* in **1776**) and of political regime shifts aroused (including the *French Revolution* in **1789**). Within that *context*, in **1798**, economist *Thomas Robert Malthus* (1992) published *An Essay on the Principle of Population* – an analysis of the relationship between the natural human population growth rate and that of the capacity of our society and planet to produce food (or the dangers of population overgrowth and the finitude of the resources available). Despite not accurately previewing today's situation and offering solutions deeply immersed in a religious and moral view of the world, his work has initiated the formal discussion of the population growth problem associated to *sustainability*. His main

concerns related to resolving socio-economic problems imposed by limited resources and inequality in the distribution of outputs of production, something to become recurrent in the debate of *sustainable development* starting in the late **1960s**.

In **1968**, entomologist *Paul Ehrlich* publishes the book *Population Bomb*, alerting for the population overgrowth threat in the "underdeveloped" countries. He argued that most of the land suitable for agriculture on Earth was already being used for that purpose, while the population explosion in the "underdeveloped" countries was increasing the gap between food demand and its production leading to a serious situation of famine. Also looking at his own "developed" country (USA), *Ehrlich* identifies an irresponsible policy concerned only with the decrease of death rates and not of birth rates, in which "[e]ach baby is viewed as a consumer to stimulate an ever-growing economy" (ibid, p. 149). To him, this was the root to most environmental problems including pollution and the overcrowding of its main cities, citing Los Angeles as an example where "the human population ha[d] exceeded the carrying capacity of the environment – at least with respect to the ability of the atmosphere to remove waste" (ibid, p. 112). According to his logic, increasing food demand pressures, their conversion into food production pressures and the support they receive from a view that humans are masters of nature, constituted the main reasons for large usage of *DDT* and disposal of other dangerous substances in the environment. Similar problems to those faced by the *Rapanui* (presented earlier) are described by *Ehrlich* as main threats of population explosion: "[s]ocial systems may break down, cannibalism may occur, breeding may cease altogether" (ibid, p. 168).

Opposed to the *Malthusian* view and to the *population bomb* metaphor, in **1969** *Fuller* stated that '[t]he population explosion is a myth' (Fuller & Snyder, 2008, p. 136) and that the industrialisation process was reducing its annual growth to a point it would soon reach stability. Although advocating that living conditions were indeed improving on average, his concerns related to the way these improvements were distributed – more in terms of people in general performing more critical roles and not automated ones rather than in terms of material possession. In his belief, the performance of more critical roles by a wider part of the population would result in increase of humanity's real wealth: knowledge to allow it to make more out of less and therefore cope with limited resources.

Ecologist *Garret Hardin* (1968), on his article *The Tragedy of the Commons* also dealt with the population growth problem, but from a different perspective, that of questioning the freedom to breed. By acknowledging the finitude of resources and believing humans are individually incapable to refrain themselves from higher levels of consumption and over breeding through their own conscience, *Hardin* structures his argument around the need of "mutual coercion, mutually agreed upon by the

majority of people affected" (op. cit., p. 1247). He states that this coercion should work not only for the control of the population growth, but also of its behaviour in regard to the use of resources and disposal of pollution. He suggests human population overgrowth (and by inference, the environmental problems associated with it) will not be solved as long as the misinterpretation of *Adam Smith*'s liberal economic model continued to take place. In his own words, he refutes 'the tendency to assume that decisions reached individually will, in fact, be the best decisions for an entire society' (ibid, p. 1244).

In April of that same year (**1968**), "a group of thirty individuals from ten countries – scientists, educators, economists, humanists, industrialists, and national and international civil servants – gathered [...] in Rome [...] to discuss [...] the present and future predicament of man" (Meadows, Club of Rome, & Potomac Associates, 1974, p. 9). As a result, the *Club of Rome* was created along with a project to investigate world problems, including, 'poverty in the midst of plenty, degradation of the environment, (...) [and] uncontrolled urban spread' (ibid, p. 10). Expanding on concepts as environmental carrying capacity, the *Project on the Predicament of Mankind* analysed 'five basic factors determining and limiting growth on Earth – population, agricultural production, natural resources, industrial production, and pollution' (ibid, pp. 11-12),. As a result, *The Limits to Growth* report was published in **1972** (Meadows et al.).

The term *carrying capacity* predates and anticipates the term *sustainability*, being commonly used to explain the limits to growth of certain populations in specific environments – according to Sayre (2008), the term was already used in the **1800s** in the field of range and game management. Among many definitions of carrying capacity, *A Blueprint for Survival* suggests it as: "the amount of solar energy potentially available to man via food-plants in a given area" (Goldsmith, Allen, Allaby, Davoll, & Lawrence, 1972, p. 13). *Sayre* categorises these definitions in 4 groups:

> *"(1) as a mechanical or engineered attribute of manufactured objects or systems, beginning around 1840 in the context of international shipping; (2) as an attribute of living organisms and natural systems, beginning in the 1870s and most fully developed in range and game management early in the twentieth century; (3) as K, the intrinsic limit of population increase in organisms, used by population biologists since the mid-twentieth century; and (4) as the number of humans the earth can support, employed by neo-Malthusians, also since midcentury" (2008, p. 120).*

However, the process of calculating carrying capacity can be controversial as different variables can be given different importance and may or may not be included in the equations depending on the available knowledge and interests of those devising the metrics. "If carrying capacity is conceived as static, it is theoretically elegant but empirically vacuous; but if it is conceived as variable, it is theoretically incoherent or at best

question-begging" (Sayre, 2008, p. 131-2). Despite being questionable as a metric, by dealing with limits to impacts, the construct of *carrying capacity* has helped to originate concepts such as *ecological footprint*, *system thresholds* and *planetary boundaries*.

In the **1992** *Globe Conference in Vancouver*, building on the concepts of *human carrying capacity* and *natural capital* and by spatially analysing *social metabolism* (Fischer Kowalski & Haberl, 1998) through *Materials Flow Analysis – MFA* (Fischer-Kowalski, 1998; Fischer-Kowalski & Hüttler, 1999), *William Rees* presents the concepts of *ecological footprint* (the total area required to sustain and urban region) and that of *appropriated carrying capacity*. Challenging views of cities as "geographically discreet places", he suggests "most of the land occupied by their residents lies far beyond their borders". To him, "through trade and natural flows of ecological goods and services, urban regions appropriate the carrying capacity of distant 'elsewheres' creating dependencies that may not be ecologically or geopolitically stable or secure", explaining the North-South divide and interdependency – with "[w]ealthy nations appropriat[ing] more than their fair share of the planet's carrying capacity" (Rees, 1992, p. 121). *Ecological footprint* measures what the *Study of Critical Environment Problems – SCEP* calls *ecological demand*, or "a summation of all man's demands on the environment, such as the extraction of resources and the return of wastes" (Goldsmith et al., 1972, p. 2).

The concept of systems' *thresholds* originated in *resilience theory* and refers to levels above which impacts on a system will cause regime shifts that lead to new domains of attraction; or, from a *sustainability* perspective, *thresholds* are doors to "non-linear transitions in the functioning of coupled human-environmental systems" (Rockström et al., 2009, p. 1). As for the concept of *planetary boundaries*, it refers to "human-determined values of the control of variables set at a 'safe' distance from a dangerous level or from its global threshold" (ibid, p. 3).

Sustainable Development and the International Arena

As the conservation movement gained momentum in the **1960s**, the *United Nations Educational, Scientific and Cultural Organisation – UNESCO* organised an intergovernmental conference of scientific experts for rational use and conservation of the biosphere (*Conference on the Biosphere*) in Paris, 4-13 September **1968**. It counted with the assistance of the *United Nations – UN*, the *Food and Agriculture Organisation – FAO* and the *World Health Organisation – WHO*, and the co-operation of the *International Biological Programme – IBP* and the *International Union for the Conservation of Nature – IUCN*.

> *"Twenty-four years before the United Nations Conference on Environment and Development – UNCED in Rio, where [sustainable development] was to*

> *be recognized and advocated at the highest political level, the Biosphere Conference was [...] the first intergovernmental forum to discuss and promote [this concept]" (UNESCO, 1993, p. 4).*

In **1969**, at Sweden's initiative, the *UN General Assembly* decided to convene the **1972** *UN Conference on the Human Environment – Stockholm Conference*, the first formal attempt of UN member countries to discuss the need to control and better manage human impact on the environment (Strong, 2001). As a contribution to the conference and building on a draft of *Limits to Growth*, *The Ecologist* published *A Blueprint for Survival* in January **1972** (Goldsmith et al.). Arguing the "principal defect of the industrial way of life with its ethos of expansion is that it is not sustainable" (op. cit., p. 2), it identified the disruption of ecosystems, the failure of food supplies, the exhaustion of resources and the collapse of society as drivers to lead humankind to change, so as to survive. It aimed for a stable society, or

> *"one that [...] can be sustained indefinitely while giving optimum satisfaction to its members [and conditioned to] minimum disruption of ecological processes[,] maximum conservation, of materials and energy[,] a population in which recruitment equals loss[,] and (...) a social system in which the individual can enjoy, rather than feel restricted by, the first three conditions" (ibid, p. 8).*

Also previous to the *Stockholm Conference*, the secretary general of the conference, *Maurice Strong*, commissioned two unofficial reports. The *Founex Report* was prepared in **1971** (UN & École Pratique des Hautes Études - VIe Section, 1972) and *Only One Earth* by *Barbara Ward* and *René Dubos* was published in **1972** (Ward & Dubos). *The Founex Report on the Environment and Development* contributes to the concept of *sustainable development* by dealing with the North-South divide. Its understanding of development implied the satisfaction of a population's basic needs, seeing developing countries as those that cannot provide for the basic needs of a considerable part of their population. It acknowledged both development (through increase of consumption) and underdevelopment (by urban and rural poverty) brought negative environmental impacts – in other words, the need for development and the risks and problems associated with it. Its suggests a transition period, during which developed countries would provide aid for developing countries (both in terms of resources and knowledge transfer) so as to prepare them to comply with future regulations to be applied to international commerce (to make it more environmentally protective concerning the evaluation of the production processes). This encouraged larger participation of developing countries in the **1972** *Stockholm Conference*.

Edited by *Ward & Dubos* (1972), *Only One Earth* was the result of input from more than 150 consultants worldwide, constituting the first state of the global environment report. According to it, "there was general agreement

among the experts that environmental problems [were] becoming increasingly world-wide and therefore demand[ed] a global approach" (op. cit., p. 28). It also acknowledged that "[humankind] not only survives and functions in [its] environment, [it] shapes it and [it] is shaped by it" (ibid, p. 30). The report's name meant to alert there was no second chance in the game of survival, and to remind all nations that they shared the same planet and, therefore, the diseconomies (namely, pollution, resource depletion, loss of biodiversity and ecological misbalances) produced by them.

Taking place in Stockholm (5-16 June **1972**), the *United Nations Conference on the Human Environment* resulted in the *Declaration of the United Nations Conference on the Human Environment* that acknowledged that "[humankind] is both creature and moulder of its environment", therefore being the "protection and improvement of the human environment [...] a major issue which affects the well-being of peoples and economic development throughout the world; [as well as] the urgent desire of the peoples of the whole world and the duty of all Governments" (UN, 1972, p. 1). The **1972** declaration calls for the recognition of a shared environmental goal that would be the responsibility of citizens and communities, enterprises and institutions as well as local and national governments. Recognizing the need to control population growth, the declaration also identifies the effects of industrialization as the big issue for developed countries, and that of the lack of development for developing nations, urging developed nations to help reduce the gap between themselves and developing ones. By pushing forward these concepts, it anticipated what was later to be labelled as *sustainable development.*

Despite its political motivation, the oil crisis of **1973-74** imposed to the world a significant shortage of one of the most important sources of energy to the industrialized world, helping to foster the idea of limits previously discussed (growth, resources, etc.), as well as the need to explore alternative sources of energy.

In **1974**, *Mankind at the Turning Point: the second report to the Club of Rome* (Mesarovic, Pestel, & Club of Rome) was published. The main challenges identified in the report were the gap between *humans* and *nature* and that between *North* and *South*. Questioning the current patterns of unbalanced and undifferentiated growth, the report calls for an organic model of growth that would not only be more appropriate to the limits of nature, but also to the emergent world system with increased interconnection between regions of the globe. It challenges the meaning of growth and suggests that some kinds of growth are connected to the decline of other connected areas or sectors. It suggests a path of organic growth, by which humankind should challenge undifferentiated growth by constructing a blueprint for regional differentiation and specialisation. Yet, it suggests humankind would be at a turning point, in which, for the

first time it would have the chance to steer the process of development of a unified world system so as to guarantee the future existence of the species.

The notion of a *world system* gains strength with the publication of *The Modern World System* (Wallerstein, 1974) and *A World Systems Perspective on the Social Sciences* (Wallerstein, 1976). Building on *dependency theory*, *Wallerstein* suggests a social theory with class division being highly connected to a world system in which wealth flows from periphery areas to core areas of the globe, linking the state of underdevelopment in the *South* with that of development in the *North* and reinforcing the need to balance intergenerational inequalities within the agenda of *sustainability*. His thesis corroborates and reinforces the concept of *ecological footprint* (later presented in this chapter) and has served as a building block to *Hornborg*'s *ecological theory of unequal exchange* (**1998**) – which identifies inequalities in the exchange between core and periphery not in terms of economic value (based on market prices), or embodied energy (or *emergy*), but actually in terms of the quality of energy (or *exergy*) that is available for work in what is being exchanged.

In **1980**, *IUCN* prepares the *World Conservation Strategy* (IUCN, 1980) by request of the *United Nations Environment Programme – UNEP*, which funds the production of the document in conjunction with the *World Wildlife Fund - WWF*. Without actually providing a definition for it, the term *sustainable development* was introduced and contextualised as the integration of development and conservation.

> *"Development [was] defined [t]here as: the modification of the biosphere and the application of human, financial, living and non-living resources to satisfy human needs and improve the quality of the human life. [According to it,] [f]or development to be sustainable it must take account of social and ecological factors, as well as economic ones; of the living and non-living resource base; and of the long term as well as the short term advantages and disadvantages of alternative actions" (IUCN, 1980, p. 1).*

Two years later, the *UN* prepared the terms of reference for the creation of the *World Commission on Environment and Development – WCED*. The commission started its works the following year, under the presidency of Norway's Prime Minister *Gro Harlem Brundlandt*. The results of the works were compiled in a report published in **1987** with the title *Our Common Future*, widely known as the *Brundtland Report* (Brundtland & World Commission on Environment and Development, 1987). It defined *sustainable development* as development that "meets the needs of the present without compromising the ability of future generations to meet their own needs" (Brundtland & World Commission on Environment and Development, 1987, p. 43) and it stated that such definition

> *"contain[ed] within it two key concepts: the concept of 'needs', in particular the essential needs of the world's poor, to which overriding priority should be given; and the idea of limitations imposed by the state of technology and social organisation in the environment's ability to meet present and future needs" (Brundtland & World Commission on Environment and Development, 1987, p. 43).*

This definition contributed to a view of development that should promote inter and intra generational social equity as well as human and environmental equity, acknowledging the systemic and physical limitations of the environment for human development. As a result of the UN report, nation-states started preparing their own reports exploring the meaning, feasibility and implications of *sustainable development* strategies to their own economies, the *Blueprint for a Green Economy* published in **1989** (Pearce, Markandya, Barbier, & Great Britain Department of the Environment) and funded by the Great Britain *Department of Environment* is one example. Aiming at compiling and discussing state of the art knowledge on *sustainable development*, it offers a gallery of definitions (op. cit, p. 173-185) that illustrates the different interpretations of the term at the time.

Based on the repercussion of the *Brundtland Report*, in **1989**, the UN General Assembly decided to organize the *United Nations Conference on Environment and Development – UNCED* hosted in Rio de Janeiro, Brazil in **1992**. One year before the conference, *IUCN* published an update and expansion of the *World Conservation Strategy*, then entitled *Caring for the Earth* (IUCN, UNEP, & WWF, 1991). The document strongly incorporated the social perspective to *sustainable development*, suggesting implementation strategies that would involve the use of principles or visions for behavioural shifts in individual, community and government spheres in the local, regional, national and international levels.

The *UNCED*[6] results in two main documents: the *Rio Declaration on Environment and Development* (UN, 1992b) that lists the guiding principles for *sustainable development*; and the *Agenda 21* (UN, 1992a) that lists the priority goals in relation to development and the environment for the XXI century. Among the agreed principles, the *Precautionary Principle*[7] has become one of the bases for *Environmental Law*. *Rio-92* was followed by the **2002** *World Summit on Sustainable Development – WSSD* (or *Rio+10*) in Johannesburg. The summit built on the commitment to *sustainable development* established in **1992** and on the *Millennium Development Goals* agreed on the *Millennium Summit* of **2000** and formalised in the *Millennium Declaration* (UN, 2000). Main outcomes of *Rio+10* included the *Johannesburg Declaration* (UN, 2002a) and the *Plan of Implementation of the*

[6] Also known as *Rio-92*, *Earth Summit* or *Eco-92*.
[7] "Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation" (UN, 1992b).

WSSD (UN, 2002b), which resulted in the *Marrakech Process*, a *10-Year Framework of Programmes* on sustainable consumption and production (UNEP, 2009). *Rio+20* took place in Rio de Janeiro in **2012**.

The end of the **1990s** and the first decades of the new millennium were marked with increased concern about the environment, anthropogenic climate change being the most debated issue. Reports from the *International Panel for Climate Change – IPCC* raised the importance of the problem and helped the formulation and ratification of the *Kyoto Protocol* (UN, 1998) setting reduction targets to carbon emissions by UN member countries. However, the refusal to ratify the protocol by key players (e.g. USA) weakened the instrument and raised the debate over the adaptation/mitigation divide. While *adaptation* is a private venture with private benefits, *mitigation* is a collective effort aimed at bringing collective benefit. Despite *adaptation* being an important strategy to cope with *climate change* – a process greatly believed to be already taking place[8] (Garnaut, 2011a, 2011b; IPCC, 2008; Stern, 2007), key players' decisions not to commit to *mitigation* targets illustrates *Hardin*'s (1968) *Tragedy of the Commons*: if countries do not suffer mutual coercion mutually agreed upon, commons such as the atmosphere can be used following a logic in which individual economic gains for polluting are (at least initially) higher than the economic expenses to be employed with adapting to a polluted environment. However, existing economic, political and military power imbalances among different countries influence the way mutual coercion can be exercised. That partly explains why expectations on the signature of a global treaty to reducing carbon emissions were not met by the *Copenhagen Summit* in **2009**.

[8] "Warming of the climate system is unequivocal, as is now evident from observations of increases in global average air and ocean temperatures, widespread melting of snow and ice and rising global average sea level" (IPCC, 2008, p. 30).

Priorities, Degrees and Dimensions of Sustainability

In **1993**, following *Rio-92*, *Turner* published his views on the principles and practices of *sustainability*. Identifying two extreme visions of *sustainable development* – the *ecocentric* from the *deep ecologists* and the *technocentric* from the *neoliberal economists* – *Turner* suggested *sustainability* should be analysed through a continuum containing different degrees of understanding of the importance of the two extremes (Turner, 1993). The importance of his proposal lies in his understanding of *sustainability* as something relative (*degree of sustainability*) rather than absolute (*sustainable* or *unsustainable*). If one considers the future as uncertain, one realises that absolute approaches to *sustainability* seem unrealistic.

In the business arena, the concept of *sustainability* gained strength with the publication of *Cannibals with Forks* in **1997** (Elkington). There, *Elkington* presented the triple bottom line paradigm for business auditing in the **XXI century**, arguing that business should equally aim for economic prosperity, environmental quality and social justice. However, as environmental conservation became mainstream, many businesses started using the concept as a marketing tool only, not necessarily changing their business practices. Also known as *greenwashing*, despite contributing to a certain distrust of *environmentally friendly* labels, it also pushed for the development of certification schemes to strengthen the appeal of products and services offered by environmentally and socially responsible businesses. In certain sectors, this movement resulted in a plethora of certification schemes. By being too many, with limited geographical reach and with different parameters on what *sustainability* was, these schemes caused consumer confusion and distrust and called for the emergence of wider accreditation programs, or the appearance of certifiers of certification programs[9].

In **1993**, *Sachs* established the five dimensions of *ecodevelopment*: *social sustainability*, *economic sustainability*, *ecological sustainability*, *spatial sustainability* and *cultural sustainability* (pp. 14-17). By including two new dimensions to the discussion of *sustainability* (*spatial* and *cultural*), *Sachs* acknowledges the need for a more holistic view of the term:

> *"Spatial sustainability directed at achieving a more balanced rural-urban configuration and a better territorial distribution of human settlements and economic activities..." (p. 16)*
>
> *"Cultural sustainability looking for the endogenous roots of the modernization models and integrated farming systems, processes seeking change within cultural continuity, translating the normative concept of ecodevelopment into a plurarity of local, ecosystem-specific, culture-specific and site-specific solutions" (p. 17).*

[9] This is discussed in light of the tourism sector in Chapter 5.

In **1995**, the concept of cultural *sustainability* is further expanded by *Francesco Di Castri* (1995) in his article *The chair of Sustainable Development*. He suggested *sustainable development* is dependent on four equally important dimensions of *sustainability*: environmental, economic, social and cultural. Using the metaphor of a *Renaissance* style chair, he argues that each one of its four legs (or *dimensions of sustainability*) should be of the same height and strength and be connected for the chair to be balanced and allow sitting. Despite acknowledging perfectly balanced situations might be utopian goals, he deemed them valid, suggesting they could lead to a new period of *Renaissance*. He also refers to *globalisation* and *diversity* as two conditioners to our capacity to pursue *sustainability*, claiming globalisation could act as a catalyst for global action towards global environmental, social and economic issues, but also bring cultural uniformity, diminishing our capacity to adapt and innovate. As for cultural and biological diversity, he points their capacity to foster economic development by means of creativity, innovation and adaptation, but also suggests that extremely closed cultural identities may not respect other value systems leading to exclusion, discrimination and rejection, resulting in fundamentalisms. To deal with globalisation and diversity, *Di Castri* suggests three principles: the *specificity principle* (solutions should be specific and not general); the *precautionary principle* (all different kinds of biological and cultural diversities should be kept alive considering the unpredictability of the future); and the *flexibility principle* (changes of course are unavoidable and desirable considering future uncertainty).

Tourism academics have identified even more *dimensions of sustainability*, including the *ethical* (Wight, 2007), the *political* (Bramwell et al., 1998; Hall, 1994), the *managerial* (Bramwell et al., 1998) and the *governmental* (Bramwell et al., 1998). Despite having increased the concern with *sustainability* within many complementary areas, this plethora of dimensions also resulted in vague concepts and multiple interpretations of what should be pursued. That highlights the need to deal with *sustainability* from an approach capable to cater for the complexity of its relationships.

In that scenario, *Marshall and Toffel* (2005), consider the limitations of humankind in treating all aspects of *sustainability* at once, suggesting a hierarchy of issues defined according to the

> *"urgency, severity and uncertainty of [their] consequences and temporal and spatial dimensions. [From highest priority to lowest, they] category[s]e actions [...] as unsustainable based on their direct or indirect potential to (i) endanger the survival of humans; (ii) impair human health, (iii) cause species extinction or violate human rights; or (iv) reduce quality of life or have consequences that are inconsistent with other values, beliefs, or aesthetic preferences" (ibid, p. 673).*

However, despite facilitating decision-making, the suggested hierarchy seems inappropriate to tackle the complexity of *social-ecological systems* by suggesting that other species extinctions can be treated as a separate category to the survival of humans.

Complex Adaptive Systems and Sustainability Science

In **1983** *Fritjof Capra* published *The Turning Point: science, society and the rising culture*. Based on the emergence of systems theory, holism and the identification of new ecological demands to models of human development and growth, *Capra* questioned the mechanistic *Cartesian* view of the world arguing that complex *phenomena* such as society and nature should not be reduced to building blocks by scientific enquire. His thoughts highlighted the relationship between: understandings of reality and those of the concept of *sustainability* and human's capacity to influence it. Further, they called for the use of new theories (*complexity theory*) and for a new approach to the building of knowledge (*transdisciplinarity*).

Created in the early **1990s** through transdisciplinary studies conducted by then recently founded *Santa Fe Institute* (Waldrop, 1992), *complexity theory* complements that of *general systems*, resulting in the emergence of *complex systems theory*. By advancing the way humans understand reality, it brought important contributions to the understanding of *sustainability* in a scenario where it appeared to have multiple interdependent dimensions. *Complex systems* are regarded as those in which the number and type of elements and relationships are of such magnitude that the way these systems answer to impacts is difficult to predict – they are based on relationships that are non-linear, therefore presenting many feedback loops. The recognition of environmental systems as complex and presenting uncertain behaviour once impacted made a stronger case for the *precautionary principle* discussed earlier. Another aspect of complex systems that is largely brought up by the *conservation movement* and also by *Rio-92* is the direct relationship between the degree of stability and *resilience* of a system and its degree of complexity and diversity. By enlarging more and more the urban and agricultural frontiers on the natural environment, humankind contributes to loss of biodiversity and consequently to the simplification of ecological systems, decreasing, this way, their degree of *resilience* and stability. *Anthropogenic climate change* is an example that results not only in greater climatic uncertainty but also in ecosystems that can be less resilient to environmental change.

Advances in the study of *complexity theory* led to the development of the concept of *Complex Adaptive Systems – CAS* or those systems in constant evolution by the adaptation of their agents, structures and/or collective behaviour. In the case of humans, the capacity to adapt can be observed in three levels: changes in behaviour based on the current culture, in new

perspectives towards reality, and in evolution by means of a *Darwinian* natural selection process, through which only phenotypes (and consequently genotypes) that are fit enough can survive (Morowitz & Singer, 1995).

Based on a *CASs* approach to better understand the relationships between human and environmental systems, *Sustainability Science* was created in 1999 (NRC) through the proposal of four inter-related research streams: Biological Systems; Technological Systems; Geophysical Systems and Social Systems.

In **2011**, scholars from the *Lund University Centre for Sustainability Studies – LUCSUS* published an article on their approach to structuring a *sustainability science* platform (Jerneck et al., 2010). According to them, the greatest priority challenge faced by a *sustainability science* program is to be able to integrate the social and the natural dimensions of *sustainability*. By structuring their own approach to promote this integration, they provide an example on how research is conducted at the *Lund University Centre of Excellence for the Integration of Social and Natural Dimensions of Sustainability – LUCID*. Their research platform involves the use of a three-dimensional matrix. The first dimension establishes the research approaches that are utilised, categorised as problem solving or critical. The second dimension suggests research core themes aiming at advancing knowledge on: scientific understandings of social-ecological systems, *sustainability* goals or pathways, strategies and implementation. The third dimension is a about the object of research, or the *sustainability* challenges that are the focus of the research centre: climate change, water scarcity, biodiversity loss and land use change. It is through their proposed core theme of scientific understandings of social-ecological systems that the research centre seeks to bridge the gap between natural and social sciences when dealing with *sustainability* challenges. This need had already been pointed by *Goldman and Schurman*, who call for "bring[ing] nature into the centre of sociological inquiry and recogni[sing] the inseparability of nature and society" (2000, p. 563). *LUCID*'s approach to bridging this gap is through the application of grand theories such as *earth system* and *world system*, through analytical frameworks such as the *resilience of coupled social-ecological systems* and *material flow analysis* and through the reconceptualization of natural cycles as *social-natural cycles*, in the case of carbon, for instance. In order to do this, they plan to move from *multi-disciplinary* through *interdisciplinary* to *transdisciplinary* research within a timeframe of ten years (Jerneck et al., 2010).

In regard to *transdisciplinarity* as a new approach to building knowledge on *sustainability* (a need pointed earlier by Capra, 1983), *Max-Neef* (2005) offers a definition by contrasting it to *disciplinarity* (specialization in isolation), *multidisciplinarity* (many distinct disciplines that do not

cooperate and work in isolation despite being complementary for a certain objective), *pluridisciplinarity* (where there is cooperation between disciplines with no coordination) and *interdisciplinarity* (where coordination comes from a higher level concept that guides the efforts of individual disciplines). According to him, individual disciplines can be categorised into 4 groups/levels: those that refer to what exists / empirical level (mathematics, physics, chemistry, geology, sociology, economics...); to what we are capable of doing / purposive or pragmatic level (architecture, engineering, agriculture, forestry, industry, commerce...); to what we want to do / normative level (planning, design, politics, law...); and to what we must do / value level (values, ethics, philosophy...). He argues that "any multiple vertical relations including all four levels, defines a transdisciplinary action" (ibid, p. 9). By vertical relations, he implies there is coordination from higher levels to lower ones. In order to advance on the study of *sustainability*, he argues that a strong transdisciplinary approach should be taken. One that would not be limited to what has just been described, but that would involve: different levels of reality (or sets of systems that abide to certain general laws that differ from those from other levels), the principle of the included middle (or the bridge between different levels of reality or different disciplines) and complexity (where understanding of parts not necessarily results in understanding of the whole).

Considering the current age as being of great uncertainty and high risk posed by environmental problems arising from past and current human development models, *Ravetz* (1999) suggests that *transdisciplinarity* is not enough if it is contained within the domain of *Normal Science*. Calling for the involvement of "extended peer communities who deploy extended facts and take an active part in the solution of their problems" (op. cit., p. 647), he suggests the employment of *Post-Normal Science*, "a new organisation of science [...] defined by the dominance of 'goal orientation'" (ibid, p. 648).

As for the employment of specific research methods, "particularly, in the domains of *sustainability*, [*qualitative case studies* are] getting an increasing attention due to [their] inherent advantages in many aspects" (Han & Stoffel, 2011, p. 6:1), including their capacity to deal with highly complex topics and look at emerging *phenomena* from holistic and integrated ways catering for "the acquisition and analysis of non-standardised data" (Han & Stoffel, 2011, p. 6:2).

Plural Concepts, Divergent Implementation Strategies

Along with the evolution of the concept of *sustainability*, different approaches for its implementation have also emerged, resulting in proposed strategies that are still the focus of much debate and disagreement. These include those already presented in *A Blueprint for*

Survival (Goldsmith et al., 1972), the *World Conservation Strategy* (IUCN, 1980) and many others.

In order to compare and contrast the plethora of concepts and associated implementation strategies to *sustainability*, *Hopwood et al.* (2005) offer a classification of different approaches to *sustainable development* by rating their environmental, socio-economic well-being and equality concerns, and placing them in three groups: *status quo*, *reform* and *transformation*. They suggest that:

> *"Supporters of the status quo recogni[s]e the need for change but see neither the environment nor society as facing insuperable problems. Adjustments can be made without any fundamental changes to society, means of decision making or power relations. [...]*
>
> *Those who take a reform approach accept that there are mounting problems, being critical of current policies of most businesses and governments and trends in the society, but do not consider that a collapse in ecological or social systems is likely or that fundamental change is necessary. [...]*
>
> *[While] [t]ransformationists see mounting problems in the environment and/or society as rooted in fundamental features of society today and how humans interrelate and relate to the environment[,] [argueing that] a transformation of society and/or human relations with the environment is necessary to avoid a mounting crisis and even a possible future collapse" (ibid, p. 42-45).*

However, despite offering a comprehensive tool to contrast the wide range of understandings of the concept and their associated implementation pathways, mapping some of the approaches to *sustainable development* can prove difficult, as the line separating different categories can be blurry, not always catering for the different views on what a single approach is supposed to be. The debate on the concept of economic *de-growth*, its feasibility and way of implementation is an example of that.

De-growth has been defined by *Kallis & Schneider* (2008, p.6) as "an equitable downscaling of production and consumption that increases human well-being and enhances ecological conditions at the local and global level, in the short and long term" (cited by Kerschner 2010, p.544). While *Latouche* (2011) argues that economic *de-growth* can be implemented through adjustments in the economy and in the representative democratic system in place in many western countries, *Fotopoulos* (2011) defends the position that *de-growth* could only be implemented through the replacement of representative democracy by an *Inclusive Democratic – ID* system. This way, the *de-growth* approach could be placed both in the *reformist* as well as in the *transformationist* categories proposed by *Hopwood et al.*, depending on those debating the concept.

Categorised by *Hopwood et al.* (2005) as a *status quo* approach, *ecological modernisation* (Jänicke, 2008) considers the increment of efficiency as the most feasible way to achieve *sustainability* outcomes. Jänicke (2008) defends there is a great opportunity for *ecological modernisation* to gain strength with the rise of what *Levi-Faur* (2005) calls *regulatory capitalism*: "a technological as much as a [new] political order" (ibid, p. 21) that

> *"represents a new division of labour between state and society and in particular between state and businesses [...] [, with] the state retain[ing] responsibilities for steering, while businesses increasingly take over the functions of service provision and technological innovation" (ibid, p. 15).*

According to *Jänicke* (op. cit.) this opportunity can be seized through what *Gunninham et al.* (1998) labels as good *environmental* or *smart regulations*: "the use of a mixture of regulatory instruments, by the mobilization of new regulatory actors and third parties, and by harnessing the enlightened self-interest of individuals and corporations" (Levi-Faur, 2005, p. 21-22). However, to opt for increased efficiency, as the sole strategy for implementing *sustainability*, appears to be a risky choice. Indeed, when population, economic growth and consumption behaviour are not in check, increases in efficiency can be coupled with (if not surpassed by) growth in *ecological demand* and *ecological footprint*. In a complementary way, despite possibly bringing incentives to investment in innovation, increases in regulation may also promote the concentration of service provision and goods production within big businesses – these would normally have more competitive budgets for research and development and for adhering to new regulations. In this scenario, smart regulation should not only focus on developing standards that are environmentally driven, but also aim to strike a power balance between big and small businesses. Business diversity (like biodiversity) is expected to cater for production systems that are more resilient and capable to innovate, and therefore better able to adapt to new environmental demands.

Following a *transformationist* approach, Krausmann, Fischer-Kowalski, Schandl, and Eisenmenger (2008) and Haberl, Fischer-Kowalski, Krausmann, Martinez-Alier, and Winiwarter (2009) suggest the need for a *global socio-metabolic transition* towards *sustainability* whereby a new *socio-metabolic regime* should be targeted. "Based on empirical data for global resource use (material and energy flows, land use) they question the notion that the promotion of eco-efficiency is sufficient for achieving *sustainability*" (Haberl et al., 2009, p. 1) and argue that, the same way human dominant socio-metabolism regimes have shifted hunter-gatherers to agriculture and to industry, a new regime shift should take place so as to cater for current and future *sustainability* challenges.

As important as the debate on what should be changed in order to reach higher degrees of *sustainability* is that on how change can take place. By looking at the transition of *socio-technical systems*, *Geels* (Geels, 2002, 2011; Geels & Schot, 2007) suggests a *Multi-Level Perspective – MLP* on *sustainability transitions*. The *MLP* focuses on the way innovations that are more environmentally friendly can become mainstream and replace older technologies, therefore serving mostly as support for the *ecological modernisation* approach. He claims that socio-technical systems comprise a *regime level*, a *landscape level* and a *niche-innovations level*. According to the *MLP*, "the *regime* forms the 'deep structure' that accounts for the stability of an existing socio-technical system[,] [...] refer[ing] to the semi-coherent set of rules that orient and coordinate the activities of the social groups that reproduce the various elements" of these systems (Geels, 2011, p. 27). By *socio-technical landscape Geels* infers the "wider *context* influencing niche and regime dynamics" (ibid, p. 28), seeing niches as "protected spaces such as R&D laboratories, subsidised demonstration projects, or small market niches where users have special demands and are willing to support emerging innovations" (ibid, p. 27).

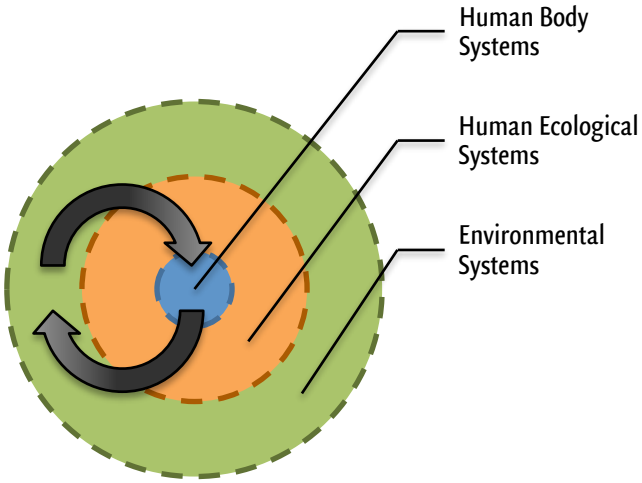
Geels (op. cit.) argues that the regime's dynamic stability can be pressured by landscape developments resulting in windows of opportunities for aligned networks of innovation to finally penetrate the regime, this way becoming more mainstream and provoking adjustments in the current system. He identifies different situations in which regimes can be greatly or barely disrupted by different kinds of landscape pressure that can be more or less aligned with the process of organisation of innovation networks. These would result in four *transition pathways*: transformation; reconfiguration; technological substitution and de-alignment; and re-alignment. He characterises the *MLP* as a *middle-range theory*, or what *Merton* (1968, p. 39) calls "theories that lie between the minor but necessary working hypotheses [...] and the all-inclusive systematic efforts to develop a unified theory that will explain all the observed uniformities of social behaviour, social organisation and social change", or grand theories. *Geels* (op. cit.) approach caters for a framework that is open enough to aggregate other theories and to be expanded beyond the boundaries of socio-technical systems. This way, its initial limitation of catering only for the ecological modernisation platform, could be lifted and the framework explored in the domain of other *sustainability* implementation platforms such as those classified by *Hopwood et al.* (2005) as *reformist* and *transformationist*.

The concept of Sustainability employed by this research

In light of the themes presented in the previous sections of this chapter, the researcher constructed the concept of *sustainability* employed as the basis for this research. This was undertaken from an anthropocentric perspective, but through an holistic approach: anthropocentric because the survival of the human species is here regarded as the overarching objective of *sustainability*; holistic because it understands humans as part of their surrounding environments (built and natural) and therefore dependent on them. This way, despite focusing the survival of the human species, the concept considers the conservation of environmental systems and resources as a pre-requisite to survival.

Humans are understood here as dependent on their environments primarily because human bodies are open systems that exchange information, energy, and matter with the environment in order to maintain their functions and guarantee reproduction. The systems through which these exchanges occur are labelled here as *human ecological systems*. It is through them that the first degree of mutual reshaping can be observed between *environmental systems* and *human body systems*, as illustrated in *Figure 4*.

Figure 4 | Reshaping through Human Ecological Systems

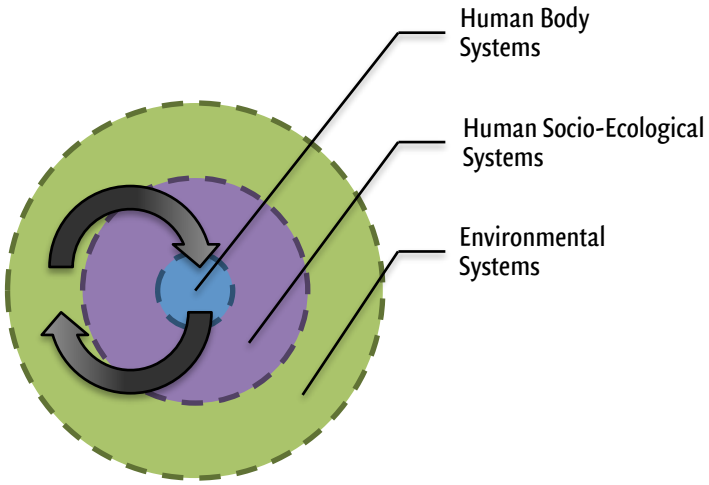


As discussed previously, human physiological needs motivate this first degree of reshaping. Examples include the intake of food and the release of excrement as well as the absorption of oxygen and the release of carbon dioxide. *Environmental systems* constantly process matter, energy and information, therefore human interaction with these systems by intake and release of matter, energy and information makes them part of *environmental systems* through *human ecological systems*.

One way humans differ from other Earth living beings is by our conscious capacity to considerably alter our surrounding environments in order to

facilitate the performance of our own *human ecological systems*. As suggested earlier, this can be understood as being partly motivated by safety needs and facilitated by behaviour deriving from social, status and self-actualisation needs. Safety needs can motivate humans to reshape their environment in an attempt to decrease future uncertainty. The establishment of social networks (motivated by social needs) with specialised roles (motivated by status needs) where individuals seek to realise their potential (motivated by self-actualisation needs) can facilitate this process of reshaping. This leads to the development of *human social-ecological systems* that impose a second degree of reshaping in both the environment and humans beings, through a feedback process, as illustrated in *Figure* 5.

Figure 5 | Reshaping through human social-ecological systems



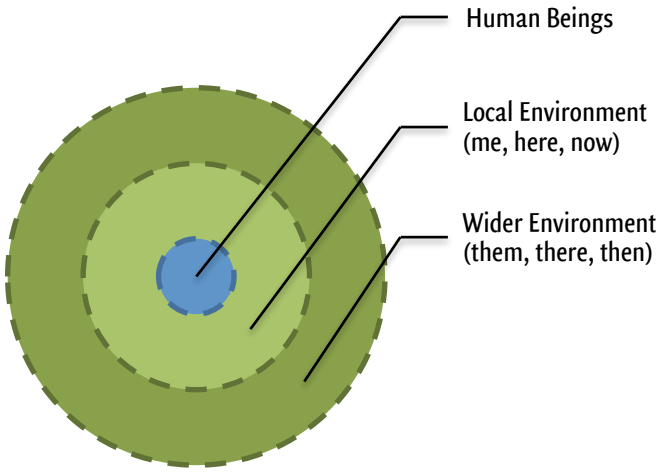
Both the diagrams presented in *Figure* 4 and *Figure* 5 were designed to suggest that *human body systems* are contained in *human (social-)ecological systems*, that are, in turn, contained in *environmental systems*, hence *human body systems* are presented in the centre of the diagrams.

The development of agriculture is an example of the way *social-ecological systems* have potentialised the human capacity to reshape natural environments, which, in turn, reshapes humans and *human social-ecological systems*. However, from the moment humans fix residence (allowing agriculture to take place while also becoming possible because of agriculture) the patterns of human reshaping of the environment become somehow problematic. By becoming more self-sufficient and independent, it becomes harder for humans to link or account for different scales of outcomes deriving from interventions in the natural environment, thus, many times, making them conflicting. Examples include:

- Time Scale (*Long and Short Term Outcomes*): the more resources one can stock, the less uncertain the future becomes; the less uncertain the future is, the less one has to be concerned about the *consequences* of one's behaviour;
- Space Scale (*Local and Global Outcomes*): the less one is forced to wander through natural environments in the pursuit of survival, the less one understands how things are connected spatially;
- Subject Scale (*Individual and Collective Outcomes*): by subtracting oneself from natural environmental systems and by developing built environments and therefore assuming a position of greater control (and therefore gaining more independence), one becomes more individualistic. This individualism can be understood not only in regard to the way humans relate to one another, but also to the way they relate to other non-human components of environmental systems.

The diagram presented in *Figure 6* illustrates this dichotomy by suggesting two perceived types of environment (local and wider) associated with the different scales of outcomes (micro and macro) for each one of their three dimensions (time, space and subject). It depicts the *local environment* (or *nearer environment*) as being perceived by humans as more concrete, with which they would have direct contact, representing the view of humans as individuals concerned with the present local outcomes of environmental reshaping.

Figure 6 | Scales of Environmental Perception



The *wider environment* (or *farther environment*) is suggested as being more abstract as it deals with concepts such as the future, the global and the collective. If one looks at both human and environmental systems as being CASs, one is aware of the danger associated with perceptions that

fragment time, scale and unit. In other words, changes occurring locally, in the present time and aimed at achieving individual outcomes may reflect on impacts in the collective, the future and the global. Therefore, the perception of a unified environment seems more appropriate to the concept of *sustainability*, one where concerns over individual and collective becomes that of the human species and the environmental systems as a whole; where local and global systems become the earth system; and where present and future also become one, therefore *consequences* are seen as an immediate result of actions.

Adopting a unified perception of the environment by no means disregards the interplay between the different scales presented earlier; it simply forces the analysis to occur through an integrated approach, allowing, for example, to consider the feedback process linking different scales:

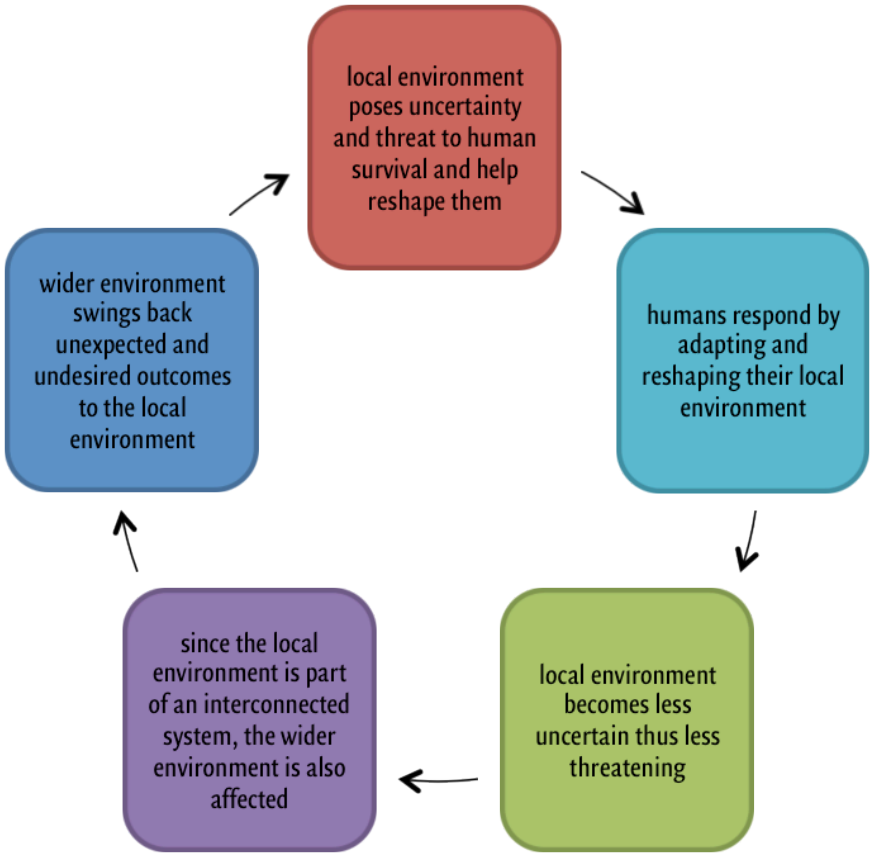
- Visions of what the future will be like or should (not) be like to guarantee human survival can influence present patterns of environmental reshaping (threat of anthropogenic climate change can influence choice of energy generation models), the same way current patterns may influence future practices of reshaping and future states of the environment (choice of current energy generation models can induce anthropogenic climate change which can inform different choices of energy generation models in the future);
- Local patterns of reshaping (a country's choice of energy generation model) may help determine global trends of associated reshaping (anthropogenic climate change) through networks of interconnected human (components of local energy generation stations are produced globally with the energy consumed locally being usually produced regionally) and environmental systems (local air pollution dissipates globally to become global air pollution), the same way global environmental (*climatosphere*) and human systems (regional, national and international urban systems) influence the way local reshaping takes place (by choice of place where to install energy generation stations, for instance);
- Individual driven reshaping can impact the collective (individual choice of means of transport contributing to air pollution), the same way that collective driven reshaping can impact individuals (e.g. collective choice of energy generation models can contribute to air pollution and to anthropogenic climate change, which will affect individuals).

These feedback processes can also link different dimensions: past and present, individual and collective, local and global behaviour can bring

individual and collective future local and global impacts. For instance, anthropogenic climate change is influenced by individual and collective choices of means of production and consumption on a local and a global scale and is likely to affect individuals and the collective both locally (e. g. disappearance of some islands) and globally (e. g. sea level rise).

Figure 7 illustrates the dynamic reshaping feedback process between humans and the environment. It suggests that the perception of a local environment that can pose uncertainty and threat to human survival triggers its reshaping and human adaptation. By being connected, changes to the local environment can bring changes to the wider environment. These changes can reverberate back to the local environment, bringing further changes that make it being perceived as uncertain and posing threats to human survival in a different way. In turn, this instigates further adaptation and action towards further reshaping of the environment.

Figure 7 | Feedback process of reshaping



The internal acclimatisation of built environments in Australia is an example of this type of dynamic process. The use of air conditioning systems that rely on coal-generated energy contributes to global warming, which, in turn, increases the need for acclimatisation in buildings worldwide, including Australia.

In order to visualise the relationships between humans and nature in the *context* of *sustainability*, the following definitions were adopted:

- From an anthropocentric point of view, the environment can be understood as comprising resources and systems, resources being depositories of energy, matter and information and systems being responsible for the dynamic process of transformation and conversion of these resources.
- The total amount of the Earth's resource stock can be classified as *lithosphere*, *hydrosphere*, *atmosphere* and *biosphere*, whereas the earth system that processes organic matter, energy and information can be referred to as *ecosphere* and that, which processes non-organic matter, energy and information as *climatosphere*.
- Despite these classification, the interplay between different kinds of resources and systems is considerable (for instance, forests not only are influenced by climate but also contribute to its characteristics, using the lithosphere, the hydrosphere and the atmosphere as inputs and reshaping them through the release of outputs).
- As discussed earlier, triggered by needs that partly motivate behaviour, humans have developed systems and resources that potentialise their capacity to reshape their environment. Human systems also process matter, energy and information and can be classified as social-ecological and comprising other subsystems such as the economic and the cultural systems. As for human resources, these can include technology, institutions, knowledge, skills, experiences, structures, visions, populations, mechanical and information processing machinery (tools or human body technological extensions), among others.
- In order to detail the links between the processes of environmental and human systems' reshaping, it is important to refer to the role of differences in genotypes, phenotypes, ages, identities and personalities on the way needs are translated into action. In that sense, human beings with different characteristics will translate needs into different types of behaviour. And by genotypes and phenotypes, it is important to highlight that not only the biological genetic load and its manifestation as a certain biological phenotype is of relevance, but also the cultural genetic load and the way it translates into conditioned behaviour.

It is based on the overall argument developed in this section that the diagram presented in *Figure 8* was designed to illustrate the interplay between humans and the environment as a basis for the construct of the concept of *sustainability* for this research. Differently to the diagrams

presented in *Figure 4* and *Figure 5*, the one presented in *Figure 8* portrays not only systems, but also resources and needs. Therefore, it was not aimed at showing how different elements contained others. In this sense, considering how dependent on the environment human beings are, environmental resources and systems are presented as the core of the diagram. This also helps to represent the earth and its environmental systems and resources and the way humans have added their own layers of systems and resources on top of them.

Figure 8 | Dynamics of human-environment interaction

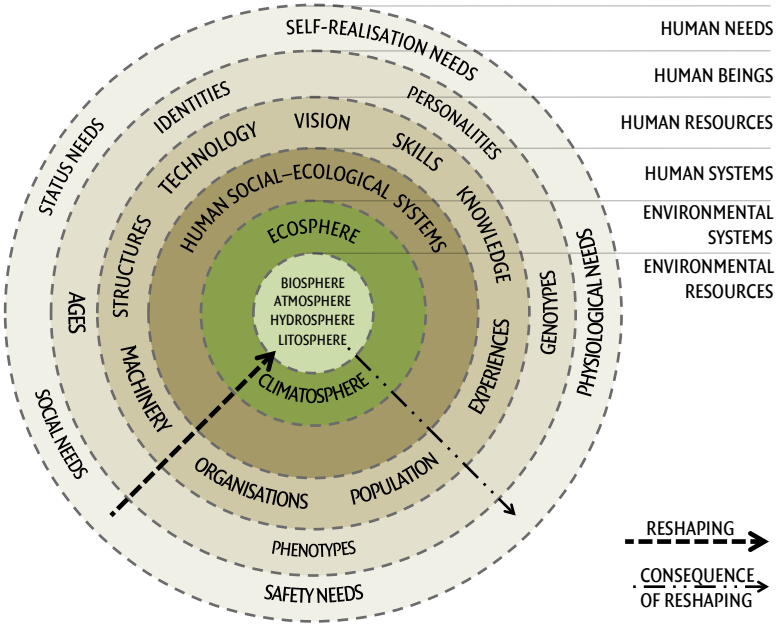


Figure 8 suggests that the process of environmental reshaping is triggered by human needs that are translated in different ways by humans carrying different characteristics and potentialised by the development of human resources and systems. Once reshaped, environmental systems and resources provide feedback to human systems and resources, which reverberate back to human beings, affecting how they translate needs into further reshaping of human and environmental systems and resources.

According to CASs and *resilience* theory[10], *environmental* and *human systems* can respond differently to distinct kinds of impacts (quantitatively and qualitatively) depending on their *resilience* and delimiting thresholds that once surpassed, could cause structural shifts to new domains of attraction, including system collapse. In light of that, this research understands that: the ***sustainability* of the human species existence** is dependent on the species' capacity to undergo adaptation and reshaping of environmental and human systems in a way that the thresholds above which such systems could collapse are not surpassed. Further to that,

[10] As discussed earlier in this chapter, on pages 17 and 34.

considering environmental and human systems as CASs, the role of uncertainty to determining thresholds should result in a concept of *sustainability* that is relative and not absolute. In other words, the least the knowledge about how systems are structured and how they can respond, the greater is the uncertainty about their future state and therefore the smaller the control over the outcomes of environmental reshaping. Therefore, pathways of human development could never be classified as sustainable or unsustainable, but rather as likely to be more sustainable or less sustainable than others. This reinforces the importance of the *Precautionary Principle* presented earlier in the chapter.

Chapter Conclusion

The concept of *sustainability* is something that evolves along with our understanding of the reality we are part of. That is why the author disregards the ideas presented in this chapter as capable to exhaust the debate on the concept of *sustainability*. Quite the opposite, the arguments presented here were used solely as the starting point for the research that was carried out in the field and are the researcher's contribution to further debate in the area human-environmental studies. It is the author's belief that only through a better understanding of the web of relationships we are part of is that we can make the best use of what is made available to us.

It is considering the evolving nature of the concept that the author has tried to use the term *sustainability* and not sustainable as the focus of the debate. Being the future uncertain, the term sustainable seems too absolute and does not seem to make much sense since the road to *sustainability* is as never-ending as the search for a complete understanding of reality. However, taking this never-ending road should not be regarded as demotivating, but rather as the stimulus for the better enjoyment of the journey itself. Recalling *Fuller and Snyder*'s (2008), *Ward*'s (1966) and *Boulding et al.*'s (1966) metaphor, it is hoped that humanity's journey to *sustainability* aboard the *Spaceship Earth* is as enjoyable as it can be and that it happens at a greater speed than the *consequences* of the environmental impacts already being caused and felt, as this is the only way we can secure our survival and the reason to pursue it.

References

Bertalanffy, Ludwig von. (1950). An Outline of General System Theory. *British Journal for the Philosophy of Science, I*(2), 134-165. doi: 10.1093/bjps/I.2.134

Boulding, Kenneth E., Jarrett, Henry, & Resources for the Future (U.S.). (1966). *Environmental quality in a growing economy: essays from the Sixth RFF Forum*. Baltimore: Published for Resources for the Future by the Johns Hopkins Press.

Bramwell, Bill, Henry, Ian, Jackson, Guy, Prat, Ana Goytia, Richards, Greg, & van der Straaten, Jan. (1998). *Sustainable tourism management: principles and practice* (2nd ed. ed.): Tilburg University Press.

Brundtland, Gro Harlem, & World Commission on Environment and Development. (1987). *Our common future*. Oxford; New York: Oxford University Press.

Capra, Fritjof. (1983). *The turning point: science, society, and the rising culture*. London: Fontana.

Carson, Rachel. (1963). *Silent spring*. London: Hamish Hamilton.

Crutzen, Paul, & Stoermer, Eugene F. (2000). Have we entered the "Anthropocene"? *Global Change Newsletter*, 17-18.

Diamond, Jared M. (2005). *Collapse: how societies choose to fail or succeed*. New York: Viking.

diCastri, F. (1995). The chair of sustainable development. *Nature & Resources, 31*(3), 2-7.

Dubos, René J. (1968). *So human an animal*. New York: Scribner.

Ehrlich, Paul R. (1968). *The population bomb*. New York: Ballantine Books.

Elkington, John. (1997). *Cannibals with forks: the triple bottom line of 21st Century business*. Oxford: Capstone.

Fischer Kowalski, M., & Haberl, H. (1998). Sustainable development: socio-economic metabolism and colonization of nature. *International Social Science Journal, 50*(158), 573-587.

Fischer-Kowalski, Marina. (1998). Society's Metabolism: The Intellectual HIstory of Materials Flow Analysis, Part I, 1860-1970. *Journal of Industrial Ecology, 2*(1), 61-78.

Fischer-Kowalski, Marina, & Hüttler, Walter. (1999). Society's Metabolism: The Intellectual History of Materials Flow Analysis, Part II, 1970-1998. *Journal of Industrial Ecology, 2*(4), 107-136.

Fotopoulos, Takis. (2011). Is degrowth compatible with a market economy? *The International Journal of Inclusive Democracy, 3*(1), 1-19.

Fuller, R. Buckminster, & Snyder, Jaime. (2008). *Operating manual for spaceship earth* (New ed.). Baden, Switzerland: Lars Müller.

Garnaut, Ross. (2011a). Garnaut Climate Change Review - Update 2011: Australia in the Global Response to Climate Change: Summary (pp. 1-44). Canberra: Cambridge University Press.

Garnaut, Ross. (2011b). *The Garnaut Review 2011: Australia in the Global Response to Climate Change*. Melbourne: Cambridge University Press.

Geels, Frank W. (2002). Technological transitions as evolutionary reconfiguration processes: a multi-level perspective and a case-study. *Research Policy, 31*(8-9), 1257-1274.

Geels, Frank W. (2011). The multi-level perspective on sustainability transitions: Responses to seven criticisms. *Environmental Innovation and Societal Transitions, 1*(1), 24-40. doi: 10.1016/j.eist.2011.02.002

Geels, Frank W., & Schot, Johan. (2007). Typology of sociotechnical transition pathways. *Research Policy, 36*(3), 399-417. doi: 10.1016/j.respol.2007.01.003

Goldman, Michael, & Schurman, Rachel A. (2000). Closing the "Great Divide": New social theory on society and nature. *Annual Review of Sociology, 26*, 563-584.

Goldsmith, Edward, Allen, Robert, Allaby, Michael, Davoll, John, & Lawrence, Sam. (1972). A Blueprint for Survival. *The Ecologist*, 2(1), 1-44.

Gunderson, Lance H., & Holling, C. S. (2002). *Panarchy: understanding transformations in human and natural systems*. Washington, DC: Island Press.

Gunningham, Neil, Grabosky, Peter N, & Sinclair, Darren. (1998). *Smart regulation: designing environmental policy / Neil Gunningham, Peter Grabosky, with Darren Sinclair*: Clarendon Press ; New York : Oxford University Press.

Haberl, Helmut, Fischer-Kowalski, Marina, Krausmann, Fridolin, Martinez-Alier, Joan, & Winiwarter, Verena. (2009). A socio-metabolic transition towards sustainability? Challenges for another Great Transformation. *Sustainable Development*, 19(1), 1-14. doi: 10.1002/sd.410

Hall, Colin Michael. (1994). *Tourism and politics: policy, power, and place*. Chichester; New York: Wiley & Sons.

Han, Dong, & Stoffel, Kilian. (2011). *Ontology based qualitative case studies for sustainability research*. Paper presented at the Proceedings of the AI for an Intelligent Planet, New York, NY, USA. Article retrieved from http://doi.acm.org.ezp.lib.unimelb.edu.au/10.1145/2018316.2018322

Hardin, Garrett. (1968). The Tragedy of the Commons. *Science*, *162*(3859), 1243-1248.

Holling, C.S. (1973). Resilience and stability of ecological systems. *Annual review of ecology and systematics*, 4, 1-23.

Hopwood, Bill, Mellor, Mary, & O'Brien, Geoff. (2005). Sustainable development: mapping different approaches. *Sustainable Development*, *13*(1), 38-52.

Hornborg, Alf. (1998). Towards an ecological theory of unequal exchange: articulating world system theory and ecological economics. *Ecological Economics*, 25(1), 127-136.

Hunt, Terry L. (2006). Rethinking the Fall of Easter Island. *American Scientist*, 94(5), 412-419.

IPCC. (2008). Climate Change 2007: Synthesis Report (pp. 1-52): International Panel on Climate Change.

IUCN. (1980). *World conservation strategy: living resource conservation for sustainable development*. Gland, Switzerland: International Union for Conservation of Nature and Natural Resources.

IUCN, UNEP, & WWF. (1991). *Caring for the earth: a strategy for sustainable living* (Earthscan ed.). Gland, Switzerland: International Union for Conservation of Nature and Natural Resources; United Nations Environment Programme; World Wide Fund for Nature.

Jänicke, Martin. (2008). Ecological modernisation: new perspectives. *Journal of Cleaner Production*, 16(5), 557-565. doi: 10.1016/j.jclepro.2007.02.011

Jerneck, Anne, Olsson, Lennart, Ness, Barry, Anderberg, Stefan, Baier, Matthias, Clark, Eric, . . . Persson, Johannes. (2010). Structuring sustainability science. *Sustainability Science*, 6(1), 69-82. doi: 10.1007/s11625-010-0117-x

Kidd, Charles. (1992). The evolution of sustainability. *Journal of Agricultural and Environmental Ethics*, 5(1), 1-26.

Klöpffer, Walter. (2003). Life-Cycle based methods for sustainable product development. *The International Journal of Life Cycle Assessment*, 8(3), 157-159.

Koestler, Arthur. (1967). *The ghost in the machine*. London: Hutchinson.

Krausmann, Fridolin, Fischer-Kowalski, Marina, Schandl, Heinz, & Eisenmenger, Nina. (2008). The Global Sociometabolic Transition: Past and Present Metabolic Profiles and Their Future Trajectories. *Journal of Industrial Ecology*, *12*(5-6), 637-656. doi: 10.1111/j.1530-9290.2008.00065.x

Latouche, Serge. (2011). De-growth: an electoral stake? *The International Journal of Inclusive Democracy*, *3*(1), 1-6.

Levi-Faur, David. (2005). The Global Diffusion of Regulatory Capitalism. *The ANNALS of the American Academy of Political and Social Science*, *598*(1), 12-32. doi: 10.1177/0002716204272371

Malthus, T. R., Winch, Donald, & James, Patricia. (1992). *An essay on the principle of population, or, A view of its past and present effects on human happiness: with an inquiry into our prospects respecting the future removal or mitigation of the evils which it occasions*. Cambridge, England ; New York, NY, USA: Cambridge University Press.

Marshall, Julian D., & Toffel, Michael W. (2005). Framing the Elusive Concept of Sustainability: A Sustainability Hierarchy. *Environmental Science & Technology*, *39*(3), 673-682. doi: doi:10.1021/es040394k

Maslow, A. H. (1943). A theory of human motivation. *Psychological review*, *50*(4), 370-396.

Max-Neef, Manfred A. (2005). Foundations of transdisciplinarity. *Ecological Economics*, *53*(1), 5-16. doi: 10.1016/j.ecolecon.2005.01.014

Meadows, Donella H., Club of Rome, & Potomac Associates. (1974). *The Limits to growth: a report for the Club of Rome's Project on the Predicament of Mankind* (2d ed.). New York: Universe Books.

Merton, Robert King. (1968). *Social Theory and Social Structure*. New York: The Free Press.

Mesarovic, Mihajlo D., Pestel, Eduard, & Club of Rome. (1974). *Mankind at the turning point: the second report to the Club of Rome* (1st ed.). New York: Dutton.

Morowitz, Harold J., & Singer, Jerome L. (1995). *The mind, the brain, and complex adaptive systems*. Reading, Massachusetts: Addison-Wesley Pub. Co.

Naess, Arne. (1973). The shallow and the deep, long-range ecology movement: a summary. *Inquiry*, *16*(1), 95 - 100.

NASA. (2010). The Earth seen from Apollo 17 *upload.wikimedia.org*: Wikimedia Commons.

NRC, . (1999). *Our Common Journey: A Transition Toward Sustainability*. Washington, DC: National Research Council and National Academies Press.

Park, Robert E, & Burgess, Ernest W. (1921). *Introduction to the Science of Sociology* (pp. 1040). Retrieved from http://www.gutenberg.org/files/28496/28496-h/28496-h.htm - Page_162

Pearce, David W., Markandya, Anil, Barbier, Edward, & Great Britain Department of the Environment. (1989). *Blueprint for a green economy*. London: Earthscan.

Ravetz, Jerome R. (1999). What is Post-Normal Science. *Futures*, *31*(7), 647-653.

Rees, William E. (1992). Ecological footprints and appropriated carrying capacity: what urban economics leaves out. *Environment and Urbanization*, *4*(2), 121-130. doi: 10.1177/095624789200400212

Rockström, J, Steffen, W, Noone, K, Persson, Å, Chapin III, F.S., Lambin, E., . . . Schellnhuber, H. (2009). Planetary boundaries: exploring the safe operating space for humanity. *Ecology and Society*, *14*(2), 32.

Sayre, Nathan F. (2008). The Genesis, History, and Limits of Carrying Capacity. *Annals of the Association of American Geographers, 98*(1), 120-134. doi: 10.1080/00045600701734356

Schnore, Leo F. (1958). Social Morphology and Human Ecology. *American Journal of Sociology, 63*(6), 620-634.

Schumacher, E. F. (1973). *Small is beautiful: a study of economics as if people mattered*. London,: Blond and Briggs.

Shepard, Paul. (1982). *Nature and Madness*. San Francisco: Sierra Club Books.

Sieferle, Rolf Peter. (2011). Cultural Evolution and Social Metabolism. *Geografiska Annaler: Series B, Human Geography, 93*(4), 315-324.

Stern, Nicholas Herbert. (2007). The Stern Review: the economics of climate change (pp. 692). London: Cambridge University Press.

Strong, Maurice. (2001). *Where on Earth are We Going?* Toronto: Vintage Canada.

Thomas, William L. (1956). *Man's role in changing the face of the earth*. Chicago: Published for the Wenner-Gren Foundation for Anthropological Research and the National Science Foundation by the University of Chicago Press.

Turner, R. Kerry. (1993). *Sustainable environmental economics and management: principles and practice*. London; New York: Belhaven Press; Co-published in the Americas by Halsted Press.

UN. (1998). *Kyoto Protocol to the United Nations Framework Convention on Climate Change*. Kyoto: United Nations.

UN. (2000). United Nations Millenium Declaration *United Nations Organisation*: United Nations.

UN. (2002a). Johannesburg Declaration on Sustainable Development. Retrieved 09/04/2009, 2009, from http://www.un-documents.net/jburgdec.htm

UN. (2002b). Plan of Implementation of the World Summit on Sustainable Development. Retrieved 09/04/2009, 2009, from http://www.un-documents.net/jburgpln.htm

UN, . (1972). Declaration of the United Nations Conference on the Human Environment. Retrieved 20/04/2009, 2009, from http://www.un-documents.net/unchedec.htm

UN, . (1992a). Agenda 21. Retrieved 24/09/2009, 2009, from http://www.un.org/esa/sustdev/documents/agenda21/english/Agenda21.pdf

UN, . (1992b, 12/01/1999). Rio Declaration on the Environment and Development. Retrieved 20/07/2009, 2009, from http://www.un.org/documents/ga/conf151/aconf15126-1annex1.htm

UN, ., & École Pratique des Hautes Études - VIe Section, . (1972). *Development and environment: report and working papers of a panel of experts convened by the Secretary-General of the United Nations Conference on the Human Environment (Founex, Switzerland, June 4-12, 1971)*: United Nations, Geneva and École Pratique des Hautes Études, Paris.

UNEP, . (2009). *Frequently asked questions: the Marrakech process: towards a 10-year framework of programmes on sustainable consumption and production*. Paris: United Nations Environment Programme - Sustainable Consumption and Production Branch.

UNESCO. (1993). *The Biosphere Conference, 25 years later* (pp. 1-34). Retrieved from http://unesdoc.unesco.org/images/0014/001471/147152eo.pdf

Waldrop, M. Mitchell. (1992). *Complexity: the emerging science at the edge of order and chaos*. New York: Simon & Schuster.

Wallerstein, Immanuel. (1974). *The Modern World-System*. New York: Academic Press.

Wallerstein, Immanuel. (1976). A World-System Perspective on the Social Sciences. *The British Journal of Sociology*, *27*(3), 343-352.

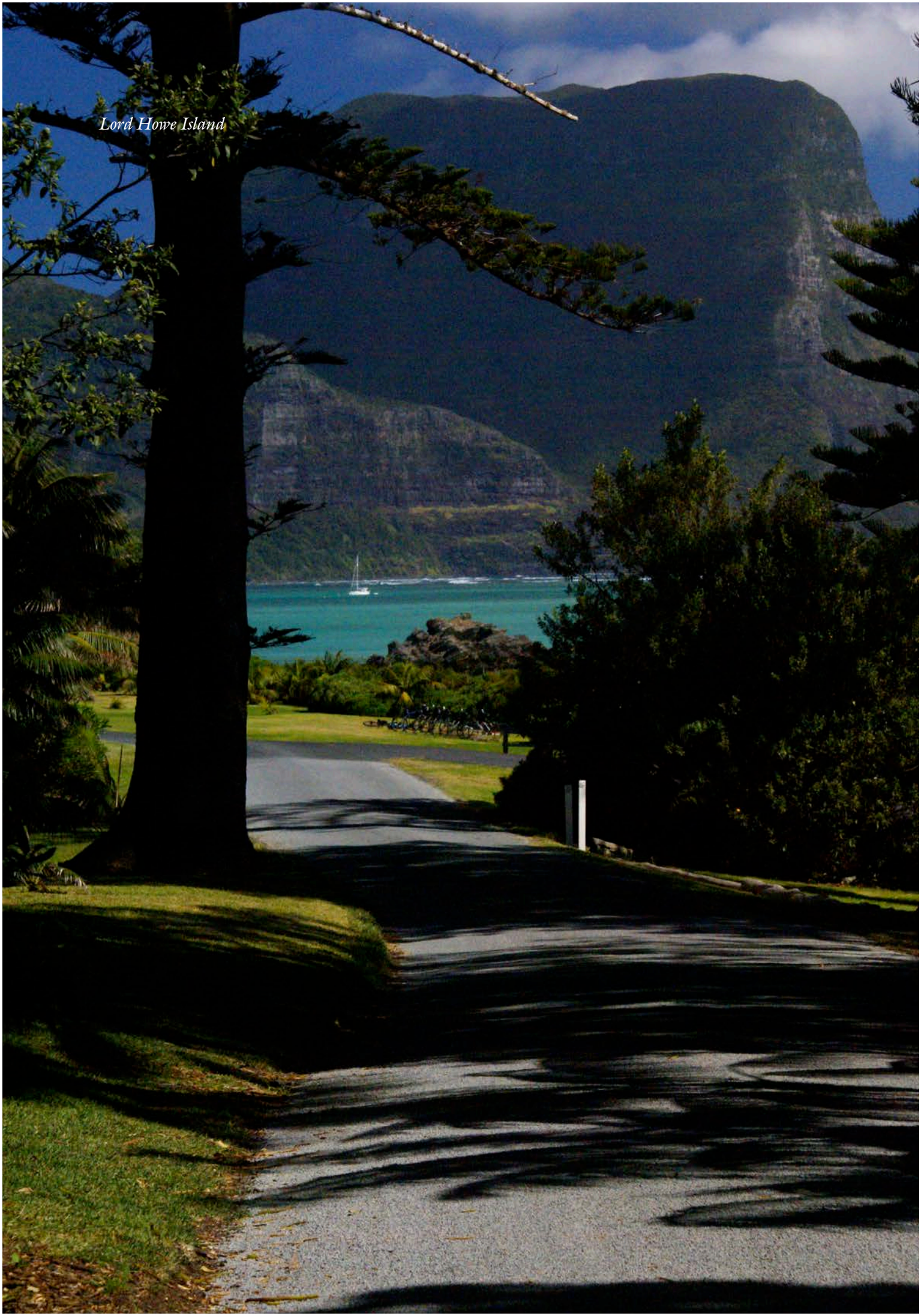
Ward, Barbara. (1966). *Spaceship earth*. New York: Columbia University Press.

Ward, Barbara, & Dubos, René J. (1972). *Only one earth: the care and maintenance of a small planet: an unofficial report commissioned by the Secretary-General of the United Nations Conference on the Human Environment*. London: Deutsch.

Weisz, Helga, & Clark, Eric. (2011). Society–Nature Coevolution: Interdisciplinary Concept for Sustainability. *Geografiska Annaler: Series B, Human Geography*, *93*(4).

Wight, Pamela. (2007). Ecotourism, CSR, and the fourth dimension of sustainability *Critical issues in ecotourism: understanding a complex tourism phenomenon*. Oxford: Elsevier.

Worster, Donald. (1977). *Nature's economy: the roots of ecology*. San Francisco: Sierra Club Books.


Lord Howe Island

Chapter 2 | Tourism and Sustainability

Constructing a Definition and Explanatory Model for the Research

Similarly to the case of *sustainability* explored in *Chapter 1*, formal concepts and explanatory models of *tourism* and *Tourism Development - TD* are also new – when compared to those deriving from more consolidated and established knowledge fields. Nevertheless, being contemporary concepts of global relevance, *sustainability* and *tourism* have been fairly debated from an integrative perspective in the last few years (Butler, 1999). However, the conception of an explanatory model presenting the main relationships established between the practice of *tourism* and *social-ecological systems* from a *sustainability* perspective is something yet to be explored in more depth. This task is, however, of utmost importance if one endeavours to investigate drivers and inhibitors to *TD sustainability*.

In this *context*, *Chapter 2* starts by critiquing existing definitions and explanatory models of *tourism* and *TD*, in terms of their capacity to comprehend *tourism phenomena* from an holistic perspective and in an integrated way. This is done in light of the concept of *sustainability* debated in the previous chapter. As a result of this process, a conceptual definition[II] of *tourism* and an associated explanatory model of *tourism* (*development*) are presented as a point of departure for this research. Finally, as a reference for designing the process of data collection, this chapter also introduces the concept of *sustainability challenges* to *TD* by analysing the set of *sustainable tourism indicators* proposed by the *United Nations World Tourism Organisation – UNWTO* in light of the explanatory model of *tourism* (*development*) proposed as the conceptual reference for this research.

[II] Here, *concept* refers to the general idea or construct represented by a *term*, while *definition* is seen as the translation of a term into a description, in a summarised way. The term *conceptual definition* is used here as that which has arisen from a process of conceptualisation aiming to translate meaning, in contrast to *operational definitions* aiming to allow measurement.

Contextualising Tourism

Despite the term *tourism* first appearing only sometime around **1810** (Leiper, 1990), it is hard to date when it was first practised. Human groups and individuals have been known for temporarily leaving and returning to their places of residence and daily routines for all different sorts of reasons throughout History. This mobility *phenomenon* can also be observed in some other mobile animal species (e.g. birds seasonal migration). Reasons to engage in this kind of human mobility can range from more objective ones such as seasonal hunting, escaping cold or hot seasons, to more subjective ones such as spiritual, philosophical, personal growth or connecting with nature, including the Australian aboriginal practice of *walkabout*[12].

By going places that are outside the area comprising their routine and by spending overnight in places that are not their fixed residence, tourists are distinct to commuters (daily travellers) and excursionists (day travellers). By returning to their fixed place of residence, tourists are also distinct to nomads (who keep moving around) or migrants (who travel to fix residence in a new place). By requiring a point of departure that is considered the tourist's fixed residence, the practice of tourism can be inferred as having become possible only when humans embraced agriculture and left behind their hunter-gatherer state. Through a process of environmental reshaping, agriculture not only allowed humans to fix residence, but was also a reason to do so. Fixing residence lead to the division of space into what is familiar and what is yet to be explored. Therefore, by allowing fixed residence through the reshaping of one's surrounding environment, agriculture also pushed humans into exploring the world outside their local areas in the search for novelty – in many cases novelty is associated to environments that have hardly been reshaped and therefore portray a natural state.

The concept of tourism is, therefore, connected with that of home: practicing tourism involving to leave home temporarily to places that are different to one's own. In this *context*, home is not a direct translation of dwelling, but rather the set of places that are part of one's routine, hence home being associated by many with urban and rural areas in different scales – e.g. the expression *hometown*. However, if home is the place with

[12] "An Aboriginal person who is on 'walkabout' connects with their spiritual obligations by tracing the paths formed by their ancestors at the beginning of time. In the process important information is encrypted in songs and ceremony that have led to the concept of Songlines. These paths or songlines crisscross Australia, connecting important waterholes, food sources and landmarks.
By going 'walkabout' Aboriginal people enhance their cultural and spiritual connection with the land and their ancestors. They return with a sense of oneness within themselves and with the world in which they live. [...]
'Walkabout' is not an aimless activity but a deliberate and focused journey connecting Aboriginal people to their traditional lands and spiritual obligations. [...]
Contemporary understandings of 'walkabout' remain true to the [...] Aboriginal heritage [concept]. To go 'walkabout' in the 21st century is to escape from the pressures of everyday life and to reconnect with yourself, with loved ones, and with the natural world" (Tourism Australia, 2011).

which humans are most familiar and where they can feel the safest by exerting the most control of their surrounding environment through reshaping, practicing tourism brings about a conflicting duality: the need to secure some level of familiarity while experiencing novelty. When it comes to tourism that is motivated by the need to reconnect with the natural environment, this duality is even more contradictory: familiarity and safety comes with environmental reshaping to serve the needs of humans, while it also spoils the natural state of the environment that originally motivated this modality of tourism to occur.

In order to expand on the conceptualisation of tourism, this chapter proceeds to presenting and critiquing current definitions and current *tourism* and *TD* explanatory models.

As pointed by *Panosso Netto* (2005) and *Getz* (1986), the number of *systemic explanatory models of tourism* (*development*) is considerable. However, very few can capture the essence of the *tourism phenomenon* and the breadth of its *consequences* and drivers. In general terms, these models can be grouped as *tourism explanatory models* (those that look at the way tourism takes place and the relationships that are established by its existence) and *TD explanatory models*[13] (those that try to understand the dynamics of *TD* and their associated relationships and *consequences* over time).

Tourism Explanatory Models

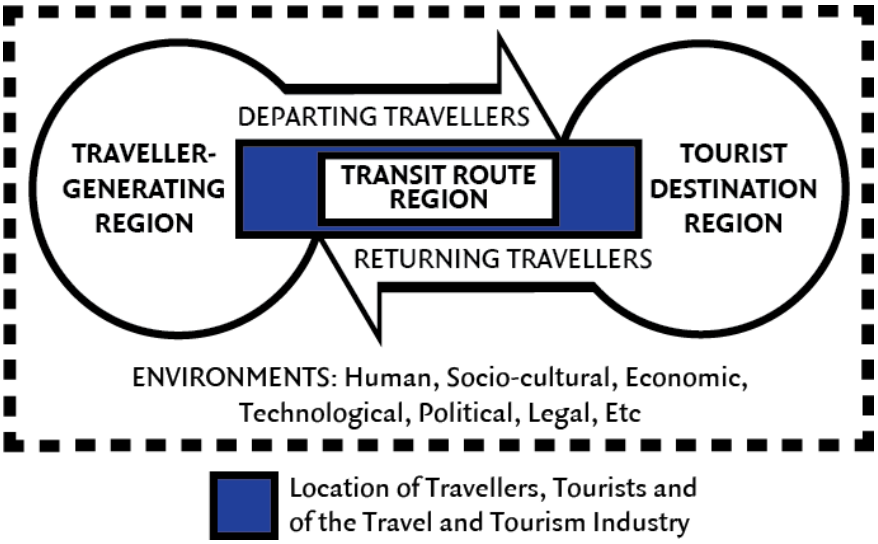
De Oliveira Santos (2007) suggests two categories of *tourism explanatory models*: *spatial* and *structural*. Here, the models proposed by *Leiper* (1979) and *Beni* (2001) are considered, respectively, the most relevant contributions to *spatial* and *structural models*. Models are usually linked with definitions. Like definitions of *sustainability*, those of *tourism* are multiple and often reflect the agendas of those who offer them. *Leiper*'s (1979) work of categorising different types of definitions of tourism into technical, economic and holistic, with the aim to understand how different groups conceptualised the *term*, is a useful touchstone. Whilst an *economic approach* to defining tourism tends to focus on the economic impacts that are generated and a *technical approach* seeks to forge more operational definitions of *tourism* that can be used for statistical purposes, a *holistic approach* leads authors to the craftsmanship of definitions that understand *tourism* as a *phenomenon*, rather than a sector or activity. For a conceptualisation of *tourism* within the *context* of *sustainability*, the *holistic approach* seems the most appropriate, as it is the

[13] The term *explanatory model* is used here in contrast to *implemented* and *prescriptive models*. *Explanatory models* are understood here as those trying to explain the general dynamic patterns of *tourism* (*development*), while *implemented models* are seen as the result of specific strategies and conditions and *prescriptive models* as those that prescribe how *tourism* (*development*) should occur so that certain outcomes can be achieved.

only to provide a comprehensive consideration of the *multidimensionality of tourism*.

Hunziker and *Krapf* offered the following holistic definition of *tourism* in **1942** (Burkart & Medlik, 1981, p. 40): "Tourism is the sum of the *phenomena* and relationships arising from the travel and stay of non-residents, in so far as they do not lead to permanent residence and are not connected to any earning activity." Exploring the relationships established with the movement of tourists from their origin to tourist destinations and acknowledging the impacts brought and received by *tourism*, *Hunziker* and *Krapf*'s (op. cit.) definition is a valuable contribution to concepts of *tourism* that can be debated within the *sustainability* arena. Based on their definition, *Leiper* proposed the basic *tourism system* in *Figure 9*.

Figure 9 | Basic Tourism System



Source | Adapted from Leiper (1990, p. 25)

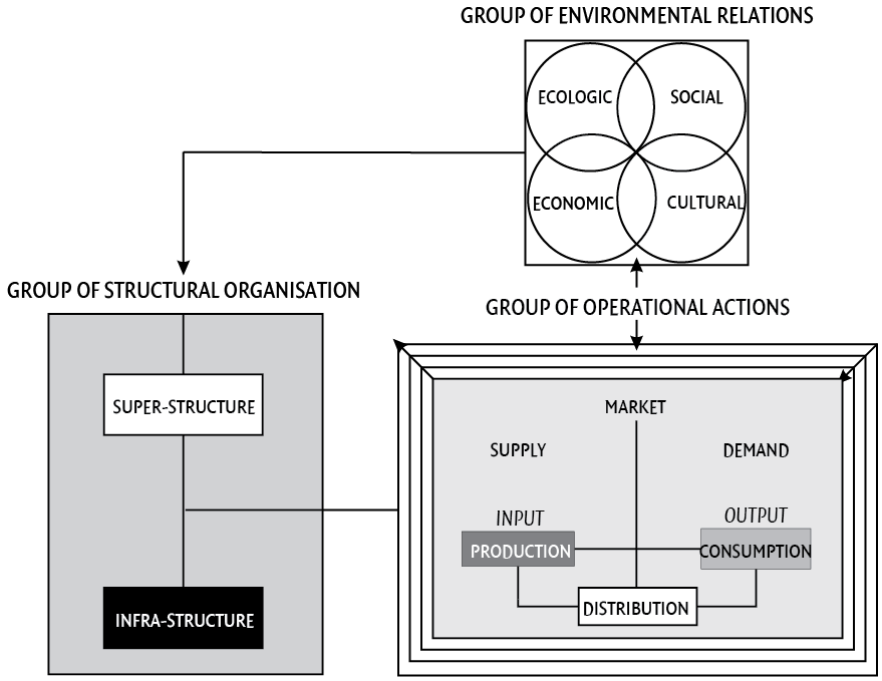
Leiper's (op. cit.) model is an attempt to use *general systems theory* to visualise what the *tourism phenomenon* comprises. It presents *tourism* as an *open system* operating within a wider environment encompassing technological, cultural, political, social, economic and physical dimensions whilst also acknowledging that tourism impacts these dimensions and is impacted by them. It also graphically represents the elements related to the geographic, sectoral, behavioural and environmental aspects of *tourism*. Despite not representing in detail how interactions take place, the value of his model is in its focus on the essential elements of the *tourism phenomenon*: tourists, the regions delineated by its occurrence and the sectoral *apparatus* that emerges to cater for the needs of tourists.

Perhaps the most interesting aspect of this simple, yet comprehensive systemic model is that by representing the existence of three distinct areas with which tourists have some kind of contact, it provides the basis for the

identification of different kinds of impacts that the development of the activity can bring to each one of these areas – *tourism* can be an importing economic activity for the generating region, and an exporting activity for the transit route region (when there are stopovers) and for the destination region, for example. However, by not representing other areas that could not be classified as generating, transit route or destination regions, it fails to acknowledge other indirect impacts of tourism such as that to global climate change or to the development of economies in regions that are suppliers to tourist destinations.

Unlike *Leiper* (op. cit.), *Beni* (2001) does not incorporate the spatial element in his *tourism explanatory model* (or *Tourism System* – SISTUR, as he labels it). His focus is on relationships established between the different structures and systems involved with *tourism*. This has led him to identify three groups of inter-related subsystems to SISTUR (see *Figure 10*): the *Group of Environmental Relations* (with the ecologic, economic, social and cultural subsystems), the *Group of Operational Actions* (with the Market, Supply, Demand, Production, Distribution and Consumption Subsystems) and the *Group of Structural Organisation* (with the Infra and Super-Structure Subsystems).

Figure 10 | Tourism System – SISTUR Reference Model



Source | Adapted from Beni (2001, p. 48)

The value of his model lies:

- on the way it details the economic and market aspects of *tourism* (including the identification of the high sensitivity of the tourist market to the way tourism is impacted by the environmental

subsystems linked to it, demonstrating a comprehension of the complexity of the tourism system and its interlinked systems);

- on the identification of the way the economic, social, cultural and ecological systems impact *tourism* and are impacted by it; and
- on the identification of pressures brought by *tourism* to the physical, administrative and legal structures of tourist destinations, contributing, this way to a more holistic view of TD planning.

However, by focusing only on the relationships that take place with the occurrence of *tourism*, his model leaves aside essential elements of *tourism* identified by *Leiper*, that are the basis for these relationships to take place.

Tourism Development Explanatory Models

At this stage, it is important to put forth this research's understanding of TD and how it recognises it as distinct to *Tourism Evolution* – TE. By TD it considers the process of implementation of *tourism* in a certain tourist destination and the interrelated *consequences* it promotes in originating, transit-route and other regions of the globe. As for TE it understands as the process of change that *tourism* as a *phenomenon* has been through over the course of History of humankind. This understanding of TE acknowledges its relationships of interdependence with the evolution of other processes such as that of *globalisation* and *human technology*. Despite this distinction, TD and TE are considered by this research as highly interconnected since *tourism* as a worldwide *phenomenon* could not evolve without the process of localised TD, while localised TD is highly influenced by changes in the way *tourism* is operated worldwide. In terms of literature, TE is confined to historical accounts of how *tourism* has been taking place since its early days, there being no efforts to model this process. Therefore, accounts of TE tend to be descriptive rather than explanatory. For this reason, this literature will not be discussed in this chapter, but references to TE will be carried out as embedded accounts in *Chapter 5* and *Chapter 6* dealing with the global and national *contexts*.

Most likely because of its scale and for being localised and therefore allowing comparative studies, quite a few TD explanatory models have been proposed. In this regard, this research presents and critiques the models proposed by *Plog* (2001), *Butler* (1980) and *Doxey* (1975) in light of the concept of *sustainability* constructured in *Chapter 1*. The relevancy of these models for the debate lays in the support they have received from *Vejlgaard* (2008), *Baum* (1998) and by a plethora of models concerning *tourist carrying capacity* and *visitation impact management*. They constitute a relevant body of theory upon which is possible to debate the applicability of life cycle and threshold concepts to understandings of the *sustainability* of TD.

Considering the essential role played by tourists, a comprehensive concept of *tourism* must take into account tourists' motivation to travel and how these

affect the process of TD in destinations. This is reinforced by the intrinsic link between human needs and the motivation to reshape one's environment in a process of niche construction[14]. *Plog*'s (2001) research on different psychographic profiles of tourists that visit destinations over the course of their TD offers a contribution to this debate.

By proposing that different tourist psychographic profiles could be located in a *continuum* that reflected the type of tourist destinations that these tourists favoured, *Plog* (ibid) identified two extreme categories: *dependable* (or *psychocentric*) and *venturers* (or *alocentric*); and three intermediate ones: *near dependable*, *midcentric* and *near venturer*. As these labels would suggest, *venturers* would to be more independent, intellectually curious, willing to take risks and to be challenged and involved in activities that could be more energy demanding and that would require self-confidence, quick decisions and their own personal judgement. *Dependables* would prefer experiences that are somehow more familiar, conservative and passive, more predictive and well thought of, more popular and well established. The remaining three categories would represent the different degrees that could be found between those two extremes.

Drawing a parallel with the concept proposed by *Organização dos Estados Americanos – OEA* for the categorisation of *tourism* elements of a destination (Beni, 2001; citing OEA, 1978), it can be said that *venturers* would tend to value more the *endogenous* variables of a tourist destination and that *dependables* their *exogenous* ones. By *endogenous* variables, the *OEA* refers to the environmental, socio-economic and cultural characteristics that are intrinsic to the destination and that make it a unique place (e.g. shape of a beach, presence of specific wildlife, cultural traditions, local socio-economic structure). By *exogenous* variables it refers to the infrastructure and superstructure *apparatus* that was installed and made available for tourists making the tourist destination operational (e.g. roads, parking spaces, hotels, restaurants, among others).

The following is a summary of Plog's (2001) main conclusions about his research undertaken in the *United States of America – USA* in two time periods (**1972** and **1991**):

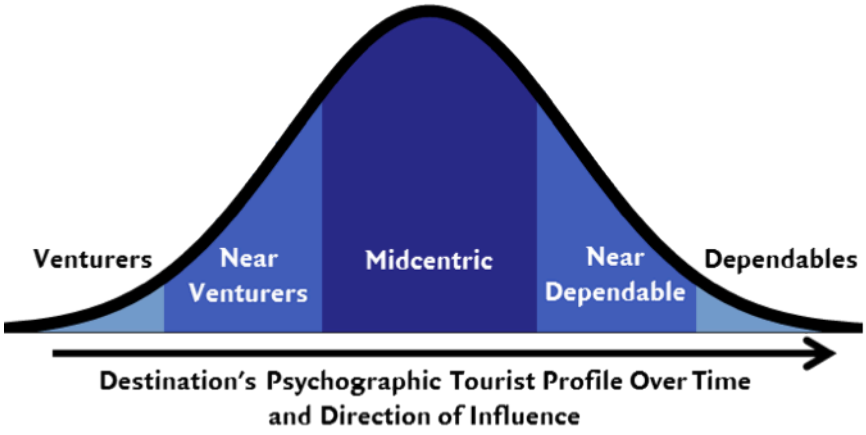
1. The placement of tourists in a continuum according to their psychographic profile followed a statistical normal distribution in which the extremes (extremely *venturer* or extremely *dependable*) represented the least number and the middle portion the largest number of tourists (*midcentric*) in a bell-shaped graph (*Figure 11*).
2. When their favoured destinations were placed along this *continuum* and data from **1972** and **1991** compared, a trend movement from

[14] As argued in *Chapter 1*.

venturer to *dependable* profiles for each destination could be observed as time progressed (*Figure 11*).

3. This trend, or shift of perception of the destination's image by tourists, is followed by the considerable change in the number of visitors received by these destinations as they start receiving new psychographic types of tourists, leading to a steady increment until they reach the *midcentric* market, followed by a considerable decline once the overall visitor profile becomes more and more *dependable*.
4. The replacement of more venture types by more dependable types of tourists leads to a type of development that could contribute to the loss of character and local identity of the destination, consequently making it less attractive to tourists in general in the long run.
5. After the peak in visitation with *midcentrics*, tourist flows start to decline when tourists become *near dependable* (declining even more when later on they become *dependable*). That, allied to the process of environmental reshaping undergone by destinations along their development, led *Plog* to the conclusion that 'an ideal age or stage exists for most destinations – namely, what might be called young adulthood, which is an early stage of development appealing to *venturer* type' (Plog, 2001, p. 18).

Figure 11 | Tourist psychographic personality typology



Source | Adapted from Plog (2001, p. 16)

An interesting aspect of his model is the conclusion that what determines the capacity of tourist destinations to continue to attract tourists is how these destinations choose to satisfy the needs of different psychographic profiles of tourists over time. By that, he refers to the amount of TD the destinations allow to take place in their territory, claiming that, if not properly planned and managed, the process of TD itself can constitute the greatest threat to the longevity of *tourism* in any destination. This perspective can be labelled as a ***sectoral dimension of TD sustainability***, as it has the existence and continuity of *tourism*, and of certain geographic areas as tourist destinations, as its main objective.

Another way of looking into the sustainability of TD is by focusing on the way *tourism* contributes to the *sustainability* of development as a whole at local and global levels. These ***local*** and ***global dimensions*** of **TD *sustainability*** would consider the *sustainability* of TD as linked to the impacts brought about by *tourism* to *human* and *environmental systems* and the way these impacts are managed at the destination, origin, transit and other regions, as well as to the globe as a whole. Therefore, it would take into account not only economic issues, but also ecological, cultural and social ones.

While research conducted by *Griffith & Albanese* (1996) and *Nickerson* and *Ellis* (1991) have contributed to expand and adjust *Plog*'s psychographic profile model, some criticism of *Plog*'s model has been presented by *Smith* (1990) and *Litvin* (2006). However, two problems are posed by the way they put forward their criticism. Firstly, they simply try to prove that *Plog*'s model is not applicable, without attempting to question the foundations of the model. Secondly, they are unable to reapply the same research design, but simply try to test the model using different parameters, conditions and assumptions.

Looking at *tourism* as a social *phenomenon*, it is surprising that critics have not targeted the way *Plog* treats TD as a linear process. By ignoring the complexity of socio-economic relationships that are established at tourist destinations and instead treating the process of development as predictable and following a number of steps or stages, *Plog* presents a rather idealistic view of the development process.

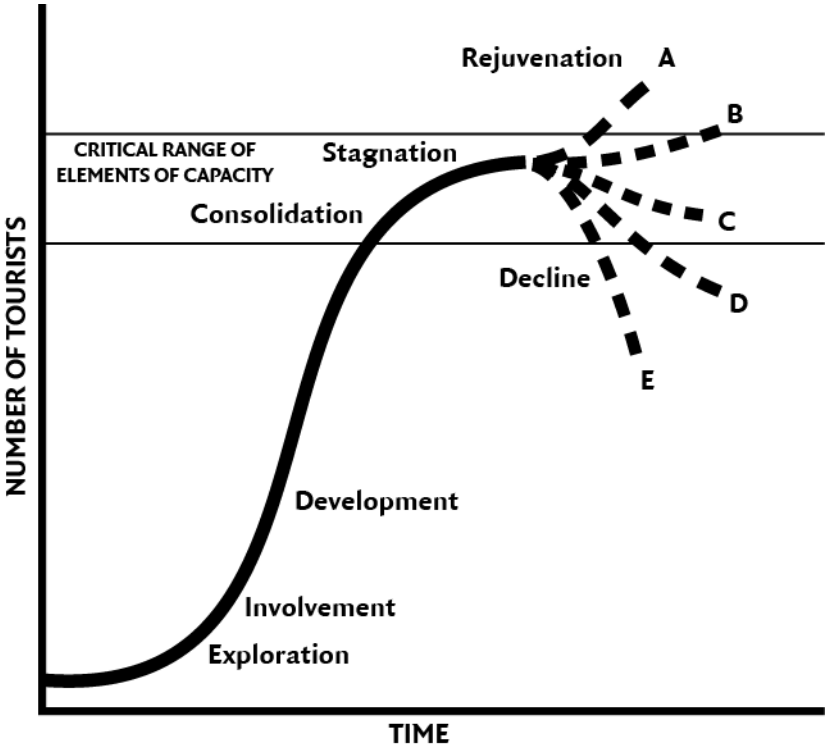
The understanding that people may shift their psychographic profile in different stages of their lives (many people may require a higher level of security and predictability as they grow old), in different situations (e.g. travelling as a couple with or without children) and *contexts* (the level of perceived risk brought with civil unrest, terrorism and outbreaks can highly influence one's disposition to be more venturer or dependable when choosing their next holiday destination) is likely to clarify other instances in which the model cannot fully explain the object of research.

In a converging way to *Plog*'s model (2001), instead of providing a ***tourist (market) centric approach*** to TD, *Butler* (1980) opts for a ***destination (product) centric approach*** by proposing a *Tourism Area Life Cycle – TALC* model.

His model argues that the destination's "pattern of development closely mirrors the classic life cycle curve, with a period of slow initial growth, followed by a rapid development and take up period, which then gives way to slower growth and eventually probably a decline" (Butler, 2009, p. 347).

This is presented in *Figure 12*, where *A* to *E* suggest the different alternatives destinations face once they reach the stagnation stage, ranging from rejuvenation to decline:

Figure 12 | Tourism Area Life Cycle Model



Source | Adapted from Butler (1980, p. 7)

According to Butler (2009),

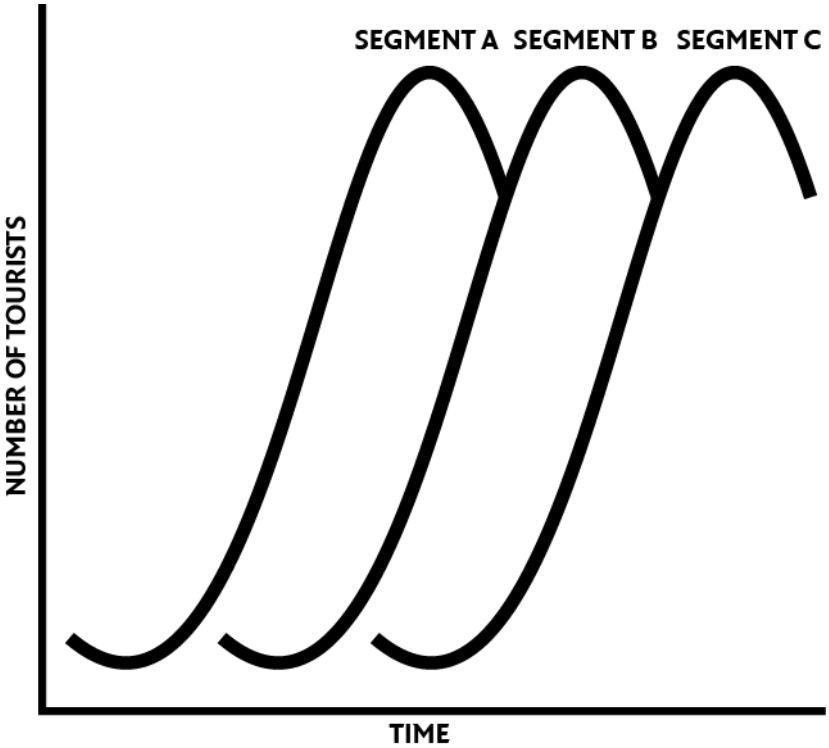
> *"of key importance [is] the intervention of management to prevent development exceeding the inherent capacity of the destination, [...] [as] if capacity levels [are] exceeded, decline in quality of visitor and resident experiences [...] [can occur], along with environmental and other problems, [...] result[ing] in a decline in visitation[,] [..] tourist expenditure and funds for reinvestment in the destination" (ibid, p. 348).*

Overall, Butler's model suggests the *sustainability* of tourist destinations is greatly driven by whether the destination's *carrying capacity* is being overshot in terms of number of tourists and development.

To debate the ability of the *TALC* model to work as a predictive tool, following is a discussion of the views put forward by *Baum* (1998) and *Weaver* (2000). In a conceptual paper aimed at extending *Butler*'s model, *Baum* (1998), proposes that decline through conscious and planned abandonment can be a strategy that would lead to an *exit stage* (his own addition to the stages proposed in the *TALC*). By using *Handy*'s (1994) *Sigmoid Curves* (*Figure 13*), *Baum* (op. cit.) proposes that a process of strategic reinvention could take place in destinations so as to make them more competitive by targeting

new emerging markets (A, B and C as *sun and beach tourism*, *adventure tourism* and *ecotourism*, for instance).

Figure 13 | Exploration of multiple tourism segments over time



Source | Adapted from Baum (1998, p. 172)

His proposition adds two layers to the debate on TALC:

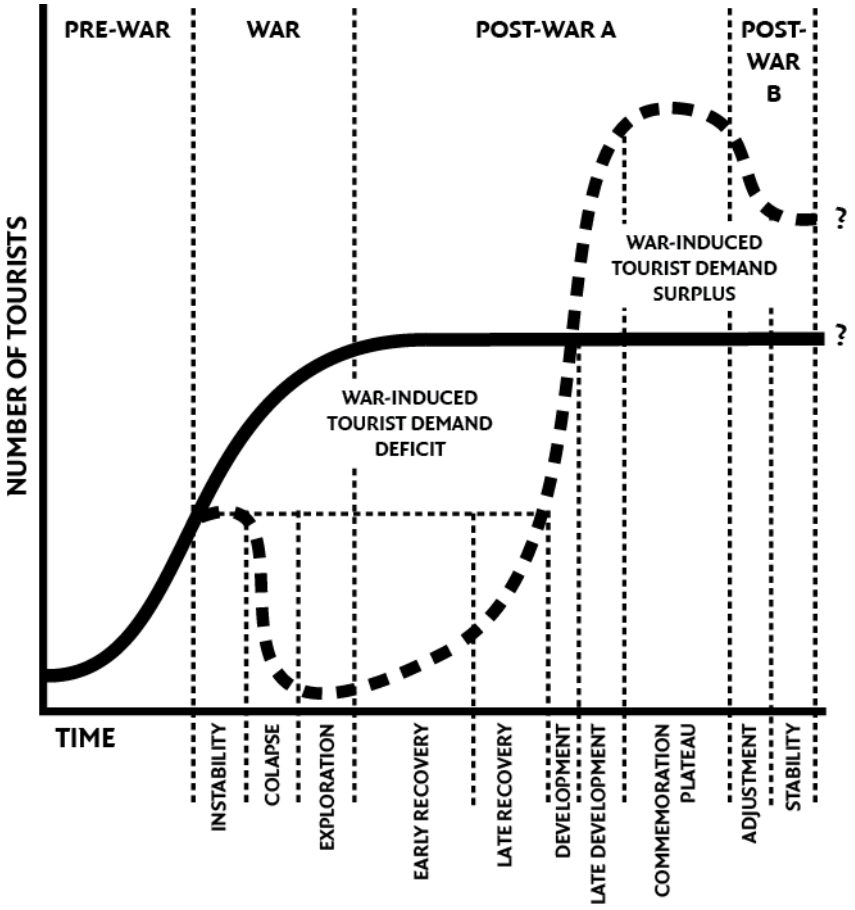
1. Development is a complex and non-linear process therefore Butler's model needs to be taken with caution. An example being when a destination explores a portfolio of different tourism segments that can be in different stages of development and in their conjunction add more stability to the overall tourist flows over time. This would result in a distorted TALC curve.
2. The strategy of abandoning *tourism* in favour of other economic activities may be the only option in some cases. Therefore, having *tourism* as the sole economic drive for a region becomes a high-risk choice[15]. The development of complementary sectors that could stand on their own in case tourism is abandoned is then highly advisable and could contribute positively to the resiliency of regional economies.

Weaver (2000) looks at the effects of wars to the expected pattern of TD proposed by the TALC model. He suggests that the impact of these events can lead to an initial collapse of *tourism* while it is still in its mid-development

[15] See Access Economics (2009)

stage, to be followed by a new stage of exploration, recovery and redevelopment. According to him, wars initially impact negatively on the local *tourism* through the destruction of infrastructure and the portraying of a destination that would be unsafe and undesirable to visit. However, the added value to the location brought about by the historical aspects that are embedded by this kind of event would lead to a late development stage. As a result, a larger number of tourists would be attracted at this stage than what would be normally expected from the model in case the war had not happened (*Figure 14*).

Figure 14 | War Distorted Destination life-cycle curve



Source | Adapted from Weaver (2000, p. 153)

When *Weaver*'s (2000) contribution is added up to *Baum*'s (1998) one realises that *Plog*'s (2001) and *Butler*'s (1980) models need to cater for a greater number of influential factors in order to better explain a complex social *phenomenon* as *tourism*. From a **cultural** point of view, the concept of *acculturation*[16] by means of the *demonstration effect* (as described by Jafari, 2000,

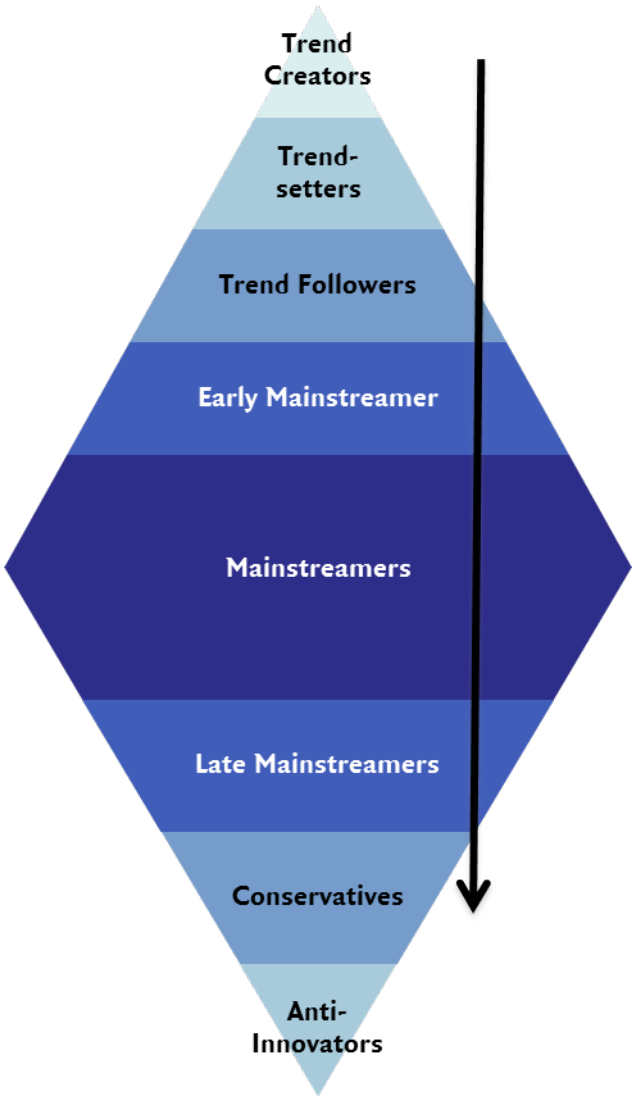
[16] "The term demonstration effect is closely linked to acculturation, which can be defined as cultural change initiated by the interaction of two or more cultural systems. However, imitation is but one aspect of acculturation. [...] The change in behavior where local people withdraw some features of their cultural life from public view is part of a wider process of acculturation" (Jafari, 2000, p. 140).

p. 140-1) is aligned with *Plog*'s view of the *TD* process – in which, at a certain stage, a destination starts receiving a great influx of midcentrics that push for the appearance of "fast food chains, tourist shops [...] and pseudo-native stores [and] bars" (Plog, 2001, p. 19). However, as noted by *Nash* (1996), despite early attempts to attribute *acculturation* to tourism alone, current views acknowledge the role of other factors that can be more influential than *tourism*. These would include the social and political structures and cultural values of local communities and micro and macro regions in which they are inserted and not only those of the generating regions alone. He also points that different destinations at similar stages of development would have different attitudes towards *tourism* and that these attitudes are most times not homogeneous, but rather associated to different groups that coexist in the destination.

Discussing the way trends in general come to being, *Vejlgaard* (2008) suggests a model that takes into account a ***product*** and ***market development perspective***. Using a qualitative approach, *Vejlgaard* argues that a trend's life cycle can be graphically viewed as a diamond-shaped model comprising groups with different attitudes towards trends (*Figure* 15).

The model would be diamond-shaped to approximately illustrate the size of each group by which trends are incorporated following a certain order. Contrast of *Vejlgaard*'s model with *Plog*'s (op. cit.), might suggest that: *trend creators* and *trend-setters* are similar to *venturers*, while *trend followers* and *early mainstreamers* would represent *near venturers*; *mainstreamers* are equivalent to *midcentrics* while *late mainstreamers* refer to *near dependables*; finally, *conservatives* and *anti-innovation* represent *dependables*. In that respect, the diamond-shaped model can be used to illustrate how different types of tourists influence the next generation or next psychographic profile of tourists. It also suggests that the process of *acculturation* can take place both from a tourist-host as well as a host-tourist direction. The role of trend-setters and trend followers in the process of making trends mainstream is perhaps the most interesting contribution of *Vejlgaard*'s model. It suggests only key local people in the tourist destination could be responsible for starting the process of tourist-host acculturation. Being able to identify local community trendsetters, and influence how they incorporate foreign cultural traits, could, in that respect, minimise tourist-host types of acculturation processes that could impact negatively to the future of the tourist destination.

Figure 15| The diamond-shaped trend model



Source | Adapted from Vejlgaard (2008, p. 64)

From a ***sociological perspective***, the model of a destination life cycle converges with Doxey's (1975) four stages of residents attitudes towards tourists that suggests:

> *"Initially an area is **euphoric** about tourists [and these] are seen as being valuable and desirable. The next stage [being] characterised by **apathy** [with] residents no longer car[ing] or notic[ing] tourists, tak[ing] for granted that [they] exist but generally ignor[ing] them. A third stage being **annoyance** [with] the cultural difference between residents and tourists bring[ing] discomfort and growing hostility[,] with tourists seem[ing] unmanageable and generally undesirable. Finally, residents reach a stage of **antagonism** where they are openly hostile and may even seek to discourage visitors from coming" (Dicke, Goeldner, & Landon, 1975, pp. 7-8).*

In that regard, it should be of concern that during the process of its development, tourism can end up becoming the main economic sector for

many local areas, when not the only substantial one. Since engaging with *tourism* in a destination at its early development stages does not require much training nor large initial investments, *tourism* ends up borrowing labour force from agriculture, fishing and other traditional subsistence and exporting activities. This euphoric stage as described by *Doxey* is usually pushed by the prospects of an ever-growing industry to local economies that had been marginal for decades, fuelling a rush to tourism development. By being uncontrolled, it can result in social antagonism, lost of character and identity brought by overdevelopment and consequently decaying tourist numbers that bring about a recessive economy that further accelerates the described process. Once locked into *tourism* and facing its decline, many destinations are finally forced to start planning and managing the way *tourism* is being developed. Since that requires large efforts in terms of education of the local population and tourists, change of the destination's image perceived by target markets as well as the redevelopment of considerable areas, if not unfeasible, the process is at least very costly (financially, politically, socially and psychologically) for host communities. Further to *Doxey*'s (op. cit.) findings, the research on residents' attitudes towards *TD* has grown considerably in the past years. *Harrill*'s (2004) review of the literature on the topic provides an insight on different approaches of research in the area. He claims theories that have emerged so far are "drawn from [those from] mature social sciences such as sociology and psychology [including] *community attachment*, *social exchange theory* and *growth machine theory*". He acknowledges that the different perspectives presented by these theories are many times complementary and the development of an overarching integrative theory is deemed necessary.

From an ***environmental perspective***, the identification of *tourism* negative impacts led scholars to borrow concepts from other areas (such as resource management) to discuss how to manage the impacts brought by different *TD* models (Getz, 1983, p. 241). *Coccossis* and *Mexa* claim that "beyond criticism, *tourism carrying capacity* remains a powerful concept as such can serve planning and management towards sustainable tourism" (2004, p. 49). Initially concerning only a "biophysical component relating to the quality of the environment and a behavioural component reflecting the quality of the recreational experience" (Wall, 1982, p. 191), *Tourism Carrying Capacity – TCC* was understood as the "maximum number of people who can use a recreational site without an unacceptable alteration in the physical environment and without an unacceptable decline in the recreational experience" (ibid). While *TCC* refers to the destination's capacity to host tourists according to their impact, *tourist carrying capacity* refers to the tourist's capacity to share the destination with other tourists without his/her experience being compromised. As the study of *TCC* advanced and was contrasted to some of the *TD* explanatory models presented in this section, new components of *TCC* started to be considered and incorporated to that of

environmental (or biophysical) and tourist (or psychological) carrying capacities. These included cultural (Mansfeld, 2006), social (Saveriades, 2000) and even economic components (Coccossis & Mexa, 2004). *Tourism cultural carrying capacity* relates to the limits above which tourism can bring unacceptable cultural influence to host communities leading to a process of acculturation and resulting in loss of local identity and character. As for *tourism social carrying capacity*, it relates to the limits above which local residents start shifting to more antagonistic positions in relation to tourism[17]. As for *tourism economic carrying capacity*, as suggested by *Cooper* (1998, p. 186) it can be defined by the "economic thresholds [that] will result in misallocation of resources and factors of production".

Overall, the definition of a tourist destination's *TCC* is a dynamic process that requires an holistic approach to understanding impacts brought by *TD* to local areas and the way these impacts reverberate back to the *tourism* activity. Different *TCC*s can be identified for different stages of development and for different impact management strategies. This notion that carrying capacity is not absolute, but rather relative to the management strategies in place has resulted in the appearance of many *Visitor Management – VM* models such as those pointed by *Getz* (1983), *Wearing* and *Neil* (1999) and *Scarpeta Matheus* (2003). The difference between these models are mainly in the chosen starting point for action, but one way or another, they incorporate the notion of carrying capacity or thresholds – although not always coming up with a number to express it. They include *Limits of Acceptable Change – LAC* (Stankey, Cole, Lucas, Petersen, & Frissell, 1985) *Visitor Experience and Resource Protection Framework – VERP* (US Department of Interior, 1997), *Protected Area Visitor Impact Management – PAVIM* (Farrell & Marion, 2002), *Visitor Activity Management Process – VAMP* (Eagles, McCool, & Haynes, 2002), *Recreational Opportunity Spectrum – ROS* (Clark & Stankey, 1979); and *Tourism Optimization Management Model – TOMM* (Manidis Consultants, 1996), among others. Despite accounting local impacts of *TD*, *TCC* and *VM* models do not consider those to non-destination areas.

Now, from a ***social-ecological systems perspective***, Petrosillo, Zurlini, Grato, and Zaccarelli (2006) suggest that *TD sustainability* should be analysed taking into account the four phases (exploitation, conservation, release and reorganisation) of the *Adaptive Cycle*[18] proposed by *Gunderson* and *Holling* (2002). By doing that, one could analyse the resilience of the social-ecological system of which local *TD* is part, through examination of connectedness and fragility, among other variables. According to them, "in the case of tourism-based system[s], the connectedness of a site is related to the degree of speciali[s]ation in tourist activities, which allow is to be competitive in comparison with other tourist resorts" (Petrosillo et al., 2006, p. 106).

[17] As described by Doxey's irritants index concept discussed earlier in this section.
[18] See pages 9 and 12.

In summary, the review of TD explanatory models discussed in this section presents the following conclusions:

1. Despite being impacted by TD, originating, transit-route and other areas of the globe are not considered by these models that focus only on impacts taking place in destination areas.
2. Most models suggest TD presents stages characterised by different: tourist psychographic profiles; tourist destination images; social and cultural resident community attitudes; economic configurations and outcomes; nature conservation outcomes. According to their logic, *consequences* brought by TD originate in the type of impacts that arise from different stages of TD.
3. Most models have TCC as part of their logic. However, being a dynamic concept dependent on the destinations amount and type of development and the pursued strategy for visitor impact management, TCC can be subjective and target of criticism.
4. In an attempt to naturalise TD and represent it through the concept of a life cycle, most models present TD as a linear process, disregarding its complexity.
5. Models do not consider the influence of *context*, geographic and demographic conditions, or other economic sectors.
6. Most models only take into consideration sectoral and local dimensions of TD sustainability in different degrees.

Tourism Development and Sustainability

Understandings of the way tourism development impacts human development sustainability are diverse and have seen shifts over the years. *Jafari*'s (1989) literature review of the topic has identified four different academic positions (or platforms) towards tourism development: an **advocacy** platform (**1950s** to **1960s**) seeing tourism as generating increasingly positive economic impacts to tourist destinations – a means of redistribution of economic capital from central to peripheral areas of the globe; a **cautionary** platform (**1970s** to early **1980s**) focusing the negative impacts of tourism, mainly those environmental, social and cultural to tourist destinations; an **adaptancy** platform (mid **1980s**) advocating alternative forms of tourism (light tourism, educational tourism and eco-tourism) should replace mass tourism and therefore avoid the negative impacts it brought to many tourist destinations at the time; and a **knowledge-based** platform (end of the **1980s**) recognising any form of tourism can be made more sustainable and that no form of tourism could be characterised simply as sustainable or not sustainable. Looking at the broader *context*, one realises this progression follows similar lines to those of the evolution of the concept of sustainability.

In a complementary way, *Clarke* (1997) suggests a framework of 4 different approaches to sustainability within *tourism* academics. The first two would advocate for the **abandonment of *mass tourism*** in favour of alternative forms of tourism, the first of them considering *mass tourism* and *sustainability* as **opposites** and being isolated by a conceptual barrier, while the second would see them as a ***continuum*** representing different degrees of tourism massification and sustainability. The third and fourth approaches were characterised by the understanding that *mass tourism* could not be eliminated in favour of alternative forms of tourism. Therefore, the third stage sought **more sustainable** ways to develop ***mass tourism***, while the forth sought the same for **all different types of *tourism***, including the alternative ones.

There are many ways in which individuals and organisations link the concept of *sustainability* with that of *tourism*, leading to the appearance of different expressions that are many times used interchangeably. These would include:

- *sustainable tourism*;
- *sustainable tourism development*;
- *sustainable development of tourism*;
- *tourism sustainability*; and
- *tourism development sustainability*.

By classification of the words contained in each of these expressions as nouns and adjectives, one might infer that while *sustainable tourism* refers to a **type** of tourism that could continue to exist into the future, *sustainable tourism development* would refer to a **model** of *TD* that could be considered *sustainable*. In a similar way, the expression *sustainable development of tourism* would mean the application of the concept of *sustainable development* for the specific area of tourism. Unfortunately, these distinctions of semantics don't seem to be taken into consideration in definitions such as those proposed by the *United Nations World Tourism Organisation – UNWTO*.

The first *UNWTO* definition proposed in **1998** seems to be simply an adaptation of the definition of *sustainable development* presented by the *Brundtland Report* (1987):

> "***Sustainable tourism development*** *meets the needs of present tourists and host regions while protecting and enhancing opportunities for the future. It is envisaged as leading to management of all resources in such a way that economic, social and aesthetic needs can be fulfilled while maintaining cultural integrity, essential ecological processes, biological diversity, and life support systems" (UNWTO, 1998, p. 21).*

The second, by being a conceptual definition, expands it by suggesting four dimensions of *sustainability* that should be considered within *TD* (cultural, social, cultural and economic), by setting forth its requirements (leadership

and informed participation of all stakeholders) and most importantly by stating that the concept is applicable to all types of tourism, this way stating that not only eco-tourism could be sustainable, but any other form of tourism, including mass tourism:

> *"**Sustainable tourism development** guidelines and management practices are applicable to all forms of tourism in all types of destinations, including mass tourism and the various niche tourism segments. Sustainability principles refer to the environmental, economic and socio-cultural aspects of tourism development, and a suitable balance must be established between these three dimensions to guarantee its long-term sustainability.*
>
> *Thus, **sustainable tourism** should:*
>
> 1. *Make optimal use of environmental resources that constitute a key element in tourism development, maintaining essential ecological processes and helping to conserve natural heritage and biodiversity.*
>
> 2. *Respect the socio-cultural authenticity of host communities, conserve their built and living cultural heritage and traditional values, and contribute to inter-cultural understanding and tolerance.*
>
> 3. *Ensure viable, long-term economic operations, providing socio-economic benefits to all stakeholders that are fairly distributed, including stable employment and income-earning opportunities and social services to host communities, and contributing to poverty alleviation.*
>
> ***Sustainable tourism development** requires the informed participation of all relevant stakeholders, as well as strong political leadership to ensure wide participation and consensus building. Achieving **sustainable tourism** is a continuous process and it requires constant monitoring of impacts, introducing the necessary preventive and/or corrective measures whenever necessary.*
>
> ***Sustainable tourism** should also maintain a high level of tourist satisfaction and ensure a meaningful experience to the tourists, raising their awareness about sustainability issues and promoting **sustainable tourism practices** amongst them" (UNWTO, 2004, p. 7).*

This second definition also considers the need to promote sustainable tourism practices among tourists. This could not only impact positively the tourist destinations but also the regions of origin; by raising tourists' awareness of sustainability principles, these could be applied by them once they are back home. However, despite their value for portraying what should be sought when tourism is being managed, these definitions pose a considerable problem for managers and planners by simply stating that there are only two opposites for sustainability, namely sustainable or unsustainable.

In this regard, the expressions *tourism sustainability* and *tourism development sustainability* seem to be more appropriate as they infer that there can be a *degree of sustainability* for different types of tourism and for different models of TD. By making the concept something relative (*degree of sustainability*) instead of absolute (sustainable or unsustainable), one allows for the results of efforts to be measured and actions to be better planned and managed. This also makes possible to set achievable (rather than utopian) goals that will prove more rewarding and challenging to the right degree. One also solves the problem of where to draw the line between sustainable and unsustainable. Considering *sustainability* infers a strong vision for the future and that the future poses a lot of uncertainty, it is preferable to suggest that a certain pathway seems more or less sustainable according to scenarios that are projected, but still uncertain, rather than simply sustainable or unsustainable. Classifying pathways as sustainable or unsustainable is only possible when analysing the past, for present *consequences* are known, but never the future, since it is still to be seen. That is why this thesis prefers to discuss the different *degrees of sustainability of tourism development* that can be sought by different destinations, instead of discussing whether *tourism* types and TD models are sustainable or not.

Tourism (Development) in the Context of this Thesis

Tourism is about human mobility, resulting interactions and *consequences* arising from these interactions. To discuss TD in the *context* of *sustainability*, one must look at *tourism* from an holistic perspective, encompassing different dimensions of interactions including social, economic, environmental, cultural, and political. In light of that, the researcher developed two foundational definitions for this research:

Tourism *is the sum of temporary and sporadic human travel to non-routine areas. It is motivated by the search for alternative ways to satisfy specific human needs to those that are available in areas of residency. Tourism can transversely impact environmental and human resources and systems of all areas delineated by its occurrence (originating, transit, destination and all other regions) as well as the globe as a whole. It thus influences the human capacity to survive (global and local dimensions of tourism development sustainability) as well as with the tourist destination's capacity to continue to attract tourist flows (sectoral dimension of tourism development sustainability).*

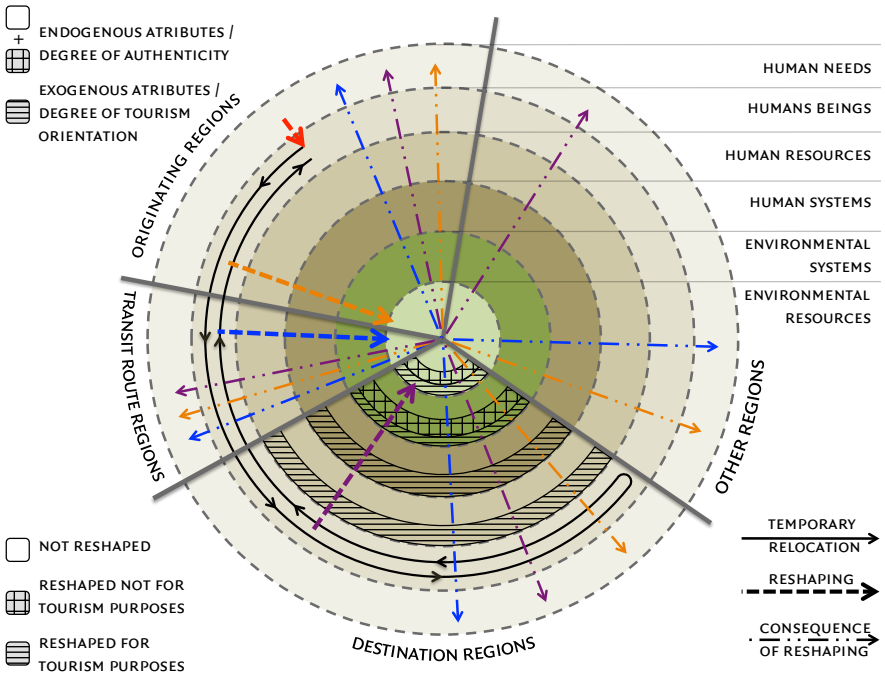
Tourism development sustainability *is the degree of resilience of a tourism development prescribed/implemented model (and therefore its capacity to increase the chances of tourism's long-term existence). Resilience is understood here as dependent on the model's capacity to establish a mutually-positive-outcome relationship with the global and local (destination, transit route, origin and other areas) human and environmental systems it relates to, allowing conservation and democratic access to human and environmental resources for existing and future generations.*

Based on the visual representation of dynamics of human-environment interactions proposed in *Chapter 1* (*Figure 8*), the researcher designed a *tourism (development) explanatory model* to represent *tourism (development)* in the *context* of *sustainability* (*Figure 16*). This model is based on the definitions just presented and it is, therefore, also used as the reference for the discussion of *TD sustainability* in this thesis. *Figure 16* suggests that human needs that cannot be satisfied in the originating tourist regions (red arrow showing the influence of the *human needs* ring on the *human beings* ring) promote the temporary travel of human beings to tourist destination regions (black arrow representing human beings moving from originating regions through transit route regions to destination regions and then back). Once in the destination areas, tourists are incorporated to the local population, increasing the pressures on local *human* and *environmental systems* and *resources* (bold purple arrow) – tourists not only carry with them the needs that motivated the travel, but also the needs that were already being fulfilled at the originating regions and that now need to be taken care of at the destination areas. According to this model, despite initially only directly reshaping the *environmental* and *human systems* and *resources* of the originating (bold orange arrow), transit (bold blue arrow) and destination (bold purple arrow) regions of the globe, considering the interconnectedness of both the earth system and the world system, indirect impacts would be unleashed to all areas delineated by the occurrence of *tourism* as well as to the globe as a whole (thin orange, thin blue and thin purple arrows representing the *consequences* of reshaping or the process of feedback). From a *Material Flow Analysis – MFA* perspective (Fischer-Kowalski, 1998; Fischer-Kowalski & Hüttler, 1999), other regions of the globe are also impacted by *tourism* when serving as supply regions.

In regard to destination areas, the model presented on *Figure 16* depicts:

- three classifications of environmental resources and systems arising from human and tourism development: **not reshaped**, **reshaped for tourism purposes** and **reshaped not for tourism purposes**;
- two classifications of human resources and systems arising from tourism: **not reshaped** and **reshaped for tourism purposes**; and
- the *consequences* of the process of reshaping to the capacity of the destination to continue to attract different psychographic tourist profiles: the destination's **endogenous attributes**, or characteristics of its elements that have either not been reshaped or that have been reshaped not for tourism purposes (also labelled here as the **degree of authenticity**); and the destinations **exogenous attributes**, or characteristics of its elements that have been reshaped for tourism purposes (also labelled here as the **degree of tourism orientation**).
- both **tourism** and **tourism development**, **spatially** and **structurally** from **sectoral, local** and **global** perspectives of sustainability.

Figure 16 | Systemic Model of Tourism within Sustainability



Tourism Development Sustainability Challenges

As important as defining what is meant by *tourism (development) sustainability* is to be able to define the main challenges that are faced by destinations when trying to increase the *degree of sustainability* of their TD prescribed/implemented models. A very broad concept, *TD sustainability* needs to be broken down into more detailed and operational elements that can be specific to the *contexts* and conditions of the areas being studied. The guidebook published by the *UNWTO* (2004) on *Indicators of Sustainable Development for Tourism Destinations* is a starting point, suggesting three interlinked levels of assessment, from most general to most specific: *composite indices*, *core indicators* and *specific indicators* deriving from *baseline issues*.

Analysis of *UNWTO*'s proposed *composite indices* (*Figure 17*) identifies concerns with the three dimensions of *tourism (development) sustainability* discussed earlier: *sectoral*, *local* and *global*.

The same analysis can be made for *UNWTO*'s *core indicators* of sustainable *tourism* as they can be classified as *local*, *global* and/or *sectoral indicators*:

- site protection (*local*);
- stress (*local* and *global*);
- use intensity (*local*);
- social impact (*local*);
- development control (*local* and *sectoral*);

- waste management (*local* and *global*);
- planning process (*local*, *global* and *sectoral*);
- critical ecosystems (*local* and *global*);
- consumer satisfaction (*sectoral*);
- local satisfaction (*local* and *sectoral*); and
- tourism contribution to local economy (*local*).

Figure 17| Analysis of UNWTO Composite Indices

Source | Based on UNWTO (2004).

As for *baseline issues*, these are suggested by UNWTO as specific to different types of tourist destinations, including those for *small islands*, *coastal zones*; *beach destinations and sites*; *natural and sensitive ecological sites*; *ecotourism destinations*; *parks and protected areas*; *communities within or adjacent to protected areas*; *trails and routes*; *small and traditional communities*; *cruise ships and their destinations*.

Examples of *baseline issues* for *small islands* include: seasonality, access to the island, water availability, access to natural resources, out-migration and

others. Each baseline issue is presented with a set of suggested indicators to measure their state. With regard to seasonality, the monthly accommodation occupancy rate is one suggested *specific indicator*.

As important as assessing these indicators and indices is to be able to interpret their meaning so as to identify the main sustainability challenges that should be addressed. A more detailed account of the specific sustainability challenges assessed by this research can be found in *Chapter 11*.

Chapter Conclusion

Tourism is a complex social *phenomenon* with economic, environmental and cultural implications of a global nature. Debating the concept of *sustainability* within TD requires a holistic conceptualisation of *tourism* itself. This can be done through the understanding of dimensions of *sustainability* that are defined by different perspectives (*sectoral*, *local* and *global*), but also by different areas that *tourism* impacts (cultural, social, economic, ecological). *Tourism* impacts are brought by different kinds of interactions resultant of humans travelling from originating, through transit and to destination regions and back. From an MFA perspective, despite only having contact with these three types of regions, tourists also impact other areas of the globe that are not classified as originating, transit or destination (but that can be supply regions, for example) and also the globe as a whole (in the case of carbon emissions from their means of transport, for instance).

This concept of *tourism* in the *context* of *sustainability* brings both challenges and opportunities. The challenges lay on the complexity of the *phenomenon*, which can make the development of explanatory models hard to produce and to communicate. The opportunities arise from the idea that an holistic understanding of the *tourism phenomenon* can greatly contribute to deeper understandings of the way *sustainability* operates in wider terms.

References

Access Economics, . (2009). Vulnerabilities study: regions with a high dependency on tourism (pp. 1-75). Canberra: Department of Resources, Energy and Tourism.

Baum, Tom. (1998). Taking the Exit Route: Extending the Tourism Area Life Cycle Model. Current Issues in Tourism, 1(2), 167 - 175.

Beni, Mário Carlos. (2001). Análise Estrutural do Turismo (1 ed.). São Paulo: SENAC.

Brundtland, Gro Harlem, & World Commission on Environment and Development. (1987). Our common future. Oxford; New York: Oxford University Press.

Burkart, A. J., & Medlik, S. (1981). Tourism: past, present and future (2nd ed.). London: Heinemann.

Butler, Richard W. (1980). The Concept of a Tourist Area Life Cycle of Evolution: implication for management of resources. The Canadian Geographer, 24(1), 5-12.

Butler, Richard W. (1999). Sustainable tourism: A state-of-the-art review. Tourism Geographies, 1(1), 7 - 25.

Butler, Richard W. (2009). Tourism in the future: Cycles, waves or wheels? Futures, 41(6), 346-352.

Clark, Roger N, & Stankey, George H. (1979). The recreation opportunity spectrum: a framework for planning, management and research USDA Forest Service: US Department of Agriculture - Forest Service.

Clarke, Jackie. (1997). A Framework of Approaches to Sustainable Tourism. Journal of Sustainable Tourism, 5(3), 224 - 233.

Coccossis, Harry, & Mexa, Alexandra. (2004). The challenge of tourism carrying capacity assessment: theory and practice. Hants: Ashgate.

Cooper, Christopher P. (1998). Tourism: principles and practice (2nd ed.). Harlow, England: Longman.

de Oliveira Santos, Glauber Eduardo. (2007). Modelos Teóricos Aplicados ao Turismo. Estudios y Perspectivas en Turismo, 16(1), 96-110.

Dicke, K P, Goeldner, C R, & Landon, E L. (1975). Highlights of the Sixth Annual TTRA Conference San Diego, California, September 8-11. Journal of Travel Research, 14(2), 1-8. doi: 10.1177/004728757501400201

Doxey, George V. (1975). A Causation Theory of Visitor-Resident Irritants: Methodology and Research Inference. Paper presented at the The Travel Research Association Conference no 6 - TTRA, San Diego, California. Article retrieved from

Eagles, Paul F. J., McCool, Stephen F., & Haynes, Christopher D. (2002). Sustainable tourism in protected areas: Guidelines for planning and management. Gland: World Commission on Protected Areas (WCPA) International Union for Conservation of Nature (IUCN).

Farrell, Tracy A., & Marion, Jeffrey L. (2002). The protected area visitor impact management (PAVIM) framework: A simplified process for making management decisions. Journal of Sustainable Tourism, 10(1), 31-51.

Fischer-Kowalski, Marina. (1998). Society's Metabolism: The Intellectual HIstory of Materials Flow Analysis, Part I, 1860-1970. Journal of Industrial Ecology, 2(1), 61-78.

Fischer-Kowalski, Marina, & Hüttler, Walter. (1999). Society's Metabolism: The Intellectual History of Materials Flow Analysis, Part II, 1970-1998. Journal of Industrial Ecology, 2(4), 107-136.

Getz, Donald. (1983). Capacity to absorb tourism: Concepts and implications for strategic planning. Annals of Tourism Research, 10(2), 239-263.

Getz, Donald. (1986). Models in tourism planning: Towards integration of theory and practice. Tourism Management, 7(1), 21-32.

Griffith, D A, & Albanese, P J. (1996). An Examination of Plog's Psychographic Travel Model within a Student Population. Journal of Travel Research, 34(4), 47-51. doi: 10.1177/004728759603400407

Gunderson, Lance H., & Holling, C. S. (2002). Panarchy: understanding transformations in human and natural systems. Washington, DC: Island Press.

Handy, C. (1994). The Age of Paradox. Boston: Harvard Business School Press.

Harrill, Rich. (2004). Residents' Attitudes toward Tourism Development: a Literature Review with Implications for Tourism Planning. Journal of Planning Literature, 18(3), 251-266. doi: 10.1177/0885412203260306

Jafari, Jafar. (1989). Sociocultural Dimensions in Tourism: an English Language Literature Review. In J. Bystrzanowski (Ed.), Tourism as a factor of change: a sociocultural study (Vol. 1, pp. 17-60). Vienna: European Coordination Centre for Research and Documentation in Social Sciences.

Jafari, Jafar. (Ed.). (2000). Encyclopedia of Tourism. New York: Routledge.

Leiper, Neil. (1979). The framework of tourism: Towards a definition of tourism, tourist, and the tourist industry. Annals of Tourism Research, 6(4), 390-407. doi: 10.1016/0160-7383(79)90003-3

Leiper, Neil. (1990). Tourism systems: an interdisciplinary perspective. Palmerston North, N.Z: Department of Management Systems, Business Studies Faculty, Massey University.

Litvin, Stephen W. (2006). Revisiting Plog's model of allocentricity and psychocentricity ... one more time.(Stanley Plog). Cornell Hotel & Restaurant Administration Quarterly, 47(3), 245(249).

Manidis Consultants, . (1996). Developing a Tourism Optimisation Management Model (TOMM): A Model to Monitor and Manage Tourism on Kangaroo Island, South Australia: Draft Consultation Report.

Mansfeld, Y. (2006). Evaluating the Socio Cultural Carrying Capacity of Rural Tourism Communities: a Value Stretch approach. Tijdschrift voor economische en sociale ..., 97(5), 583-601.

Nash, Dennison. (1996). Tourism as Acculturation or Development Anthropology of Tourism. Oxford: Pergamon.

Nickerson, N P, & Ellis, G D. (1991). Traveler Types And Activation Theory: A Comparison Of Two Models. Journal of Travel Research, 29(3), 26-31. doi: 10.1177/004728759102900304

OEA. (1978). Estratégia de Desenvolvimento Turístico do Equador Série Informações e Estudos. Washington: Organização dos Estados Americanos.

Panosso Netto, Alexandre. (2005). Filosofia do Turismo: Teoria e Epistemologia. São Paulo: Editora Aleph.

Petrosillo, I, Zurlini, G, Grato, E, & Zaccarelli, N. (2006). Indicating fragility of socio-ecological tourism-based systems. Ecological Indicators, 6(1), 104-113. doi: 10.1016/j.ecolind.2005.08.008

Plog, Stanley. (2001). Why Destination Areas Rise and Fall in Popularity: An Update of a Cornell Quarterly Classic. Cornell Hotel and Restaurant Administration Quarterly, 42(3), 13-24. doi: 10.1177/0010880401423001

Saveriades, A. (2000). Establishing the social tourism carrying capacity for the tourist resorts of the east coast of the Republic of Cyprus. Tourism Management, 21(2), 147-156. doi: 10.1016/S0261-5177(99)00044-8

Scarpeta Matheus, Fabricio. (2003). Capacidade de Carga e Manejo de Visitantes. (Undergraduate), Escola de Comunicações e Artes, São Paulo.

Smith, Stephen L.J. (1990). A Test Of Plog's Allocentric/Psychocentric Model: Evidence From Seven Nations. Journal of Travel Research, 28(4), 40-43. doi: 10.1177/004728759002800409

Stankey, George H., Cole, David N., Lucas, Robert C., Petersen, Margaret E., & Frissell, Sidney S. (1985). The limits of acceptable change (LAC) system for wilderness planning. United States Department of Agriculture - Forest Service. Ogden, UT.

UNWTO. (1998). Guide for Local Authorities on Developing Sustainable Tourism (English version). Madrid: UNWTO.

UNWTO. (2004). Indicators of sustainable development for tourism destinations: a guidebook. Madrid, Spain: United Nations World Tourism Organization.

US Department of Interior, . (1997). The Visitor Experience and Resource Protection (VERP) framework: a handbook for planners and managers. Retrieved 30/08/2010, from http://catalogue.nla.gov.au/Record/3849348

Vejlgaard, Henrik. (2008). Anatomy of a trend. New York: McGraw-Hill.

Wall, Geoffrey. (1982). Cycles and capacity: Incipient theory or conceptual contradiction? Tourism Management, 3(3), 188-192.

Wearing, Stephen, & Neil, John. (1999). Ecotourism: impacts, potentials, and possibilities. Oxford ; Boston: Butterworth-Heinemann.

Weaver, David Bruce. (2000). The exploratory war-distorted destination life cycle. International Journal of Tourism Research, 2(3), 151-161.

Lord Howe Island

Chapter 3 | Social-Ecological Complex Adaptive Systems

The Dynamics of Sustainability and Tourism Development

While chapters 1 and 2 have respectively introduced core concepts to this thesis – *sustainability* and *Tourism Development – TD* in the *context* of *sustainability*, the current chapter sought to develop a theoretical framework of analysis for studying the dynamics behind processes of *TD* and how they lead to certain *sustainability* outcomes. It does that by exploring *complexity theory* through the concept of *Social-Ecological Complex Adaptive Systems* - SECAS, describing its characteristics and properties and discussing its application to *TD* and *sustainability* studies. *Chapter 3* also explores complementary concepts, or building blocks, used to develop the *SECAS* model that framed the research and analysis of data. These concepts include ***competition*** and ***cooperation*** (core to the development of the primary and secondary research questions); ***structure*** and ***agency***, and ***networks*** (linking system and unit levels); ***tourism clusters*** (linking SECASs with tourism development theory); and ***resilience*** (linking SECASs with environmental studies and *sustainability* and wrapping up many of the concepts presented).

As a result of the exploration of the above-mentioned concepts, a visual representation model of a local-global *SECAS* is developed, presented and explained. The model, in conjunction with the main conclusions presented here prepare the basis for *Chapter 4*, which focuses on the development of the research questions and the research design.

Social-Ecological Complex Adaptive Systems – SECAS

As mentioned in *Chapter 1*, *complexity theory* brings an opportunity to look at human-environment relations *phenomena* in a way that is more aligned with the still evolving concept of *sustainability* by acknowledging the multitude of relationships that take place within social and ecological systems and the resulting emergent collective behaviour of their agents.

According to *Lansing* (2003, p. 183)

> *"for mathematicians and physicists, the biggest surprise is that complexity lurks within extremely simple systems. For biologists, it is the idea that natural selection is not the sole source of order in the biological world. In the social sciences, it is suggested that emergence – the idea that complex global patterns with new properties can emerge from local interactions – could have a comparable impact."*

Complexity theory focuses on the study of complex systems, also known as non-linear systems. Different to linear systems where the sum of parts is equal to the whole, complex systems are constituted of units (or agents) that are constantly interacting in a dynamic fashion. The result of collective interaction is that individual and collective behaviour are constantly influencing one another in different degrees. This way, reductionist approaches to studying complex systems prove unable to predict collective behaviour based on individual behaviour, as collective behaviour is a product and not a sum of individual behaviour. Complex systems are therefore dynamic, or under constant change.

For *Norberg and Cumming* (2008, p. 2), "[c]omplex systems are systems that can produce unexpected dynamics because of non-linear interactions among components [...] meaning these systems have the possibility of [exhibiting] reinforcing or self-moderating processes". These can be interpreted as feedback processes through which systemic emergent properties self-regulate interactive individual and collective behaviour. They also point "[o]ne *phenomenon* caused by self-reinforcing processes is regime shifts, which refer to the ability of a system to internally switch between different self-reinforcing processes that dominate how the system functions" (ibid). Also known as amplification, self-reinforcing processes "can be a merely physical process or an informational process [...]. Its role in the analysis of emergence is in explaining how certain minor or even incidental aspects of a complex *phenomenon* can become the source of its dominant features" (Murphy & Stoeger, 2007, p. 95).

Despite acknowledging that "neither a single science of complexity nor a single complexity theory exists yet" (p.14), *Mitchell* (2009) proposes *Complex (Adaptive) Systems* are those

> *"in which large networks of components with no central control and simple rules of operation give rise to complex collective behaviour, sophisticated information processing, and adaptation via learning or evolution[,][...] the central question of the sciences of complexity [being] how this emergent self-organised behaviour comes about" (p. 13).*

A key property of complex systems, "[e]mergence is a term often used by scientists to describe the spontaneous appearance of novel fitted orderliness" (Murphy & Stoeger, 2007, p. 88).

In the absence of a unified theory for complexity, a number of general *properties* and specific *characteristics* of complex systems have been identified and proposed as the basis for a future theory of complexity. Chu, Strand, and Fjelland (2003) propose that ***contextuality*** and ***radical openness*** are two of these essential properties, radical openness being "a direct *consequence* of the richness in the connections between real systems and their ambiance" (p. 24) while contextuality being "a property that is a direct *consequence* of the partitioning of the world into system and ambiance preceding any modelling enterprise" (p. 25). This way, they infer that complex systems are regarded as open systems that relate to other systems in hierarchical ways, both influencing and being influenced by them, a concept previously explored by *Koestler* (1967).

From a different perspective, but in a complementary way, *Mitchell* (2009, p. 12-13) suggests three common properties for *complex (adaptive) systems*: complex collective behaviour (where collective actions of a vast number of components give rise to complex, hard to predict and changing patterns), signalling and information (where information and signals are produced and used as the means of interaction) and adaptation (where systems adapt through learning or evolutionary processes). Adaptation is what, according to *Norberg and Cumming* (2008, p. 2), sets apart *Complex Adaptive Systems – CASs* from systems that are simply complex, meaning their capacity "to change in response to prevailing (and anticipated, where possible) conditions by means of self-organisation, learning and reasoning". The adaptation property can be interpreted as a different way to look at contextuality and radical openness as *CASs* adapt partly because, by being radically open systems, they are influenced by higher level systems (or *context*).

In a convergent and more detailed way, *Cilliers* (1998, p. 3-4) offers a list of ten characteristics of complex systems. According to him:

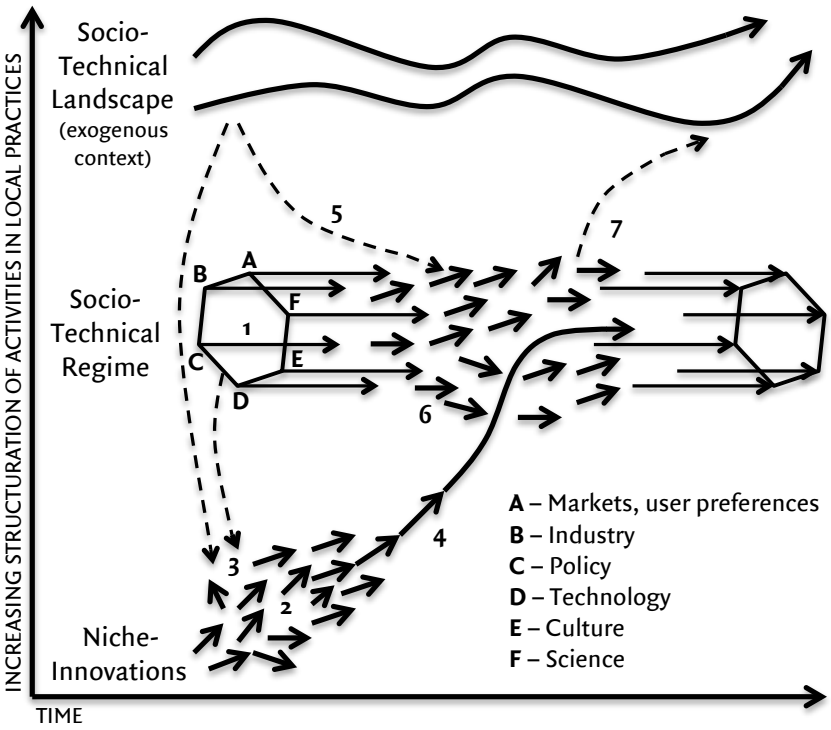
1. Complex systems are made of a large number of elements;
2. These elements must interact in a dynamic fashion;
3. System elements influence and are influenced by quite a few others. There can be, however, redundancy, in the sense that changes in the number of interactions not always result in changes of system behaviour;

4. The interactions are non-linear;
5. The interactions are usually of a fairly short range, the location of agents playing an important role in the amount and type of interactions that are established;
6. There are loops in the interaction which lead to processes of amplification or attenuation;
7. Complex systems are usually open systems, making it harder to define the system's boundaries. In that respect, different observers may define different system scopes according to their position (framing);
8. Complex systems operate in conditions that are far from equilibrium, requiring a constant flow of energy to ensure its organisation and survival;
9. Complex systems are constantly evolving and therefore have a history;
10. System elements are ignorant of the behaviour of the system as a whole, responding only to information that is made available to them locally. This justifies the need to analyse the whole and not simply the individuals when trying to grasp the behaviour of a complex system.

Considering that, according to the three positions presented above, there is a multitude of non-linear relationships established within a *CAS* and between the system and its ambiance, identifying causality appears to be a challenging undertaking. However, as argued by *Murphy and Stoeger* (2007, p. 94), "[w]hat we need is to trace ways that nature can tangle causal chains into complex knots[,] [e]mergence [being] about the topology of causality". This suggests that, despite how challenging the complexity of a system makes it for one to identify relationships of cause and *consequence*, these can be more easily identified by the study of emergent properties. Changes to *CAS*s can, therefore, be explained not by the way their agents individually interact with one another, but rather by the processes in place that arise from their interaction.

Previously presented in *Chapter 1*, *Geels* (2011) *Multi-Level Perspective – MLP* on socio-technical transitions provides relevant insights into the role of emergent properties of *CAS*s in systems undergoing change. The *MLP* "is a middle range theory that conceptuali[s]es overall dynamic patterns in socio-technical transitions[,] [...] [viewing] transitions as non-linear processes that result from the interplay at three analytical levels: niches, socio-technical regimes, and an exogenous socio-technical landscape" (Geels, 2011, p. 26). This interplay between the three levels can be visualised in *Figure 18*.

Figure 18 | Multi-Level Perspective on Transitions



1 – Socio-technical regime is "dynamically stable". On different dimensions are ongoing processes.
2 – Small networks of actors support novelties on the basis of expectations and visions. Learning processes take place on multiple dimensions (co-construction). Efforts to link different elements in a seamless web.
3 – External influences on niches (via expectation and networks).
4 – Elements become aligned, and stabilise in a dominant design. Internal momentum increases.
5 – Landscape developments put pressure on existing regime, which opens up, creating windows of opportunity for novelties.
6 – New configuration breaks through, taking advantage of 'windows of opportunity'. Adjustments occur in socio-technical regime.
7 – New regime influences landscape.

Source | Adapted from Geels (2011, p. 28)

Analysed from a CASs perspective, the socio-technical landscape (also referred by *Geels* as the exogenous *context*) would be equivalent to the system's ambiance or the higher-level *CAS* the system is part of. Both the socio-technical regime (that he considers to comprise science, culture, technology, policy, industry and markets and user preferences) and the niche innovations are emergent properties resulting from the interaction of agents that either reinforce or reshape the current system and could be understood as the self-reinforcing and self-moderating processes suggested by *Norberg and Cumming* (2008). The feedback process between regime and landscape suggested by *Geels* (2011) is also similar to the feedback process that takes place in *CASs* (as suggested by Chu et al., 2003) where ambiance influences the *CAS*, which, in turn, also influences the ambiance.

Examples of CASs include the immune system, the brain, the stock market, social systems and ecosystems, among others. If one considers how much human social systems have reshaped their natural environments – even leading to the identification of a new geological era named the *Anthropocene* (Crutzen & Stoermer, 2000), one realises that *sustainability* research should focus on the study of coupled social-ecological systems (as suggested by Jerneck et al., 2010). Taking into account that the focus of this thesis is on the sustainability of tourism development, this specific type of CAS is of special interest and will be explored more in depth and referred to as *Social-Ecological Complex Adaptive System – SECAS*[19].

Interactions between human and natural systems are now core to the concept of resilience set forth by the *Resilience Alliance*, which considers the resilience of social-ecological systems as their main research agenda (Folke, 2006). *Gunderson* and *Holling* (2002) explore the differences between ecosystems and social systems to illustrate the challenges of trying to study ecosystems from a social perspective and vice-versa. By acknowledging that the quest for *sustainability* is dependent on the way these two systems interact, they suggest these systems cannot be studied as separate objects. The same paradigm is core to the research programme developed by the *Lund University Centre of Excellence for Integration of Social and Natural Dimensions of Sustainability – LUCID*, in Sweden (Jerneck et al., 2010).

Considering the way social and environmental sciences have followed their own separate paths for so long and that social systems do differ from ecological systems in some fundamental ways, studying social-ecological systems does seem like a challenging, yet necessary undertaking. Looking at these systems from a CAS approach helps to explain both the difficulty and the need to study them in an integrated way. The concept of emergent properties is key to this idea and calls for a study of the whole, rather than the parts, as it is through the interaction between social and ecological systems that social-ecological system-wide properties emerge – these properties no longer can be analysed through a single social or ecological lens because they do not refer to social or ecosystems as separate instances. Based on this idea, this research takes the position that the concept of SECAS constitutes an opportunity to expand and deepen studies of *TD sustainability*. *Tourism* being a social *phenomenon* that is partly motivated by the human need to interact with the natural environment constitutes a clear example of a system where social and ecological boundaries are hard to establish, forcing the researcher to look at social-ecological processes.

Competition and Cooperation

Self-organisation makes CASs dynamic and it is through this same process that system wide properties emerge. Resulting from relationships

[19] Previous research on social-ecological systems based on *tourism* include Lacitignola, Petrosillo, Cataldi, and Zurlini (2007).

established among agents, the process of self-organisation requires a set of preconditions that, according to *Cilliers* (1998, p. 94-5), can be summarised in the following way:

- Systems consist of a large number of agents that are initially undifferentiated, with local information changing the strength of interconnections and leading the system to more differentiated states through self maintaining processes.
- Agents' competition for limited resources is the basic driving force behind the development of the system structure.
- Rich and meaningful structures are also boosted by agents' co-operation, promoting associations among patterns leading to mutual reinforcement.
- Interactions must be non-linear, with small changes being able to cause large effects and the combination of patterns resulting in the formation of new ones (product, not sum).
- Asymmetry leads to complexity the same way complexity boosts asymmetry through non-linearity.

By being distributed among different agents, the system's memory is both the result of as well as the push for the establishment of relationships that can result in the processing of complex concepts.

The importance of competition and cooperation as driving forces to self-organisation is also highlighted by *Waldrop* (1992, p. 145) who suggests that "[t]he control of a CAS tends to be highly dispersed [...][and] [i]f there is to be any coherent behaviour in the system, it has to arise from competition and cooperation among the agents themselves". Also suggesting that a CAS's history portrays the "coevolutionary dance of competitions and cooperation" (p. 292) he points that "competition can produce a very strong incentive for cooperation, as certain players spontaneously forge alliances and symbiotic relationships with each other for mutual support" (p. 185), which, in turn, makes them more competitive. As important driving forces to self-organisation and consequently to emergent properties that reinforce *status quo* or promote change, competition and cooperation among SECAS's agents are regarded here as key areas for research into transitions to sustainability.

With regard to cooperation in tourist destinations and based on the study of *institutional analysis*, *rational choice theory*, *transaction cost economics*, *resource dependence theory*, *game theory* and *social exchange theory*, *Beritelli* (2011, p. 612-4) suggests there are two cooperation approaches: *formal contract-based cooperation* and *informal relation-based cooperation*. Whereas the first would be based on formal agreements originating in "institutional and organisational resources and assets, economic dependencies and explicitly mutual gains", the second emphasizes "mutual trust, personal commitment and interrelationships", both approaches taking into account that "co-operation

is a multiple-round game at organisational as well as individual levels, and that cooperative behaviour is supported by effective communication" (ibid). Also referred to as collaboration, co-operation in light of community based *tourism* planning is seen by *Jamal* and *Getz* (1995, p. 188) as "a process of joint decision-making among autonomous, key stakeholders of an interorganisational, community *tourism* domain to resolve planning problems of the domain and/or to manage issues related to the planning and development of the domain".

As for competition, this is described by *Burt* (1992, p. 5) p. 5 as being a matter of relations and not players' attributes, a relation emergent, not observed, a process and not a result; imperfect competition being a result of freedom, not just power. According to *Brandenburger* and *Nalebuff* (1996), "[b]usiness is cooperation when it comes to creating the pie and competition when it comes to dividing it up". In ecology, cooperation can be observed in the joint effort to gaining access to resources and competition in the struggle to secure its dominion and/or consumption.

For the purpose of this research, cooperation is understood as the relationship of collaboration (working together) that takes place when different agents bear compatible goals (deriving from their needs) – in other words, these goals are either complementary or shared but non-exclusive. As for competition, this is seen here as the relationship of dispute that takes place when goals are mutually exclusive (incompatible), regardless of being shared or not. To illustrate these concepts, one could apply them to ecology where limited resources can impose situations of both competition and cooperation. When groups of animals of the same species work together to defend access to a certain resource, they share the same goal and this goal is shared and not mutually exclusive, therefore leading to cooperation among them. However, by defending the access for these resources by preventing access by other species, the different species are in competition. Goals are mutually exclusive or incompatible when the achievement of one's goal prevents others to achieve their own.

Despite representing relationships between agents that are apparently opposites, competition and cooperation seem to fulfil complementary roles when looked at from a *CAS*s perspective. In that sense, cooperation can lead to competition and vice-versa. On one hand, certain agents cooperate among themselves so that they can better compete with other agents. On the other, competition among certain agents for the same niche or role, can lead the weaker agent to find a new niche or to specialise in something different. By promoting specialization, competition can open the doors for new types of cooperation.

In this regard, competition and cooperation can be seen as two sides of the same coin. This concept has led *Brandenburger* and *Nalebuff* (1996) to create the term co-opetition, to represent a strategy where businesses pursue

competition and cooperation with the same related agents simultaneously. Since competition is resource consuming, when weaker agents can predict its result, they can either withdraw from the niche they are competing for and move into a similar niche in a new ecosystem or find a new niche to explore within the same ecosystem by adapting. This is what the Blue Ocean Strategy is about, where *Kim* and *Mauborgne* (2005) suggest that businesses should pursue ways to making the competition irrelevant by specialising in niches or finding markets that are yet to be explored.

Bearing these dynamics in mind, competition and cooperation can be said to foster self-organised criticality, or as *Cilliers* (1998, p. 117) suggests, "the mechanism by which networks diversify their internal structure maximally". The benefit being that "[t]he more diverse the structure, the richer the information that can be stored and manipulated" (ibid). However, in order to accomplish that, "[t]he network has to walk the tightrope between solid structure, on the one hand, and disorder, on the other" (ibid). In other words, solid structure caters for efficiency and scale, necessary for a reasonable enough number of occurrences of relevant novelties, which can only emerge within some level of disorder.

With regard to the role of competition and cooperation in processes of system transformation and adaptation, *Cilliers* (1998, p. 119) suggests that "[d]issenting voices [(or innovation)] receive no special privilege; they have to enter into the 'agonistics of the network', where their relevance is dynamically determined through competition and co-operation in terms of the history as well as the changing needs and goals of the system". When looking back at the *MLP* on socio-technical transitions (Geels, 2011) presented earlier, one will notice that it is through a process of competition and cooperation between different niche innovations, that new technology is developed and gains enough momentum to make use of windows of opportunity to become mainstream and part of new socio-technical regimes. In order to gain access to the regime, these new technologies also establish relationships of competition and cooperation with existing regime technologies.

Structure and Agency

Structure and *agency* are core concepts to the study of social systems and very connected to *competition* and *cooperation*. "*Structures* are typically seen as the more fixed and enduring aspects of the social landscape", whereas *agency* is seen as "the ability of individuals or groups [...] to 'make things happen' within given structural constraints and opportunities" (Stones, 2007). The inherent connection between structure and agency has led to different ideas about the way their interplay takes place.

Looking at *agency* from a *structure* lens, *López* and *Scott* (2000), suggest that social structures comprise three subsets of interdependent structures:

institutional, *relational* and *embodied structures*. While acknowledging that the distinction between *norms* (or *institutional structures*) and *relations* (or *relational structures*) is not for sure an absolute one, they claim it is fundamental, as "social relations exist only by virtue of the norms or rules that people apply in their actions, but the relations cannot simply be read-off from the rules" (p. 47). As for the *embodied structure*, they explain the concept is partially based on the works of *Giddens* (1993, p. 125-6), who uses the difference between speech and language to explain the distinction between social action and social structure, arguing that "action and interaction, like speech, form a socially and temporarily situated flow of activity[,] [s]ocial structure, on the other hand, like a [language], does not exist in space and time" (López & Scott, 2000, p. 94). In other words, they suggest social structures are produced and reproduced through social actions, becoming this way embodied in different ways by different agents – like in the example of the language, where different agents articulate their speech using and valuing different parts of a shared language, different agents sharing the same norms will value and incorporate them into their actions in different ways. As they acknowledge, perhaps the greatest contribution of the concept of embodied structures is its attempt to discuss a dimension of social structure that is embedded within actions, therefore helping to approximate social *structure* to *agency*.

Looking at *structure* through the lens of *agency*, *Emirbayer* and *Mische* (1998, p. 970) define *agency* as

> *"the temporally constructed engagement by actors of different structural environments – the temporal-relational contexts of action – which, through the interplay of habit, imagination, and judgment, both reproduces and transforms those structures in interactive response to the problems posed by changing historical situations".*

By including imagination as part of the interplay leading to action, *Emirbayer* and *Mische* suggest that actions are not entirely based on norms (that would dictate habits and inform judgment), but also on novelty and surprise. By understanding that *agency* portrays a central role into creating *structure*, they claim that norms and values are "by-products of actors' engagement with one another in ambiguous and challenging circumstances[,] emerg[ing] when individuals experience a discordance between the claims of multiple normative commitments" (Emirbayer & Mische, 1998, p. 1012-13).

These two presented views illustrate the ongoing debate between social theorists around causality in *social structure* and *agency*, some even claiming that they should not be considered as two separate elements of the social system (Giddens, 1984). When looking at agents as subsystems of the social systems they are part of, the struggle between structure and agency can be seen as that described by *Koestler* (1967) between different system hierarchies

where subsystems struggle between fulfilling their role while also acting on their self-interest.

In that regard, it is relevant to point that conceptualisations of structure and agency can be fairly complementary, resulting in an overarching concept of simultaneous causality. In that respect, agency can be said as being based on structure, but also on imagination and changing needs, whereas structure can be based on agency (by production and transformation), but also on structure (when this informs agency leading to reproduction). In that respect, by use of a CAS approach, this research understands that there is a constant feedback process linking structure and agency which gives rise to emergent processes of self-reinforcement and self-moderation. In turn, self-moderation and self-reinforcement will at different instances promote or inhibit the maintenance and consolidation of current structures, their adaptation or the establishment of new ones. The system's capacity to undergo structural change while maintaining its functions is here understood to determine its resilience and capacity to survive to impacts brought about by changes at the higher-level system to which it is dependent. Structure here refers to elements that allow the development of relationships by the establishment of patterns that are shared among those agents that relate to one another, hence promoting efficiency and productivity, whereas agency can be seen as the dynamic element behind society, which brings change and adaptation to current structures by means of innovation.

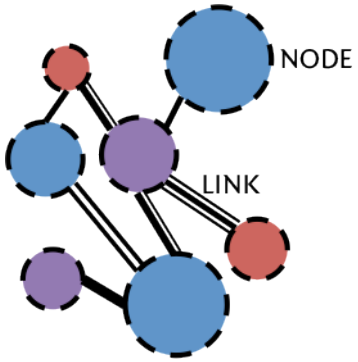
When looking at competition and cooperation in light of the above, one could infer that they are processes that are linked to both structure and agency. By representing different types of relationships between agents, competition and cooperation are the result of agency and the basis for structure, the same way they can be influenced by structure and a driver for agency. In other words, there seems to be a loop process between *Competition and Cooperation - C&C*, one between *Structure and Agency – S&A* and another between C&C and S&A.

Networks

Despite being a tool focused mainly on structure, network analysis can provide interesting insights on CASs by facilitating the identification of emergent patterns. According to *Newman* (2010, p. 2), "a network is a simplified representation that reduces a system to an abstract structure capturing only the basics of connection patterns and little else". Networks are usually represented by *nodes* (or vertices) and *links* (or edges) (Clauset, 2011; Newman, 2010). Nodes refer to the *units* of the system whereas links to the *relationships* that are established among them. A simple representation of a network can be observed in *Figure 19*, where different types and intensities of links are represented by different widths and different types of lines, while different colours and sizes of circles represent the different types of nodes

and their weight in the system. Nodes are represented here with dashed boundaries to infer that they are systems on their own that are open – hence the interactions they establish with other nodes through links.

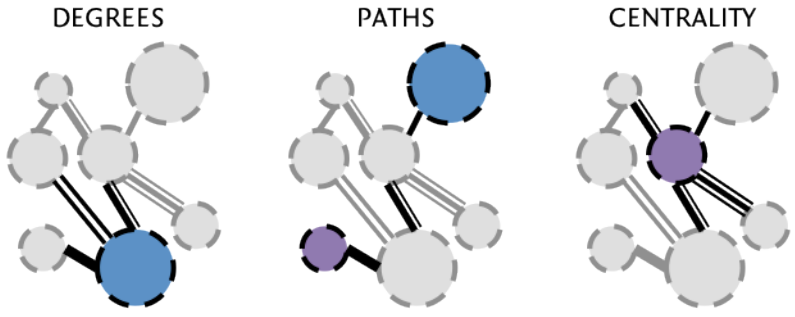
Figure 19 | Simple representation of a network



Depending on the network being analysed, nodes can be people, organisations, concepts, values, rules, regulations and even projects or actions. As presented in the section on *structure* and *agency*, different types of networks can also interact – a network of values can influence the way agents interact, leading to certain organisational network configurations.

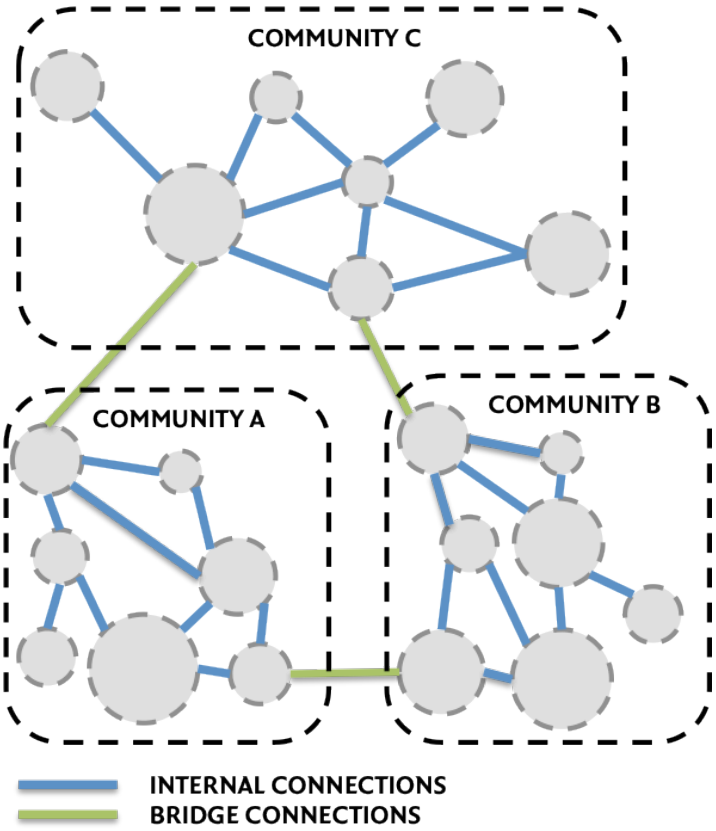
Degrees, *paths*, *centrality*, and *communities* are among some of the tools used to analyse networks. *Degrees* refer to the number of direct connections established by a given node with other nodes. *Paths* refer to the number of degrees connecting any two given nodes, the greater the number of paths the less directly connected the two nodes being analysed are. *Paths* can also be referred to as the number of *degrees of separation* between two nodes. *Centrality* refers to the node's importance in terms of how it is connected to the rest of the network. In general terms, a node that is more directly connected to other nodes in a certain network can be said to be more central or more influential (Clauset, 2011; Newman, 2010). The concepts of degrees, paths and centrality are illustrated in *Figure 20*.

Figure 20 | Degrees, paths and centrality in networks



As for *communities*, these can be identified by the visualisation of groups of units that are highly interconnected among themselves, in spite of being weakly connected to other groups of nodes. Connections between units of the same community are usually referred to as *internal connections* and those among different communities as *bridge connections* (Clauset, 2011). These concepts can be visualised in *Figure 21*. Communities can also be referred to as *clusters*. A specific type of economic cluster (*tourism cluster*) is discussed in more depth at the end of this chapter.

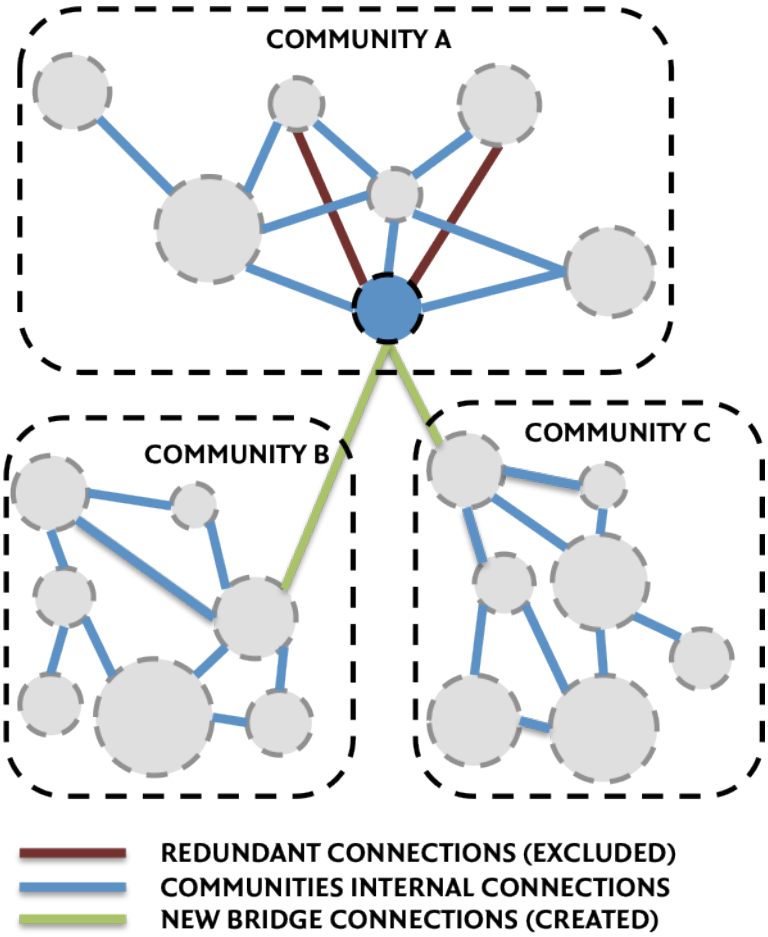
Figure 21 | Network Communities



Other important concepts are those of *redundancy* and of *structural holes*. In most scenarios, units will present a limited capacity to establish connections that is driven by, among other factors, the amount of energy, time, frequency of interactions and location (physical or virtual) that they demand from a unit. In this scenario, Burt (1992) suggests that redundant connections are those primary connections between the unit of analysis and other unities that could be replaced by indirect connections that are already in place. In other words, he questions the establishment and maintenance of direct connections with units to which the unit of analysis is already indirectly connected. Instead, he suggests the pursuit of connections with nodes that can serve as gateways for accessing networks of units that are currently not connected to the unit of analysis's network. This would increase the centrality of the unit of analysis while also filling a *structural hole*, or the absence of a connection between two *communities*. According to Burt (ibid),

by establishing this new connection, the unit of analysis becomes more competitive by becoming more influential. This concept can be better visualised by observation of *Figure 22*, where the unit of analysis (blue circle) ceases to maintain redundant connections (brown lines) in order to pursue bridge connections with external communities so as to become more central.

Figure 22 | Filling structural holes



Tourism Clusters

As presented in *Chapter 2*, *TD sustainability* is understood by this research as comprising three dimensions: *sectoral*, *local* and *global*. Focusing on the economic aspects of the activity, the sectoral dimension of *TD sustainability* is the one that deals with the capacity of a certain tourist destination to attract tourists now, and continue to do so over time. Because of *tourism*'s potential for generating economic development in peripheral areas, different ways to implement this sectoral dimension have been the subject of much *tourism* and economic oriented research. *Tourism clusters* is one of the approaches taken by academics to try to understand the dynamics of *TD* and the formulation of strategies targeting the sectoral dimension of *TD sustainability*. Before exploring the linkages between *tourism* clustering and

SECASs, it is important to discuss some foundation concepts related to tourism as an economic activity and to competitiveness within economics.

From a SECAS perspective, this research considers *economies* to be emergent properties of systems where continuous exchanges of different limited *offerings* between different limited agents who seek to satisfy their own needs (or *demands*) take place, *value* being a concept that derives from this definition and allows it to be operational. It understands *value* as being implicitly associated with offering (the value of what is on offer) and dependent on how limited, diverse and compatible are both what is on offer and what is being demanded at a certain time and place. By implying that both offering and demand are limited, this definition suggests that agents compete both when offering as well as when demanding. The arena where these relationships of competition and exchanges take place is referred here as the *market* or the *marketplace*, whilst those agents who demand will be referred to as *buyers* and those who offer as *sellers*.

Many are the cases in which exchanges are only possible when multiple agents are involved (those cases in which offering and demand can only generate exchanges if these are conducted collective), giving rise to the appearance of currencies, or trading credits. Currencies are usually widely accepted by agents within the same economic system and are a means to other future exchanges. Despite being related, currency and value are different concepts. Because currencies are used as a virtual representation of what they can be exchanged for, currencies also portray a value for those who offer them and those who demand them, the value of a certain offering in a certain currency being expressed as a price. However, the terms purchasing and selling currency are only generally used when different currencies are being exchanged for one another. In order for an economic exchange to occur, agents involved must agree on a common price for whatever is being exchanged. Reaching an agreement will depend on how much both agents value what is being exchanged. According to *Porter* (2004) being competitive is of key importance for those agents who offer, the *offering* perceived value by those who demand being directly linked with how competitive those who offer become. He classifies the sources of value as being linked to the *differentiation* of the *offering* in regards to three concepts: *innovation*, *price* and *focus*. Following his logic, within a certain market, demanding agents compare different exchange alternatives according to how unique and capable of satisfying their needs the available offerings are and under what prices the exchanges are expected to occur.

Using a similar logic, but slightly different terminology, *Pine* and *Gilmore* (1999) offer a relevant contribution to the understanding of the progression of economic offering by exploring their different nature (commodities, goods, services, experiences and transformations) and how they relate to innovation (from undifferentiated to differentiated competitive positions), focus (from irrelevant to relevant to the needs of customers) and price (from

market to premium). *Table 1* illustrates *Pine* and *Gilmore*'s suggestion that the different economic offerings could be placed in a continuum where commodities and transformations are the extremes representing the highest levels of commoditisation (in which the focus is on what is being offered and therefore all buyers receive very similar offerings from different sellers on similar exchanges) and customisation (where each buyer undergoes a different transformation by means of the economic exchange, even when they all purchase the same offering from the same seller under similar conditions).

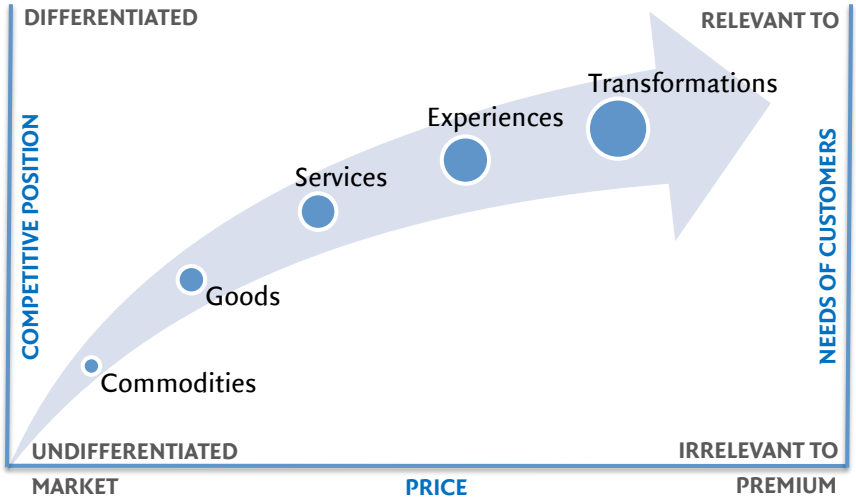
Table 1 | Economic Distinctions

Economic Offerings	Commodities	Goods	Services	Experiences	Transformations
Economy	Agrarian	Industrial	Service	**Experience**	**Transformation**
Economic Function	Extract	Make	Deliver	**Stage**	**Guide**
Nature of Offering	Fungible	Tangible	Intangible	**Memorable**	**Effectual**
Key Attribute	Natural	Standardised	Customised	**Personal**	**Individual**
Method of Supply	Stored in bulk	Inventoried after production	Delivered on demand	**Revealed over a duration**	**Sustained through time**
Seller	Trader	Manufacturer	Provider	**Stager**	**Elicitor**
Buyer	Market	Customer	Client	**Guest**	**Aspirant**
Factors of Demand	Characteristics	Features	Benefits	**Sensations**	**Traits**

Source | Adapted from Pine and Gilmore (1999, p. 170)

Figure 23 presents how *Pine* and *Gilmore* associate each type of economic offering with the three sources of value suggested by *Porter*. According to them, individual sellers have the most control over prices for transformations because those are highly customised and innovative when compared with alternative options of economic exchange. On the other hand, because commodities are the least focused on buyer's needs and their characteristics hardly differ from one seller to another, their prices are highly controlled by how much is on offer and how much is being demanded. In other words, by offering very customised transformations, a seller becomes the only agent to offer something that is highly sought after by specific buyers, being in control of a monopoly that renders greater control of prices.

Figure 23 | Progression of economic value



Source | Adapted from Pine and Gilmore (1999, p. 22)

If one is to discuss *TD sustainability* through an economic perspective, then understanding what constitutes the economic offering that tourists seek is of extreme importance. This becomes even more evident if one seeks to evaluate how different tourism development models contribute in less or more extent to the distribution of economic benefits from central (or tourist originating areas) to peripheral (or local destination areas).

Depending on one's perspective of *TD*, one might consider it targets the provision of different types of economic offering. When a destination targets its capacity to offer sun and beach *tourism*, it is in fact offering commodities. The same goes for those that are shopping destinations, where the main motivation for travellers is the purchase of goods for their availability and lower prices. Destinations can also become service providers, the case of many central cities offering business and health services to travellers residing in smaller cities or settlements. However, as pointed by *Sharpley* and *Stone* (2011, p. 2), it "has long been recognised and considered within the academic study of tourism: that to consume tourism is to consume experiences; moreover, that tourist experiences are not uniform, even within specific *contexts* and places". For instance, if the definition of a beach with good waves for surfing (commodity) is something that can be shared with reasonable consensus by many different surfers, the type of surfing experience that this same beach can provide to different surfers can be of an entirely different nature. Personal experiences will involve the kind of connection each surfer is able to establish with the destination and the kind of surf culture promoted by this same destination, which can be less or more embracing of newcomers. Finally, destinations can also focus on the provision of transformations. If experiences help define one as a being, transformations allow one to become an individual. By being a source of novelty in terms of provision of different *contexts*, values and lifestyles,

destinations can act as a catalyst for personal transformations. The greater the transformation, the more part of someone's existence, and therefore more valuable, a place becomes.

Despite tourism certainly involving the exchange of all different types of economic offerings suggested by *Pine* and *Gilmore*, destinations can still be more or less focused on the provision of offerings that refer to these different types. Following this logic, by focusing on more commoditised offerings, destinations become less competitive in attracting tourists, and therefore retain lesser control over the type of tourism they are willing to develop. By focusing on more customised offerings, destinations retain greater control of the type of tourism development that takes place and consequently of the types of tourists that are attracted and the prices that are charged.

Joseph Campbell's (1993) *Hero's Adventure*[20] concept is perhaps a great metaphor to the role that *tourism* can play as a tool for self-transformation. According to him, mythology is mostly not based on historical events or on the ways ancient civilizations tried to explain the origins of the world, but are actually metaphors to the process of self-discovery and becoming individuals that humans are subject to. In his logic, being a hero is being capable of breaking the strings that were tied throughout our development or education process that conform us to the current system (in other words, the embodied structures discussed in this chapter's section on S&A). In order to develop this self-awareness of who we are – and not what we are expected to be, *Campbell* suggests there must be *rupture*. According to him, it is only through *rupture* that one can look back at one's own situation from an outside perspective and become more critical and therefore freer. By offering an opportunity to break the strings with one's daily routine, *tourism* could be understood as a tool for awareness and self-transformation. If processes of self-transformation can result in changes of behaviour, *tourism*, therefore, could provide tourists and locals with wider views of the world leading to behaviour aligned to more sustainable models of development. It could be a vehicle for the spread of new trends at the socio-technical landscape level (creating windows of opportunities at the regime level) while also fostering the development of niche innovations by approximating different agents.

Processes of self-transformation rely on experiences, the same way experiences rely on services and services rely on goods, which rely on commodities (Pine & Gilmore, 1999). If a tourist's process of transformation therefore relies on a plethora of commodity traders, goods manufacturers, service providers, experience stagers and transformation elicitors, guaranteeing the orchestration of so many agents in a way that the most value is added to the tourist economic offering becomes a central goal. It is within this scenario and through a *CAS* approach that this section discusses

[20] Also referred to as *Hero's Journey*.

the concept of *tourism clusters*. According to *Porter* (1998b, p. 197) "clusters are geographic concentrations of interconnected companies, specialized suppliers, service providers, firms in related industries, and associated institutions (...) in particular fields that **compete** but also **cooperate".** He further adds that a "cluster allows each member to benefit as if it had greater scale or as if it had joined with others without sacrificing its flexibility" (Porter, 1998a, p. 81).

> *"The general assumption behind the **clustering models** is a step **beyond** the simple **benefits** to firms and communities that can be **explained by** economic **specialization**. Clustering is predicated by the notion that the co-location of like firms will produce a range of **synergies**, which if captured, may enhance the **growth of market size**, **employment and product**. (...) The **Porterian** model relies on the conventional notion that a **co-location** of like industries in a geographic concentration can **produce multiplier effects** (economic) and consequent social impacts (**externalities**)" (Michael, 2007, p. 22).*

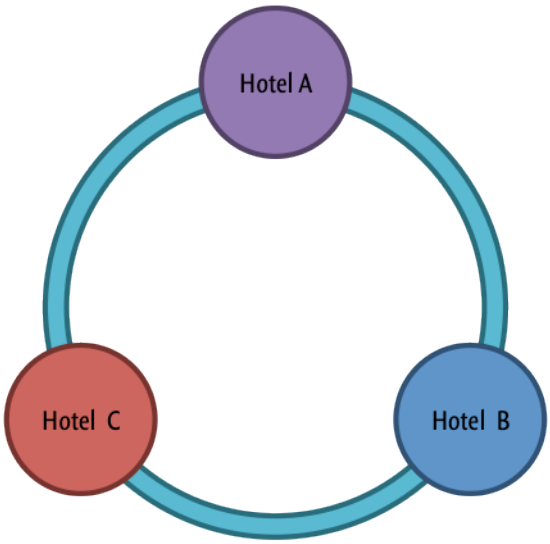
Looking at economic clusters from a *CAS* perspective, one can infer that geographic concentration can enhance the number and types of relationships between different agents, or as Boari, Odorici, and Zamarian (2003, p. 469) suggest, "localization fosters both cooperation and competition among firms, thereby supporting the competitive advantage of the cluster and of the individual firm". The concept that "in successful clusters, there is usually both competition and cooperation" (Yaw, 2005, p. 121) reaffirms these types of relationships as system driving forces. Resulting synergies arising from relationships of *C&C* can be understood as emergent system-wide properties that can provide self-reinforcing and self-moderating feedback to the system's structure and agency. The multiplier effect is another example of an emergent property resulting in self-amplification of economic relationships, whereas externalities of an economic, social or ecological order can also be understood as resulting feedback processes that can be of self-moderating or self-reinforcing nature. Within *tourism*, the concept of economic clustering has been explored as a way to make sense of the web of relationships that arise through the process of *TD* in tourist destinations (see Lazzeretti & Petrillo, 2006; Michael, 2007). It is also considered a strategy for tourism development by suggesting the types of relationships that can lead to certain desired synergies and externalities[21]. In that respect, *Michael* (2007) has identified three dimensions of clustering within tourism development: horizontal, vertical and diagonal.

Michael (op. cit.) suggests horizontal clustering can be understood as processes in which similar types of businesses co-locate in the tourist destination. As a result of this co-location, different types of *C&C* might take place, leading to opportunities to increase the competitiveness of the destination as a whole, as well as of its individual firms. On one hand,

[21] See Beni (2012) and Dantas Amor Garrido (2001).

spatially concentrated scale could lead to specialisation through innovation and focus, possibly resulting in a destination with increased diversity of its tourist offering. On the other, it could also present opportunities for cost reduction to individual businesses through cooperation, resulting in more competitive pricing and larger budgets for investment in innovation. This could occur by shared access to resource pools and increased buying power through joint negotiations conducted with suppliers – a cohesive enough group of hotels can jointly purchase supplies at lower costs than they would if negotiating prices on an individual basis. Overall, horizontal clustering seems to bring an opportunity to multiply the effects of positive externalities and to share the costs of negative ones. *Figure 24* illustrates tourist horizontal clustering within hotels in a single tourist destination.

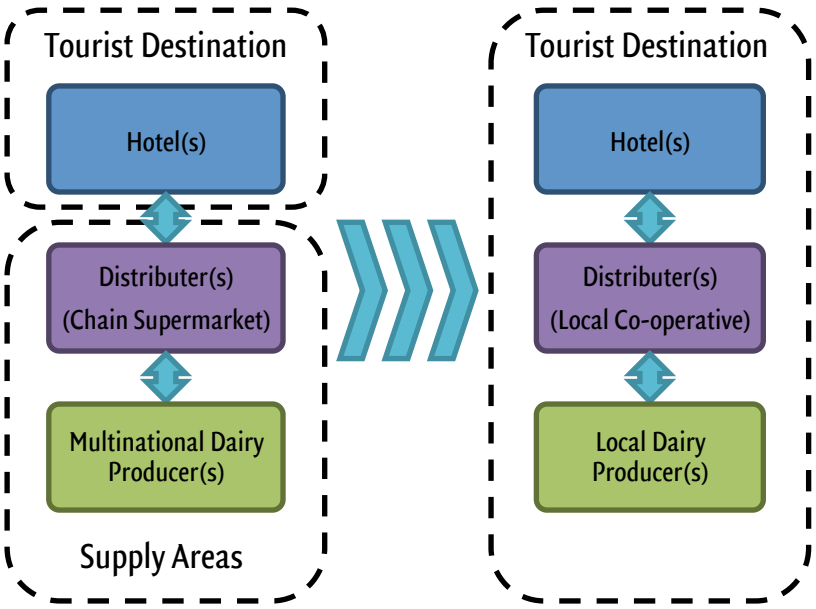
Figure 24 | Example of a tourist horizontal clustering



As for vertical clustering, *Michael* (op. cit.) refers to the co-location of businesses operating at different levels of the tourism supply (or added value) chain. The opportunity to integrate different levels of the added value chain could enhance specialisation, minimize "logistics and distributional costs, and may help to concentrate labour supply, workforce skills and market information" (Michael, 2007, p. 26). It is important to point that horizontal and vertical clustering are processes that may support one another – by spatially concentrating a large number of similar businesses, horizontal clustering may foster the scale needed for the establishment of local suppliers. The more internalised in the tourist destination the supply chain is, the greater the multiplier effect of tourism in the local economy. By possibly fostering complementary economic sectors, *tourism* clustering could result in a local economy that is less dependent on *tourism* and more diversified. *Figure 25* illustrates the concept of vertical clustering in which a large enough number of hotels make it feasible for the establishment of local dairy producers that can supply local products that will be used in the preparation of breakfast to be offered to guests. The local produce may not

only diminish transportation costs and reduce carbon emissions, but may also offer extra added value to the offer of accommodation by helping to put together an experience that is regarded as more authentic and capable of carrying a local identity. By internalising part of the supply chain in the tourist destination, vertical clustering may also lead to a greater multiplier effect on the local economy.

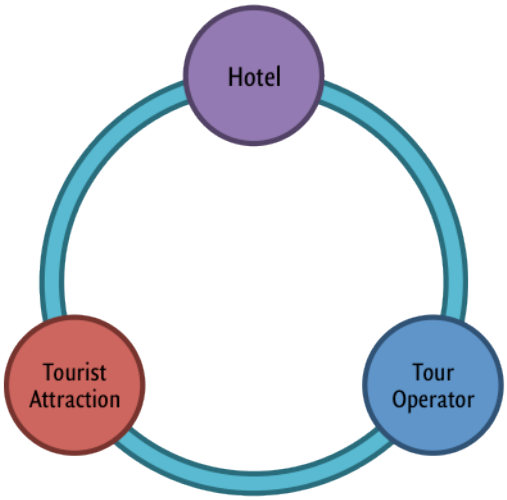
Figure 25 | Example of a vertical tourist clustering



Michael (2007, p. 26) refers to diagonal clustering as "an increasing concentration of complementary (or symbiotic) [businesses,] [...] [where] each firm adds value to the activity of others, even though their products may be quite distinct and clearly belong to other industry classifications". *Figure 26* presents an example of tourism businesses that could take part in a process of diagonal clustering. By establishing closer linkages, these businesses can create "a bundle of separate products and services that the consumer effectively purchases as a single item" (ibid). If on one hand, "[t]he co-location of complementary providers adds value to the tourism experience; [...] conversely, the absence of key services will probably limit the growth of existing [businesses]" (ibid).

The three dimensions of clustering suggested by *Michael* (op. cit.) can be understood as complementary and capable to foster one another. By bringing together the different providers of the tourist experience, diagonal clustering may cater for the provision of tourist experiences that are more cohesive. If this cohesion is associated with a reasonably unified effort to translate local differentials into the experience, then the resulting offer may be perceived as more authentic by portraying a local identity. The more cohesive and authentic the experience, the more competitive the destination's tourist offering is likely to become.

Figure 26 | Example of diagonal tourist clustering



However, not all tourist businesses can co-locate in tourist destinations. By linking tourist origin and tourist destination areas, *tourism* depends on both outbound and inbound *tourism* businesses that interact on a regular basis, despite their location differences. Trying to bridge this location gap, *tourism* fairs and exhibitions are organised every year with the aim to temporarily co-locate *Destination Marketing Organisations – DMOs* and inbound and outbound *tourism* business so as to generate synergies that can receive ongoing support and be expanded by non-spatialised networks such as the internet during the rest of the year. As suggested by *Dantas Amor Garrido* (2001), a cohesive community of inbound and outbound *tourism* businesses requires greater support of networks that can enhance the interaction of spatially distant agents.

Resilience, Sustainability and Tourism Development

In order to relate *SECASs* to the sectoral, local and global dimensions of tourism development sustainability, the concept of resilience is now further expanded. By being adaptive, *SECASs* can undergo certain degrees of structural changes that could allow them to maintain their functions when impacted by other systems or environmental conditions. According to *Norberg* and *Cumming* (2008, p. 2), this is a self-organisational process. However, if the type and degree of disturbance posed to a system is above certain *thresholds*, self-organisation can lead to regime shifts by means of self-reinforcing and self-moderating processes[22]. Considering that, once a regime shift has taken place, the removal of the pressures that have caused the shift cannot guarantee that the impacted system will bounce back to its previous regime, "the degree of disturbance a system can handle before a

[22] As discussed earlier in the section dealing with *SECASs* and the *MLP* on socio-technical transitions, self-reinforcing and self-moderating processes are emergent properties connected to self-organisation.

regime shift takes place" is of great relevance and according to *Norberg* and *Cumming* (2008, p. 3) can be understood as the system's resilience. As pointed in *Chapter 1*, *Holling* (1973) suggests resilience is complementary to two other dimensions of adaptation: the system's potential (or limits) and the system's connectedness (or the degree to which a system can self-manage its future). While the potential dimension of adaptation sets the limits for what the system can become in terms of a feasible functional structure, the connectedness dimension relates to the system's capacity to undergo the necessary processes of change to get there.

If, as discussed earlier, we have reached the *Anthropocene*, then the amount of pressure human systems have put on natural systems and the capacity of these systems to absorb these pressures without undergoing regime shifts becomes central to the concept of *sustainability* of human development. If natural and human systems are highly connected and can be understood as social-ecological systems, then by provoking regime shifts in natural systems, through feedback processes human systems are likely to be forced to undergo regime shifts too. However, as pointed in *Chapter 1*, different regimes can lead to different population domains of attraction, which include not only stable numbers and unstable cyclical numbers, but also extinction. This conclusion by no means infers that, from a human development sustainability perspective, all regime shifts are undesirable. Certain regime shifts in human systems may be key to prevent undesirable regime shifts in natural systems as a means of *mitigation* – e.g. a socio-technical transition to energy generation regimes that reduce carbon emissions may mitigate climate change. The same way, regime shifts in current *human systems* may be key to *adaption* to new regimes in *natural systems*.

A key question that remains unanswered is, therefore, to what extent the current global SECAS can self-manage its future in a way to secure its resilience through regimes that lead to the *sustainability* of human development. In other words, can the current *human* and *natural system* structures allow processes of self-organisation and regime shifts that will not lead to the extinction of the human species?

If *self-organisation* is a key component of resilience leading to both structural changes and regime shifts through self-moderating and self-reinforcing processes, then the study of the *dynamics of self-organisation* becomes central to the study of SECAS. If *self-organisation* relies upon *structure* and *agency*, which are, in turn, connected to relationships of *competition* and *cooperation* among system agents, then the study of their interplay seems a relevant starting point to dealing with the above question.

If humans are reliant on SECASs functions to satisfy their needs and, consequently, to secure their survival, then the way SECASs *emergent properties* influence the ability of the system to perform these functions is also relevant.

In that respect, the identification of the necessary functions and ways to assess them is as relevant as understanding the way emergent properties can influence these functions. From a human perspective, relevant system functions can be understood as those providing access and allowing the processing, stock, distribution, consumption and discharge of resources such as matter, energy, agents and information. Being open systems, local SECASs do not only rely on internal processes. Their resilience depend on their capacity to maintain the functions that satisfy local agents' and local subsystems' needs through internal processes and exchanges with outer systems; their capacity to stock internally and externally being complementary to that.

By interfering with self-organisation processes in tourist destinations, different tourism development models may interfere with the resilience of local SECASs in different degrees. One way to investigate this relationship is by looking at how certain tourism development models impact the way local structures and agency come about. Another is by looking at how competition and cooperation are established among local and external agents involved with the destination and their impact on key local system functions. From a global perspective, tourism is a relevant *phenomenon* to investigate, because it can be understood as the manifestation of an *emergent property* of the global SECAS. By increasing connections, tourism helps to create bridges between different network communities. As an emergent *phenomenon*, tourism is driven by the excessive homogenisation of concentrated human urban networks and the need to gain access to diversified networks. Conversely it can serve as a means of reproduction of this process of homogenisation or serve as a catalyst for innovation and diversification. By being based on the movement of tourists around the globe, tourism can also lead to differentiate spaces, by defining areas that are tourist originating, tourist destination, tourist transit, and non-tourist areas.

The *global nature conservation movement* described in *Chapter 1* can also be considered an *emergent property* of the global SECAS. It leads to self-reinforcing and self-moderating processes that affect the way different agents relate within the SECAS. It, therefore, tries to regulate the way global human systems interact with global natural systems in recognition of the interconnectedness and limitations of both systems. One way this emergent property manifests is through the development and application of rules that differentiate space in regards to how human systems are allowed to interact with natural systems: in other words, the establishment of protected areas. These can be subject to protection schemes that range from locally devised ones to regional, national and global ones. *World Heritage Listing – WHL* is an example of a global protection scheme that aims to protect areas the system recognises as being of "outstanding universal value". Despite being a global strategy, *WHL* results in the protection of local (or at most, regional) areas, dividing the global space into listed and non-listed areas.

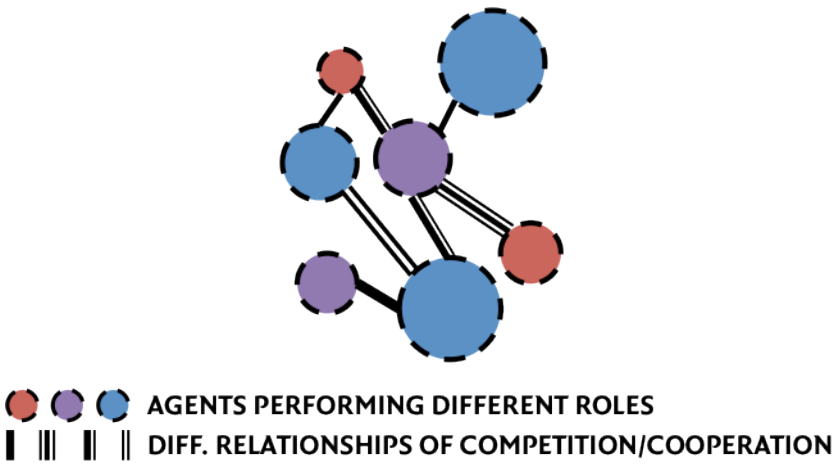
By imposing restrictions and conditions to the way a protected local SECAS can self-organise and therefore function, on one hand, it is expected that *WHL* (just like *tourism*) will influence the *resilience* of the local SECAS in different ways. On the other hand, it is also expected that, through a feedback process, these restrictions and conditioners will influence the way local SECASs interact with the global SECAS. This is because of the raising need to establish specific interactions between the two systems for the fulfilment of processes that no longer can take place locally, but that generate outputs that are needed by local agents (food production is an example). *Tourism* being a social *phenomenon* and an economic activity that relies on the interaction between *human* and *natural systems*, it is expected that the model of *TD* manifested in a destination will be greatly influenced by protected area schemes that are implemented in that same destination, including that of *WHL*.

Based on the above arguments, it is considered here that the academic understanding of human development *sustainability* can be advanced by further research into the relationships: between self-organisation (driven by competition and cooperation) and the resilience of local SECASs; between *TD*, *Protected Areas - PAs* and self-organisation; and between global and local SECASs. The way this thesis approaches this research gap is explored in more detail in *Chapter 4* as part of the research design. In order to facilitate the development of a research approach based on the concept of SECASs, a visual model of the concept was devised and is presented in the next section.

Conceptual Model used to frame the research

Considering that the concept of agents and the relationships established among them is key to the concept of SECAS, representing them was the first step in the development of the model. This is presented in *Figure 27*, which consists of an adaptation of *Figure 19* presented earlier in the section on *Networks*.

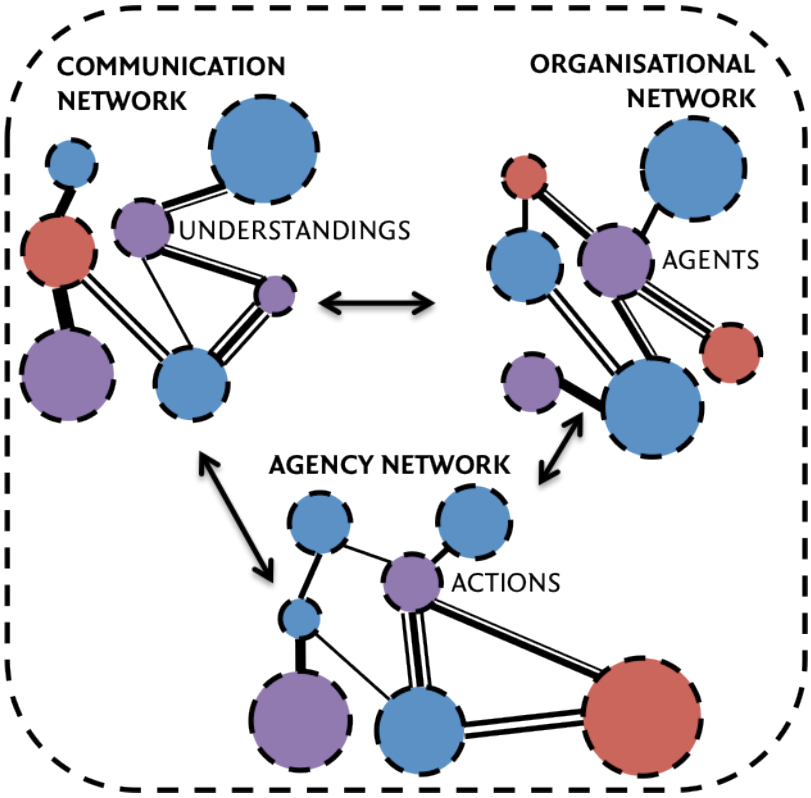
Figure 27 | Organisational Network



According to this representation, agents establish different types of relationships among themselves, leading to the definition of different roles. This thesis labels the structure arising from the establishment of relationships between agents as an *organisational network* because it organises agents in a way where each one plays a specific role within the system.

By establishing relationships and assuming specific roles, agents perform actions, which also portray relationships with one another. A certain action may reinforce other while being in conflict with another one, for example. A network of actions could therefore represent an *agency network*. However, in order for agents to relate to one another and act, there must be the exchange of information, or communication. Therefore, a *communication network* would relate different types of messages, that once again, can be aligned or in conflict. The greater the barriers for communication, the less connected the system becomes, both in terms of how actions and agents relate to one another. Overall, the organisational network, the agency network and the communication network are represented here as three interdependent networks of a single dimension of structure. Using the label suggested by *López* and *Scott* (2000) presented earlier, this thesis refers to this structural dimension as the *relational structure*. A summary of these concepts can be visualised through the observation of *Figure 28*.

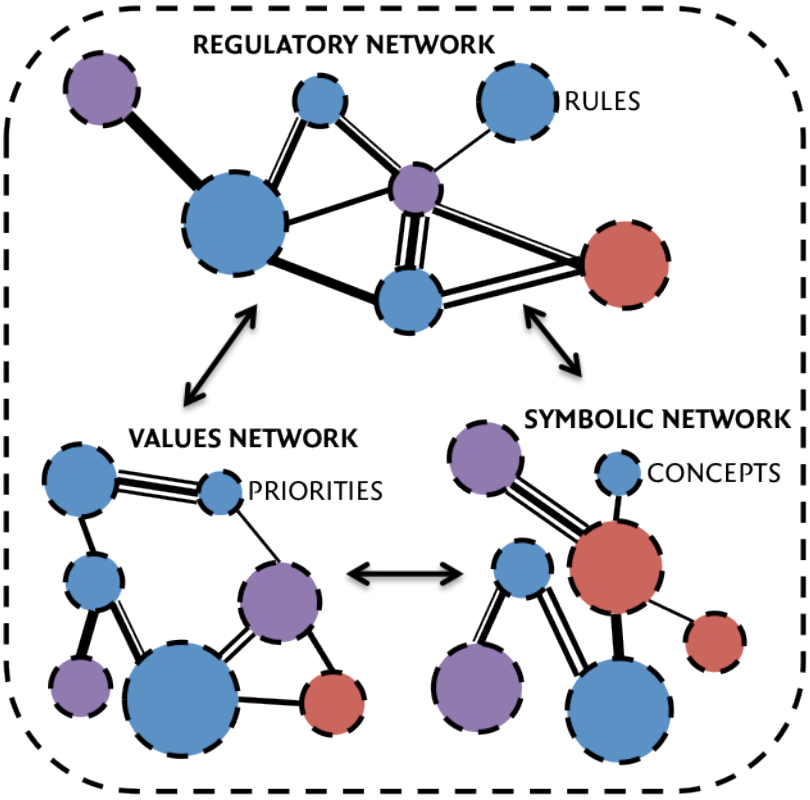
Figure 28 | Relational Structure



However, as self-organisation takes place, other networks emerge both as a result of and as a driver for the development of the relational structure. This

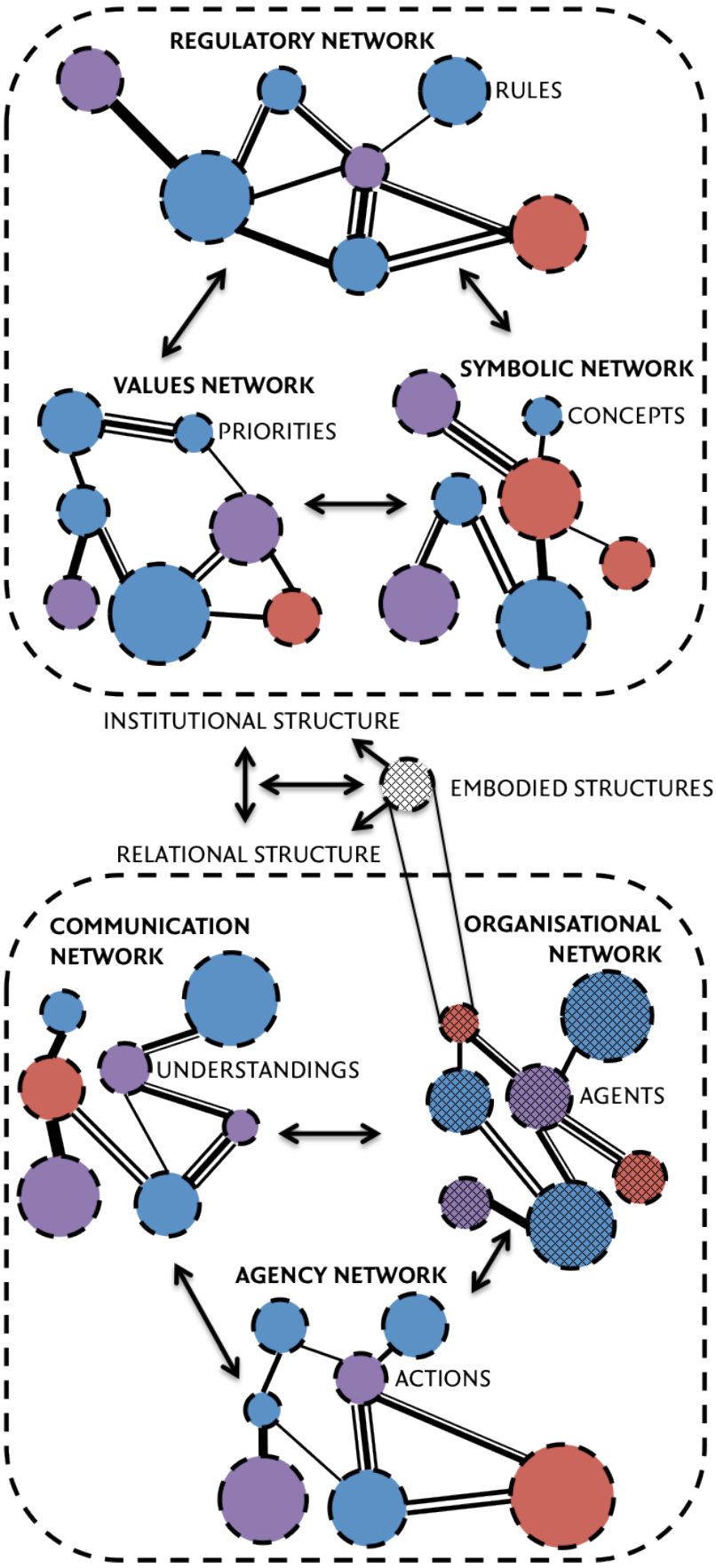
complementary structure is labelled by *López* and *Scott* (2000) as the institutional structure. Here, the institutional structure is understood as also comprising three networks, namely the symbolic network, the regulatory network and the values network. Overall, the institutional structure represents the elements that are shared by agents and that facilitate their interaction – it is about the emergence of patterns aiming at making the system more productive. The *symbolic network* links different kinds of concepts and is a tool for agents to grasp meaning. The more concepts are shared, the easier communication becomes and the more aligned agents' understandings of each other are. Concepts can be as substantive as names of objects (chair) or as abstract as names of ideas (*sustainability*). Usually, the more abstract, the greater the discrepancies in interpretation. The values network links different classifications of concepts aiming at guiding and facilitating decision-making within agents' interactions. It also translates into meaning, but of a different kind: how desirable or not something is supposed to be for the system to function. Therefore, it is a network linking different priorities. Once again, these priorities can be aligned or in conflict. The stronger democratic values are for a certain society, the more of a priority these will be when influencing agents' behaviour, for example. As for the regulatory network, this can be understood as comprising different rules aiming to set forth how agents are allowed or expected to act, interact and communicate. It is likely that the more regulated a system is, the less room for surprise or novelty, but the greater the system's potential productivity. Like the relational structure, the three networks that are part of the institutional structure are understood here as being highly interconnected and interdependent. Rules would emerge from priorities the same way they could influence them. Complementarily, rules would be dependent on shared concepts and could give rise to new ones. Concepts would be valued, the same way that their valuation would lead to the emergence of new concepts. The interplay between these three interconnected networks that are considered here as part of the institutional structure can be visualised by observation of *Figure 29*.

Figure 29 | Institutional Structure



As mentioned previously, institutional and relational structures are regarded here to be interconnected parts of the same *social structure*, represented in *Figure 30*. As suggested by *López* and *Scott* (2000), embodied structures are regarded here as important components of the social structure, representing what different agents absorb (or internalise) of the institutional structure, influencing the way they act, interact and communicate. Therefore, embodied structures comprise **rationales** (logic based on past experiences), **visions** (desired futures) and **perceptions** (views/understandings of the present). It is also understood here that different agents internalise different extracts of the institutional structure based on their accumulated sets of experiences of interaction with the rest of the system. Embodied structures can be considered the result of the interplay between institutional and relational structures at the same time these embodied structures feed back into those two.

Figure 30 | Social Structure



In *Figure 30*, the diagonal grids superposing the agents represent their embodied structures. In order to represent the relationships between the embodied structures and the relational and institutional structures, the embodied structure for one of the agents is magnified and brought outside of the domain of the relational structure. As agents' subsystems, the boundaries of the embodied structures are represented as dashed lines so as to infer that they are open.

So as to advance the development of the visual representation model of SECASs, allowing the consideration of new elements, the representation of the social structure was simplified. *Figure 31* portrays, as a vertical-horizontal grid, all the institutional and relational networks that are linked to the organisational network. It suggests that social structures operate within a certain environment (dark green background). Differentiated access to specific environmental resources by certain agents or groups of agents is considered here as a key driver for the emergent power relationships within the social structure.

Figure 31 | Contextualised Social Structure

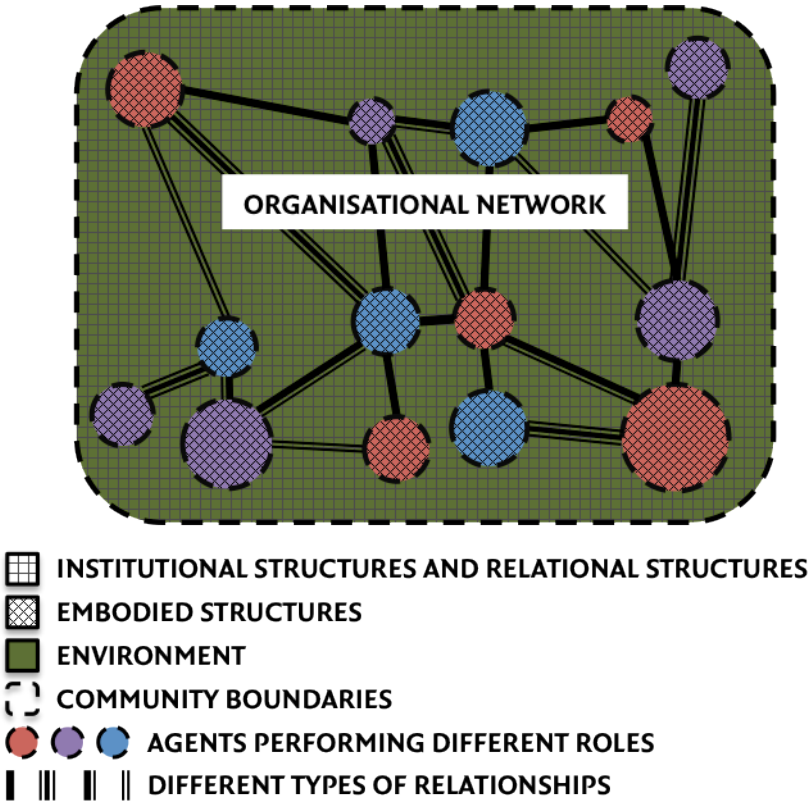
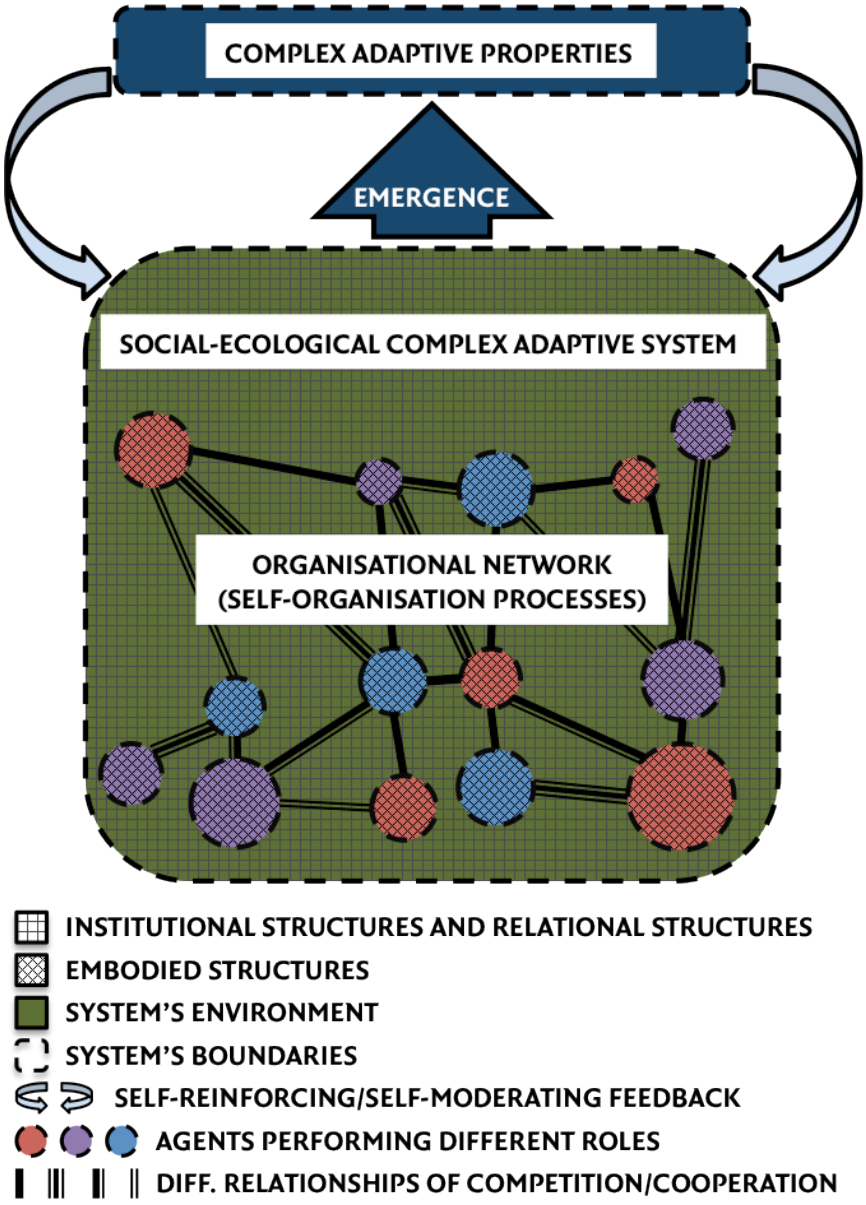


Figure 32 situates the social structure within the SECAS by portraying the emergence of complex adaptive properties as a result of processes of self-organisation. It also portrays the way the resulting emergent properties feedback into the process of self-organisation by means of self-moderating and self-reinforcing processes. The boundaries of the SECAS are represented as dashed-lines so as to portray it as an open system. The social-ecological

aspect of the system relies on the understanding that agents represent not only humans, but also other species that are interconnected through ecological processes. As for environment, it is understood here as the physical environment presenting its own physical processing of matter, energy and information. Despite the separation portrayed in the representation, it is understood here that physical and ecological processes are highly interconnected.

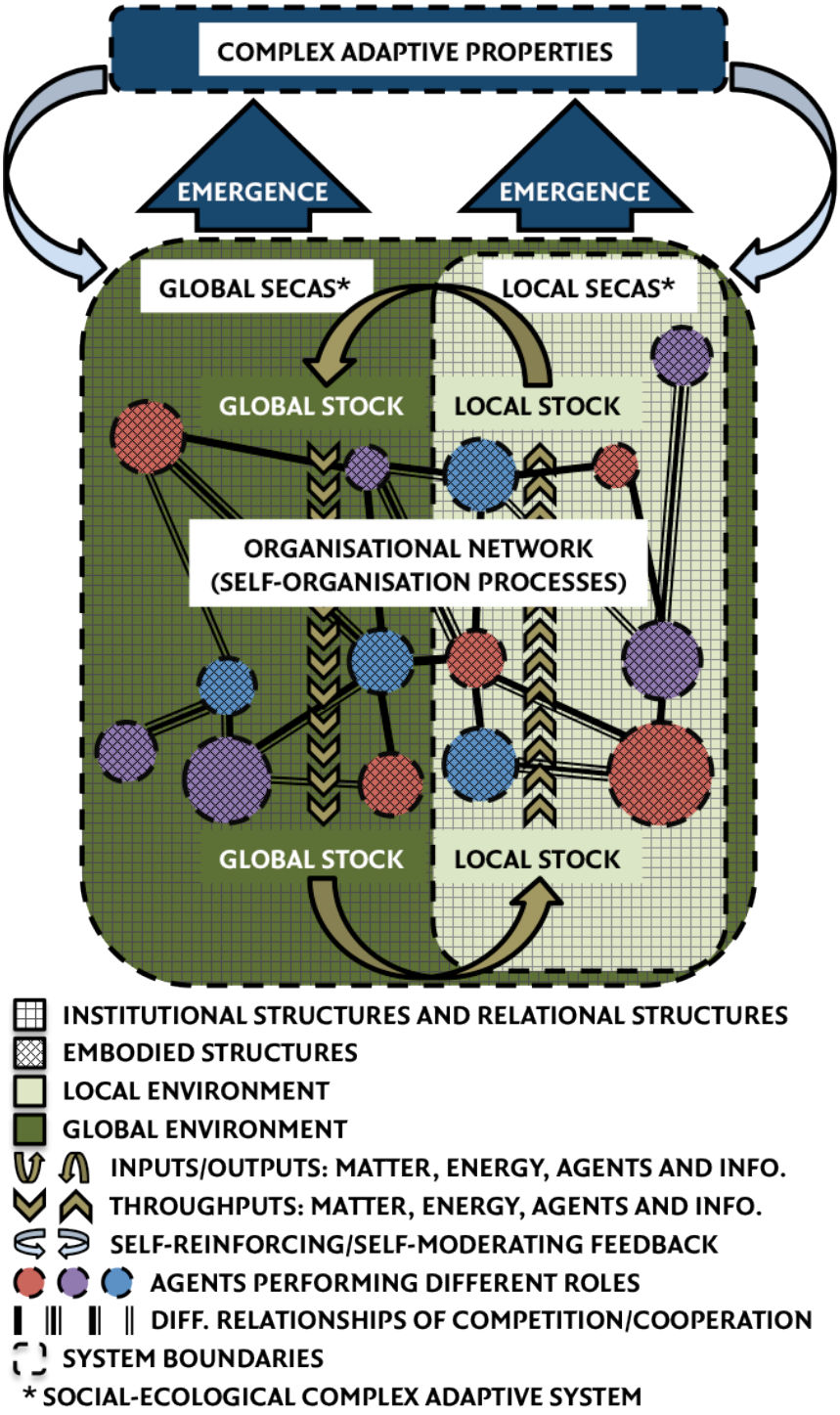
Figure 32| Social-Ecological Complex Adaptive System



In order to expand the model, *Figure 33* delineates the boundaries of a local SECAS while also portraying the way it relates to an overarching global SECAS, as suggested by Chu et al. (2003). According to the representation, flows of matter, energy, agents and information occur between the local SECAS and the global SECAS. This way, outputs of the global SECAS are absorbed as inputs by the local SECAS. Conversely, outputs of the local SECAS are

absorbed as inputs by the global SECAS. Inputs become part of a system's internal pool of resources whereas outputs are no longer part of this pool. Pools of resources can either become part of throughputs (or processes of transformation) or part of a stock. From a local SECAS perspective, the resources available internally constitute a local stock, and those available in the global SECAS constitute a shared, external global stock.

Figure 33 | Global-Local SECAS



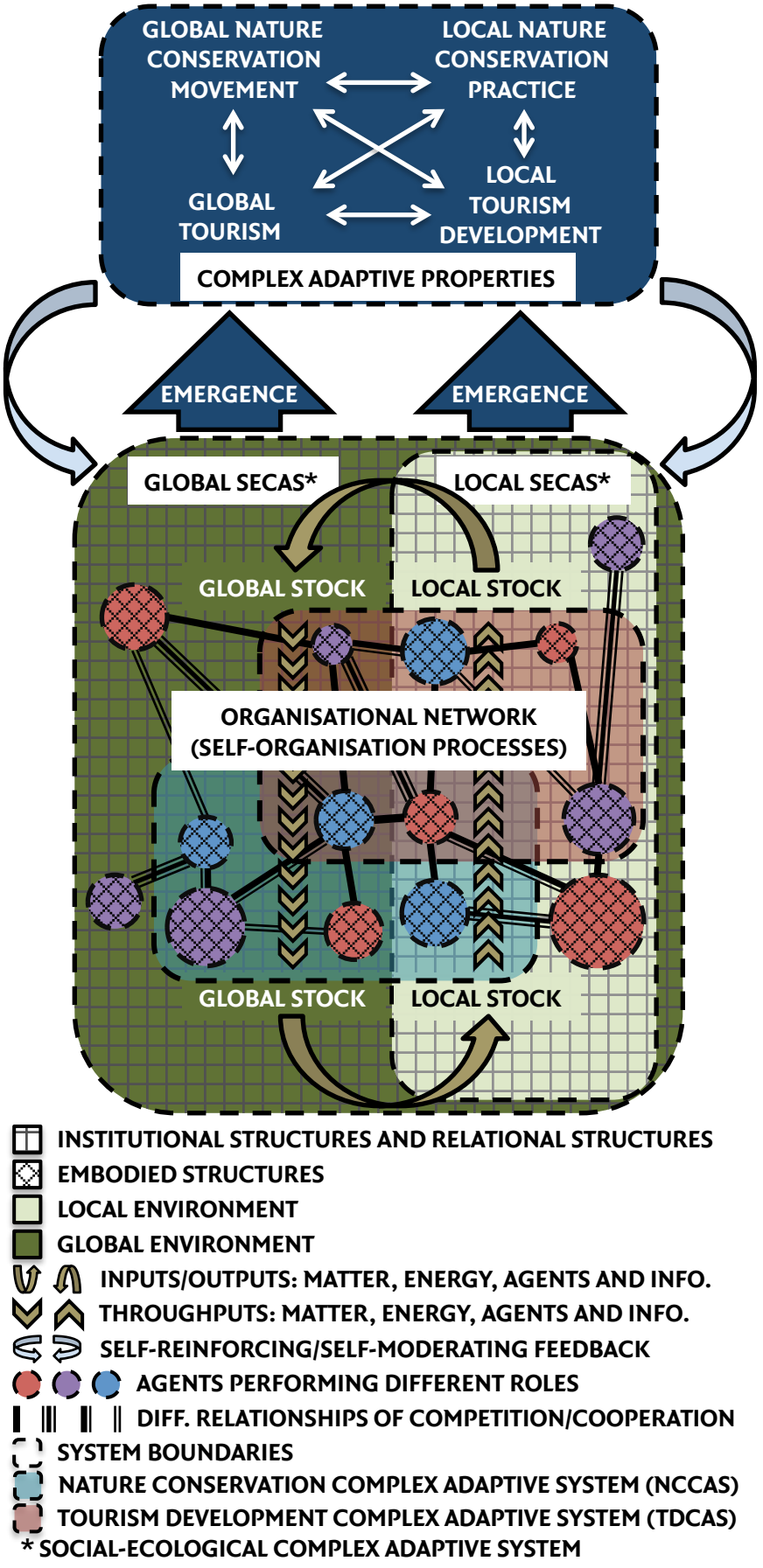
The last step in the development of the model regarded the consideration of emergent properties that were key for this thesis: the emergence and evolution of tourism and of the nature conservation movement in the global level; and the development of *tourism* and the incorporation of the nature conservation movement through policies and practices in the local level. *Figure 34* contextualises the model by portraying *tourism* and the nature conservation movement as emergent system properties as well as their resulting (and partially overlapping) organisational networks that are part of both the local and the global sections of the SECAS.

Chapter Conclusion

The current chapter explored the conceptual underpinnings of SECASs with the intent to shed light on the chosen research topic for this thesis and allow the development of the research design that is presented in *Chapter 4*. The study of concepts related SECASs allowed the critical development of a visual model that incorporates relevant aspects of the objects of study, namely *sustainability* and TD. Relationships of C&C were identified as a key *phenomenon* driving the process of self-organisation and were considered as core to this thesis. The evolution of *tourism* and of the nature conservation movement were considered to be the manifestation of emergent properties of the global SECAS that could influence relationships of C&C within local SECASs. One of the ways the conservation movement manifests is through the division of space into protected areas and non-protected areas. As for tourism, it manifests by the division of space into tourist originating, transit and destination areas and non-tourist areas. The concept of resilience proved a promising avenue for linking the concept of SECAS and that of sustainability and was understood as dependent on: the process of self-organisation of agents (based on C&C) and the resulting emergent complex adaptive properties and their feedback to self-organisation processes by means of self-reinforcing and self-moderating processes.

Key elements extracted from this chapter that were used in the development of the research design presented in *Chapter 4* include: C&C, TD, PAs, and the *sustainability* of local SECAS from a *resilience* perspective.

Figure 34 | Contextualised Global-Local SECAS



References

Beni, Mário Carlos (Ed.). (2012). *Turismo: planejamento estratégico e capacidade de gestão - Desenvolvimento regional, rede de produção e clusters*. Barueri: Manole.

Beritelli, Pietro. (2011). Cooperation among prominent actors in a tourist destination. *Annals of Tourism Research, 38*(2), 607-629. doi: 10.1016/j.annals.2010.11.015

Boari, Cristina, Odorici, Vincenza, & Zamarian, Marco. (2003). Clusters and rivalry: does localization really matter? *Scandinavian Journal of Management, 19*(4), 467-489.

Brandenburger, Adam, & Nalebuff, Barry. (1996). *Co-opetition* (1st ed.). New York: Doubleday.

Burt, Ronald S. (1992). *Structural Holes: The Social Structure of Competition*. Cambridge, MA, USA: Harvard University Press.

Campbell, Joseph. (1993). *The Hero with a Thousand Faces*. London: Fontana Press.

Chu, D., Strand, R., & Fjelland, R. (2003). Theories of complexity: common denominators of complex systems. *Complexity, 8*(3), 19-30. doi: 10.1002/cplx.10059

Cilliers, Paul. (1998). *Complexity and Postmodernism: Understanding Complex Systems* (1 ed.): Routledge.

Clauset, Aaron. (2011, Jun 24). *Networks.* Paper presented at the web.cecs.pdx.edu, Albuquerque.

Crutzen, Paul, & Stoermer, Eugene F. (2000). Have we entered the "Anthropocene"? *Global Change Newsletter*, 17-18.

Dantas Amor Garrido, Inez Maria. (2001). *Modelos Multiorganizacionais no Turismo: Cadeias, Clusters e Redes.* (Masters Thesis), Escola de Administração, Salvador. Retrieved from http://www.adm.ufba.br/sites/default/files/publicacao/arquivo/inez_maria_dantas_amor_garrido.pdf

Emirbayer, Mustafa, & Mische, Ann. (1998). What Is Agency? *American Journal of Sociology, 103*(4), 962-1023.

Folke, Carl. (2006). Resilience: The emergence of a perspective for social-ecological systems analyses. *Global Environmental Change, 16*(3), 253-267.

Geels, Frank W. (2011). The multi-level perspective on sustainability transitions: Responses to seven criticisms. *Environmental Innovation and Societal Transitions, 1*(1), 24-40. doi: 10.1016/j.eist.2011.02.002

Giddens, Anthony. (1984). *The constitution of society: outline of the theory of structuration*. Cambridge: Polity.

Giddens, Anthony. (1993). *New Rules of Sociological Method*. Cambridge: Polity Press.

Gunderson, Lance H., & Holling, C. S. (2002). *Panarchy: understanding transformations in human and natural systems*. Washington, DC: Island Press.

Holling, C.S. (1973). Resilience and stability of ecological systems. *Annual review of ecology and systematics, 4*, 1-23.

Jamal, Tazim B., & Getz, Donald. (1995). Collaboration Theory and Community Tourism Planning. *Annals of Tourism Research, 22*(1), 186-204.

Jerneck, Anne, Olsson, Lennart, Ness, Barry, Anderberg, Stefan, Baier, Matthias, Clark, Eric, . . . Persson, Johannes. (2010). Structuring sustainability science. *Sustainability Science, 6*(1), 69-82. doi: 10.1007/s11625-010-0117-x

Kim, W. Chan., & Mauborgne, Renée. (2005). *Blue ocean strategy: how to create uncontested market space and make the competition irrelevant*. Boston, MA, USA: Harvard Business School Press.

Koestler, Arthur. (1967). *The ghost in the machine*. London: Hutchinson.

Lacitignola, D., Petrosillo, I., Cataldi, M., & Zurlini, G. (2007). Modelling socio-ecological tourism-based systems for sustainability. *Ecological Modelling, 206*(1-2), 191-204.

Lansing, J. Stephen. (2003). Complex Adaptive Systems. *Annual Review of Anthropology, 32*(1), 183-204. doi: doi:10.1146/annurev.anthro.32.061002.093440

Lazzeretti, Luciana, & Petrillo, Clara S. (eds.). (2006). *Tourism local systems and networking* (1st ed. ed.). Oxford: Elsevier.

López, José, & Scott, John. (2000). *Social Structure*. Buckingham, Philadelphia: Open University Press.

Michael, Ewen J. (2007). *Micro-clusters and networks: the growth of tourism*. Oxford: Elsevier.

Mitchell, Melanie. (2009). *Complexity: A Guided Tour*. Oxford: Oxford University Press.

Murphy, Nancey C., & Stoeger, William R. (2007). *Evolution and emergence: systems, organisms, persons*. Oxford; New York: Oxford University Press.

Newman, Mark. (2010). *Networks: An Introduction* (1 ed. Vol. 1). Oxford, England: Oxford University Press.

Norberg, Jon, & Cumming, Graeme S. (2008). *Complexity theory for a sustainable future*. New York: Columbia University Press.

Pine, B. Joseph, & Gilmore, James H. (1999). *The experience economy: work is theatre & every business a stage*. Boston: Harvard Business School Press.

Porter, Michael E. (1998a). Clusters and the New Economics of Competition. *Harvard Business Review, 76*(6), 77-90.

Porter, Michael E. (1998b). *On competition*. Boston, MA: Harvard Businesss School Publishing.

Porter, Michael E. (2004). *Competitive strategy: techniques for analyzing industries and competitors* (1st Free Press export ed.). New York ; London: Free.

Sharpley, Richard, & Stone, Philip. (2011). *Tourist Experience: Contemporary Perspectives*. New York: Routledge.

Stones, Rob. (2007). Structure and Agency *Blackwell Encyclopedia of Sociology*: Blackwell Publishing.

Waldrop, M. Mitchell. (1992). *Complexity: the emerging science at the edge of order and chaos*. New York: Simon & Schuster.

Yaw, Fitzgerald. (2005). Cleaner technologies for sustainable tourism: Caribbean case studies. *Journal of Cleaner Production, 13*(2), 117-134.

Lord Howe Island

Chapter 4 | Planning the Journey

Methodological challenges and strategies

Following the literature review and the theoretical framework developed in chapters 1, 2 and *3*, the design elements for the research are now detailed. *Chapter 4* starts by presenting the overall *context* for defining the research focus that led to the formulation of the research questions. It moves to the choice of research approach, the choice of case studies, the identification of different levels of cases and the definition of the units of analysis and variables. It then presents how data collection and fieldwork were carried out. This is followed by a description of the methods employed for data analysis, the structure defined for the upcoming chapters as well as the material resources used for the research as whole. It concludes by presenting a diagram that summarises the overall methodological framework devised for the research.

Core ideas developed in the previous chapters were used throughout the design process. The concept of *sustainability* developed in *Chapter 1* led the researcher to adopt a holistic approach to the research design. Different dimensions of *Tourism Development – TD sustainability* explored in *Chapter 2* provided guidance to the definition of the *sustainability challenges* to be investigated. The concept of *resilience* along with the SECAS theoretical model developed in *Chapter 3* helped to structure the way results and discussion were organised in chapters 5, 6, 7, 8, 9, 10 and 11.

While, chapters 1 and 2 provided core concepts that clarified the meaning of key terms that are part of the research question, *Chapter 3* provided instrumental concepts that could make the research operational. Overall, the three chapters have informed the way research design decisions were made. In other words, if *Chapter 4* aims to define "what was being researched", "how the research was conducted", "where and when the research took place", "who was subject to the research" and "which aspects were the focus of the research", chapters 1, 2 and *3* provide the answer as to "why the choices in *Chapter 4* were made".

Overall Context for defining the Research Focus

In order to identify the overall *context* for defining the research focus, an exploration of the interfaces between planning and *Social-Ecological Complex Adaptive Systems – SECASs* was undertaken. Primarily, this exploration was carried out because the *sustainability* of local populations and the *resilience* of local social-ecological systems form great part of the planning discourse; ultimately, because, "[w]hile the fuzziness of 'sustainability' affects actions and behaviour in planning, 'complexity' influences our understanding of planning" (de Roo & Silva, 2010, p. 2). By doing so, complexity offers an opportunity to enhance not only the scientific development of spatial planning as an academic subject, but also the process of research design that targets planning related objects.

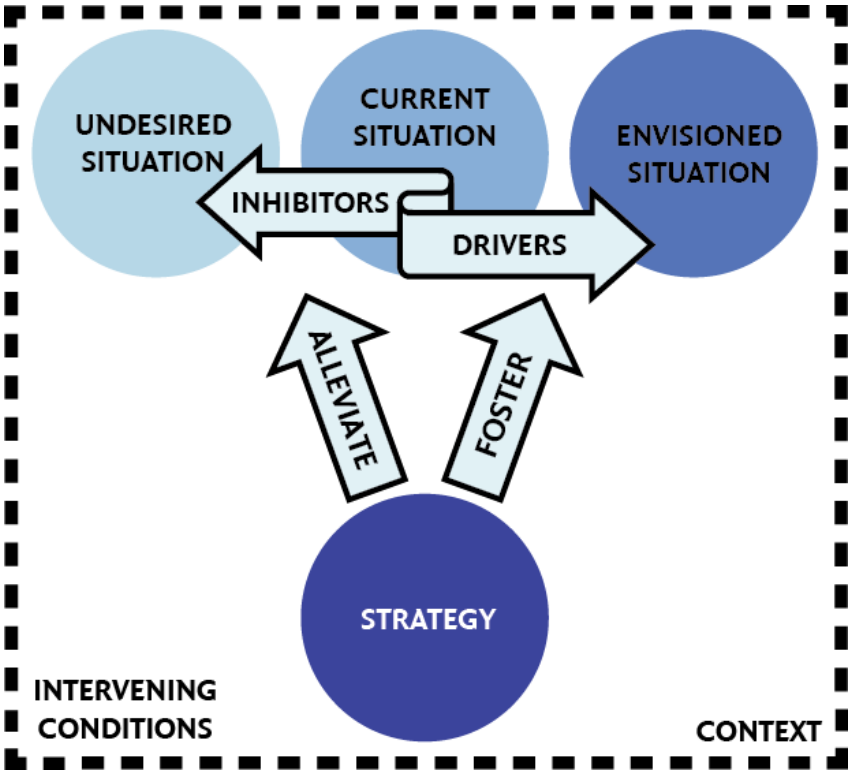
If spatial planning aims to identify what desirable and undesirable futures for delineated spatial areas are and design pathways leading to what is desirable and avoiding what is undesirable, then *sustainability transitions* as a research topic is inherently linked to spatial planning research. As argued in *Chapter 1*, the design of pathways that could lead to a transition to *sustainability* presents as much of a challenge as reaching consensus on the meaning of *sustainability* itself. Being a normative discipline by working with what is desirable and what is not, spatial planning also imprints a normative perspective on *sustainability transitions* when the two are studied as coupled areas.

The concept of *strategy* is key to planning. It objectifies a chosen pathway, making it possible to structure a series of actions or steps that are expected to lead to what is defined as desirable. From a planning perspective, the emergence of the nature conservation movement could be interpreted as a *strategy* aiming to inhibit types of human development that could lead to the extinction of humankind. Being very broad, the nature conservation moment as a *macro-strategy* gives rise to more specific *micro-strategies*, including *Localised Conservation – LC* through the proclamation of *Protected Areas – PAs*, of which *World Heritage Listing – WHL* is part. However, the rationale behind the proclamation of *PAs* derives from linear planning, by which the greater the number of *PAs* that are implemented, the greater the conservation of nature is expected. Nevertheless, looking at planning from a *SECASs* perspective, one might consider that the division of space in zones that are subject to different levels of protection not necessarily will lead to greater conservation of nature on the whole. Through the process of globalisation, *PAs* of the globe may end up exporting their environmental impacts to non-*PAs*. By doing so, they may also increase the demand for transport, resulting in greater global environmental impact. The extent to which localised protection contributes to greater global nature conservation seems to be linked to the feasibility of implementing local models of development that are more sustainable. From a *SECAS's* perspective, this feasibility may depend

on the restrictions imposed by the protection levels applied locally but also on the self-organisation processes in course at the local level.

Based on the above arguments and from a SECAS's perspective towards planning, questioning the way specific *strategies* can influence the processes steering human development seems to be a relevant research undertaking. *Figure 35* portrays 3 types of situations identified by planners during the planning process: the current situation, the undesired situation and the desired or envisioned situation. Differently to linear planning, it acknowledges the processes steering the ability to follow pathways leading to envisioned or undesired situations. Self-organisation processes driving communities to an envisioned situation are labelled here as drivers. Those leading to undesired outcomes are considered here as inhibitors. Acknowledgement of the role of drivers and inhibitors in steering local systems should lead to the design of strategies that aim to alleviate inhibitors and foster or enhance drivers. From a SECAS's perspective, it is expected that the success of the designed strategy will be influenced by factors that are external to the system (labelled here as *context*) and those characteristics of the local environment and local agents (labelled here as *intervening conditions*)[23].

Figure 35 | Overall Framework for Defining the Research Focus



[23] Later in this chapter, on page 137, *Figure 40* portrays the way *strategy*, *context* and *intervening conditions* are linked with the SECAS model developed in *Chapter 3*.

Research Focus

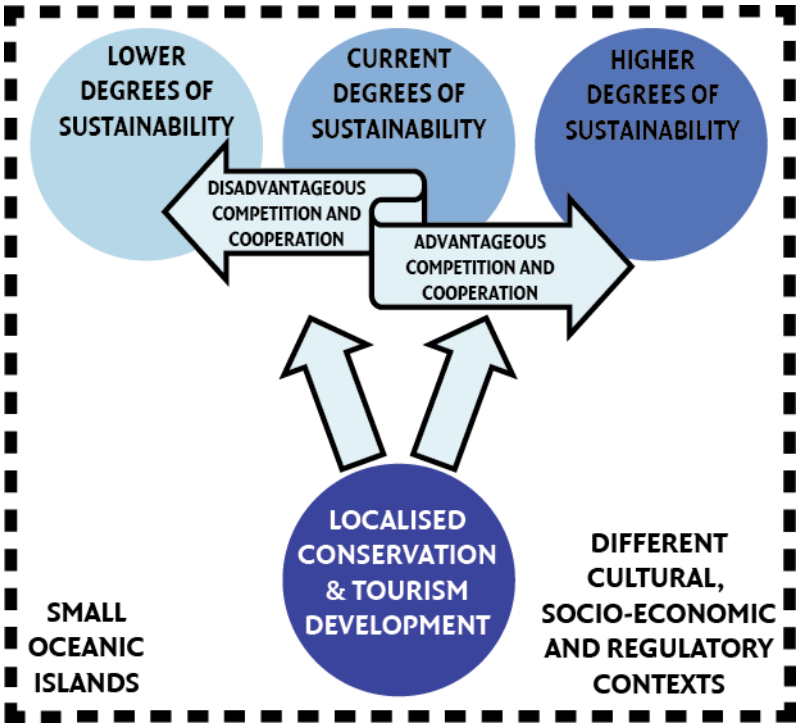
Based on the arguments presented in *Chapter 1* and on the framework presented in *Figure 35*, this thesis aims to contribute to the body of knowledge on the dynamics of sustainability transitions within tourism development in tourist destinations.

In order to pursue this aim, the present research focuses on:

- different **sustainability challenges** as the different situations or outcomes that must be worked on;
- the way different types of **competition** and **cooperation**[24] can act as **drivers** and **inhibitors** to the achievement of **higher degrees of sustainability** within tourism development; and finally
- how the specific strategies of ***Localised Conservation - LC*** (implemented through *Protected Areas - PAs* in *World Heritage Properties - WHPs* and **Tourism Development – TD** act upon these drivers and inhibitors in different socio-economic and regulatory *contexts* in the cases of *World Heritage* listed **small oceanic island tourist destinations**.

This is summarised in *Figure 36*.

Figure 36 | Research Focus



[24] Refer to page 81 for a detailed account on the relevancy of competition and cooperation to the study of SECASs and consequently to sustainability transitions.

Formulation of the Research Questions

The research focus just presented was used in the formulation of the research questions and the research design presented ahead.

This thesis sought to answer the following primary question:

1 How do different types of interpersonal and interorganisational relationships of **competition** and **cooperation** among tourism stakeholders of small oceanic islands listed as *Natural World Heritage Properties – NWHPs* influence the **sustainability of their tourism development**?

And the following secondary questions:

2.1 How do ***Localised Conservation – LC*** (implemented through *Protected Areas - PAs* in the *context* of *World Heritage Listing - WHL*) and **Tourism Development – TD** influence **competition** and **cooperation** among stakeholders of *World Heritage* listed small oceanic island tourist destinations?

2.2 What are the main **historical events** affecting the way these stakeholders **compete** and **cooperate** and **how**?

2.3 How do intrinsic **environmental and demographic characteristics** of these destinations affect the way **competition** and **cooperation** take place?

2.4 How do the **cultural, socio-economic and regulatory *contexts*** of these destinations **interfere** with these **relationships**?

These questions were motivated by the need to better understand ways to effectively implement higher degrees of *sustainability* within the development of tourist destinations, being significant to all of those involved with urban and regional planning of areas capable of receiving tourist flows. They are also significant to those involved with policy making processes related to the way *tourism* is managed at a transnational, national and state levels, as higher degrees of *sustainability* of *TD* in destinations implies control of spill-over effects and *consequences* to other non-tourist areas.

Whilst the rationale for choosing competition and cooperation as the focused drivers and inhibitors derives from what was argued in *Chapter 3*, the reasons for choosing *WHL* as the global *LC strategy* and small oceanic islands as the case study sites are explained later in this chapter.

Choice of Research Approach

Table 2 is a summary of the references used to structure the research design for the development of this thesis. References in blue are books and those in green are scientific journal articles about previous research conducted using a case study approach design. The rationale behind this structure is explained along this section and the ones following.

Table 2 | Research design references for the research

Reference	Research Approach			Data Collection						Analysis	
	Case Study Approach	Multiple / Comparative Case Study	Qualitative Inductive Research	Multiple Sources	Semi-Structured Interviews	Snowball + Purposive Sampling	Theoretical Sampling	Direct Observation	Secondary Data	Triangulation	Grounded Theory Methods
Yin, 2009	✓	✓	✓	✓	✓			✓	✓	✓	✓
Xiao et al., 2006	✓	✓	✓								✓
Ozcan et al., 2009	✓	✓	✓	✓	✓			✓	✓	✓	
Beaumont, 2010	✓	✓	✓	✓	✓			✓	✓		
Grangsjo et al., 2006	✓		✓	✓					✓		✓
Oppermann, 2000	✓		✓	✓						✓	
Patton, 2002	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Baldacchino, 2008	✓		✓	✓	✓			✓			
McCall, 1994	✓		✓	✓	✓			✓			
Decrop et al., 2005	✓		✓		✓		✓				✓
Williams, 2005	✓		✓		✓						
Scott et al., 2008	✓	✓	✓		✓	✓					
Glaser et al., 1967	✓		✓	✓	✓			✓	✓		✓
Glaser, 1978	✓		✓	✓	✓		✓	✓	✓		✓
Connell et al., 1997	✓	✓	✓		✓		✓				✓
Stevenson et al., 2008	✓		✓	✓	✓	✓			✓		✓
Kim et al., 2009	✓		✓		✓	✓					✓

A case study approach was selected because it 'allows investigators to retain the holistic and meaningful characteristics of real-life events – such as [...] organi[s]ational and managerial processes' (Yin, 2009, p. 4). As pointed by Xiao et al.'s (2006) in his analysis of tourism case study research published in four specialised journals (*Annals of Tourism Research*, *Journal of Travel Research*, *Tourism Analysis* and *Tourism Management*), being appropriate for holistic

studies is one of the reasons why case studies have been so widely used in tourism research.

The present research can be considered intensive[25] research that was conducted mostly as an inductive qualitative[26] research in the format of an embedded multiple case study. As pointed by Ozcan et al. (2009, p. 249),

> *"[i]nductive studies are especially useful for developing theoretical insights when research focuses on areas that extant theory does not address well and when the research question is a process one [...]. Multiple cases are effective because they enable collection of comparative data, and so are likely to yield more accurate, generalizable theory than single cases."*

An inductive approach was chosen as the main research strategy because the research questions for this thesis focus on how certain processes take place over time and under specific conditions[27]. However, if an inductive approach was undertaken for the processes of data collection and analysis, a deductive approach was undertaken to set up the boundaries for data collection and analysis. Together, the representation models developed in chapters 1, 2 and 3 served as the overall framework for data collection, helping the researcher to focus on what was relevant for the research. This resulted in a research process that was open enough to incorporate input received from data collection, while also being focused on the characteristics of the *phenomenon* under analysis. Therefore, this research can be understood as being mostly inductive, but also, with minor deductive characteristics.

The choice of an embedded-multiple-case-study format lies on the nature of the *phenomenon* being studied. It was embedded because SECASs are part of a hierarchy of systems – their units are subsystems on their own, while SECASs are also part of upper level systems. Therefore, the research focused on three levels of case studies: tourist destinations as the place based case study, the networks comprising the local social structures for each destination and their individuals or agents that were part of the local SECAS for each destination. Since *contextual* and *intervening conditions* were key variables for this thesis, the research was designed as a multiple case study, so as to compare how these conditions affected the studied *phenomenon* in different tourist destinations.

[25] According to (Sayer, 2000), "[i]ntensive research seeks out substantial relations of connection and situates practices within wider contexts, thereby illuminating part-whole relationships" (p. 22), being "strong on causal explanations and interpreting meanings in context" (p. 21).

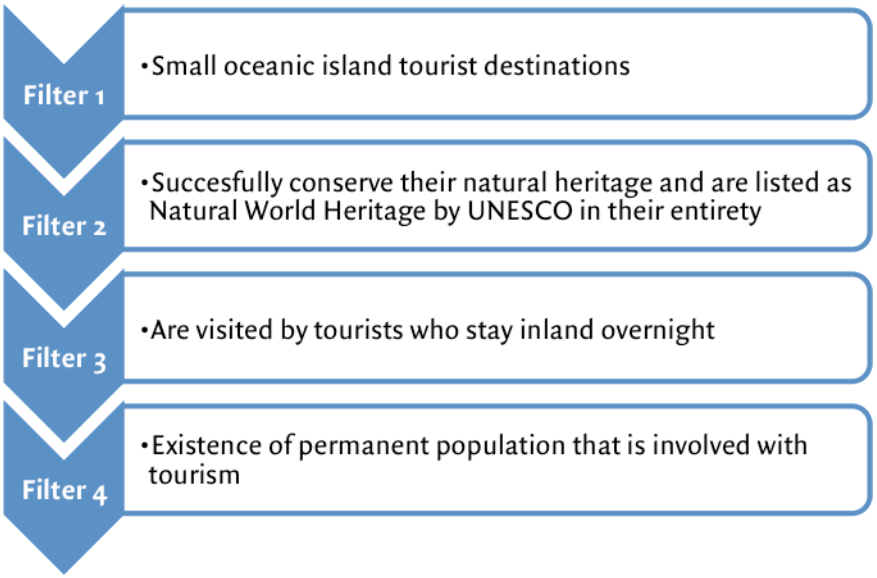
[26] As explored on page 33, a qualitative approach is more appropriate to sustainability research looking at complex *phenomenon* from an holistic and integrated perspective.

[27] Being dynamic systems, holistic studies of SECASs demand research approaches capable to explore how processes take place.

Choice of Case Study Sites

Farrell and *Twining-Ward* (2004, p. 286) suggest that "[i]n order to further advance understanding of the behaviour and management of *Complex Adaptive Tourism Systems*, greater attention needs to be given to place-based studies". Following this rationale, this thesis considered tourist destinations should be the primary cases for investigation. The process of case study sites selection involved the application of the criteria (or four filters) outlined in *Figure 37*:

Figure 37 | Case study selection criteria



Filter 1 concerned selecting sites according to their geographical features. **Small oceanic island tourist destinations** were chosen as the type of case study site because of their unique conditions and characteristics – or amplifiers of constraints for development in a *context* of greater isolation. *Ronström* (2009) explains that in many western European languages, the word island is associated with the word 'isolation', or the phrase 'isolated land' (in Italian, the word for 'island' is *isola*). By being more isolated, islands can be studied as smaller representations of the planet Earth, which, for some, can also be referred to as *The Island Earth* (Turner, 2009, citing Margaret Mead).

A vast list of reasons why island studies are so important have been meticulously compiled by *Baldacchino* (2006). From this list, perhaps one of the most relevant pointed reasons for this thesis is that: '[s]ocial network theory has been developed from the particular research *contexts* afforded by small island environments (Barnes, 1954; Boissevain, 1974)'. In a complementary way, the *Island Research and Education Initiative* (2009) suggests 'islands are global models for the successful management, conservation and sustainable use of limited natural resources'. Despite *Nunn* (1994, p. 12) suggesting that '[i]slands can be treated not as open but as effectively closed systems wherein the interaction of particular environmental variables can be

comparatively easily studied', it is reasonable to say that islands are open systems with fewer connections to other systems than most of those present in continental lands.

The above reasons to choose islands as case study sites are reinforced by the following arguments:

- Islands are likely to become the ones most affected by the *consequences* of climate change, therefore tending to present a greater concern for sustainability issues;
- They present greater development limitations that must be addressed by their residents, due to their location and size, scarcity of resources and fragility of natural assets, imposing a greater perception of limits/carrying capacity;
- Small oceanic island tourist destinations are examples of tourism development which receives regional influence in a lower degree, making it easier to isolate these interferences when analysing them as destinations on their own;
- Their regional, national and international relationships can be more easily identified as their connection with places outside their boundaries is usually limited or concentrated in one means of transport that is usually highly regulated;
- Also, many of them represent cases of very high governmental control and pan-governmental protection – many are part of *National Marine Parks* and *UNESCO* lists some as *World Heritage*.

Despite there being no universally accepted definition of what an oceanic island is (Nunn, 1994), in general, geographers tend to categorise islands as oceanic according to their location, whereas geologists according to their genesis. For the purpose of this thesis, oceanic islands are understood as being those that are not part of the continental platform, but those actually sitting on top of the ocean basin (Baldacchino, 2007), which present distance to continents superior to 370.4 km (or 200 nautical miles) – the maximum extension of a country's *Exclusive Economic Zone*, stated by article 57 of the *United Nations International Convention on the Law of the Sea* (UN, 1982).

Filter 2 concerned selecting sites according to the international regulations they were subject to. UNESCO's global conservation strategy of ***World Heritage Listing - WHL*** was chosen as the criteria so as to select sites that were able to successfully conserve their natural heritage and for which the importance of conservation was likely to be clear to both residents and tourists. The *World Heritage List* comprises three types of properties: those with cultural, natural and mixed assets of universal value. At this stage, only oceanic island destinations that were categorized as being part of *Natural* or *Mixed WHPs* were selected. The *International Convention Concerning the Protection of the World Cultural and Natural Heritage* (UNESCO, 1972) gave birth to the

WHL programme**.** This thesis chose to investigate the *WHL* programme as the main nature conservation strategy to be investigated because:

- it is a global strategy with *consequences* to the three dimensions (sectoral, local and global) of tourism development sustainability discussed in *Chapter 2*. It does that by seeking to conserve natural and cultural heritage, with "[t]he inscription of a site on the World Heritage List bring[ing] an inevitable and welcomed awareness and curiosity about the site and its outstanding values" (UNESCO World Heritage Centre, 2008), therefore increasing its capacity to attract tourist flows;
- of its potential to influence competition and cooperation in tourist destinations not only in the moments of pre-assessment and during the process of nomination, but also during post-nomination since that "[i]f a site loses the characteristics which determined its inscription on the *World Heritage List*, the *World Heritage Committee* may decide to delete the property from both the *List of World Heritage in Danger* and the *World Heritage List*" (UNESCO World Heritage Centre, 2008);
- it is a strategy aimed at conserving cultural and natural sites carrying outstanding universal values used by many countries to protect their most precious assets. In some cases, it is even promoted by countries that want to protect landscapes that are linked to their history but that are located in neighbouring countries – see the Australian Government effort to protect the *Kokoda Trail* in Papua New Guinea (Wearing, Wearing, & McDonald, 2010). In other cases, it can bring together different countries to protect environments that are transnational – see the *Kvarken Archipelago / High Coast* transnational serial *World Heritage* property in Sweden / Finland (BfN & IUCN, 2009).
- "despite their global significance and striking values[,] [*WHPs*] are often better known globally than locally" (UNDP, 2011, p. 5). *WHL* is, therefore, many times translated as a globalising force acting on local areas.

From an environmental psychology perspective, *Reser* et al. (2005) and *Bentrupperbäumer* et al. (2006) offer interesting findings from research conducted in the *Wet Tropics World Heritage Area of North Queensland* on the problems associated with the current diversity of use of *'World Heritage'* values. They highlight the need to better understand how *WHL* translates to managers, tourists and operators.

From a *tourism* management perspective, *Widmer* (2000) and *Widmer* et al. (2009) offer relevant conclusions from their research on the influence of *WHL* to *tourism* flows to the *Fernando de Noronha Archipelago – FDN*. By seeking to understand the main motivation that leads tourists to choose *FDN* as their

destination, her results show that although only 3.31% travel to the archipelago because it is listed as a *NWHP*, almost half (42.54%) have *FDN*'s natural assets as the main motivation to visit the destination. Yet, according to her conclusions, '[the study of the impacts of *WHL* is an intriguing an complex topic that has received very little attention in Brazil]'[28], therefore '[existing a vast array of future research alternatives, including studies comparing different international *WHPs*]'[29] (Cavalcanti da Rocha Lima, 2000, p. 144). For a detailed account of *UNESCO*'s *WHL* Programme in Australia and Brazil, refer to *Chapter 6*.

Filters *3* and *4* were applied to allow studying the development of *tourism* in *Natural World Heritage* listed small oceanic islands in a broader and more holistic way. *Filter 3* guarantees that the associated impacts with **tourists staying overnight** can be observed – including the stimulus to development of accommodation and the associated multiplier effects on the local economy; and *Filter 4* guarantees that the case study could provide the researcher with realities comprising **local societies and economies**. The selection process carried out during the research design process in **2009** is presented on *Table 3* and *Table 4*.

Table 3 | Case study sites shortlisting process overview

Categories	Number of Sites
Total Listed Sites	**890**
Total Delisted Sites	2
Cultural Heritage Listed Sites	689
Cultural Heritage Delisted Sites	1
Natural Heritage Listed Sites	176
Natural Heritage Delisted Sites	1
Mixed Heritage Listed Sites	25
Natural Heritage and Mixed Listed Sites	**201**
Natural Heritage / Mixed Listed Oceanic Island(s) Sites	**12**
Total Selected Sites	**2**

[28] Translated from the original in Portuguese: "... o estudo sobre os efeitos do título de Patrimônio da Humanidade sobre o Turismo constitui tema intrigante e complexo e, ao mesmo tempo, quase inexplorado em âmbito brasileiro."
[29] Translated from the original in Portuguese: "Neste contexto, cabe dizer que esta pesquisa representa apenas uma pequena ilha no oceano destas possibilidades, do qual também fazem parte estudos comparativos entre sítios mundiais..."

Table 4 | Case study sites shortlisting process in detail

Natural Heritage and Mixed Small Oceanic Island Sites	Country	Year of Listing	Criteria[30]	Reason(s) to Disregard as a Case Study
Heard and McDonald Islands	Australia	1997	viii; ix	Uninhabited / No permanent population
Lord Howe Island Group – LHI	Australia	**1982**	**vii; x**	**No reason**
Macquarie Island	Australia	1997	vii; viii	Uninhabited / No permanent population
Brazilian Atlantic Islands: Fernando de Noronha – FDN and Atol das Rocas Reserves – ADR	**Brazil**	**2001**	**vii; ix; x**	**No reason for FDN; No tourists allowed in ADR**
Malpelo Fauna and Flora Sanctuary	Colombia	2006	vii; ix	Uninhabited / No permanent population
Cocos Island National Park	Costa Rica	1997	ix; x	Uninhabited / No permanent population
Galápagos Islands	Equator	1978	vii; viii; ix; x	Listed as *in danger* property at the time the research was designed
New Zealand Sub-Antarctic Islands	New Zealand	1998	ix; x	Uninhabited / No permanent population
Natural System of Wrangel Island Reserve	Russian Federation	2004	ix; x	Uninhabited / No permanent population
Aldabra Atoll	Seychelles	1982	vii; ix; x	Uninhabited / No permanent population
Gough and Inaccessible Islands	United Kingdom	1995	vii; x	Uninhabited / No permanent population
Henderson Island	United Kingdom	1988	vii; x	Uninhabited / No permanent population

[30] Refer to Attachment 2 for an explanation of each criterion.

Only two sites – ***Fernando de Noronha Archipelago – FDN***[31] and ***Lord Howe Island – LHI*** fulfilled all the four criteria applied. They are two groups of small oceanic islands with similar size and geographical features in countries with different historical and socio-economic backgrounds (Australia and Brazil). Key inter*vening conditions* for the two sites are presented in *Chapter 7*. *Table 5* summarises some of the main characteristics and similarities between **FDN** and **LHI**:

Table 5| Islands characteristics and similarities

		FDN	LHI
	Country Name	Brazil	Australia
	Country Population (people)	203,011,959[32]	23,570,765[33]
	Country Area (sq. km)	8,511,965	7,692,024
	Country Density (people/sq. km)	23.85	3.06
	State Name and Acronym	Pernambuco - PE	New South Wales - NSW
	Island Population	3,600 (estimate)	360 in 2011 census
	Main Island Area (sq. km)	17.01	14.54
	Island Density (people/sq. km)	212	25
	Tourist Carrying Capacity	450 tourists[34]	400 tourists[35]
	Mainland Connecting Airport	545km	700km
International	**UNESCO Natural World Heritage**	2001	1982
	Property Name	Brazilian Atlantic Islands	Lord Howe Island Group
	Type of Area	Part of serial WH property	Single WH property
	Selection Criteria	vii; ix; x	vii; x
National	**Federal Environmental Protection Area**	1986	-
	National Marine Park	1988	2000; 2012
State	**State Permanent Park Preserve**	-	1982
	State Environmental Protection Area	1989	-
	State Marine Park	1995	1999

[31] Differently to the Lord Howe Island Group – a *Single* Natural World Heritage property, the Brazilian Atlantic Islands are a *Serial* Natural World Heritage property comprising two components – the Fernando de Noronha Archipelago and the Rocas Atoll, which are distant 145 km from each other. The Rocas Atoll is an uninhabited Biological Reserve that does not allow tourism in its area. For this research project, from the Brazilian Atlantic Islands Serial Natural World Heritage property, only the Fernando de Noronha Archipelago component is considered suitable according to the proposed selection criteria.
[32] Estimate on 20th August 2014 at 13:54:46 Canberra Time (IBGE, 2014).
[33] Estimate on 20th August 2014 at 13:55:15 Canberra Time (ABS, 2014).
[34] Maximum of 450 tourists that can enter the island by plane on a single day.
[35] Maximum of 400 simultaneous tourists on any given day based on the number of 400 tourist beds allowed on the island.

Considering that the North/South divide is central to the debate of *sustainable development*, contrasting cases from countries in different paths of development seemed appropriate. It provided an opportunity to consider the effects of different *contexts* on the way *WHL* influence competition and cooperation and on the way these influence *sustainability*, allowing for an analysis that was more adequate to the characteristics of *Complex Adaptive Systems – CAS*. It is also important to point out that these two sites have been listed in two different moments (*LHI* in **1982** and *FDN* in **2001**) and in two different regulatory *contexts* – *LHI* were first listed as *World Heritage* and then became *State* and *National Marine Parks* while *FDN* was first declared a *National Environmental Protection Area – APA*[36], then a *National Marine Park*, a *State APA*, a *State Park* and finally *World Heritage*).

Cases, Units of Analysis and Variables

This research was conducted using an embedded-comparative-multiple-case-study approach. By embedded it inferred that different levels of cases were defined and analysed, namely: tourist destinations, social networks and agents. While the two chosen **case study sites** can be considered the **highest level cases**, each contains a **second level of (embedded) cases – networks**, and also a **third level of (embedded) cases – organisations and individuals**. In that respect, while *LHI* and *FDN* are first level cases, their local social networks (e.g. organisational network and relational network) are second level cases and their local administrative government bodies (e.g. the *Lord Howe Island Board – LHIB* and the *Fernando de Noronha State District Administration – ADEFN*[37]), their administrative personnel and members of the local community are third level cases. By multiple, it meant that more than one case was studied and could be compared at each level: 2 cases at the destination level, 12 cases at the network level and 115 at the agents level (44 organisations and 71 individuals).

So as to help defining the focus of the research effort and consequently the boundaries of data collection and analysis, a unit of analysis was defined. Providing a common ground to the analysis that was conducted by linking the three case levels, the **local *SECASs*** were considered as the **unit of analysis** for this research. This unit of analysis also related to the **core variables** of this research established by the research questions, which were:

- **sustainability degrees**;
- different types of **competition** and **cooperation**;
- ***strategies***;
- ***context*** and ***intervening conditions***.

[36] *Área de Proteção Ambiental.*
[37] *Administração do Distrito Estadual de Fernando de Noronha.*

Considering that from a SECAS perspective, feedback loops are expected to link all the above mentioned variables; that this research is of a qualitative nature; and that there was no manipulation of any of the variables, but only observation of the way they interacted; then, the classification of variables as dependent and independent did not make sense for the effect of this research.

In summary, the research seeks to understand how local SECASs operating in tourist destinations (first level cases) function and evolve. It does that by looking at inter-related variables such as sustainability challenges, the different types of competition and cooperation that are established by SECAS's agents (third level embedded cases), their resulting social networks (second level embedded cases), and the strategies in place within specific *contexts* and *intervening conditions*.

Data Collection

"[A] major **strength** of **case study data collection** is the **opportunity** to use many different sources of evidence. Furthermore, the need to use **multiple sources of evidence** far exceeds that in other research methods such as experiments surveys or histories" (Yin, 2009, pp. 114-5).

The present research was designed included collection of **three sources of data/evidence** (Yin, 2009, p. 101)**,** allowing a holistic view of the *phenomenon* under investigation, as well as data triangulation for consistency checking. This helped ensure the quality and credibility of the analysis and conclusions that were reached (Patton, 2002, p.247). Previous use of a mixed data collection approach for comparative multiple case studies can be observed in the research conducted by Beaumont et al. on local tourism governance network approaches. It included

> *"archival research and analysis of newspaper reports, council minutes, technical reports, corporate plans and historical tourism strategies. Socio-economic data at regional and local levels were also collected and analysed. Semi-structured interviews were undertaken [and researchers] attended tourism meetings, [building] up this way, a rich, in-depth, 'insider' appreciation for each of the networks via [their interviewees]" (Beaumont & Dredge, 2010, p. 12).*

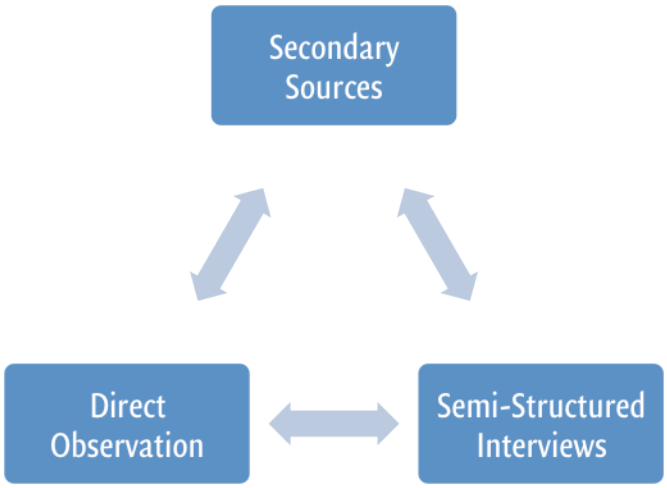
The three sources of data/evidence collected during the research process for this thesis included secondary sources, semi-structured interviews and direct observation. *Table 6* highlights in red letters the types of data that were the focus of collection for each source of data. Whereas collection of secondary sources aimed mostly to provide data related to *context*, semi-structured interviews focused on relationships and direct observation on *intervening conditions* and TD and *sustainability outcomes*. However, because of the inductive nature of the case study research for this thesis, despite focusing mostly on specific types of data, all three types of sources were used in a complementary way. Therefore, data collection from different sources was

carried out through an inter-dependent and interactive process portrayed in *Figure 38*.

Table 6 | Sources and types of data collected

Source of Data	Type of Data		
Secondary Sources	Context	Relationships of Competition and Cooperation	Intervening Conditions and Outcomes
Semi-Structured Interviews	Context	Relationships of Competition and Cooperation	Intervening Conditions and Outcomes
Direct Observation	Context	Relationships of Competition and Cooperation	Intervening Conditions and Outcomes

Figure 38 | Data Collection Process



As illustrated by *Grangsjo* et al.'s (2006) research on hotel networks and social capital in destination marketing, inductive qualitative case studies are appropriate for the investigation of social networks and relationships as the exact data one seeks in those cases is something that emerges as the research develops and not something that can be precisely defined at the very beginning. This way, all 3 different proposed sources for this research played the role of providing: initial evidence/data, detailed evidence/data, confirmation evidence/data or even the leading path to new evidence/data, making it possible to carry out data triangulation (Oppermann, 2000) and therefore increase the construct validity of the research design (Yin, 2009).

Great part of secondary data was obtained through desk research, especially through library books and digital documents available on the Internet. When it came to semi-structured interviews and direct observation, these were carried out through fieldwork research only, with the exception of a couple of contextual semi-structured interviews conducted over the phone. Since semi-structured interviews and direct observation were the main types of source needed to answer the research questions (while secondary sources

were meant to provide the researcher with the contextual situation to support the interpretation of the results obtained with the other two), the fieldwork research component proved essential to the completion of this research project.

In regard to the importance of conducting both on-site direct observation and face-to-face interviews, *Baldacchino*'s (2008) account of the epistemological and methodological challenges of studying islands suggests it is only through on-site research that one can pursue a deeper understanding of how islanders see the world. This kind of perspective is what '[...] McCall (1994) [...] defined [as] *nissology*[, or] the study of islands on their own terms' (Baldacchino, 2008, p. 37).

The collection of **secondary data** had its core focus on obtaining contextual data and was carried out **on-site and off-site throughout the research process.** It included sourcing:

- legal and government policy documents;
- statistics;
- master plans;
- management plans;
- meetings minutes;
- reports and others.

And it sought to understand:

- the regulatory framework in place for the two case study sites;
- formal **visions of sustainability** and of **(tourism) development**;
- formally **implemented** or attempted **strategies** for **tourism management** and **nature conservation;**
- individuals and organisations formal **awareness** of the role of **competition** and **cooperation** as drivers and inhibitors of higher degrees of sustainability within tourism development;
- the **history**, **trends** and **patterns** of **development** associated to the case study sites; and
- the **situational *context*** in which **tourism development** occurred.

Direct observation (focusing on *intervening conditions* and self-organisation outcomes in terms of tourism development and sustainability) was carried out using a **qualitative approach**, with the **adaptation** of **UNWTO**'s **sustainable tourism indicators** and the use of **observation guides**. It included the observation of:

- landscape, environmental and geographic features
- infrastructure
- population behaviour

- tourist behaviour
- trade behaviour
- tour operators behaviour and other elements

Direct observation also focused **SECASs self-organisation relationships** of **competition** and **cooperation** including the observation of:

- Public Meetings; and
- Private Meetings (when invited).

Interviews were semi-structured to allow 'for adapting the content and the flow of the interview to each informant, without forcing interviewees into preconceived answer patterns' (Decrop & Snelders, 2005, p. 124), while also allowing to dig deeper into new threads that could answer the research primary and secondary questions. Previously to this research, the use of face-to-face semi-structured interviews had already been carried out by *Williams* (2005) to investigate the meanings and effectiveness of *World Heritage Designation* in the USA. Although his research aimed the national and regional levels, he also used a mixture of purposive and snowball sampling strategy just like the present research did. Another example includes Scott et al.'s (2008) research on destination networks (comparing four Australian case studies) in which network analysis was carried out for each studied case and a mixed purposive and snowball strategy was used to sample target respondents to answer semi-structured face-to-face interviews.

Semi-structured interviews conducted as part of this research were of two kinds: **contextual** and **focused**. All interviewees were given a *Plain Language Statement* explaining the research and the purpose of the interview and were required to fill in and sign a *Consent Form* stating they agreed with being interviewed and indicating whether they allowed the interview to be recorded[38]. **Contextual interviews** were entirely qualitative and were carried out with two groups: representatives of international organisations focusing on the conservation of nature and/or *TD sustainability*; and key informants for each case study site who could provide an overview of the tourist destination and kick-start a snowball approach to defining targets for **focused interviews**.

Looking at the relationships established among local SECASs' agents in relation to the operation, management and planning of tourism, **focused interviews** targeted those involved with tourism at the destination level. Since theoretical sampling (Connell & Lowe, 1997; Glaser, 1978) was the *Grounded Theory – GT* method chosen to define the total number of semi-structured interviews for this research, this number could not be defined precisely beforehand, but rather was set during the process of data collection once saturation was reached. Whereas theoretical sampling was used to

[38] See appendices 2-7.

define the size of the sample, a mixed purposive and snowball approach was used to define those who were to be part of the sample. Through purposive sampling, potential interviewees were selected by study of secondary sources and by direct observation. When interviewed, informants were asked to suggest other potential interviewees, leading to new interviews (snowball approach). Saturation was reached through convergence of data provided by different interviewees/sources and/or convergence of suggested potential interviewees and those actually interviewed.

Fieldwork

Because of the inductive characteristic of the research, fieldwork was carried out in two stages for each case study site. This allowed data analysis to be conducted between the two stages, resulting in a research that was open enough to be more exploratory in the first stages while also focused enough to be more in depth in the second stages. For each site, the first stage comprised the collection of data through direct observation and secondary sources, as well as the identification of target organisations from which representatives were interviewed during the second stage. A pilot of the semi-structured interviews was also conducted during the first stage of fieldwork in each site. Fieldwork was carried out first in *FDN* because the researcher was already familiar with the site, making the process of data collection more efficient and allowing more time for necessary research design adjustments.

Fieldwork was carried out in *FDN* (Brazil) from the 11th to the 30th of November **2009** (1st stage) and from the 5th to the 27th of April **2010** (2nd stage) resulting in 7 contextual and 20 focused interviews; and took place on *LHI* (Australia) from the 13th to the 28th November 2010 (1st stage) and from the 19th February to the 13th March 2011 (2nd stage) resulting in 21 contextual and 29 focused interviews. For the case of *FDN*, there were four councils that were more closely related to the management of its protected areas: the ***APA Council***, the ***PARNAMAR Council,*** the ***Tourism Council*** and the ***District Council***. Their composition (*Table 7* and *Table 8*) was used to identify potential interviewees, during the researcher's first visit to *FDN* in November **2009**. A similar process took place for the *LHI* site, through which the ***Lord Howe Island Board – LHIB***, and the ***Lord Howe Island Marine Park Advisory Committee – LHIMPAC*** were the starting point for identifying potential interviewees. The research's inductive approach coupled with the snowball approach to sampling resulted in a list of interviewees that received additions as interviews were being conducted and further information about the overall organisational and personal networks for each island was collected.

Direct observation and sourcing of secondary data were carried out throughout fieldwork, with an emphasis on the first stage for each site. Secondary data were also obtained from the Internet and physical libraries outside the case study sites, including the: *IUCN* library in Gland

(Switzerland) for both sites; *State Library of New South Wales* in Sydney (Australia) for LHI; *Faculdade de Filosofia, Letras e Ciência Sociais – FFLCH* and *Escola de Comunicações e Artes – ECA* libraries of the *University of São Paulo - USP* and the *Vila Olímpia Library* of *University Anhembi Morumbi – UAM* in São Paulo (Brazil), FDN's mainland administrative office archives and *Jordão Emerenciano* public archives in Recife (Brazil) for FDN.

Table 7 | Composition of Local Thematic Forums by Category

Category	FDN			LHI
	APA Council	PARNAMAR Council	Tourism Council	LHIMPAC
Federal Government	2	1		
Military	2			
State Government	2		1	
Local Council	1	1	1	1
Local Administration	1	1	1	1
Research	1	3		1
Local Community	1	1	1	3
Protected Areas	2	2	2	2
Environment	3	2	1	1
Tourism	5	2	9	1
Diving		1	1	1
Fishing	1			2
Art	1		1	
Commerce			1	
Total	22	14	19	13

Table 8 | Composition of FDN's and LHI's Local Councils

Category	FDN	LHI
	District Council	LHIB
State Government		1
Local Community	7	4
Tourism		1
Environment		1
Total	7	7

By looking at the number of interviews presented in *Table 9*, one will notice the considerable difference in the number of interviews conducted in the Australian and the Brazilian sites. Being Brazilian and having already been to Fernando de Noronha prior to this research, the researcher was more familiarised with the socio-economic and cultural *contexts* as well as the demographic and environmental features of FDN, allowing the research to be more focused and saturation to be reached more quickly. That explains why contextual interviews for LHI (21) were three times the number of those conducted in FDN (7). *Table 9* also highlights the distribution of interviewees

according to broad categories. In those cases where interviewees belonged to 2 different categories (for instance *Tourism Sector* and *Local Community*), only their main category was used to identify them in this table. This way, the presented totals reflect the number of third level cases that were interviewed.

Table 9 | Sum of interviewees per category for FDN and LHI

Main Category	Interviewees		
	FDN	LHI	Total
Federal Government	7	3	**10**
State Government	2	2	**4**
Local Government	5	14	**19**
Local Community	1	6	**7**
NGO	3	4	**7**
Tourism Sector	6	12	**18**
Complementary Sector	1	3	**4**
University	1	1	**2**
Total	26	45	**71**

Table 10 highlights the number of interviewees who were subject of contextual interviews used to explore the global structure for the conservation of nature presented in *Chapter 5*.

Table 10 | Sum of interviews for International Organisations

Main Category	Interviewees
UN System	11
International NGO	6
University	4
Total	**21**

As for direct observation, the meetings highlighted on *Table 11* and *Table 12* were observed as part of the fieldwork for each site.

Table 11 | Direct Observation of Meetings for FDN

Direct Observation of Meetings	
12/11/09- 13/11/09	2a Conferência Distrital de Cidades (2nd FDN District Conference on Cities)
18/11/09	COMTUR Meeting
19/11/09	Cruise ship Operation Meeting
13/04/10	APA Council Meeting
15/04/10	Public Hearing for IPHAN's Historic Centres Plan

Table 12 | Direct Observation of Meetings for LHI

Direct Observation of Meetings	
15/11/10	LHITA Board Meeting
23/02/11	LHIMPAC Meeting
25/02/11	Sustainable Energy Working Group (SEWG) Talk
28/02/11	LHIB Meeting Closed Session
01/03/11	LHIB Meeting Open Session

Data Analysis

Grounded Theory – GT methods (Glaser & Strauss, 1967) were used to analyse collected data and to inform further data collection in regard to themes requiring more in-depth investigation. Previously used in other case studies related to *tourism* (Connell & Lowe, 1997; Decrop & Snelders, 2005; Kim, Eves, & Scarles, 2009; Stevenson, Airey, & Miller, 2008), *GT* is a common method for research seeking to understand complex social *phenomena*.

In order to explore how different properties of the chosen cases reflected in the *phenomenon* that was the focus of this study, a casebook was developed contrasting different information for each case level[39]. Properties were identified according to their potential level of influence, which was initially determined during the stages of fieldwork and reassessed at the later stages of coding.

Following a similar method to that employed by *Stevenson* et al. (2008) and by *Decrop* et al. (2005), semi-structured interviews were digitally transcribed and, along with selected data from secondary sources and direct observation (memos), were analysed line by line in order to identify key words or phrases that could be used to create categories to code segments of text. "Memos were written to map ideas, refine concepts, identify relationships in the data and to note ideas outside the data. [...] Open coding was used to break down data into distinct units of meaning and these units were then labelled to generate concepts" (Stevenson et al., 2008, p. 740). "Coding was made at three levels (open, axial and selective coding) from the most descriptive to the most interpretative" (Böhm, 2004, pp. 270-5; Decrop & Snelders, 2005, p. 124).

Direct observation photos and interview photos were used as complementary to secondary sources and to the audio recorded text of the interviews. Being visual (and not textual) representations of data, specific areas of the photographs were tagged with the same set of codes used with the transcribed interviews, secondary source documents and field memos. At times, they also prompted the researcher to create new codes.

[39] According to Richards (2009, p. 99), this can be called *descriptive coding*.

There are two main differing traditions of data analysis through GT methods, namely the *Glaserian* and the *Straussian* approaches. However, neither of them offered a coding structure that can be universally used in different disciplines. Therefore, in light of the *phenomenon* being studied, a specific coding protocol was devised through the adaptation of the recommendations put forward by both authors.

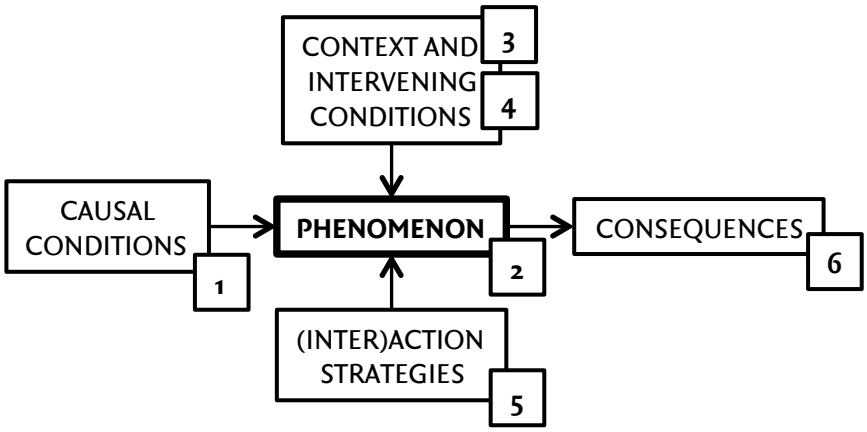
Open coding[40] was the **first step** and consisted in coding relevant incidents using *in vivo*[41] codes whenever possible. Reinforcing incidents (textual or visual evidences of the concept being labelled) indicated saturation[42] within an open code that could be elevated to the status of a substantive code. Parallel to open coding, the organisation of code trees ensured coding was focused enough on the unit of analysis and the primary and secondary research questions. They provided a way to understand how different concepts were linked in relation to being a category (higher level concepts) and their properties (a conceptual characteristic of a category). This tree structure partly emerged from the data and partly from the framework devised for the semi-structured interviews. Secondary sources have also contributed to this structure by bringing up new (many times, *in vivo*) codes. Also parallel to open coding, preliminary analytical coding (Richards, 2009, p. 102) was conducted in a way to identify possible relationships between different concepts. At this point, relationships between the case study site concepts and those related to their social networks and agents (organisations and individuals) were also recorded.

The **second step** consisted of **axial coding** by use of a coding paradigm. At this point, most of the relevant concepts were analysed in regard to the way they related to other major and minor concepts. "Similar to *Glaser*'s coding families, the coding paradigm takes into account that the development of categories requires either a previously defined theoretical framework[43] or at least the possibility to draw on a selection of such frameworks if one wants to avoid being flooded by the data" (Bryant & Charmaz, 2007, pp. 201-2). However, neither *Glaser*'s coding families nor *Strauss* and *Corbin*'s coding paradigm were designed for research into systems theory (Kelle, 2007, p. 204). Therefore, based on the *SECAS* model developed in *Chapter 3*, axial coding was carried out by devising and using an adaptation of the coding paradigm proposed by *Strauss*. This ensured the use of a coding structure that was more appropriate to complex adaptive systems, while still using a

[40] *Open coding* is labelled as *topic coding* by Richards (2009). It can be understood as "the process of breaking down the data into distinct units of meaning" (Goulding, 2006, p. 76).
[41] *In vivo* codes can be understood as labels extracted directly from the sources being studied in order to give names to concepts under which incidents are coded.
[42] Saturation is achieved when a concept can be said as substantially supported by enough indicators that can provide evidence of the concept's meaning and relevance.
[43] According to *Yin* (2009, p. 35) "[f]or case studies, theory development as part of the design phase is essential whether the ensuing case study's purpose is to develop or to test theory".

GT approach to coding, which according to *Kelle* (ibid) "is undoubtedly open enough to allow for such a stance". *Figure 39* presents the core category (*phenomenon*) and subcategories of the coding paradigm proposed by *Strauss* and *Corbin*, while *Table 13* presents how the core variables related to the research questions can be seen in light of this coding paradigm.

Figure 39 | Strauss and Corbin Coding Paradigm



Source | Adapted from Böhm (2004, p. 272)

Table 13 | Core variables and the Axial Coding Paradigm

Strauss & Corbin (1990, pp. 96-97) Axial Coding Paradigm (Sub)Categories	Current Research Core Variables
1. Causal Conditions	Events, incidents, actions leading to agency
2. Phenomenon	Relationships of competition and cooperation
3. Context	Developed and developing countries / Globalisation
4. Intervening Conditions	Small oceanic island tourist destinations
5. (Inter)action Strategies	Localised Conservation and Tourism Development
6. Consequences	Degrees of Sustainability / Challenges

Figure 40 illustrates how the categories and subcategories proposed by *Strauss* and *Corbin*'s coding paradigm relate to the SECAS model developed in *Chapter 3*. It portrays events, incidents, actions as *causal conditions* driving processes of self-organisation through relationships of competition and cooperation (*phenomenon*). The global SECAS and the global environment are represented as the *context*, while local environmental and demographic features are understood as *intervening conditions*. TD and the implementation of PAs are considered as emergent properties – or *(inter)action strategies* leading to scenarios of sustainability determined by the degree of change/uncertainty within the global SECAS and the degree of *resilience*/adaptive capacity within the local SECAS. Ultimately, the axial coding paradigm was also used to structure the content of the 7 upcoming results and discussion chapters:

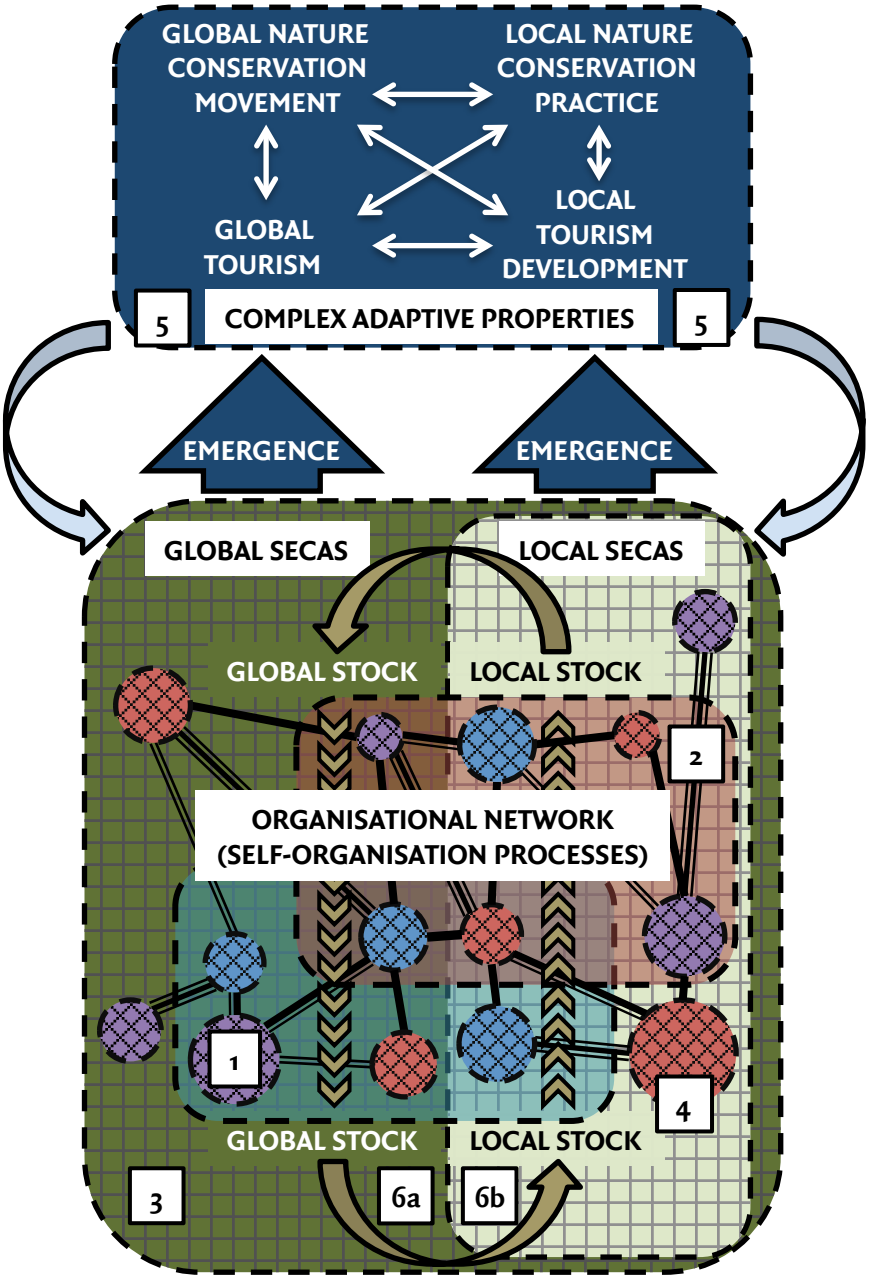
- *Chapter 5: Global Context* (Research Question 2.4)
- *Chapter 6: National Contexts* (Research Question 2.4)

- *Chapter 7: Intervening Conditions* (Research Question 2.3)
- *Chapter 8: (Inter)Action Strategies FDN* (Research Question 2.1)
- *Chapter 9: (Inter)Action Strategies LHI* (Research Question 2.1)
- *Chapter 10: Causal Conditions and Phenomenon* (Research Question 2.2)
- *Chapter 11: Consequences* (Research Question 1)

The **third** and final **step** consisted of **selective coding** which resulted in the emergence of theoretical codes used to ground the design of the theoretical model proposed in *Chapter 10*. At this stage, a higher level of code identification/selection based on their relevance for the research questions was carried out. Overall, differences between the first, the second and the third steps were mainly related to how specific/substantive and general/abstract the codes were and how relevant or not they were to explain the behaviour, the influences to the behaviour and the *consequences* of the behaviour of the SECASs being studied. While the structure of the code tree developed in the first step focused coding on topics related to the research questions, the selection of the most relevant concepts and their relationships allowed the researcher to answer the research questions in the third step.

Finally, analysis of data on *consequences* was summarised in *Chapter 11*, which also drew conclusions on how different types of competition and cooperation impact key sustainability challenges of *Local Empowerment* and *Local Social Cohesion*.

Figure 40 | Coding paradigm in light of SECAS



1 **EVENTS, INCIDENTS, ACTIONS** LEADING TO **AGENCY** OR **CAUSAL CONDITIONS**

2 **RELATIONSHIPS** OF COMPETITION AND COOPERATION OR **PHENOMENON**

3 **GLOBAL SECAS** AND **GLOBAL ENVIRONMENT** OR **CONTEXT**

4 **LOCAL ENVIRONMENTAL** AND **DEMOGRAPHIC FEATURES** OR **INTERVENING CONDITIONS**

5 **DEVELOPMENT MODEL, EMERGENT STRATEGY** OR **(INTER)ACTION STRATEGIES**

6a **UNCERTAINTY/CHANGE** OR **CONSEQUENCES**

6b **ADAPTIVE CAPACITY/RESILIENCE** OR **CONSEQUENCES**

Resources Employed

Data collection was carried out by the employment of the following resources:

Contextual Interviews: were recorded with the aid of a notebook only. They were not audio recorded because they focused on factual information and not the interviewee's perception of the studied *phenomenon*.

Focused Interviews: were digitally recorded with the aid of a digital sound recorder, a digital photo camera and a notebook. Were carried out through an inductive-deductive approach with the aid of a magnetic white board, whiteboard markers and magnetic prompt cards. While the digital sound recorder was used to register the dialogue established for each interview, the digital photo camera was used to register each collaborative construction established on the board by both the researcher and the interviewee. Memos were written for each interview after they were conducted, with the aid of the notes taken while they were carried out.

Direct Observation: was recorded by means of digital photos, digital sound recording and a notebook. Memos were written with the aid of the notes taken on site and were structured by main topics and main events that were observed.

Secondary Sources: obtained through digital repositories, Internet websites and the scanning of non-digitalised out-of-print sources and purchase of available written and visual ones. Those that were purchased were also scanned later on. This was done so as to allow them to be properly processed with the aid of the qualitative data analysis software employed by this research.

To facilitate the triangulation of the collected data, all three sources of data were processed and analysed using the same qualitative data analysis software: *NVivo 10* by *QSR International*. After being imported to *NVivo 10*, focused interviews were transcribed and their audio synchronised with their transcription. Secondary sources, photographs of direct observation and whiteboard constructions for each interview and all memos and interview summaries were also imported into *NVivo* where they were coded according to the process outlined earlier in this chapter.

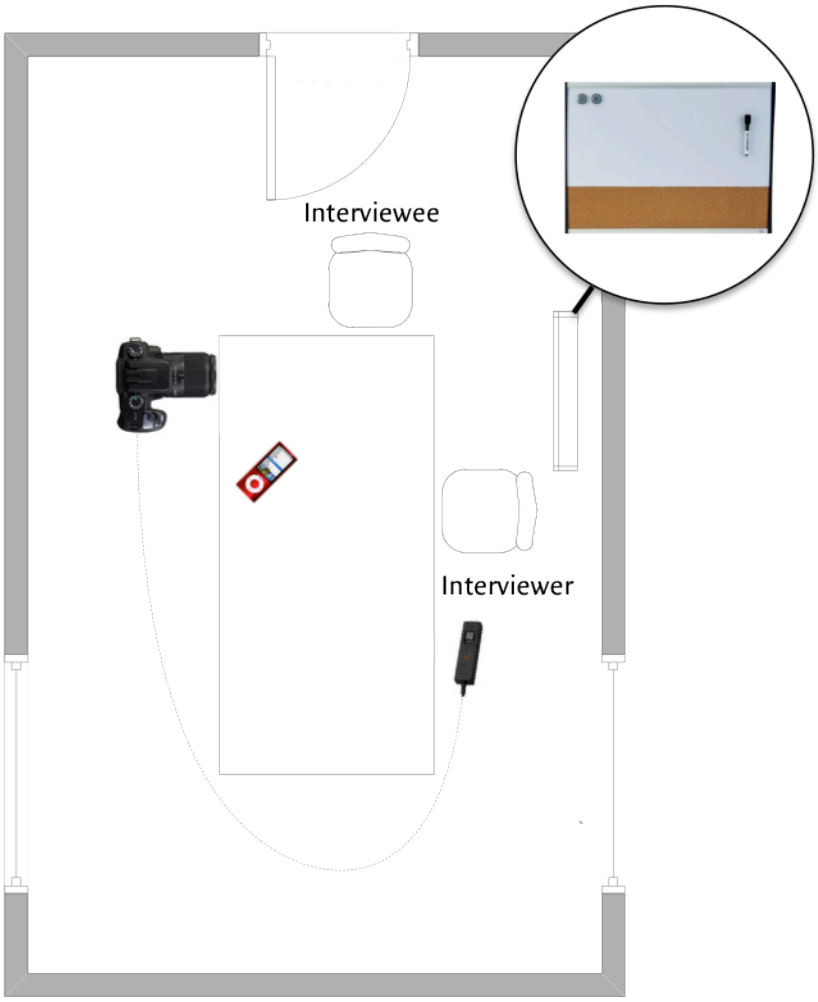
The environments where focused interviews took place were subject of great consideration by the researcher so as to try to eliminate factors that could negatively influence the collection of data. Interviews were conducted in two kinds of environment: those familiar to the interviewee (their home, their office, their store, etc.) and those unfamiliar (the researcher's hotel lounge, the local administration conference room, etc.). When in familiar environments (or territories), despite interviewees being more confortable to speak, from a researcher's perspective, being able to operationalize the

interview was something that required quick thinking and resourcefulness. Where to place the recorder, the board and the case containing all the cards were usually the main concern so as not to make the interviewees overwhelmed with the amount of equipment being brought into their own space. Here is a summary of these considerations:

- recorders had to be placed near enough the interviewee so as to properly record the dialogue, but not in a position that could intimidate them;
- the board had to be in a position in which it could be easily accessed by both the interviewee and the interviewer so as to allow for a collaborative process of construction;
- the case with the prompt cards had to be handy, but not fully available to the interviewee as the interview was conducted in different steps that required different cards. These were organised in plastic folders that could be separately detached from the case for each step of the interview, allowing for a quick and smooth process through which interviewees were only provided with the information they needed for each step of the interview, without feeling overwhelmed. Cards and the whiteboard were magnetic so as to cater for harsh weather conditions (mainly windy conditions) such as those experienced in some interviews that were conducted on tables set outside dive shops by the beach, for instance; and
- the use of the digital camera to capture the result of each constructive process registered on the whiteboard was carried out with care so as to make it clear that only the board was being registered and not the interviewee or their environment. This was taken into consideration so as to avoid the feeling of intrusiveness and lack of privacy or source confidentiality.

When carrying out interviews in his own territory, the researcher could think upfront about most logistics involved. Nevertheless, providing a friendly space for interviewees to feel comfortable and speak freely became the main concern. In that kind of environment, the camera was set up on a tripod and was operated by a remote control, so as not to distract the interview. The interviewees were placed close to the exit door so they could feel free to withdraw from the interview anytime they wanted. The recorder was placed in an angle that could capture both the interviewee and the interviewer, without being directly in front of neither, as they would be facing each other. Finally, the board was placed between the interviewee and the interviewer so as to allow for a collaborative process, but slightly closer to the interviewer so as to reinforce some kind of coordination of the overall process. This is illustrated in *Figure 41*.

Figure 41 | Interview Room Layout



The cards used for the focused interviews allowed them to be semi-structured and inductive:

- Semi-structured because they helped to set the boundaries of the interview by determining the big areas to be covered in each step: *Sustainability Challenges* (dark blue cards); *Key Organisations* (green cards); *Key Groups* (brown cards); *Key People* (light blue cards); *Drivers and Inhibitors* (orange cards). The interview was established in a way to allow: identification of main elements and relationships of the *phenomenon* being studied; visualisation of the way the researched system worked by means of examples and storytelling; and abstraction by means of visual representation expressed on the whiteboard.
- Inductive because despite being constructed based on secondary sources and contextual interviews the set of prompt cards received additions as interviewees identified new relevant elements. Examples of the use of the whiteboard as the medium for the focused interviews are presented on *Figure 42* and *Figure 43*.

Figure 42 | Example of Discussion on Group Interactions

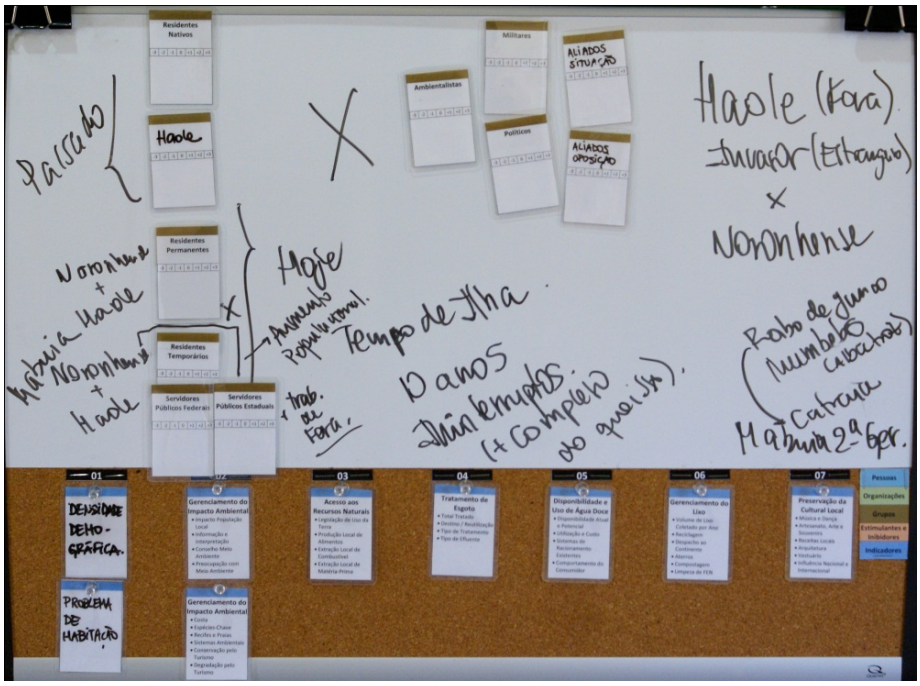
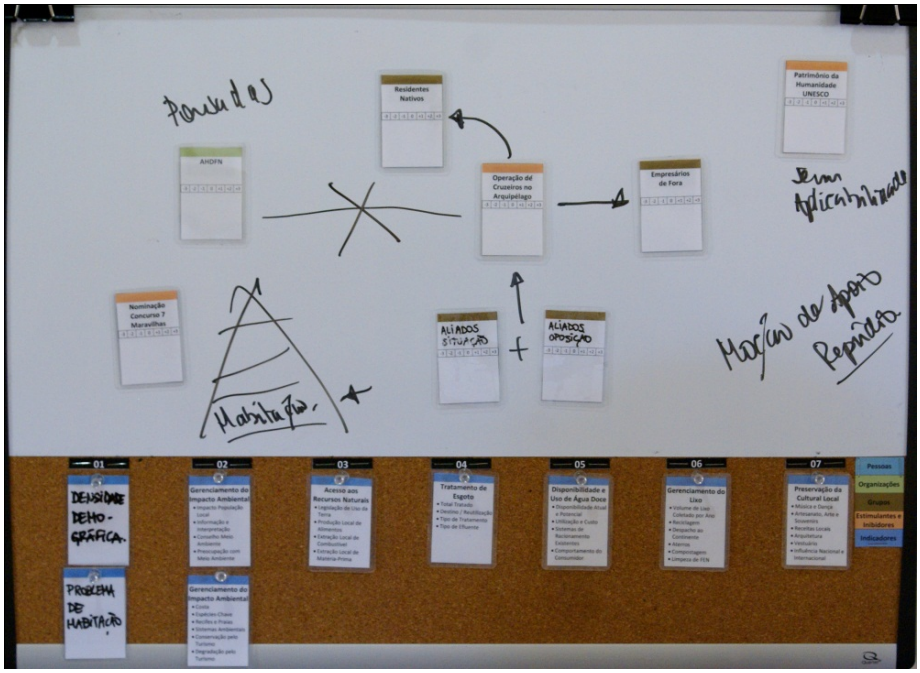


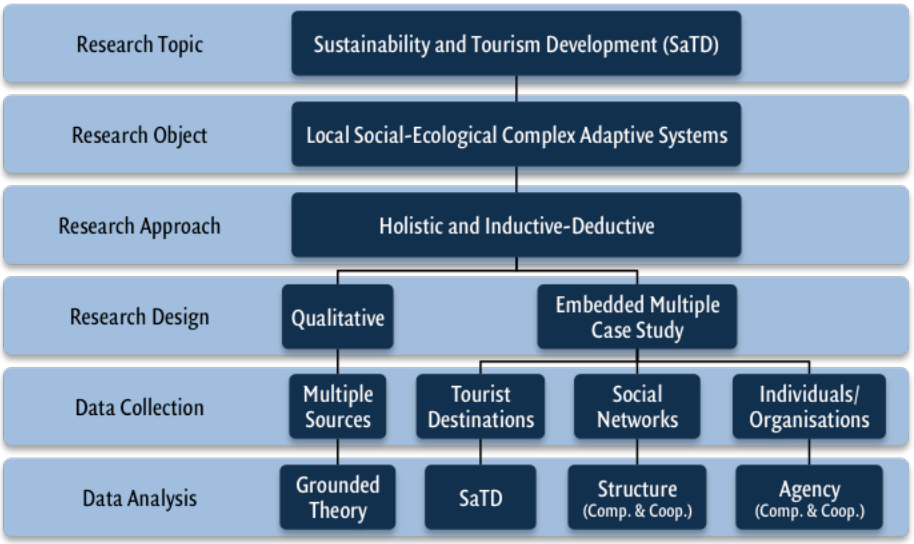
Figure 43 | Example of Discussion on Relationships



Chapter Conclusion

The research design for this thesis had to consider the challenges of researching social *phenomenon* through an holistic approach, the evolutionary nature of SECASs requiring the collection of data to explain a place's history from interacting social and regulatory perspectives. Trying to grasp the big picture without having access to all pieces of this puzzle required a research design that accessed different sources of data. Semi-structured interviews, secondary sources and direct observation were triangulated and offered the broadest picture. A semi-structured system of data collection catered for the simultaneous need of focus and breadth. Research boundaries were defined around the research questions, guiding the focused interviews. By establishing an initial broad structure that was later on reviewed, expanded and validated through data collection, despite being mostly inductive, the research can also be considered deductive. An holistic study carried out within the research constraints of a PhD candidature, it focused on case studies that could prove feasible. Small oceanic islands provided the opportunity to study the smallest scale of tourist destinations that received the least regional influences and with relationships with the outer world that were more clearly definable and identifiable. By being small, they also provided the opportunity for carrying out reasonably in-depth research without making the research work impossible to be concluded. Data analysis was carried out by means of *Grounded Theory* (Charmaz, 2006) because of its focus on theory generation and its ability to integrate the analysis of different sources of data, namely the interviews, direct observation and secondary sources. However, it had to be adapted to suit the characteristics of SECASs. The diagram presented on *Figure 44* summarises the methodological framework for the research:

Figure 44 | Methodological framework for the research



References

ABS. (2014, Aug 20). Australian Population Clock. *Australian Bureau of Statistics*. from http://www.abs.gov.au/ausstats/abs%40.nsf/94713ad445ff1425ca25682000192af2/1647509ef7e25faaca2568a900154b63?OpenDocument

Baldacchino, Godfrey. (2006). Islands, Island Studies, Island Studies Journal. *Island Studies Journal*, *1*(1), pp. 3-18.

Baldacchino, Godfrey. (2007). *A world of Islands: an island studies reader*. Charlottetown [Canada]: Institute of Island Studies.

Baldacchino, Godfrey. (2008). Studying Islands: On Whose Terms? Some Epistemological and Methodological Challenges to the Pursuit of Island Studies. *Island Studies Journal*, *3*(1), pp. 37-56.

Barnes, J. A. (1954). Class and Committees in a Norwegian Island Parish. *Human Relations*, *7*(1), 39-58. doi: 10.1177/001872675400700102

Beaumont, Narelle., & Dredge, Dianne. (2010). Local tourism governance: a comparison of three network approaches. *Journal of Sustainable Tourism*, *18*(1), 7 - 28.

Bentrupperbaümer, Joan M., Day, Tara J., & Reser, Joseph P. (2006). Uses, Meanings, and Understandings of Values in the Environmental and Protected Area Arena: A Consideration of 'World Heritage' Values. *Society & Natural Resources: An International Journal*, *19*(8), 723 - 741.

BfN, & IUCN. (2009). *Workshop Proceedings*. Paper presented at the Nominations and Management of Serial Natural World Heritage Properties: Present Situation, Challenges and Opportunities, Isle of Vilm.

Böhm, Andreas. (2004). Theoretical Coding: text analysis in Grounded Theory (B. Jenner, Trans.). In U. Flick, E. von Kardorff & I. Steinke (Eds.), *A Companion to Qualitative Research* (pp. 270-275). London: Sage.

Boissevain, Jeremy. (1974). *Friends of friends: networks, manipulators and coalitions*. Oxford: Blackwell.

Bryant, Antony, & Charmaz, Kathy. (2007). *The SAGE handbook of grounded theory*. London: SAGE.

Cavalcanti da Rocha Lima, Janirza. (2000). *Nas Águas do Arquipélago de Fernando de Noronha.* (PhD in Anthropology PhD Thesis), Pontifícia Universidade Católica de São Paulo, São Paulo.

Charmaz, Kathy. (2006). *Constructing grounded theory: a practical guide through qualitative analysis*. London: SAGE.

Connell, John, & Lowe, Andy. (1997). Generating grounded theory from qualitative data: the application of inductive methods in tourism and hospitality management research. *Progress in Tourism and Hospitality Research*, *3*(2), 165-173.

de Roo, Gert, & Silva, Elisabete A. (2010). *A planner's encounter with complexity*: Ashgate Pub Co.

Decrop, Alain, & Snelders, Dirk. (2005). A grounded typology of vacation decision-making. *Tourism Management*, *26*(2), 121-132.

Farrell, Bryan H., & Twining-Ward, Louise. (2004). Reconceptualizing Tourism. *Annals of Tourism Research*, *31*(2), 274-295.

Glaser, Barney G. (1978). *Theoretical sensitivity: advances in the methodology of grounded theory*. Mill Valley, Calif.: Sociology Press.

Glaser, Barney G., & Strauss, Anselm L. (1967). *The discovery of grounded theory: strategies for qualitative research*. Chicago: Aldine Pub. Co.

Grangsjo, Y. V., & Gummesson, E. (2006). Hotel networks and social capital in destination marketing. *International Journal of Service Industry Management, 17*(1), 58-75. doi: 10.1108/09564230610651589

IBGE. (2014, Aug 20). Projeção da População Brasileira: Popclock. *Instituto Brasileiro de Geografia e Estatística.* from http://www.ibge.gov.br/home/popclock_home/iframe_popclock_p_home.html

Island Research and Education Initiative, . (2009). About IREI. Retrieved 04/01/2010, 2010, from http://www.islandresearch.org/1-a.html

Kelle, Udo. (2007). The Development of Categories: different approaches in Grounded Theory. In A. Bryant & K. Charmaz (Eds.), *The SAGE handbook of grounded theory* (pp. pp. 191-213). London: SAGE.

Kim, Yeong Gug, Eves, Anita, & Scarles, Caroline. (2009). Building a model of local food consumption on trips and holidays: A grounded theory approach. *International Journal of Hospitality Management, 28*(3), 423-431.

McCall, Grant. (1994). Nissology: A Proposal for Consideration. *Journal of the Pacific Society, 17*(2-3), pp. 93-106.

Nunn, Patrick D. (1994). *Oceanic islands*. Oxford [UK]

Cambridge, Mass., [USA]: Blackwell.

Oppermann, Martin. (2000). Triangulation - a methodological discussion. *International Journal of Tourism Research, 2*(2), 141-145.

Ozcan, Pinar, & Eisenhardt, Kathleen M. (2009). Origin of Alliance Portfolios: Entrepreneurs, Network Strategies, and Firm Performance. *Academy of Management Journal*, *2*, 246-279. https://ezp.lib.unimelb.edu.au/login?url=http://search.ebscohost.com/login.aspx?direct=true&db=buh&AN=37308021&site=ehost-live

Patton, Michael Quinn. (2002). *Qualitative research and evaluation methods* (3 ed.). Thousand Oaks, California: Sage Publications.

Reser, Joseph P., & Bentrupperbäumer, Joan M. (2005). What and where are environmental values? Assessing the impacts of current diversity of use of 'environmental' and 'World Heritage' values. *Journal of Environmental Psychology, 25*(2), 125-146.

Richards, Lyn. (2009). *Handling qualitative data: a practical guide* (2nd ed.). London: SAGE.

Ronström, Owe. (2009). Island Words, Island Worlds: The Origins and Meanings of Words for 'Islands' in North-West Europe. *Island Studies Journal, 4*(5), pp. 163-182.

Scott, Noel, Cooper, Chris, & Baggio, Rodolfo. (2008). Destination Networks: Four Australian Cases. *Annals of Tourism Research, 35*(1), 169-188.

Stevenson, Nancy, Airey, David, & Miller, Graham. (2008). Tourism Policy Making: The Policymakers' Perspectives. *Annals of Tourism Research, 35*(3), 732-750.

Strauss, Anselm L., & Corbin, Juliet M. (1990). *Basics of qualitative research: grounded theory procedures and techniques*. Newbury Park, Calif.: Sage Publications.

Turner, Tom. (2009, Feb). Earth Island Institute: About Us: Our Story. *Earth Island Institute.* from http://www.earthisland.org/index.php/aboutUs/story/

United Nations Convention on the Law of the Sea (1982).

UNDP. (2011). COMPACT: engaging local communities in stewardship of globally significant protected areas. Retrieved 21/03/2011, from http://sgp.undp.org/img/file/Compact Booklet-1.pdf

Convention Concerning the Protection of the World Cultural and Natural Heritage (1972).

UNESCO World Heritage Centre, . (2008). World Heritage Information Kit. from http://whc.unesco.org/en/activities/567/activity-567-1.pdf

Wearing, Stephen Leslie, Wearing, Michael, & McDonald, Matthew. (2010). Understanding local power and interactional processes in sustainable tourism: exploring village-tour operator relations on the Kokoda Track, Papua New Guinea. *Journal of Sustainable Tourism*, *18*(1), 61 - 76.

Widmer, Glória Maria., & De Souza Melo, Ana Júlia. (2009). *A Influência do Título de Patrimônio da Humanidade sobre Aspectos Quantitativos e Qualitativos da Visitação Turística em Fernando de Noronha*. Paper presented at the XI Seminário Internacional de Turismo, Curitiba, Brazil.

Williams, Kevin. (2005). The Meanings and Effectiveness of World Heritage Designation in the USA. In D. Harrison & M. Hitchcock (Eds.), *The politics of world heritage: negotiating tourism and conservation* (1st ed. ed., pp. 132-136). Clevedon [UK]; Tonawanda, NY [USA]; North York, Ontario [Canada]: Channel View Publications.

Xiao, Honggen, & Smith, Stephen L. J. (2006). Case studies in tourism research: A state-of-the-art analysis. *Tourism Management*, *27*(5), 738-749.

Yin, Robert K. (2009). *Case study research: design and methods* (4th - Kindle E-Book Edition ed.). Thousand Oaks, Calif.: SAGE.

Fernando de Noronha Archipelago

Part 2 | The Evolution of SECAS

Different Places, Different Global-Local Interplays

Part 2 comprises 7 chapters portraying the main results obtained with the research by exploring: the *contextual*, *intervening* and *causal conditions* influencing processes of self-organisation by means of competition and cooperation; the *(inter)action strategies* of *Tourism Development – TD* and *Localised Conservation – LC* in place and resulting *consequences* in terms of implemented tourism development models and main sustainability challenges the two case study sites currently face.

Chapter 5 explores the *context* in which the strategies of *LC* and *TD* have emerged at the global level, while *Chapter 6* portrays the process of their adoption at the national level (Australia and Brazil) and chapters 8 and 9 at the local level (*Lord Howe Island – LHI* and *Fernando de Noronha Archipelago – FDN*). These chapters suggest that these 3 strategies are embedded in global, national and local historical and social economic *contexts* linked with the evolution of tourism and of the nature conservation movement. Despite the attempt to restrict the analysis of the researched *phenomenon* to *Chapter 10*, *Chapter 5* carries an account of the multi-level nature conservation and *TD* structures, presenting the way they evolved over time at the global level.

Chapter 7 explores the role of environmental and demographic features of *LHI* and *FDN* as *intervening conditions* influencing the researched *phenomenon* (self-organisation by means of competition and cooperation). In that chapter, the oceanic island environment and the population of the Brazilian and the Australian sites are characterised, including the identification of different local and external agents related to the two islands.

Chapter 10 starts by portraying the main *causal conditions* identified by the research as driving and inhibiting processes of self-organisation by means of competition and cooperation. It follows by presenting the results obtained in regard to the *relational structures* for the two case study sites and their associated manifestations of different types of interpersonal and interorganisational relationships of competition and cooperation.

Chapter 11 addresses the primary research question by dealing with the resulting *consequences* or main sustainability challenges resulting from the processes of self-organisation by means of competition and cooperation experience by the two case study islands.

Lord Howe Island

Chapter 5 | Global Context and Strategies

Global Structural Conditions

> *[One] would use the case study method because [one] wanted to understand a real-life phenomenon in depth, but such understanding encompassed important contextual conditions - because they were highly pertinent to [one's] phenomenon of study (Yin, 2009, loc. 639 of 4690).*

Three ***contextual conditions*** for the researched *phenomenon* (self-organisation by means of competition and cooperation) are explored in this chapter: two emergent properties of the global SECAS (the ***evolution of tourism*** and the ***emergence of the nature conservation movement***) and the ***broader historical background*** to which these properties are attached. Linked with these *contextual conditions* is the emergence of two system-wide *(inter)action strategies*: **Tourism Development – TD** and **Localised Conservation – LC** through the *implementation of Protected Areas – PAs* from local to global levels. The interplay and co-evolution of these *(inter)action strategies* and *contextual conditions* at the global level is presented in this chapter, therefore providing the global background to understanding how TD and the *implementation of PAs* have occurred at the national level (*Chapter 6*) and the local level (*Chapter 8* for *Fernando de Noronha Archipelago - FDN* and *Chapter 9* for *Lord Howe Island - LHI*). This chapter seeks to address part of the fourth secondary research question (2.4)[44] and sets the basis for the argument that not only are **TD** and **LC** a product of globalisation, they are also promoters of this system-wide *phenomenon*, affecting how dependent local areas are to the global SECAS. *Context* can be understood as the "structural conditions that shape the nature of situations, circumstances, or problems to which individuals respond by means of action/interaction/emotions[, ranging] [...] from the most macro to the micro" (Corbin & Strauss, 2008, p. 87). This relationship between *context* and *phenomenon* corroborates with that of complexity theory, inferring there is a feedback process through which *context* influences *phenomenon*, bringing "about *consequences* that in turn might go back to impact upon *conditions*" (ibid., p. 89). This is mainly because "*phenomenon* and *context* are not always distinguishable in real-life situations" (Yin, 2009) and from a SECAS perspective they are entangled and interdependent. As for *(inter)action strategies*, they can be seen as "devised to manage, handle, carry out, respond to a *phenomenon* under a specific set of perceived *conditions*" (Strauss & Corbin, 1990, p. 97). Events are presented here as an integrated chronology to facilitate analysis of the researched SECAS's dynamics and because

> *[t]heorizing the social process via narrative is a deep tradition in both history and sociology. If there is any one idea central to historical ways of thinking, it is that the order of things makes a difference, that reality occurs not as*

[44] See page 123.

time-bounded snapshots within which 'causes' affect one another (...), but as stories, cascades of events (Abbot, 1991, p. 227 cited by Geels, 2011, p. 35).

The Global Meta-Context

An account of the global *context* is now carried as an attempt to look at history from *tourism* and social-ecological perspectives. Ribeiro's (1997) interpretation of civilizational processes is used here as the structure to understanding the *meta-context* in which *tourism* and socio-ecological systems have evolved.

Presenting a critical history of technology, *Ribeiro* (op. cit.) explains the linkages between different *technological revolutions* (or socio-technical regime shifts), different general *civilizational processes* and different *socio-cultural formations*. According to Ribeiro (1997, p. 57), the term *technological revolution* suggests that "certain outstanding technological transformations (on the way **humankind interacts with the natural environment** or makes war) correspond to qualitative social transformations, leading to the recognition of new categories within the continuum of socio-cultural evolution".

A summary of *Ribeiro*'s historical framework is presented in *Table 14*. It portrays the different types of sociocultural formation undergone by Brazil and Australia in regard to their colonisation process. While Australia was colonised by the English as a settlement colony, Brazil was first a Portuguese exploration colony based on slavery and later an independent country exploited under neo-colonialism. References to Iberia (Portugal and Spain), England and the USA have also been printed in bold to illustrate the complementary sociocultural formations arising from the relationships of interdependence between countries (Brazil as an *exploration colony* of the *salvationist mercantile* Portuguese Empire, then under *industrial imperialist* English and later on North American *neo-colonialism* and Australia as a *settlement colony* of *industrial imperialist* England)[45].

The history of *tourism*, *environmental impacts* and *nature conservation* can also be interpreted as linked with technological breakthroughs as well as to the process of globalisation, being highly impacted by periods of political, military, social and economic instability. From a Western perspective, *Rejowski* (2002) suggests 3 great periods for the study of the history of tourism: *pre-tourism*, the development of *modern tourism* and *contemporary tourism in a scenario of change*. According to *Rejowski* (op. cit.), *pre-tourism* corresponds to the period prior to the *Industrial Revolution*, comprising tourism's initial development with the Greeks and the Romans (specially boosted by the Roman network of roads and the *Pax Romana*); a period of retraction with the *Barbarian Invasions* and the *Middle Ages*; and its recoup during the *Renaissance* and the practice of the *Grand Tour*. As for the development of *modern tourism*, she interprets it as being boosted by improved transport alternatives resulting from the creation

[45] Corroborating with *Wallerstein*'s (1974) *World System Theory*.

and expansion of railways and the construction and operation of steamships. Finally, *contemporary tourism* in a scenario of change would refer to the **XX** and **XXI centuries**, highly influenced by the growth of air transport and improvement of communications, especially with the advent of the *Internet*.

Table 14 | Basic Sequence of Sociocultural Evolution

Technological Revolutions	General Civilizational Processes	Sociocultural Formations	Historical Paradigms
I Agricultural Revolution	1st Agricultural Revolution	undifferentiated horticultural villages	Tubinambá (16th c. A.D.)
			Guaná (18th c. A.D.)
	2nd Pastoral Expansion	nomadic pastoral hordes	Quirquiz (20th c. A.D.)
			Guaicuru (18th c. A.D.)
II Urban Revolution	3rd Urban Revolution	collectivist rural craftsmen states	Urartu (10th c. B.C.)
			Mochica (2nd c. A.D.)
	4th Slavery Expansion	private rural craftsmen states	Phoenician (20th c. B.C.)
			Kushana (5th c. B.C.)
	5th Second Pastoral Expansion	nomadic pastoral chiefdoms	Hicsos (13th c. B.C.)
			Hunos (4th c. A.D.)
III Irrigation Revolution	6th Irrrigation Revolution	theocratic irrigation empires	Egypt (21st c. B.C.)
			Incas (15th c. A.D.)
IV Metallurgical Revolution	7th Metallurgical Revoution	slavery mercantile empires	Greece (5th c. B.C.)
			Rome (2nd c. A.D.)
V Pastoral Revolution	8th Pastoral Revolution	despotic salvationist empires	Islam (7th c. A.D.)
			Otoman (15th c. A.D.)
VI Mercantile Revolution	9th Mercantile Revolution	salvationist mercantile empires	**Iberia (16th c. A.D.)**
			Russia (16th c. A.D.)
		slavery/exploration colonialism	**Brazil (17th c. A.D.)**
			Cuba (18th c. A.D.)
	10th Capitalist Expansion	mercantile capitalism	Holland (17th c. A.D.)
			England (17th c. A.D.)
		mercantile colonialism	Indonesia (19th c. A.D.)
			Guianas (20th c. A.D.)
		settlement colonialism	**USA (18th c. A.D.)**
			Australia (19th c. A.D.)
VII Industrial Revolution	11th Industrial Revolution	industrial imperialism	**England (19th c. A.D.)**
			USA (20th c. A.D.)
		neocolonialism	**Brazil (20th c. A.D.)**
			Venezuela (20th c. A.D.)
	12th Socialist Expansion	revolutionary socialism	USSR (1971)
			China (1949)
		evolutionary socialism	Sweden (1950)
			England (1965)
		modernising nationalism	Egypt (1953)
			Argel (1962)
VII Thermonuclear Revolution	13th Thermonuclear Revolution		Future Societies

Source | Translated from Ribeiro (1997, p. 62)

The process of increased globalisation manifested throughout these three great periods of *tourism* history has brought not only an increase in

tourist flows and human impact on the environment, but also a raising awareness of the need to control this impact as to guarantee the survival of the human species[46]. In that respect, one can observe the emergence of a *global nature conservation structure* and a *tourism development structure* that have coevolved with a global structure aiming to secure peace through cooperation and conflict resolution. Within these structures, a process of coevolution can also be observed in the way global organisations were created through the development of a global regulatory network, which was, in return, validated and expanded by these same global organisations. This global network of international organisations arises from interests of national governments, the private sector and the organised civil society.

Foundations of Global Cooperation, PAs and TD

As with any evolutionary account, defining the origin of current networks can be something highly debatable and hard to do as one will tend to keep going deeper into the past, looking for further foundations of events initially considered as the origin of the current researched structure. For the purpose of this research, the account of the global *context* will start in the **early XX century** around the time of the *First World War*, with the creation of the *League of Nations*. This considers not only the intrinsic connection between the *First* and the *Second World Wars* and that between the *League of Nations* and the United Nations, but also the fact that these two wars were some of the most influential contemporary events to delineate the way international relations have taken place until very recently. It also considers that this period is the one most related to the development of *tourism* in the two case study sites of *FDN* and *LHI*.

> *"By the 1900s, coastal tourism, overseas travel by passenger liner and the rise of socially segregated travel offered a wider range of international holiday options to the elite in Western society. The imperial trade of many European powers also created a demand for business travel and limited volumes of recreational travel" (Page, 2011, p. 45).*

This growth of mass tourism had originated in the **XIX century** with the introduction of organised travel by *Thomas Cook* and the availability of mass transport options such as railways and steamships. However, during *World War I* (**1914-1918**), *tourism* undergoes a period of retraction. In response to that, the 20-year interwar period (**1919-1938**) comprised the reconstruction and expansion of important tourist infrastructure and the creation of organisations and regulations[47] promoting the development of *tourism*.

[46] As discussed throughout *Chapter 1*.
[47] Regulations acknowledging worker's rights to holidaying are an example (Gyr, 2010). In 1925, Brazil was the 6th country in the world to guarantee the right to paid annual leave to all workers of public and private organisations (SCS-TST,

In **1919**, the *Paris Peace Conference* (18th-21th January) formalises the end of the war with the preparation of the *Paris Peace Treaties* (including the *Treaty of Versailles* signed on 28 June **1919**), and culminates in the creation of an international organisation with the mission to secure international peace: the *League of Nations*. This organisation was the basis for the creation of international specialised agencies such as the *International Labour Organisation – ILO* [48] in **1919** (an international forum for labour issues), the *Permanent Court of International Justice* in **1922** (superseded by the *International Court of Justice*), and the *International Institute of Intellectual Cooperation – IICI* in **1925** (superseded by the *United Nations Educational, Scientific and Cultural Organisation - UNESCO*). In **1919**, the *International Air Traffic Association – IATA* was founded in Hague, the year of the world's first international scheduled air services (IATA, 2012). In **1924**, the *International Union of Official Tourist Propaganda Organisations – IUOTPO* was created with the mission to raise awareness of tourist destinations and facilitate tourist traffic through European international borders (Bhatia, 2002, p. 137). Parallel to tourism, the conservation movement was also gaining momentum, the *International Office for the Protection of Nature – IOPN* being established in Brussels in **1928** by initiative of the *International Union of Biological Sciences – IUBS* (UNESCO, 1948).

Mostly due to its incapacity to avoid the *Second World War* (**1939-1945**), the *League of Nations* was dissolved in 19 April **1946**. However, in **1942**, through the *Declaration by United Nations – UN* at the *Arcadia Conference*, the *UN* is created with the ultimate goal to ensure international peace, inheriting many of the specialised agencies of the *League of Nations*. Implemented through the *UN Charter* of **1946**, the *United Nations* emerges in a time of great concerns about the *consequences* of the *Second World War* and high expectations of peace. The incapacity of the *League of Nations* to act more decisively in international disputes was a great concern to those leading the creation of the *UN*, reflecting on the way the *UN Security Council* was constituted and its rules of operation formulated. The main challenge faced by both the *League of Nations* and the *UN* has been the dichotomy in ensuring its member countries' sovereignty, while also reassuring the exercise of such sovereignty does not harm the exercise of sovereignty by other countries[49] – the fear of many member countries of being subject to the decisions of a global organisation has greatly contributed for the lack of strength of the *League of Nations* and also to the *United Nations*, in a smaller degree. From the way the *United Nations* and its specialised agencies are constituted, the main role of the *UN System* is to

2011). In Australia, "[p]aid annual leave was won after a campaign by printing workers in 1936" (ACTU, 2012).

[48] As Towner (1995, p. 341) suggests, tourism history is directly connected to the history of leisure, including the way leisure is officially recognised as a need.

[49] Corroborating with the theory on *holons* proposed by Koestler (1967) presented in Chapter 1.

ensure cooperation among nations while also trying to resolve conflicts (Fasulo, 2009).

Rise of Global Tourism

World War II (**1939-1945**) brought a new period of rupture for *tourism* (forcing *IUOTPO* to discontinue its activities), but also pushed for increased global cooperation for the reestablishment of peace and the promotion of reconstruction. Despite coming slowly after the war (Gyr, 2010), the growth of *tourism* regained strength with: increased power of worker's unions and the subsidised social *tourism* movement; the recognition of *tourism* as a vehicle for peace[50] for bringing increased understanding of cultural differences and as an important economic activity for European countries trying to recoup from losses of war; and by the further expansion of air transport services infra-structure supported by the creation of the *International Civil Aviation Organization – ICAO* in **1944**[51], and the signature of the *International Services Transit Agreement* and the *International Air Transport Agreement* in that same year. Re-signifying the landscape, the war also brought *tourism* awareness to areas that used to hold little *tourism* appeal[52].

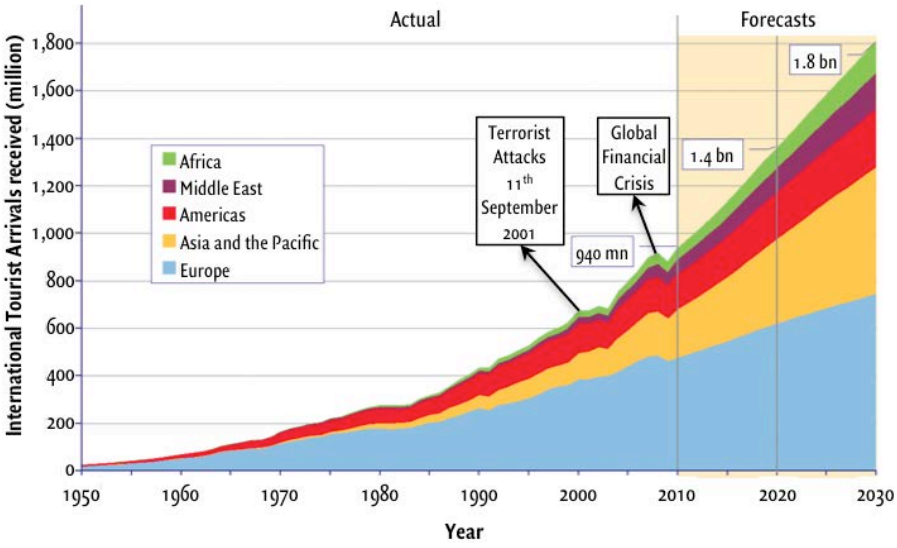
In **1947**, following the **1946** *Conference of National Tourist Organisations* in London, the *International Union of Official Travel Organisations – IUOTO* was founded to aid the process of post-war reconstruction, replacing *IUOTPO*. The new organisation had as major tasks, the stimulation and coordination of *TD* and "was the only international organi[s]ation grouping together the governmental or official *tourism* organisations of all parts of the world on the basis of one for each country and territory" (Bhatia, 2002, pp. 138-9). Working closely to the *UN*, *IUOTO* takes part of the **1963** *UN Conference on International Travel and Tourism* in Rome, setting the basis for the definitions of tourists[53] and excursionists[54] approved by the *UN Statistical Commission* in **1968** (ibid, p. 88).

Figure 45 portrays the *tourism* growth trend in the period post *II World War*, from **1950** to **2010** and projections to **2030**. It highlights the sensitivity of the activity to events of global impact such as the *terrorist attacks of the 11th of September* **2001** and the *Global Financial Crisis of* **2008/2009**. Along with

[50] "The United Nations, following an IUOTO initiative, declares 1967 as the International Tourism Year (ITY), with the slogan Tourism, Passport to Peace" (UNWTO, 2011a).
[51] "as a means to secure international co-operation and highest possible degree of uniformity in regulations and standards, procedures and organization regarding civil aviation matters" (ICAO, 2012).
[52] Refer to Chapter 2, for an account of the effects of war to tourist destinations.
[53] Tourists: "temporary visitors staying at least twenty-four hours in the country visited[,] the purpose of whose journey being classified as leisure (recreation, holiday, health, study, religion and sport) or business, family, mission, meeting".
[54] Excursionists: "temporary visitors staying less than twenty-four hours in the country visited (including travellers on cruises)".

the growth of tourism, the **last sixty years** experienced increased globalisation of regulations, infrastructure, economies, societies, cultures, technologies, communication, institutions, etc. *Tourism* and globalisation seem to portray a self-reinforcing relationship by which greater tourist flows promote increased connections, the same way increased connections push for greater tourist flows. The development of air transport has a direct link with the increase of connections and tourist flows, having become the main mode of transport for domestic and international tourists worldwide from the **1970s** onwards (Palhares, 2001, p. 161).

Figure 45 | Tourism actual trend and forecast 1950-2030



Source | Adapted from UNWTO (2012d, p. 14)

Despite the continuous and fairly stable growth experienced by *tourism* since the **1950s**, its importance for national economies and its social and environmental impacts were overlooked by many national governments for a long time. Responding to calls from the **1969** *Intergovernmental Conference on Tourism* in Sofia and the *United Nations General Assembly* for the creation of an intergovernmental organisation on independent tourism, the *IUOTO* adopts the Statutes of the *World Tourism Organisation – WTO* on the 27th September **1970**[55] (UNWTO, 2011a). With that change of statute, the organisation also changed its focus. In opposition to simply facilitating *tourism*, the organisation started delving and acting on TD impact issues as well, including those on the environment[56].

In **1989**, *tourism* business leaders meeting in Paris realised that because of its fragmentation, "although Travel & Tourism was the largest industry in

[55] Which from **1980** onwards is celebrated as *World Tourism Day*.
[56] As discussed on page 65, the period from the **1970s** to early **1980s** is characterised by a cautionary position towards tourism development impacts.

the world and the biggest provider of jobs, few in the industry, let alone within governments, were aware of this" (WTTC, 2012a, p. 1). As a result, the *World Travel & Tourism Council – WTTC* was established in **1990**, aiming to promote awareness of *Travel & Tourism*'s economic contribution, to expand markets in harmony with the environment and to reduce barriers to growth (WTTC, 2012a). The compilation of *tourism* statistics that would allow measurement of its national economic impact had long been a concern, with the term *Tourism Satellite Account – TSA* being coined in **1979** and the development of an "international standard for all countries wishing to measure the impact of tourism on their economy" being approved by the *United Nation's Statistical Commission* in **2000**[57] (UNWTO, 2002). Despite not producing individual *TSA*s for countries, *WTTC*'s global research on the global economic contribution of *Travel & Tourism* seeks consistency with *TSA*, which was developed in great part by *WTO* contributions. Advancing the process of tourism integration in the global framework for cooperation, in **2003**, responding to calls from its member countries and from the *UN*, *WTO*'s Assembly approves the transformation of *WTO* into a *UN* specialised body, the *United Nations World Tourism Organisation*, with its initials changing to *UNWTO* in **2005** (UNWTO, 2011a).

Gaining greater recognition as an important economic sector for national economies is still a great part of the tourism sector agenda. During the **2009** *UNWTO General Assembly*, Tourism Ministers of member countries part of the *G20*[58] established the *T20* "to promote the value of tourism as a driver of job creation, economic growth and development within the *G20* processes and advocate for policies which are supportive of tourism growth" (UNWTO, 2012a). Barriers to travel, visa facilitation, air connectivity and increased access to sustainable energy are among priority themes discussed by *T20* since its inception (ibid).

As the *UN* specialised agency with the tourism mandate and following the *UN Delivering as One* strategy, *UNWTO* brought 9 international organisations[59] together in **2010** and established the *UN Steering Committee on Tourism for Development – SCTD* with the aim to coordinate their tourism-related work, specially in relation to "*Least Developed Countries – LDC*s and developing countries" (UNWTO, 2012b).

[57] From **2000** *TSA* is recognised as the unifying framework of most of the components of the *System of Tourism Statistics*, a subset of the *General System of Statistics* adopted by the *UN* (UNWTO, 2002).
[58] The *Group of Twenty – G20* comprises the major 20 global economies and is an international forum for cooperation on global economic and financial issues. Both Brazil and Australia are part of the group (G20, 2013).
[59] *International Labour Organisation - ILO*, *International Trade Centre – ITC*, *United Nations Conference on Trade and Development – UNCTAD*, *United Nations Development Programme – UNDP*, *United Nations Environment Programme – UNEP*, *United Nations Educational, Scientific and Cultural Organisation – UNESCO*, *United Nations Industrial Organisation – UNIDO*, *World Trade Organisation – WTO* and *United Nations World Tourism Organisation – UNWTO*.

This trend of coordinating efforts can also be seen within different international organisations representing the different sectors within tourism. In **2012**, *WTTC*, *UNWTO* and *IATA* joined forces with 6 other international organisations and formed the *Travel Association Coalition* in the pursuit of a *One Voice Campaign* for *Tourism Development* (WTTC, 2012b).

Rise of the Global Nature Conservation Movement

In **1945**, at the *United Nations Conference* in London for the establishment of an educational and cultural organisation, the constitution of the *United Nations Educational, Scientific and Cultural Organisation – UNESCO* was introduced and signed. Coming into force in **1946**, *UNESCO* builds on the work of *IICI* and was seen as an instrument to world peace through the promotion of education, scientific cooperation and cultural diversity acceptance (UNESCO, 2012). Its purpose is stated in its constitution through a simple, yet comprehensive statement: "since wars begin in the minds of men, it is in the minds of men that the defences of peace must be constructed" (UNESCO, 1946).

The devastation caused by conflict during the *First* and the *Second World Wars* led to the loss of significant amounts of cultural and natural heritage (Instituto Cultural da RAE de Macao, 2005, p. 7). Being the *UN* specialised agency for educational, scientific and cultural affairs, *UNESCO* became closely related to environmental and cultural and natural heritage issues. By request of the *Swiss League for the Protection of Nature*, *UNESCO* organises the **1948** Fontainebleau *Conference for the Establishment of the International Union for the Protection of Nature – IUPN*, culminating in the creation of an international organisation that replaced the *IOPN* (UNESCO, 1948). After a couple of name changes[60], the organisation is currently known as the *International Union for Conservation of Nature – IUCN*. In its original constitution, its mission included the promotion and recommendation of national and international action, the facilitation and encouragement of co-operation and the collection, analysis, interpretation and dissemination of information regarding the protection of nature (IUCN, 1948, p. 17). As part of its actions, in **1963**, *The IUCN Red List System* (currently *The IUCN Red List of Threatened Species*) was first conceived as a standard for species listing and conservation assessment efforts and in **1994**, more precise and quantitative *Red List Categories*[61] and *Criteria* were adopted with all world bird species being evaluated in **1988** and all mammal species assessed in **1996**, setting a baseline to monitor future trends (IUCN, 2013b).

[60] In **1956**, it was rebranded as the *International Union for the Conservation of Nature and Natural Resources* (IUCN) and in **1990** as the *World Conservation Union* (IUCN). It switched to its current name (*International Union for Conservation of Nature – IUCN*) in **2008**.

[61] From most to least threatened: *Extinct*, *Extinct in the Wild*, *Critically Endangered*, *Endangered*, *Vulnerable*, *Near Threatened* and *Least Concern*.

Concerns with the extinction of species and loss of biodiversity are indeed, some of the foundations of the global conservation movement triggering the appearance of not only monitoring systems, but also international agreements and institutions. The result of 7 rounds of negotiation and a specific conference[62] on its adoption, the *Convention on Biological Diversity – CBD* was open for signatures on the 5th of June **1992** during the *UN Conference on Environment and Development - UNCED* in Rio, coming into force on the 29th December **1993**. Its 3 main objectives are: "the conservation of biological diversity, the sustainable use of the components of biological diversity and the fair and equitable sharing of the benefits arising out of the utilization of genetic resources" (SCBD, 2013). Due to its importance in monitoring the level of threat experienced by different species, the *IUCN Red List* is adopted by the *CBD*[63] as one of the indicators of biodiversity conservation (ZSL Institute of Zoology, 2007).

Back in **1961**, concerned with the urgent need to promote nature conservation and realising the lack of funding for securing more effective action, a group of individuals (some of them related to *IUCN* and *UNESCO*) met in Switzerland and signed the *Morges Manifesto* (WWF International, 1961) creating the foundations for the *World Wildlife Fund – WWF*, launched that same year as a charity organisation. To raise awareness and funds, *WWF* "launched *National Appeals*, which would send up to two thirds of the funds raised to the *International Secretariat* in Morges (now know as *WWF International*), and keep the remainder to spend on conservation projects of their own choice" (WWF International, 2012). Among others, *IUCN* received some of *WWF*'s first grants. *National Appeals* later became *National Organisations* affiliated to *WWF International*, such as *WWF-Brasil*, *WWF-Australia* and others. Initially focusing on the protection of specific species, *WWF* soon realised it would have to work with people who were connected with the habitats of the species they were trying to protect.

"In **1985** *WWF* formally re-registered its name to *World Wide Fund for Nature*, to try and scape the preservation of animal species image and reflect a broader view of the situation" (WWF International, 2006). In the late **1990**s, the organisation adopts a larger scale approach focusing also on *Eco-Regions* rather than just species and their habitats. These *Eco-Regions* were defined as hotspots to biodiversity, an example being the Amazon Basin. By **2000**, conservation efforts also included the work with big businesses, including the establishment of the *Marine Stewardship*

[62] *Conference for the Adoption of the Convention on Biological Diversity* in Nairobi in **1992**.
[63] Goal 7 (*Ensure Environmental Sustainability*) of the *Millennium Development Goals* that set target 7.B to reduce significantly the rate of biodiversity loss by 2010, backed up the importance of biodiversity conservation. However, this target was missed (UN, 2013).

Council to certify and help manage global fishing stocks. By **2007**, a set of global priorities was established to tap into macro issues that were the root causes of biodiversity loss, including *climate change*. Currently, *WWF International's Strategic Plan for Conservation* seeks to conserve biodiversity and reduce humanity's global footprint, focusing efforts on 35 priority places, 36 priority species and 6 priority footprint areas by tackling threats and drivers behind them. Their *Global Marine Program* is one of five expert programs to operationalize their strategy (WWF International, 2008). Part of *WWF-Germany* and based in Hamburg, the *International WWF Centre for Marine Conservation* supports the establishment of trans-boundary high seas international *Marine Protected Areas – MPAs* and promotes sustainable tourist practices in coastal sites that are *tourism* and biodiversity hotspots, such as the Mediterranean (WWF-Germany, 2007).

Nevertheless, concerns with general developmental impacts on the environment highly marked the late **1960**s and the **1970**s. In **1972**, the *United Nations Conference on the Human Environment* set the basis for the concept of sustainable development and culminated in the creation of the *United Nations Environment Programme – UNEP* on that same year. The *Declaration* originating from the conference formalised the UN's view and principles in regards to development and the environment, while *UNEP* constituted the effort to achieving this view and practice these principles. Since its creation, *UNEP* has established a series of partnerships with *Non-Governmental Organisations – NGOs* and *National Governments* that have resulted in the creation of new organisations, such as the *UNEP World Conservation Monitoring Centre – UNEP-WCMC* and the *UNEP Global Resource Information Database in Arendal – UNEP GRID Arendal*.

UNEP-WCMC was created in **1988** to cater for the data needs of *IUCN*, *UNEP* and *WWF*. The global datasets it produces focus mainly on biodiversity and *Protected Areas – PAs*. Initially working only with the assemblage and maintenance of datasets, it has recently moved also into the analysis of datasets and the production of reports. Now, it also seeks to provide authority information to decision makers. In relation to *PAs*, *UNEP-WCMC* seeks to map and understand their role in biodiversity conservation and the main factors currently threatening these areas (UNEP-WCMC, 2013).

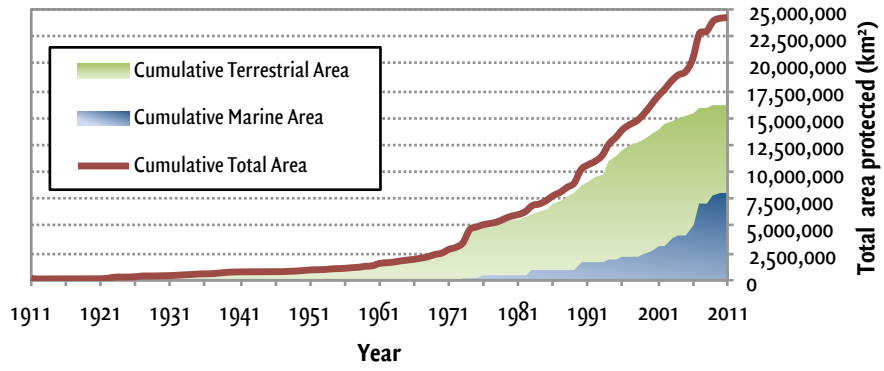
UNEP GRID Arendal was created in **1989** as the result of a partnership between the *Government of Norway* and *UNEP*, with the mission to "provide environmental knowledge for change". One of its cross-cutting themes is sustainable tourism, for which they have produced publications and offer support for decision-making and awareness-raising about the role that tourism can play as a tool for biocultural conservation and regeneration. Its *Linking Tourism and Conservation – LTC* initiative "highlights well functioning examples where tourism supports the development and management of protected areas" (GRID-Arendal, 2013).

Protected Areas as a Global Strategy for Conservation

Being the protection of biodiversity and ecological processes highly dependent on the protection of habitats and eco-regions in which they take place, many *Protected Areas – PAs*[64] have been proclaimed since the *Yellowstone National Park* in the USA in **1872**, constituting an important global strategy for the conservation of nature.

In general terms, the proclamation of PAs is an attempt to inhibit human development behaviour that can deplete resources, pollute the environment, considerably reshape natural landscapes and interfere with ecosystem processes and the maintenance of biodiversity. PAs can also promote the nature conservation movement by providing opportunities for environmental education through visitation and research, while protecting representative and iconic environments, ecosystems and species. In **2011**, the total coverage of nationally designated protected areas reached close to 25 million square kilometres (*Figure 46*). Along with the globalisation of the nature conservation movement, the number of internationally designated protected areas started growing more significantly in the mid **1990**s, after the *United Nations Earth Summit* in Rio in **1993**, reaching more than 27.000 in **2011** (*Figure 47*).

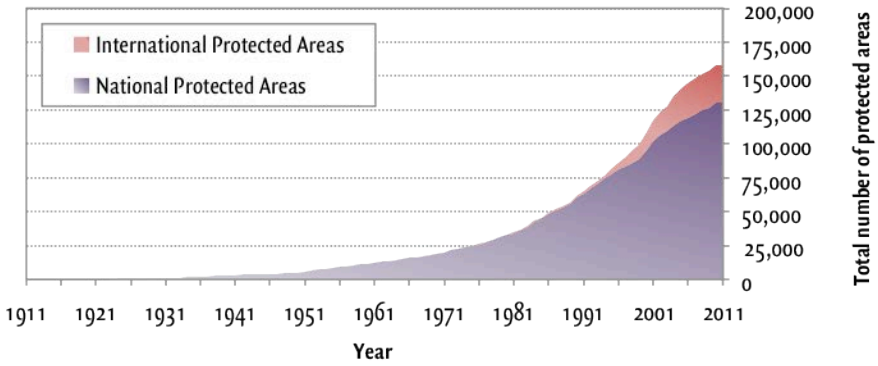
Figure 46 | Growth in nationally designated PAs (1911-2011)



Source | IUCN and UNEP-WCMC (2012)

[64]According to *IUCN* (2011),"[a] protected area is a clearly defined geographical space, recognised, dedicated and managed, through legal or other effective means, to achieve the long term conservation of nature with associated ecosystem services and cultural values".

Figure 47 | Growth in number of designated PAs (1911-2011)



Source | IUCN and UNEP-WCMC (2012)

However, there being initially a lack of common terminology and standards, each country developed its own systems of PAs. In **1933**, the first attempt to 'clarify terminology' was undertaken at the *International Conference for the Protection of Fauna and Flora*, in London, setting out four PA categories. In **1972**, *IUCN* was called out to define different PA purposes and terminology, prompting its newly formed *Commission on National Parks and Protected Areas* – CNPPA's (currently the *World Commission on Protected Areas* – WCPA[65]) decision to develop a *PA Category System*. This system was improved by revision and proposals of new categories culminating in a new system approved in **1994** at the *IUCN General Assembly* meeting in Buenos Aires. It gained further recognition and global penetration with its endorsement by the *CBD* at its 7th *Conference of Parties* in Kuala Lumpur in **2004** and its last revision through ample participation in **2008** (IUCN & Dudley, 2008). An important shift from pre-**1994** to post-**1994** categories is the recognition that despite being commonly referred to as *International Protected Areas*, *Biosphere Reserves* and *Natural World Heritage Properties* are in fact international instruments to the protection of natural areas that are implemented by nationally proclaimed PAs and regulations[66].

Back in **1968**, with the co-operation of *IUCN* and other international organisations, *UNESCO* held the Paris *Intergovernmental Conference of Experts on the Scientific Basis for Rational Use and Conservation of the Resources of the Biosphere* (UNESCO, 1970). The recommendations of the conference led to the launching, in **1971**, of a long-term intergovernmental and interdisciplinary programme on the rational use and conservation of the natural environment and its resources entitled *Man and the Biosphere Programme – MaB Programme* (Batisse, 1980; UNESCO, 1970). With the title

[65] Despite coming into existence only in **1996**, *WCPA* originated in 1958 when *IUCN* founded the *Provisional Commission on National Parks*, later promoting it to an *International Commission on National Parks* (a technical advisory body to the *IUCN General Assembly*) in **1960**, and transforming it into the *CPPA* in **1975** (IUCN, 2010).
[66] Refer to *Attachment 1* for the current *IUCN* list of PA categories and their description.

conservation of natural areas and of genetic material they contain, theme number 8 of the program brought up the idea of a *coordinated worldwide network of protected areas*. As a result, the first batch of 57 *Biosphere Reserves* was created in **1976** (Batisse, 1982). The logic of *Biosphere Reserves* is to articulate existing PAs and support the creation of new ones so that they can be managed in an integrated way at biome levels. In **2012**, the *World Network of Biosphere Reserves* comprised a total of 610 sites in 117 countries (UNESCO, 2013).

Following the increasing trend of PA proclamations and pushed by the growing process of globalisation, 100 years after the proclamation of the world's first National Park, *UNESCO's General Conference of* **1972** adopted the *Convention Concerning the Protection of the World Cultural and Natural Heritage* (*World Heritage Convention – WH Convention*).

> *"The idea of a 'world heritage trust' was first proposed by a White House Conference on International Cooperation in the USA in* **1965** *[...] to identify, establish, develop and manage the world's most important natural and scenic areas and historic sites. [...] [Following that,] UNESCO developed a draft convention on 'International Protection of Monuments, Groups, and Buildings and Sites of Universal Value', while IUCN undertook an independent effort to prepare a 'Convention for the Conservation of the World's Heritage' (Slatyer, 1983, p. 138).*

The two drafts were submitted to a special working group of UNESCO experts and the *Committee of the UN Conference on the Human Environment* and were improved and consolidated into the *WH Convention of* **1972** (Slatyer, 1983). State parties that have signed and accepted/ratified/acceded the *WH Convention* can nominate areas under their jurisdiction to be included in the *WH List*. Signatory member-states elect regional representatives that form the *WH Committee*. *IUCN* assesses nomination applications for natural or mixed *WHPs* and provides recommendations to the *WH Committee*, which, then, makes a decision on whether to inscribe the nominated properties in the list. The assessment of nominated properties as natural heritage is centred in the identification of currently held natural *Outstanding Universal Values – OUV*, or as *Article 2* of the *Convention* (UNESCO, 1972) states:

> *- "natural features consisting of physical and biological formations or groups of such formations, which are of outstanding universal value from the aesthetic or scientific point of view;*
>
> *- geological and physiographical formations and precisely delineated areas, which constitute the habitat of threatened species of animals and plants of outstanding universal value from the point of view of science and conservation;*
>
> *- natural sites or precisely delineated areas of outstanding universal value from the point o view of science, conservation or natural beauty".*

This way, while UNESCO's *MaB Program* targets **representative** ecosystems of the main global biomes, *World Heritage Listing – WHL* targets **iconic** exemplars of natural environments of *OUV*. As a result, in many cases, *Natural World Heritage Properties – NWHPs* tend to cover smaller areas and comprise fewer PAs.

NWHPs are classified as attending any of the following 4 criteria or their combination (WHC, 2013a)[67]:

> *vii.* *"to contain superlative natural phenomena or areas of exceptional natural beauty and aesthetic importance";*
>
> *viii.* *"to be outstanding examples representing major stages of earth's history, including the record of life, significant on-going geological processes in the development of landforms, or significant geomorphic or physiographic features";*
>
> *ix.* *"to be outstanding examples representing significant on-going ecological and biological processes in the evolution and development of terrestrial, fresh water, coastal and marine ecosystems and communities of plants and animals";*
>
> *x.* *"to contain the most important and significant natural habitats for in-situ conservation of biological diversity, including those containing threatened species of outstanding universal value from the point of view of science or conservation".*

Since the *WH Convention* explicitly states that inscribed areas comprise elements of *OUV*, being listed as *WH* can bring broad public awareness to places that were once hardly known. It is, therefore, expected that *WH Listing* could result in greater tourist flows to inscribed properties. However, if a site is at risk of losing the universal values it is inscribed for, it can be moved to the *In Danger List* of *WH Properties – WHPs*. If it effectively loses them, it can also lose its title as a *WHP*. With the advice of *IUCN*, the WH *Committee* decides on the deletion of properties from the *WH List*. Moving a property to the *In Danger List* can be a strategy of its governing member state so as to bring public awareness and promote immediate action. Maintaining *WHPs* out of the *In Danger List* requires responsible member states and other parties to pursue their conservation through the establishment of new governance structures or the adaptation of existing ones. Communication between the *UNESCO WH Centre* and member states happen through: member-country appointed ambassadors that are housed within *UNESCO*; through inter-ministerial *UNESCO National Commissions*; *Focal Ministries* for *UNESCO* and *UNESCO*'s national and regional offices. Improved communication within the UN System has recently provided greater approximation between *WH Programmes* and UN's *Millennium Development Goals – MDGs*.

[67] Criteria *i* to *iv* are cultural criteria.

The celebration of the *WH Convention*'s 40th anniversary in **2012**, has brought a period of reflection on the role of *WHPs* to the conservation of nature at the global scale. However, concerns about the reach and breadth of the network of *WHPs* are older, having led the *WH Committee* to launch in **1994**, "a *Global Strategy for a representative, balanced and credible World Heritage List*" (WHC, 2013c). In line with this concern, in **2002**, the *WH Centre* organised a *World Heritage Marine Biodiversity Workshop for Filling Critical Gaps and Promoting Multi-Site Approaches to New Nominations of Tropical Coastal, Marine and Small Island Ecosystems* (WHC, 2013b). It was held with 62 coastal and marine scientific experts and resulted in the *Hanoi Statement*, a document proposing among others, a list of potential *Marine World Heritage Properties – MWHPs* and the creation of a specific *Marine Programme* within *UNESCO*'s *WH Centre* (WHC, IUCN, Foundation, & Commerce, 2003). In **2005**, *UNESCO* launches the *World Heritage Marine Programme – WHMP* with the mission to "to establish effective conservation of existing and potential marine areas of *OUV* to make sure they will be maintained and thrive for generations to come". Involved with capacity building and conservation of *MWHPs*, the programme has established a network of *MWHP* managers for the exchange of best practices and management approaches. Recently, *WHMP* started preparing a new initiative aiming at the application of the concept of *OUV* at *MWHP* in partnership with the *Global Ocean Biodiversity Initiative – GOBI* (WHC, 2013c).

Launched in **2008**, *GOBI* is an "international partnership advancing the scientific basis for conserving biological diversity in the deep seas and open oceans" and is the result of collaboration between *IUCN*, *UNEP-WCMC*, the *German Federal Agency for Nature Conservation – BfN* and several marine and oceanographic organisations and instruments. "The work under this initiative builds on the scientific criteria adopted by the Parties to the *CBD* in **2008** to identify *Ecologically or Biologically Significant Areas – EBSAs* in the global marine realm" (GOBI, 2013).

Amidst so many biodiversity conservation instruments, a *Liaison Group of the Biodiversity-Related Conventions (Biodiversity Liaison Group – BLG)* was established in **2004** during the 7th *Conference of Parties of CBD – CBD-COP7* and congregates the heads of Secretariats for *CBD*, *Ramsar Convention on Wetlands*, *WH Convention*, the *Convention on International Trade in Endangered Species of Wild Fauna and Flora – CITES*, the *Convention on Migratory Species of Wild Animals – CMS* and the *International Treaty on Plant Genetic Resources for Food and Agriculture*, to look for complementarity of actions, the implementation of joint projects and joint reporting (CBD, 2013). However, *NWHP* reporting is still not part of joint reporting, allegedly because of its specific nature.

Global Tourism and Conservation Interfaces

Interfaces between nature-based tourism and conservation/PAs are many. In terms of *WHPs*, the **1993** International Workshop on *Managing Tourism in Natural World Heritage Sites* organised by *UNESCO*'s *WHC* and *UNEP* in Dakar identified 10 general principles[68] that should guide management of *tourism* in *WHPs*. Among these principles, it is worth mentioning those referring to the need: to involve local people so that they "take pride in their heritage and benefit from tourism"; and for *tourism* to respect "ecological and social-cultural values and *World Heritage* status" (Lucas, 2002, p. 21). Nevertheless, these later evolved to a set of 9 *Principles for Sustainable Tourism at World Heritage Properties* proposed by *UNESCO*'s *World Heritage Sustainable Tourism Program* in consultation with major international stakeholders. In terms of planning and management, they imply there should be ample cooperation among different stakeholders and participation and inclusion of local communities in the process of tourism development at *WHPs*, so as to foster local empowerment (IUCN, Borges, Carbone, Bushell, & Jaeger, 2011, p. 28). Analysis of ways forward to operationalize these principles are offered by *IUCN*'s report *Sustainable Tourism and Natural World Heritage Properties: Priorities for Action*, a joint collaboration of *IUCN*'s *Global Business and Biodiversity Programme - BBP*, *IUCN*'s *World Heritage Programme* and *WCPA*'s *Tourism and Protected Areas Specialist Group – TAPAS*.

TAPAS was established in **1996** by *WCPA* as a Task Force "to respond to an emerging need to develop a broader understanding of the complex relationship between [tourism and protected] areas" (Jacques, 2004, p. 2). It was later turned into a *Specialist Group* and in **2011** comprised 169 members. It aims to "provide strategic advice on sustainable tourism in protected areas", developing and disseminating knowledge, and serving as an interactive forum to strengthen capacity and effectiveness of *PA* managers, policy makers and stakeholders (Spenceley, 2011, slide 4).

Complementarily, *IUCN*'s *BBP* was established in **2003** "to influence and support private partners in addressing environmental and social issues [...] [in] large footprint industries [...] including [...] nature-based tourism" (IUCN, 2013a). As part of its *Business Engagement Strategy*, *IUCN*'s *BBP* seeks to integrate biodiversity conservation in supply chains by supporting ecotourism businesses through training and skills development targeting best practices and new standards. *BBP* has also developed a set of *Biodiversity Principles* for siting and design of hotels and resources aiming to minimise their footprint (IUCN, 2012, pp. 9-10).

However, "while guidelines have been developed on sustainable tourism issues by *UNWTO*, *UNESCO* and its advisory bodies (*International Council on Monuments and Sites – ICOMOS*, *IUCN* and *International Centre for the Study of*

[68] See Attachment 3.

the Preservation and Restoration of Cultural Property – ICCROM), there was still the need to apply them in a more comprehensive and systematic manner in [*WHPs*]" (UNWTO & UNESCO, 2008, p. 4). Recognising this, *UNWTO* and *UNESCO* organised an *International Conference on Sustainable Tourism Management at World Heritage Sites*, which took place in Huangshan, China in **2008**. The Conference "focused on policies and practices as well as practical data and information management tools, supporting planning and management processes and leading to better decision making" (ibid). Among the conclusions from the analysis of regional experiences was the need for "greater emphasis on co-management with local communities" (ibid). With the support of *UNESCO*, the *UNWTO Huangshan Sustainable Tourism Observatory* was launched during the Conference aiming to provide a future "comprehensive impact monitoring and information communication mechanism [for *WH* sustainable tourism management], through the systematic use of indicators, developing dynamic and adaptive management responses based on the information generated" (UNWTO & UNESCO, 2008, p. 17). The concept of *Global Observatory of Sustainable Tourism – GOST* was launched in **2004** by *UNWTO* based on its methodology for sustainable tourism indicators (UNWTO, 2004). In **2010**, a *Monitoring Centre for UNWTO Sustainable Tourism Observatories* was launched by Sun Yat-Sen University in cooperation with *UNWTO* (UNWTO, 2011b, p. 7). By **2013**, a total of 5 *GOSTs* had been launched in China with *UNWTO* studying the possibility to open new observatories in other continents (UNWTO, 2012c).

Financial support from *UNESCO* for *WHPs* comes from the *World Heritage Fund – WHF* and is limited, occurring mostly through the offering of technical assistance or through partnerships with *NGOs* such as the *United Nations Foundation – UNF* and *WWF* or other *UN* initiatives such as the *United Nations Office for Partnerships – UNOP*, *UNEP*, *UNDP* and the *Community Management of Protected Areas for Conservation – COMPACT* programme. Over the years, *UNESCO* went from a project based approach including the **2001-2005** *Linking Biodiversity Conservation and Sustainable Tourism at World Heritage* initiative in Mexico, Honduras, Indonesia and Guatemala in partnership with *UNEP*, *UNF* and *Rare* (WHC, 2005), to a macro-program approach with the re-launching of its *World Heritage and Sustainable Tourism Programme – WH&ST Programme* in **2011** (WHC, 2012).

> *[The new WH&ST Programme] responds to the decision 34 COM 5F.2 of the WH Committee at its 34th session in Brasília in 2010, which 'requests the WH Centre to convene a new and inclusive programme on WH&ST, with a Steering Group comprising interested State Parties and other relevant stakeholders, and also requests the WH Centre to outline the objectives and approach to the implementation of the programme' (WHC, 2012).*

The *Steering Group* comprises six State Parties representatives, the Director of *WHC*, *IUCN*, *ICOMOS*, *ICCROM*, the *UNWTO* and the *Swiss Government* as

the financial supporter. A small *Working Group* with the support of the *Nordic World Heritage Foundation* and external consultants coordinated the process of program development that included an *Expert Meeting* in Sils/Engadine, in **2011**. Building on the *Friends of World Heritage* initiative, the *WH&ST Programme* projects the *People Protecting Places* initiative as a learning platform to reach the general public (WHC, 2012).

UNF has been involved with financing the protection of *WHPs* through a strategy based on the promotion of sustainable development of tourism since its creation in **1998** as a public charity from a 1 billion dollar gift from *Ted Turner* (UNDP, 2011). From that amount, about US$ 167.3 million were used to finance the *Environment Programme* from *UNOP* from **1998** to **2005**, "focusing primarily on two thematic priority areas, namely 1) Biodiversity; and 2) Sustainable Energy and Climate Change" (UNOP, 2011).

> *"The primary objective of the Biodiversity Programme Strategy (1998-2005) [was] to assist developing countries to promote effective action for the conservation and sustainable use of biodiversity by targeting protected areas designated as World Heritage Sites to implement key objectives of the World Heritage Convention and the Convention on Biological Diversity" (ibid).*

Within the *World Heritage Biodiversity Programme*, a total of US$ 75 million were invested in 40 projects in partnership with *UNDP* and *UNESCO*'s *WH Centre*. Projects included supporting the eradication of alien and invasive species in Galapagos and the development of *Sustainable Tourism Management Plans* for *WHPs* in Central America. Within the *Biodiversity Program*, *UNOP* also supported *UNDP*'s *COMPACT* program, jointly funded by *UNF* and the *Global Environment Facility*[69] – *GEF Small Grants Programme* – *SGP*.

> *"COMPACT was launched in **2000** in recognition of the fact that, as priority conservation areas for humankind, World Heritage sites could provide 'an ideal framework for boosting cooperation between intergovernmental agencies, governments, and civil society' in order to halt or reverse critical threats to globally significant biodiversity" (UNDP, 2011, p. 5)*

Using a landscape/seascape approach, *COMPACT* aims to support local communities in their stewardship of *PAs* and their surroundings, by supporting the development of participative governance structures and management plans that culminate in greater local community involvement in conservation and in economic activities that can support conservation. It does that through the provision of small grants and technical expertise. As part of the partnership, *UNF* funds local

[69] Originated in **1991** as a U$ 1 billion *World Bank* pilot program, *GEF* was jointly implemented by *The World Bank*, *UNDP* and *UNEP*. In **1992**, *GEF* was restructured at the *UNWSDC* and became a permanent and separate institution (GEF, 2011).

coordinators for each *WHP* part of the program, those marked with an asterisk (*) being sites overlapping with *Biosphere Reserves*:

- Belize Barrier Reef *Reserve* System, Belize
- Morne Trois Pitons *National Park*, Dominica
- Mount Kenya *National Park*, Kenya*
- Sian Ka'an *Biosphere Reserve*, Mexico*
- Puerto Princesa Subterranean River *National Park*, Philippines*
- Mount Kilimanjaro *National Park*, Tanzania
- The Djoudj-Djawaling Transboundary *Biosphere Reserve* and *World Heritage Property*, Senegal and Mauritania*
- A cluster of five *PA*s in South-West Madagascar anticipating *World Heritage* listing between **2010** and **2012**

Like the **2003** *IUCN World Parks Congress* in Durban, South Africa, *COMPACT* acknowledges the role of indigenous and local communities "in collaborative management of *PA*s and the importance of traditional conservation practices of these communities, as expressed in *Indigenous and Community Conserved Areas – ICCAs*" (UNDP, 2011, p. 4).

In **2005**, *UNF* partnered with *Expedia Inc.* and, in cooperation with *UNESCO*'s *WH Centre*, launched the *World Heritage Alliance for Sustainable Tourism – WHA* "to support *World Heritage* conservation, sustainable tourism and local economic development for communities in and around *UNESCO World Heritage* sites, [...] working with the travel industry to educate travellers about responsible tourism and to establish a tourism infrastructure that promotes the physical conservation of [*WHP*s] and ensures the sustainable economic development of surrounding communities" (UN Foundation, 2008). By **2009**, the *WHA* comprised 65 members: 43 travel industry members (including lodging providers, tour operators, cruise lines and airlines) and 22 associate partners (including local and national government bodies, *NGO*s and other civil society groups concerned with tourism, sustainability and cultural or environmental preservation) (UNESCO & UN Foundation, 2010). *WHA* triggered the *Friends of World Heritage* campaign aiming to educate travellers on *WHP*s.

> *"The WHA [...] adopted a set of principles to guide travel industry members in their efforts to foster sustainable tourism in and around World Heritage sites. These principles [were] aligned with the new Global Sustainable Tourism Criteria. [...] The Alliance provide[d] a venue for developing public-private partnerships under the umbrella of the UN to address the main objective of the Marrakesh Process, namely promoting sustainable consumption and production patterns through active participation of key stakeholders: governments, industry, WH site managers, communities, and travelers. While it addresses most of the priorities of the Sustainable Tourism*

> *Task Force it can be framed under 'Promoting Natural and Cultural Heritage as Assets for Sustainable Tourism Development'" (UNESCO & UN Foundation, 2010).*

With the shift of focus from project-based initiatives to an overarching program for *Sustainable Tourism* by *WH Centre* and increasing focus of *UN Foundation* on the development of the *Global Sustainable Tourism Criteria – GSTC*, the *WHA* was discontinued in **2010** (UN Foundation, 2012).

To understand how sustainable tourism initiatives such as *WHA* and *GSTC* came about, it is important to consider the favourable international *context* for the establishment of partnerships for sustainable development promoted by the **2002** *World Summit on Sustainable Development – WSSD*. An outcome of *WSSD*, *Paragraph 43* of *Chapter IV* of the *Johannesburg Plan of Implementation – JPOI*[70] aims specifically at the promotion of sustainable tourism development to be implemented through a range of actions at all levels, including the enhancement of international cooperation; the development of programmes promoting ecotourism and enabling indigenous and local communities to develop and benefit from it; and the enhancement of stakeholder cooperation in tourism development and natural heritage preservation (UN, 2003). Recognising *Sustainable Consumption and Production – SCP* as an overarching objective to be implemented through a *10-Year Framework of Programs – 10YFP*, *JPOI* triggered the *Marrakech Process*, a bottom-up multi-stakeholder process launched in **2003** that identified regional *Sustainable Consumption and Production* needs and priorities.

A result of this process, the *10YFP* on *SCP* was adopted at the *United Nations Conference on Sustainable Development* in Rio de Janeiro in **2012**. Paragraphs 130 and 131 of *The Outcome of the Conference* document entitle *The Future we want:* emphasises "that well-designed and managed tourism can make a significant contribution to the three dimensions of sustainable development"; recognises "the need to support sustainable tourism activities [...] that promote environmental awareness and conserve and protect the environment and respect wildlife, flora, biodiversity, ecosystems and cultural diversity"; encourages "the promotion of investment in sustainable tourism [through the creation of] small to medium-sized enterprises and [the facilitation of] access to finance for the poor, indigenous peoples and local communities in areas with high ecotourism potential"; and underlines the importance of guidelines and regulations to the process (UNCSD, 2012).

As well as the *10YFP*, the *Marrakech Process* also fostered the creation of *7 Task Forces* to support the implementation of *SCP* projects led by governments and in cooperation with various partners. In **2006**, during the 9th *Special Session* of *UNEP*'s *Governing Council*, France announced its

[70] See Attachment 4.

willingness and commitment to establish and chair an *International Task Force on Sustainable Tourism Development – ITF-STD* under the *Marrakech Process*, which also comprised 14 member countries (including Brazil), 3 partner countries (including Australia), various UN organisations (including *UNESCO*, *UNEP* and *UNWTO*), as well as nature conservation NGOs (including the *Rainforest Alliance*, *WWF* and *IUCN*) and international business associations (including *WTTC*, *Roteiros de Charme* Hotel Association, the *Tour Operators Initiative for Sustainable Tourism Development – TOI*[71] and the *International Organisation for Standardisation – ISO*). By **2009**, *ITF-STD* was transitioning into a *United Nations Partnership for Sustainable Development* (UNEP, 2009, p. 35), resulting in the establishment of *The Global Partnership for Sustainable Tourism – GPST*, with its coordinating office hosted by *UNEP Division of Technology, Industry and Economics – UNEP-DTIE* in Paris and the mission to

> *foster partnerships for advancing sustainable tourism principles at destinations through the adoption of clear policies, innovative and transformative projects and the sharing of knowledge and experience, with an objective to create effective partnerships for sustainable tourism (GPST, 2013b).*

Among the *7 Priority Themes* of *GPST* are the: *Protection of the Environment and Biodiversity*, *Preservation of Cultural and Natural Heritage*, *Promotion of Sustainable Tourism to Alleviate Poverty* and *Adoption of Sustainable Management Practices by the Private Sector (GPST, 2013a)*. *ITF-STD* and later *GPST* members initiatives included *GSTC*, *WHA* and many others, totalling more than 40 projects and programs (UNEP, 2009, p. 9).

The origins of the *GSTC* go back to **2000** when the *Mohonk Agreement* (a *Proposal for an International Certification Program for Sustainable Tourism and Ecotourism*) was adopted at the conclusion of an international workshop convened by the *Institute for Policy Studies* in New York. There, in light of the exponential growth of sustainable tourism certification since the **1990s** that had already reached more than 60 programs (Skinner, Font, & Sanabria, 2004), participants "recognised that [despite] tourism certification programs need[ing] to be tailored to fit particular particular geographical [regions] and sectors of the tourism industry", [a set of criteria that were] the universal components that must frame any ecotourism and sustainable certification program" should be in place (Institute for Policy Studies, 2001). Following that, in **2001** the *Rainforest Alliance*[72] commissions a "Feasibility Study, Organizational Blueprint and Implementation Plan for a *Global Sustainable Tourism Stewardship Council* –

[71] *TOI* was launched in **2000** by global tourism businesses committed to sustainable tourism practices with the support of *UNEP*, *UNESCO* and *UNWTO (TOI, 2011)*.
[72] A nature conservation *NGO* previously involved with the implementation of the *Forest Stewardship Council* responsible for a global sustainable forestry accreditation scheme.

STSC: An Accreditation Body for Sustainable Tourism Certifiers" (Alliance, 2001).

On the 30th of September **2003**, as part of the process of implementation of the STSC, the *Sustainable Tourism Certification Network of the Americas* was launched in Bahia, Brazil. In 2004, the *Voluntary Initiative for Sustainability in Tourism – VISIT* was launched as the regional network for certification in sustainable tourism in Europe. In 2008, UNEP, UNWTO and UNF join the initiative aiming to launch the STSC in early **2009** that was to be housed at UNEP.

Parallel to that, in mid **2007**, the Partnership for GSTC was initiated by the *Rainforest Alliance*, UNEP, UNF and UNWTO as a *UN Partnership* type II[73]. It was officially launched at the *IUCN World Conservation Congress* in Barcelona, October 6th, **2008**.

Building on the synergies promoted by the GPST, on the 10th September **2009**, the *Sustainable Tourism Stewardship Council – STSC* and the *Global Sustainable Tourism Criteria – GSTC* announced their merger resulting in the creation of the *Tourism Sustainability Council – TSC* (Rainforest Alliance, 2009). Later on, TSC was rebranded as the *Global Sustainable Tourism Council – GSTC*, which was officially launched in August **2010**. In **2013**, standards from 13 certification organisations had been recognised as aligned with GSTC for hotels and tour operators.

Chapter Conclusion

This chapter sought to paint the broad landscape of which *Fernando de Noronha Archipelago*, *Lord Howe Island* and their respective national governments are part. It started by analysing the broad global historical *context*, exploring the changing roles that Brazil and Australia have undertaken within the global economy and global power exercise through the perspective that countries patterns of development are intrinsically linked to one another and therefore cannot be explained by levels or stages of development. It then moved to exploring the foundations of global competition and co-operation that have driven the way a global network of organisations and programs have been developed, leading to the emergence of the global conservation movement, tourism development and the proclamation of PAs as a strategy for conservation.

It is also important to verify the changes in roles performed by key organisations globally. When analysed from an evolutionary perspective, key global organisations such as WWF and UNWTO have moved from highly operational roles such as tourism propaganda and local

[73] *UN Partnerships* type II are non-legal and non-binding and therefore can involve a greater number of stakeholders, specially NGOs.

conservation projects, to efforts focusing on macro dynamics of tourism development and global conservation. Within that scenario, it was also possible to see that specialisation and diversification were two processes acting on most global organisations. While it seems clear that most organisations are becoming more and more complementary and are starting to integrate a *Global Network for Tourism Development and Nature Conservation – GNTDNC*, some of these organisations are also diversifying their portfolio of services and projects as they become larger, hence the case of *UNEP-WCMC* that is moving from the development of database to the provision of knowledge. Perhaps the most striking conclusion about the *GNTDNC* was the perception that when it comes to tourism sustainability, since *UNWTO* has the mandate over tourism within the *UN System* and *UNEP* has it over environmental conservation, an integration of actions and programmes was not only necessary, but also carried the potential to boost the effects of both agendas. While *UNEP* allowed tourism to enter more conservative forums, *UNWTO* facilitated the incorporation of environmental concerns within tourism business and government practices.

References

ACTU. (2012, Aug 08). Unions Australia: Achievements by Australia Unions. *Unions Australia.* from http://www.unionsaustralia.com.au/about.aspx?AspxAutoDetectCookieSupport=1

Alliance, Rainforest. (2001). Request for Proposal: Feasibility Study, Organizational Blueprint and Implementation Plan for a Global Sustainable Tourism Stewardship Council (STSC): An Accreditation Body for Sustainable Tourism Certifiers. New York City: Rainforest Alliance.

Batisse, Michel. (1980). The Relevance of MAB. *Environmental Conservation*, 7(03), 179-184. doi: 10.1017/S0376892900007529

Batisse, Michel. (1982). The Biosphere Reserve: A Tool for Environmental Conservation and Management. *Environmental Conservation*, 9(02), 101-111. doi: 10.1017/S0376892900019937

Bhatia, A K. (2002). *Tourism Development: Principles and Practice*. Berkshire, UK: Sterling Publishers.

CBD. (2013). Liason Group of Biodiversity-Related Conventions. from http://www.cbd.int/blg/

Corbin, Juliet M., & Strauss, Anselm L. (2008). *Basics of qualitative research: techniques and procedures for developing grounded theory* (3rd ed.). Los Angeles: SAGE Publications.

Fasulo, Linda. (2009). *An Insider's Guide to the UN* (2nd edition ed.). New Haven: Yale University Press.

G20. (2013). What is the G20. from http://www.g20.org/docs/about/about_G20.html

Geels, Frank W. (2011). The multi-level perspective on sustainability transitions: Responses to seven criticisms. *Environmental Innovation and Societal Transitions*, 1(1), 24-40. doi: 10.1016/j.eist.2011.02.002

GEF. (2011, Dec 01). What is the GEF: Global Environment Facility. from http://www.thegef.org/gef/whatisgef

GOBI. (2013). About GOBI - Global Ocean Biodiversity Initiative. from http://gobi.org/About

GPST. (2013a). Global Partnership for Sustainable Tourism: 7 Priority Themes. from http://www.globalsustainabletourism.com/About-us/30-7-Priority-Themes.html

GPST. (2013b). Global Partnership for Sustainable Tourism: About the Global Partnership. from http://www.globalsustainabletourism.com/About-us/29-About-the-Global-Partnership.html

GRID-Arendal, UNEP. (2013). UNEP GRID Arendal Linking Tourism & Conservation Initiative. from http://www.grida.no/tourism/product-service-detail.aspx?id=5088

Gyr, Ueli. (2010, Dec 03). The History of Tourism: Structures on the Path to Modernity. *European History Online (EGO) - Institute of European History (IEG).* from http://www.ieg-ego.eu/en/threads/europe-on-the-road/the-history-of-tourism

IATA. (2012). History: The Founding of IATA. *International Air Trnasport Association.* from http://www.iata.org/about/Pages/history.aspx

ICAO. (2012). Foundation of the International Civil Aviation Organization. *International Civil Aviation Organisation.* from http://www.icao.int/pages/foundation-of-icao.aspx

Mohonk Agreement: Proposal for an International Certification Program for Sustainable Tourism and Ecotourism (2001).

Instituto Cultural da RAE de Macao. (2005). Macao World Heritage Information Kit: The Historic Centre of Macao. *Macao Special Administrative Region of the People's Republic of China,*. from http://edocs.icm.gov.mo/Heritage/MWHE.pdf

IUCN. (1948, Aug 05). International Union for the Protection of Nature. *International Union for Conservation of Nature.* from http://data.iucn.org/dbtw-wpd/edocs/1948-001.pdf

IUCN. (2010). 50 Years of Working for Protected Areas: a brief history of IUCN World Commission on Protected Areas. Gland: International Union for Conservation of Nature.

IUCN. (2011, Jul 17). IUCN: What is natural heritage. *International Union for Conservation of Nature.* from http://www.iucn.org/about/work/programmes/wcpa_worldheritage/about_world_heritage/what_is_natural_heritage/

IUCN. (2012). Shaping the Future with Business: Global Business and Biodiversity Programme: Report 2011-2012. Gland: International Union for Conservation of Nature.

IUCN. (2013a, Mar 04). IUCN Global Business and Biodiversity Programme: Who we are. from http://www.iucn.org/about/work/programmes/business/bbp_aboutus/

IUCN. (2013b, Feb 07). The IUCN Red List. from http://www.iucn.org/about/work/programmes/species/our_work/the_iucn_red_list/

IUCN, Borges, Maria Ana, Carbone, Giulia, Bushell, Robyn, & Jaeger, Tilman. (2011). Sustainable Tourism and Natural World Heritage: Priorities for Action (pp. 1-34). Gland: International Union for Conservation of Nature.

IUCN, & Dudley, Nigel. (2008). Guidelines for Applying Protected Area Management Categories (2008 ed., pp. 1-106). Gland: International Union for Conservation of Nature.

IUCN, & UNEP-WCMC. (2012). The World Database on Protected Areas (WDPA). Retrieved Mar, from UNEP-WCMC http://www.wdpa.org/Statistics.aspx

Jacques, Jean Claude. (2004). *Protected Areas and Tourism: A Mutual Benefit Beyond their Borders.* Barcelona. http://www.barcelona2004.org/www.barcelona2004.org/esp/banco_del_conocimiento/docs/PO_24_EN_JACQUES.pdf

Koestler, Arthur. (1967). *The ghost in the machine*. London: Hutchinson.

Lucas, PHC Bing. (2002). Tourism and World Heritage. Tokyo: Asian Productivity Organisation.

Page, Stephen J. (2011). Tourism: Its origins, growth and future *Tourism Management: an Introduction* (4th edition ed., pp. 35-55). Oxford: Elsevier.

Palhares, Guilherme Lohmann. (2001). *Transporte Aéreo e Turismo: gerando desenvolvimento socioeconômico*. São Paulo: Editora Aleph.

Rainforest Alliance, . (2009, Sep 10). [Partnership for Global Sustainable Tourism Criteria and Sustainable Tourism Stewardship Council Announce Merge to Form Tourism Sustainability Council].

Ribeiro, Darcy. (1997). *O Processo Civilizatório*. São Paulo: Companhia das Letras.

SCBD. (2013). Convention on Biological Diversity: Introduction. from http://www.cbd.int/intro/

SCS-TST. (2011, Jul 04). Férias: Direito ao descanso reúne costume, lei e jurisprudência. *Tribunal Superior do Trabalho*.

Skinner, Elizabeth, Font, Xavier, & Sanabria, Ronald. (2004). Does Stewardship Travel Well? Benchmarking Accreditation and Certification. (11), 121-132. doi: 10.1002/csr.061

Slatyer, R O. (1983). The origin and evolution of the World Heritage Convention. *Ambio*, 138-140.

Spenceley, Anna. (2011, May). *Tourism and Protected Areas Specialist Group - TAPAS*, Geneva.

Strauss, Anselm L., & Corbin, Juliet M. (1990). *Basics of qualitative research: grounded theory procedures and techniques*. Newbury Park, Calif.: Sage Publications.

TOI. (2011). Tour Operators Initiative for Sustainable Development: History. from http://www.toinitiative.org/index.php?id=47

Towner, John. (1995). What is tourism's history? *Tourism Management*, *16*(5), 339-343.

UN. (2003). United Nations Division for Sustainable Development - WSSD - Johannesburg Plan of Implementation - Chapter 4 (pp. 1-15). New York City: United Nations.

UN. (2013). United Nations Millennium Development Goals. from http://www.un.org/millenniumgoals/environ.shtml

UN Foundation (2008, Sep 05). [World Heritage Alliance for Sustainable Tourism Factsheet].

UN Foundation. (2012). United Nations Foundation: What we do: Promoting Sustainable Tourism. from http://www.unfoundation.org/what-we-do/legacy-of-impact/sustainable-development/promoting-sustainable-tourism.html

UNCSD. (2012). Rio +20 Outcome of the Conference: The future we want (Original ed., pp. 53). Rio de Janeiro: United Nations Conference on Sustainable Development.

UNDP. (2011). COMPACT: engaging local communities in stewardship of globally significant protected areas. Retrieved 21/03/2011, from http://sgp.undp.org/img/file/Compact Booklet-1.pdf

UNEP. (2009). A Three-Year Journey for Sustainable Tourism *uneptie.org*. Paris: UNEP.

UNEP-WCMC. (2013). UNEP-WCMC: What We Do. from http://www.unep-wcmc.org/about-us_17.html

UNESCO. (1948, Jul 20). Conference for the Establishment of the International Union for the Protection of Nature. *United Nations Educational, Scientific and Cultural Organisation World Heritage Centre*. from http://unesdoc.unesco.org/images/0015/001547/154739eb.pdf

UNESCO. (1970). *Use and conservation of the biosphere: Proceedings of the intergovernmental conference of experts on the scientific basis for rational use and conservation of the resources of the biosphere, Paris, 4-13 September 1968* Retrieved from http://unesdoc.unesco.org/images/0006/000677/067785eo.pdf

UNESCO. (2012). History: United Nations Educational, Scientific and Cultural Organization. *United Nations Educational, Scientific and Cultural Organisation*. from http://www.unesco.org/new/en/unesco/about-us/who-we-are/history/

UNESCO. (2013). UNESCO: Ecological Sciences for Sustainable Development: Man and the Biosphere Program. from http://www.unesco.org/new/en/natural-sciences/environment/ecological-sciences/man-and-biosphere-programme/

UNESCO, & UN Foundation. (2010). International Task Force on Sustainable Tourism Development: World Heritage Alliance for Sustainable Tourism: Mainstreaming Sustainability into Tourism for the Protection of The World Heritage. Paris: United Nations Environment Programme - Sustainable Consumption and Production Branch.

UNESCO Constitution, (1946).

Convention Concerning the Protection of the World Cultural and Natural Heritage (1972).

UNOP. (2011). United Nations Office for Partnerships: Environment Programme. Retrieved 21/03/2011, from http://www.un.org/partnerships/environment.html

UNWTO. (2002). The Tourism Satellite Account (TSA) within a Historical Perspective: The Contribution of the World Tourism Organisation (WTO). Madrid: United Nations World Tourism Organisation.

UNWTO. (2004). *Indicators of sustainable development for tourism destinations: a guidebook*. Madrid, Spain: United Nations World Tourism Organization.

UNWTO. (2011a). History: World Tourism Organization UNWTO. *United Nations World Tourism Organisation.* from http://www2.unwto.org/en/content/history-0

UNWTO. (2011b, Mar). Sustainable Development of Tourism. *SDT Bulletin*, pp. 1-15.

UNWTO. (2012a). T20 Initiative: Committed to Tourism, Travel and the Millennium Development Goals. from http://t20.unwto.org/en

UNWTO. (2012b). UN Steering Committee on Tourism for Development (SCTD): Institutional and Corporate Relations UNWTO. from http://icr.unwto.org/en/sctd

UNWTO. (2012c). UNWTO Global Observatory on Sustainable Tourism (GOST). from http://sdt.unwto.org/en/content/global-observatory-sustainable-tourism-gost

UNWTO, & UNESCO. (2008). *Sustainable Tourism Management at World Heritage Sites International Conference: Enhancing Inter-Agency and Stakeholder Coordination for Joint Actions: 24-27 March 2008*. Huangshan, China. http://www.unwto.org/sdt/events/en/pdf/111_finrep_en_huangshan.pdf

Wallerstein, Immanuel. (1974). *The Modern World-System*. New York: Academic Press.

WHC, UNESCO. (2005). World Heritage Centre: Linking Biodiversity Conservation and Sustainable Tourism at World Heritage Sites. from http://whc.unesco.org/en/activities/66/

WHC, UNESCO. (2012). World Heritage Centre: World Heritage and Sustainable Tourism Programme. from http://whc.unesco.org/en/tourism/

WHC, UNESCO. (2013a). UNESCO World Heritage Centre: The Criteria for Selection. from http://whc.unesco.org/en/criteria/

WHC, UNESCO. (2013b). UNESCO World Heritage Centre: World Heritage Marine Biodiversity Workshop: Filling Critical Gaps and Promoting Multi-Site Approaches to New Nominations of Tropical Coastal, Marine and Small Island Ecosystems. from http://whc.unesco.org/en/events/501

WHC, UNESCO. (2013c). World Heritage Marine Programme. from http://whc.unesco.org/en/activities/13/

WHC, UNESCO, IUCN, Foundation, UN, & Commerce, NOAA US Department of. (2003). *Proceedings of the World Heritage Marine Biodiversity Workshop* A. Hillary, M. Kokkonen & L. Max (Eds.), *World Heritage Papers* (pp. 92). Retrieved from http://whc.unesco.org/uploads/events/documents/event-501-2.pdf

WTTC. (2012a). A History of the World Travel & Tourism Council. *World Travel & Tourism Council.* from http://wttc.org/site_media/uploads/downloads/WTTC_History_1.pdf

WTTC. (2012b). WTTC Progress & Priorities: our annual report 2011-2012. London: World Travel & Tourism Council.

WWF International. (1961). Morges Manifesto: We Must Save the World's Wild Life: An International Declaration (pp. 1-4). Morges: World Wildlife Fund.

WWF International. (2006). WWF from 1961 to 2006: WWF's approach to conservation from its inception to 2006. from http://wwf.panda.org/who_we_are/history/wwf_conservation_1961_2006/

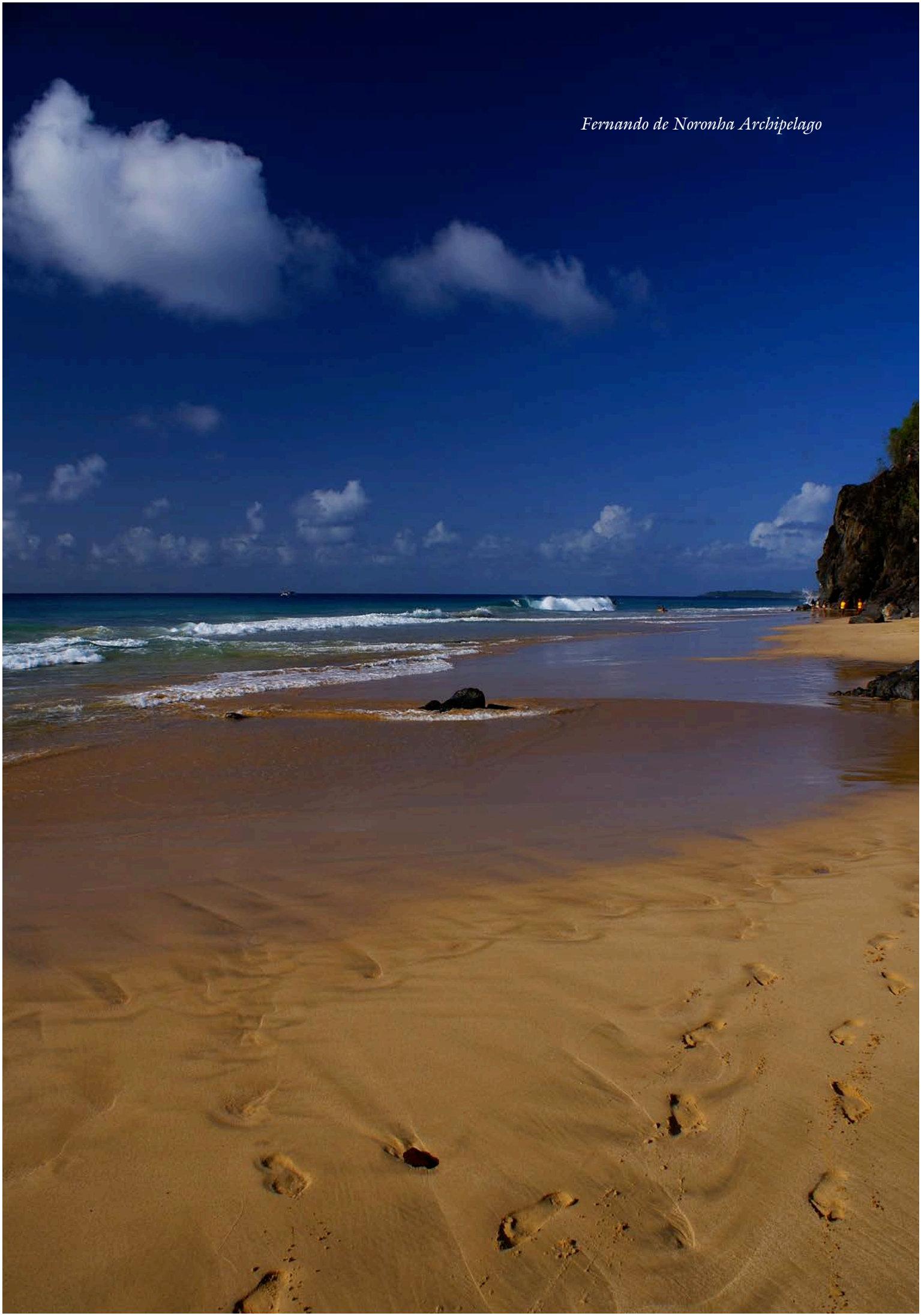
WWF International. (2008). A Roadmap for a Living Planet. *WWF.* from http://assets.panda.org/downloads/roadmap_sign_off_fin.pdf

WWF International. (2012). WWF in the 60's. *World Wildlife Fund.* from http://wwf.panda.org/who_we_are/history/sixties/

WWF-Germany. (2007). *Coastal Conservation and Tourism: WWF's Global Marine Programme*: WWF Germany.

Yin, Robert K. (2009). *Case study research: design and methods* (4th - Kindle E-Book Edition ed.). Thousand Oaks, Calif.: SAGE.

ZSL Institute of Zoology. (2007). IUCN Red List Index (Sampled Approach). from http://www.zsl.org/science/research-projects/ia-iucn-redlist,1161,AR.html



Fernando de Noronha Archipelago

Chapter 6 | National Contexts

National Structural Conditions

Similarly to *Chapter 5*, but focusing on the national level, three ***contextual conditions*** for the researched *phenomenon* (self-organisation by means of competition and cooperation) are explored in this chapter: two emergent properties of the global SECAS (the ***evolution of tourism*** and the ***emergence of the nature conservation movement***) and the ***broader historical background*** to which these properties are attached to in Brazil and in Australia. As mentioned previously, linked with these *contextual conditions* is the emergence of two system-wide *(inter)action strategies*: *Tourism Development – TD* and *Localised Conservation – LC* through the *implementation of Protected Areas – PAs* from local to global levels. The interplay and co-evolution of these *(inter)action strategies* and *contextual conditions* at the national level for each case study site is presented in this chapter in an integrated way. *Chapter 6* therefore seeks to address the remaining part of the fourth secondary research question (2.4)[74] providing the national backgrounds to understanding how *TD* and the *implementation of PAs* have occurred at the local level (*Chapter 8* for *Fernando de Noronha Archipelago – FDN* and *Chapter 9* for *Lord Howe Island – LHI*).

Overall, this chapter reinforces the argument that not only are *TD* and *PAs* a product of globalisation, they are also promoters of this system-wide *phenomenon*, affecting how dependent local areas are to the global SECAS. It also suggests a close link between global and national levels when it comes to the way global SECASs properties have emerged and pushed for global, national and local *(inter)action strategies* of *TD* and *LC* through *PAs*.

[74] See page 123.

Brief Background on Brazil and Australia

Claimed by Portugal in **1500** with the arrival of the fleet under the command of *Pedro Álvares Cabral*, Brazil was already occupied by many different indigenous tribes that were assimilated, exterminated or pushed inland by the Portuguese. Brazil remained a mining and agrarian exploration Portuguese colony until **1815**, when, as a result of the transfer of the Portuguese Royal Court to Brazil that was fleeing Europe from Napoleonic invasions, it was elevated to the status of kingdom and became part of the *United Kingdom of Portugal, Brazil and Algarves*. In **1822**, about a year after the Portuguese court returned to Portugal, Brazil declared its independence and became a constitutional parliamentary monarchy on its own.

African enslaved labour brought from Portuguese colonies mainly in Angola and Mozambique had been the engine of the Brazilian extractive economy until **1888**, when external and internal pressures led to slavery being abolished in Brazil by Royal determination. Farm and slave owners discontent culminated in the overthrown of monarchy and the institution of the presidential Brazilian Republic in **1889** by the military. Technically a constitutional democracy, the Old Brazilian Republic was in fact dominated in great part by farmers and in many instances by the military.

Great waves of immigrants, especially Europeans, started integrating the Brazilian population from the end of the **1800s** onwards. Highly agrarian and explorative of its mining reserves since its early settlement, Brazil watched the rise of urban areas in the early **1900s**, which pushed for greater connectivity among citizens and the widespread of ideas of social and political reform. The **1930** Revolution instituted what became known as *Vargas Era*, which pushed Brazil towards industrialisation, boosted by immigrant mindset and initiative and financial resources from coffee production in the Southeast of Brazil (especially São Paulo). *Vargas's* dictatorship centralised power at the federal level and somehow resembled the political philosophy of *World War II* Germany and Italy in many ways, which made Brazil to assume a certain neutral position on the War until **1942** when German and Italian submarines sank Brazilian merchant ships in the Atlantic. Forced to join the *Allies*, *Vargas*'s government was overthrown right after the end of the war in **1945**.

General elections were called and in **1946** Brazil had a new constitution and president, inaugurating the Second Republic – a period of great political instability in Brazil, that lead to a *coup d'état* in **1964** and a military dictatorship that lasted until **1985**. The New Republic that started with the restoration of civil government in **1985** resulted in the institution of a democratic government system and the current constitution approved in **1988**. Brazil is currently a constitutional republican federation formed by the Union of 26 States, the Federative District and 5565 Municipalities under a democratic and presidential system of government.

After *James Cook* had visited and mapped the East Coast of Australia, (named *New South Wales – NSW*) and claimed it for Great Britain in **1770**, British settlement of Australia started in **1788** with the establishment of a penal colony where Sydney lies today. An additional five British self-governing colonies were established in Australia in the following years. *Tasmania – TAS* was settled in **1803**, becoming a separate colony in **1825**. The British claimed the western part of *Western Australia – WA* in **1828**, when the Swan River colony was founded. *South Australia – SA* was detached from *NSW* in **1836**, *Victoria – VIC* in **1851** and *Queensland – QLD* in **1859**.

In **1901**, the six colonies federated, constituting the Commonwealth of Australia. The *Northern Territory – NT* was created in 1911 when it was detached from *SA* and the *Australian Capital Territory – ACT* was created in 1911 to host Canberra, the Federal Capital. Similarly to the Brazilian case, different aboriginal tribes already inhabited Australia. These were decimated and pushed inland by the British from early settlement. Australia is currently a democratic and parliamentary constitutional monarchical federation of 6 States, two major mainland territories and 8 external territories under a democratic parliamentary system of government.

Differently to the Brazilian case that incorporates local governments as part of federative union, the Constitution of Australia only defines the powers of the Commonwealth and those of the Federated States, retaining to the latter, any residual powers not clearly defined in constitution as being of the Commonwealth. As a result, different states are free to institute their own local government systems.

Initially a British penal colony, Australia remained mostly an agrarian and mining based economy for most of the **XIX century**, with industrialisation starting to take place by the **1890s**. Manufacturing gained speed with government protectionist regulations and the removal of inter-colonial tariffs brought with Federation. It was also boosted by the wealth gained from mining and the influx of European immigrants, especially in the period after the *Second World War*, which also brought greater demand for Australian exports. Despite the adoption of a series of liberalisation measures from the **1970s** onwards, Australia was able to secure greater wealth distribution to its population than Brazil. This has secured Australia a domestic market with high per capita buying power and one of the world's highest *Human Development Index – HDI*. Despite Australia's geographic isolation, investments in education, research and communication allied to an active foreign relations program and selective immigration policies have boosted innovation within the country and secured Australia an active role in the globalisation process (Attard, 2010).

Based on the control of inflation from **1994** onwards, allied with more responsible management of the Brazilian Public debt and government

spending, the Brazilian economy was able to grow considerably and consistently over the past decade, becoming more attractive to Brazilian and foreign investors. Despite its history of great social differences, Brazil watched the introduction of a series of social reforms over the past decade that guaranteed more equitable wealth distribution, resulting in the growth of the Brazilian middle class and the consolidation of a considerable domestic market.

Overall, the consolidation of domestic markets in Brazil and Australia, allied with their position as suppliers of mining and agricultural and livestock produce to China (which presents and impressive growth of its own domestic market) resulted in their economies being less hit by the Global Financial Crisis deflagrated in **2008/09**.

In **2012**, Brazil hosted an estimated population of more than 198 million inhabitants occupying a total land area of 8,515,767.049 sq km, representing a demographic density of 23.29 inhabitants per sq km (IBGE, 2013). Despite becoming the 6th largest economy in 2011 with a US$ 2.476 trillion *Gross Domestic Product – GDP*, in **2012**, Brazil fell to the 7th place with a US$ 2.3 trillion GDP (UN, 2012). As for Australia, it hosted almost 23 million inhabitants in **2013** (ABS, 2013b) in a land area of 7,692,589 sq km[75] (Geoscience Australia, 2010), resulting in a demographic density of 2.99 inhabitants per sq km. Australia's *GDP* in 2011 was around US$ 1.5 trillion, representing the 12th economy in the world (UN, 2012). In terms of land area, Brazil is ranked 5th in the world, followed by Australia in the 6th position (Bank, 2013). As for marine territory, "Australia has the third largest estate of any nation in the world" (DSEWPC, 2013b), while Brazil is currently ranked 12th (University of British Columbia, 2013).

Brazil and Australia are both part of the list of 17 Megadiverse countries identified by *Conservation International* as those hosting more than two thirds of Earth's species and therefore considered highly biodiverse (CI, 1998).

The Evolution of Tourism in Brazil and Australia

Despite earlier manifestations of tourism dating back to the **XVIII century** for both Brazil and Australia, this section focuses on the evolution of tourism from the mid **XIX century** onwards in Australia and from the early **XX century** onwards for Brazil as it was during those times that *LHI* and *FDN* started their respective processes of tourism development.

From the mid **XIX century** up to the early **XX century**, travel around Australia was made mainly by steamships (Richardson, 1999, p. 23). In fact, *LHI*'s first tourists were brought by a steamer link from Sydney established in **1893** by Burns Philp & Company – BP (Nichols, 2006, p. 75 & 124). For a long time,

[75] Includes all Australian External Territories, except for the Australian Antarctic Territory.

the sea was not seen as the boundary of the Australian territory, but actually as large ring road connecting the country (Richardson, 1999, p. 24). This reality was only to be changed with the advent of the railways and roads and especially with airplanes. However, being part of the South Pacific, Australia retained its maritime tradition, evolving into an important hub for the cruiseline industry, especially along its Northeast coast, a strategic gateway to the islands of the Great Barrier Reef, the Coral Sea and the South Pacific Islands. Due to its close relationship with the former British Empire and with the USA, the history of cruiseship tourism in Australia seems to be directly linked with the development of the industry worldwide. P&O, the major player in South Pacific cruising with a great presence in Australia, "has been credited with introducing travel by ship as a leisure and recreational activity rather than merely a means of transport in **1844**" (Douglas & Douglas, 2006, p. 184). Differently to the Brazilian case, the development of the cruiseship industry in Australia was based on private ventures from the start and without as many restrictions to the entry of foreign firms mainly from the UK and the US.

In the **1920s**, Brazil experiences the beginning of coastal tourism partly motivated by a trend of health and well being associated with the understanding that seawater held curative powers and partly for the difficulties imposed by *First World War* on the traditional holidaying trips to Europe carried out by Brazilian farmers and traders. Along with the appearance of resorts, casinos also grew in number from the mid **1930s** until they became illegal in **1946** (Rejowski, 2002, p. 126). The **1930s** also saw the introduction of quite a few relevant tourist services, with the first cruiseline being operated by *Lloyd Brasileiro* along the Brazilian Coast in **1932** (Rejowski, 2002, p. 126). In **1936**, the hospitality sector started getting organised with the First National Hospitality Congress taking place in Rio and resulting in the creation of the *Brazilian Hospitality Industry Association – ABIH* in that same year and by the 1950s had already reached a reasonable scale in Brazil's main capital cities, although mega resorts along the Brazilian northeast coast only became a reality in the **1990s** (ABIH, 2011; Rejowski, 2002, p. 128, 130 & 147). French travel agency Wagon-Lits also started to operate in Brazil in **1936**, whereas the first Brazilian travel agency was established only in **1943** (Rejowski, 2002, p. 127). Ten year later (in 1953), 15 travel agencies established the *Brazilian Travel Agents Association – ABAV* (ABAV, 2003, 2013).

Only offering cargo infrastructure, most Brazilian ports were not ready to cater for passengers. Suffering with the *II World War*, cruiseship tourism was only to be revived in Brazil from **1962** onwards (ibid, p. 130), when the Brazilian Government purchased to the *Companhia Costeira de Navegação* (*Lloyd Brasileiro*) 4 cruiseships from Yugoslavia and Spain named *Anna Nery*, *Rosa da Fonseca*, *Princesa Leopoldina* and *Princesa Isabel* (Amaral, 2002, p. 193). Founded in the city of Santos in **1953**, Agaxtur (Agência Auxiliar de Turismo) started

organising cruiselines along the Brazilian coast chartering these four cruiseships from **1963**. When they were sold in **1968**, Agaxtur started chartering cruiseships from Italian *Costa Cruises*, with operations starting in **1969**. Until **1995**, no foreign cruiseships could operate between Brazilian ports if not chartered by Brazilian companies. In that year, with an amendment to the Brazilian Constitution, this restriction was revoked, allowing foreign cruiseships to undertake cabotage navigation along the Brazilian coast (Amaral, 2002, p. 197). As a result, from the **1997/1998** to the **1999/2000** seasons, the number of cruiseship calls to Brazilian ports went from 154 to 323 (Amaral, 2002, p. 198). This new configuration allowed Brazilian operators to sell cruises without having to charter entire cruiseships[76].

The early **XX century** was highly marked by the introduction of airplanes worldwide. In Australia, the first flight is believed to have occurred in **1909**, whereas the first flight in an Australian designed and built aircraft occurred in **1910** (Richardson, 1999, p. 26). In November **1920**, the *Queensland and Northern Territory Aerial Service – QANTAS* was established in Australia and in **1931**, on a flight across the Tasman Sea, *Francis Chichester* was the first pilot to land an airplane (seaplane) on *LHI*'s lagoon (Nichols, 2006, p. 132), the first fare paying passengers to the island only being carried in July **1946** by *Marinair* (Phillipps, 2009, p. 43).

Initially operating scheduled mail services within Queensland and the Northern Territory (QANTAS, 2013a), *QANTAS* started its first international service from Darwin to Singapore in **1935** (QANTAS, 2013b). In that same year, *Ansett Australia* was founded by *Sir Reginald Ansett* (Australia, 2008a) and a year later, a consortium of British-financed Australian shipowners created the *Australian National Airways – ANA* (Davidson & Spearritt, 2000a, p. 286). Established in **1946**, government owned *TransAustralian Airways* – TAA battled against *ANA* for the leadership of the Australian domestic market from the end of the **1940s,** forcing *ANA* to cease operations by **1957** when it was incorporated by *Ansett Airways* (ibid, p. 287). Under a two-airline agreement for domestic routes, *Ansett* and *TAA* started posing greater focus on the holidaying market, instead of working just with business passengers and freight, *Ansett* becoming "the first Australian airline to follow the precedent set by the railways and take serious steps to become a provider of resort settings and accommodation as well as of transport" (Davidson & Spearritt, 2000a, p. 297-8). As part of the third phase of a three-stage tourism programme, *Ansett* started developing certain islands (initially *Hayman* and *Daydream Islands* on the *Whitsundays Group*) within the *Great Barrier Reef – GBR* where it built infrastructure and luxury accommodation (ibid, p. 299). Being closer to Sydney than most *GBR* islands, *LHI* was considered a natural site for such type of resort. However, great resistance

[76] This was the case for *CVC* (currently Brazil's largest operator) until **2003** when it chartered its first cruiseship (CVC, 2012).

from the local community made it not feasible for the program to be implemented there.

In **1986** *TAA* was rebranded as *Australian Airlines*, being acquired by *QANTAS* in **1992**, ceasing operations 4 years later (Davidson & Spearritt, 2000a, p. 305). The **1990s** were marked by a duopoly of *Ansett* and *QANTAS* and the deregulation and liberalisation of the domestic air transport in Australia, culminating with the end of *Ansett Airways* in **2001** and the introduction of quite a few low-cost low-fare carriers (Tretheway, 2007) such as, *Virgin Australia* in **2000** (Virgin Australia, 2013), *Tiger Airways* in **2003** (Tiger Airways, 2013) and *QANTAS*-owned *JetStar* in 2004 (Jetstar, 2013).

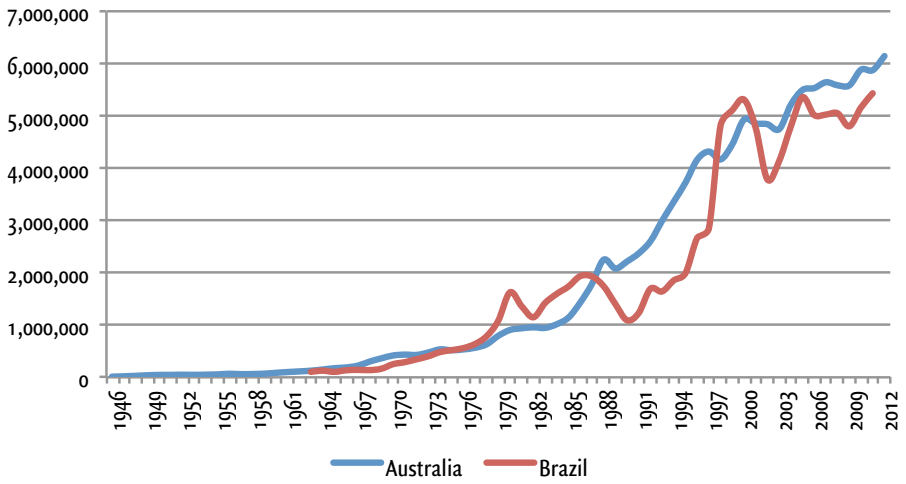
In Brazil, the history of commercial aviation dates back to its regulation in **1925** (MVOP, 1927, p. 25) and the authorization for three airlines to operate in the country in **1927**: the *Condor Syndikat* from Berlin; Brazilian *VARIG* (established in 1927); and the *Compagnie Générale d'Enterprises Aéronautiques Lignes Latecoère (Compagnie Générale Aéropostale)* from Paris, that started its transcontinental air postal service linking Europe and Brazil, with a stop in Fernando de Noronha (MVOP, 1928, p. 335). They were followed by *PanAir* (part of *PanAm*), established in **1930** and *VASP* in **1933** (Rejowski, 2002, p. 126). By the end of the 1970s, there were 4 national carriers: *VARIG*, *TransBrasil*, *VASP* and *Cruzeiro do Sul*. However, with the institution of regional aviation by the Brazilian Federal Government in **1975**, new carriers were established, including *TAM*[77] (ibid, p. 134). In the **1970**s, it was common for airlines to establish their own chain of accommodation services so as to complement the provision of air transport. In Brazil, Air France introduces *Meridien Hotels* in 1975 (ibid, p. 135) and *VARIG* constituted the *Rede Tropical de Hotéis* in 1967 (Hotéis, 2009).

Prior to the creation of the *National Agency for Civil Aviation – ANAC*[78] in **2005**, commercial aviation matters were the responsibility of the *Department of Civil Aviation – DAC*[79] of the *Brazilian Air Force*. Initially under the *Ministry of Defence*, *ANAC* was later on incorporated to the President's *Civil Aviation Secretariat*. Parallel to the process of demilitarisation of the control of civil aviation in Brazil, a process of market deregulation and liberalisation also followed. This process culminated in a greater opening of the Brazilian commercial air services to foreign and new airlines, reconfiguring the way competition takes place in the sector (Palhares, 2006, pp. 122-8; Trigo, 2005, pp. 603-39). As for Australia, it has been through a process of deregulation since the late **1980s** that led to the privatisation of state-owned airlines and airports as well as the introduction of privately-owned low-cost-low-fare airlines (ibid, pp. 119-122), being nowadays one of the most liberal domestic air transport regimes in the world (Tretheway, 2007).

[77] *Transportes Aéreos Marília.*
[78] *Agência Nacional de Aviação Civil.*
[79] *Departamento de Aviação Civil.*

Figure 48 portrays how international tourist numbers have grown in Brazil and Australia over the years and suggests that the processes of deregulation of air transport in these two countries may have contributed to the steady recoup observed from the early **1990s** onwards, while the early **2000s** portray the effects of the terrorist attacks in New York of 11th September **2001**.

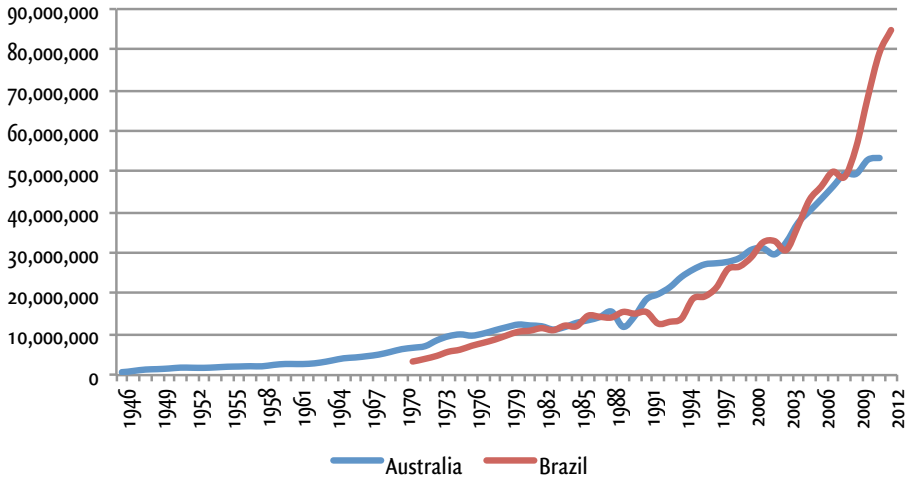
Figure 48 | International Tourist Arrivals 1946-2012



Sources | ABS (1970, 1971, 1972, 1974, 1976, 2013a), EMBRATUR (1971, 1982) and MTur (2012b)

A similar consideration can be made by analysis of *Figure 49*. However, it is interesting to observe that in the last couple of years, Brazil has grown its number of domestic arrivals in a much greater rate than Australia, which is explained by the rapid increase of its middle class and its economic growth despite the *Global Financial Crisis – GFC* of **2008-10**.

Figure 49 | Domestic Tourist Arrivals



Sources | BITRE (2013), EMBRATUR (1973, 1975, 1977, 1993, 2004) and MTur (2005, 2012)

Somehow parallel to the development of infrastructure, the Brazilian Government slowly started to get involved with tourism through the establishment of the *Permanent Commission for Exhibitions and Fairs*[80] in **1934** and the *Division of Tourism*[81] within the *Department of Press and Publicity*[82] in **1940** (Rejowski, 2002, p. 127). In **1958**, the *Brazilian Tourism Commission – COMBRATUR*[83] was created with the mission to coordinate national tourism development and the inflow of foreign tourists as well as the implementation of a system of regulation, registration and compliance for tourism related activities such as transport, accommodation and the movement of tourists and their belongings (Brasil, 1958). It is extinct in **1961** with the creation of the *Tourism and Tournaments Division*[84] within the *Ministry of Industry and Commerce – MIC*[85] that continued the work developed by COMBRATUR and also started organising the participation of Brazil in tourism-related international events and facilitating the entry of international investment in tourism facilities in Brazil (Brasil, 1961). However, being directly part of the Brazilian Government Structure rendered the Division unable to cater for all tourism regulation and organisation requirements set forth by the incisive growth trend experienced by the sector at the time. In response to that, the *Brazilian Tourism Enterprise – EMBRATUR*[86], and the *National Tourism Council – CNTur*[87] were created in **1966** with the aim to formulate and implement a *National Tourism Policy*. In **1967**, the *National Tourism System* is created, comprising EMBRATUR, *CNTur* and the *Ministry of Foreign Affairs* (Rejowski, 2002, p. 132). In **1971**, EMBRATUR sets the goal to expand the hospitality industry in Brazil, constituting the *Tourism General Fund – FUNGETUR*[88] to finance the construction, expansion and renovation of hotels in Brazil, leading, in **1978** to the institution of a *General Regulation for the Classification of Brazilian Accommodation Providers* (ibid, pp. 136-7).

In **1991**, EMBRATUR becomes the *Brazilian Tourism Institute*, a statutory authority responsible for the formulation, coordination and implementation of the *National Tourism Policy – NTPolicy* and the *National Tourism Plan - NTPlan*. However, despite developing Brazil's first *NTPolicy*, a *National Program of Local Tourism Development – PNMT*[89] (promoting the creation of local tourism councils) based on *UNWTO*'s guidelines and the *Northeast*

[80] *Comissão Permanente de Exposição e Feiras.*
[81] *Divisão de Turismo.*
[82] *Departamento de Imprensa e Propaganda.*
[83] *Comissão Brasileira de Turismo.*
[84] *Divisão de Turismo e Certames.*
[85] *Ministério da Indústria e Comércio.*
[86] *Empresa Brasileira de Turismo.*
[87] *Conselho Nacional de Turismo.*
[88] *Fundo Geral do Turismo.*
[89] *Programa Nacional de Municipalização do Turismo.*

Region Tourism Development Program - PRODETUR-NE[90] *(Trigo, 2005, pp. 19-38)*, Brazil's first *NTPlan* was only developed when the *Ministry of Tourism – Mtur* was created in **2003**. At that time, the approach to tourism development was shifted from local to regional level through the implementation of a *National Program for Regional Tourism Development*[91] and the identification of priority regions[92] to tourism development throughout Brazil, while *EMBRATUR*'s focus became restricted only to the development of Brazil's international inbound tourism, with domestic affairs being the responsibility of the *MTur*. Overall, despite being coordinated at the national level, the process of tourism development in Brazil is becoming more decentralised.

Differently to the Brazilian case, where tourism started as a centralised matter in the hands of the federal government, in Australia, the *Tasmanian Tourist Association – TTA* established in **1893** was the first government-led attempt to promote tourism development, preceding the first tourism ministry anywhere in the world established in New Zealand in **1901** (Davidson & Spearritt, 2000b, pp. 63-4). *TTA* was followed in **1905** by the *NSW* initiative to establish an *Intelligence Department* to advertise the state and promote tourism through its sub department, the *Railway Tourist Bureau*, which later on ventured into creating a ski resort in Mount Kosciuszko (ibid, pp. 69-9). It was only in **1929** that the *Australian National Travel Association – ANTA* started operating as the first federal tourism initiative focusing on the promotion of Australia as a tourist destination for Australians and foreigners (ibid, p. 79). Based on the proposals of two consultancy firms commissioned by *ANTA*, the *Australian Tourist Commission – ATC* was created in May **1997** as a Commonwealth statutory authority to occupy "the middle ground between government and the private sector" nationally coordinating attractions and facilities, intensifying Australia's overseas program while also redefining the role of Commonwealth and State Governments (ibid, p. 90). In an environment where state tourism bodies were actively engaging in international tourism promotion, *ATC*'s challenge was to cater for a unified image of Australia to international tourists. Alongside *ATC*, *See Australia* was created to market Australia domestically.

Later additions to the *Australian National Tourism System*[93] included the *Tourism Ministers' Council* in **1959** and the *Australian Standing Committee on Tourism – ASCOT* in **1976** (Hall, Jenkins, & Kearsely, 1997, p. 28) as well as the *Bureau of Tourism Research – BTR* in **1987** and the *Tourism Forecasting Council – TFC* in **1993** (Hall, 2002, pp. 154 & 157). As pointed by *Nogueira de Moraes* (2003), the *Australian National Tourism System* developed to become complex enough to cater for the need to balance federal, state, regional and local needs, whilst also promoting the partnership between government, the private sector and

[90] *Programa de Desenvolvimento do Turismo no Nordeste.*
[91] *Programa de Regionalização do Turismo – Roteiros do Brasil.*
[92] *65 Destinos Indutores.*
[93] For an extended account of the *Australian National Tourism System*, see (Nogueira de Moraes, 2003, 2004).

universities. In **1997**, the *Sustainable Tourism Cooperative Research Centre – STCRC* "was established under the Australian Government's *Cooperative Research Centres - CRCs* [94] [...], and grew to be the largest dedicated tourism research organisation in the world" congregating a total of 16 Australian Universities[95], 3 of the largest Australian tourism industry associations[96], *QANTAS*, as well as all Australian government tourism and conservation peak organisations at the Commonwealth and state levels[97] (STCRC, 2010b). Despite ceasing operations in **2010**, its research legacy was kept alive with the introduction of the *Sustainable Tourism Online*[98] web portal.

In **2004**, as the result of the implementation of the *Tourism White Paper* – a medium to long term strategy for tourism, *Tourism Australia replaced ATC* and *See Australia* while *Tourism Research Australia – TRA* replaced *BTR*, also incorporating *TFC* and renaming it to *Tourism Forecasting Committee*, (Australia, 2004; ITR, 2003). Initially under the single denomination of *Tourism Events Australia*, *Business Events Australia and Trade Events Australia* were two additions to the national system, operating under the structure of *Tourism Australia* (Tourism Australia, 2013). At the time of these changes, tourism was under the *Department of Industry, Tourism and Resources – ITR*. Currently, tourism sits within the *Department of Resources, Energy and Tourism – RET* of the *Australian Government* (RET, 2013).

Alongside the development of a government tourism management structure, the tourism industry also got organised by means of sectoral and tourism-wide associations. In **1957**, Australian travel agents constitute the *Australian Federation of Travel Agents – AFTA* (AFTA, 2013). Fifteen years later, in **1972**, the *Australian Incoming Tour Operators Association* is constituted, later becoming the *Inbound Tour Operators Association*. In **2000**, it was rebranded as the *Australian Tourism Export Council – ATEC* to reflect its members contribution to the Australian export economy (ATEC, 2013). In **1989**, the *Tourism Task Force* is founded, congregating leaders of the largest organisations related to tourism, mainly from the aviation and property sectors. In **2003**, it was

[94] "An Australian Government Initiative administered by the *Department of Industry, Innovation, Climate Change, Science, Research and Tertiary Education*. The *CRC* program supports end user driven research collaborations to address major challenges facing Australia. *CRCs* pursue solutions to these challenges that are innovative, of high impact and capable of being effectively deployed by the end users" (CRC, 2013).
[95] *Charles Darwin University, Curtin University of Technology, Edith Cowan University, Griffith University, James Cook University, La Trobe University, Monash University, Murdoch University, Southern Cross University, The University of New South Wales, University of Canberra, The University of Queensland, University of South Australia, University of Tasmania, University of Technology Sydney*, and *Victoria University* (STCRC, 2010a).
[96] *Australian Federation of Travel Agents – AFTA, Australian Tourism Export Council – ATEC* and *Tourism & Transport Forum – TTF Australia* (STCRC, 2010a).
[97] *Australian Capital Tourism, New South Wales National Parks & Wildlife Services – NSW NPWS, Parks Victoria, South Australian Tourism Commission – SATC, Tourism Australia, Tourism New South Wales, Tourism Northern Territory, Tourism Queensland, Tourism Tasmania, Tourism Victoria, Tourism Western Australia, Western Australian Government Department of Environment and Conservation* (STCRC, 2010a).
[98] For further info, see http://www.sustainabletourismonline.com/

rebranded as the *Tourism and Transport Forum – TTF* to reflect the growing importance of aviation and transport for the organisation (TTF, 2013). Overall, *TTF* tends to represent the interests of Australian big businesses that are related to tourism while *ATEC* represents those of smaller tourism organisations. Supporting the development process of the *Tourism White Paper*, the *National Tourism Alliance – NTA* was formed in **2001** congregating *TTF*, *ATEC* and many other tourism industry associations (Nogueira de Moraes, 2003, pp. 59-60). In **1991**, a year before *Rio-92*, *Ecotourism Australia* was formed as an incorporated non-profit organisation, becoming the peak Australian body for the ecotourism industry and having the certification of ecotourism businesses as its flagship program (Ecotourism Australia, 2012a).

In terms of Australia's insertion into tourism related global schemes, it is relevant to point that despite not being onboard the *Global Partnership for Sustainable Tourism – GPST*, it is actually part of the *Global Sustainable Tourism Criteria – GSTC* through *Ecotourism Australia*. Also, in **2003**, at the *Ecotourism Australia National Conference*, "a *Memorandum of Cooperation for the Development of a World Heritage Tourism Program and Fund* was signed by the *United Nations Educational, Scientific and Cultural Organisation – UNESCO World Heritage Centre – WHC* and Ecotourism Australia" (Ecotourism Australia, 2012b). As for Brazil, it is part of both *GPST* and *GSTC*, the later through its *Roteiros de Charme*, a national certification scheme for exclusive hospitality service providers. Brazil joined the *United Nations World Tourism Organisation - UNWTO* in **1975** and has been a member since then, whilst Australia was a member state from **1979** to **1990**. In **2004**, in light of *UNWTO* becoming a *UN* specialised agency and as the result of the *Tourism White Paper*, Australia re-joined *UNWTO* and has been a member since then (ITR, 2003, p. 9; UNWTO, 2013).

Conservation and PAs in Brazil and Australia

In Brazil, despite previous efforts (dating back to the **17th century**) to establish effective legal instruments to protect portions of the Brazilian territory from human exploitation, it was only during the Republican period (starting in **1889**) that the Brazilian Government came up with a robust enough instrument (*Forest Code of* **1934**) that guaranteed the implementation of the first *Brazilian National Park* in **1937** – *Parque Nacional de Itatiaia*. Before that, the power of the rural elites and the fragility of the then recently created republican institutions did not allow conservation efforts to become a reality (Medeiros, 2006, pp. 68-9). The *Forest Code of* **1934** (Brasil, 1934) introduced different typologies[99] (Protected Forests, Remaining Forests, Model Forests, etc.) and categories of *Protected Areas – PAs* that included *National Parks* -

[99] In Brazil, Protected Area *categories* (lower level) are part of specific Protected Area *typologies* (upper level). As an example, the *categories* of *Biosphere Reserves*, *Ramsar Sites* and *Natural World Heritage Sites* are part of the *typology* entitled *Areas of International Recognition*.

PARNAS[100], *National Forests* – FLONAS and *Aesthetic* or *Biological Protection Reserves* – REBIOS, among others. The *New Forest Code* (Brasil, 1965) superseded the one from **1934** by transforming *National Parks* and *National Forests* into typologies and introducing two others: the *Areas of Permanent Preservation* – APPs and the *Legal Reserves*. In **1967**, the *Brazilian Institute for Forestry Development* – IBDF[101] was created with the aim to implement, manage and control the growing number of PAs in Brazil. In **1973**, influenced by the *Stockholm Conference* of **1972**, the Brazilian Government decided to create a central structure responsible for the development and operationalization of a national integrated policy for the environment. This culminated in the creation of the *Special Secretariat for the Environment* – SEMA[102] within the *Ministry of Interior*[103]. For political reasons, IBDF (that was then part of the Ministry of Agriculture[104]) was not incorporated to SEMA, leading the Secretariat to pursue its own program of PAs. This resulted in the creation of a plethora of new typologies and categories, including the *Environmental Protection Areas* – APAs[105] typology in **1981**. This great number of typologies and categories led to various attempts to develop a coordinated system of PAs. This was only achieved in **2000** when the *National System of Conservation Units* – SNUC[106] came into force (Brasil, 2000). After quite a few amalgamations and divisions, the current governance structure for the environment in Brazil comprises mainly: the *Ministry for the Environment* – MMA[107] created in **1992**; the *Brazilian Institute for the Environment and the Natural Renewable Resources* – IBAMA[108] created in **1989** with the merging of SEMA and IBDF (IBAMA, 2012); and the *Chico Mendes Institute for the Conservation of Biodiversity* – ICMBio[109] created in **2007** and taking over the management of the SNUC from IBAMA (ICMBio-MMA, 2012a). In **2000**, foreseeing the opportunity to use tourism as an instrument for environmental education and conservation, IBAMA launched its *National Parks Recreational Use and Ecotourism Program: Business Opportunities*. This started bringing together private investors and *National Parks* through tendering processes targeting the provision of public services and the establishment of selected tourism linked business operations in *National Parks*, the most significant example being that of the *Iguaçu National Park*. In **2008**, MMA, ICMBio, MTur and EMBRATUR launched a new program called *Tourism in the Parks*. This time, despite not being a priority Park, the *National Marine Park of Fernando de*

[100] In Brazil, *National Parks* are proclaimed and managed by the Federal Level, while the State Level is responsible for *State Parks* and the Municipal Level by *Natural Municipal Parks*. By proclaiming a *National Park* in an area under state jurisdiction, the federal level becomes responsible for the area comprised by the National Park.
[101] *Instituto Brasileiro de Desenvolvimento Florestal.*
[102] *Secretaria Especial do Meio Ambiente.*
[103] *Ministério do Interior.*
[104] *Ministério da Agricultura.*
[105] *Áreas de Proteção Ambiental.*
[106] *Sistema Nacional de Unidades de Conservação.*
[107] *Ministério do Meio Ambiente.*
[108] *Instituto Brasileiro do Meio Ambiente e dos Recursos Naturais Renováveis.*
[109] *Instituto Chico Mendes de Conservação da Biodiversidade.*

Noronha – PARNAMAR-FDN[110] was included in the tendering section of the program.

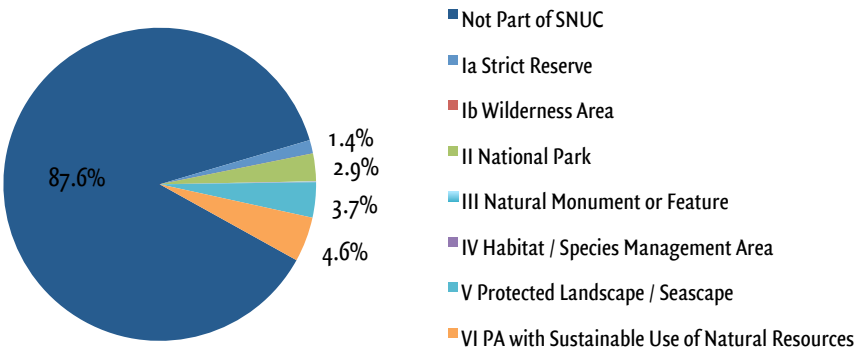
In Australia, the Government of the then *Colony of New South Wales* declared the country's first National Park (and second in the world) in **1879** – *Royal National Park Sydney* (NSW Department of Lands, 1879). Like Brazil, Australia's conservation regulatory framework evolution involved the alignment of specific pieces of environmental conservation legislation by one overarching instrument. Through the *Environmental Reform (Consequential Provisions) Act of* **1999** (Australia, 1999b), the *Environment Protection and Biodiversity Conservation Act of* **1999** – EPBC Act (Australia, 1999a) superseded both the *National Parks and Wildlife Protection Act of* **1975** (Australia, 1975) and the *Word Heritage Properties Conservation Act of* **1983** – WHP Act (Australia, 1983). The *EPBC Act* is partly the result of the *Heads of Agreement on Commonwealth and State Roles and Responsibilities for the Environment* signed by the all members of the *Council of Australian Governments – CoAG* in November **1997** (Australia, 1997). Triggered by cases of dispute between the Australian Commonwealth and States with regard to decision-making involving environmental protection versus development issues, it is preceded by the *Intergovernmental Agreement on the Environment* (Australia, 1992) and partly motivated by the *Commonwealth v Tasmania case* ("Commonwealth v Tasmania ("Tasmanian Dam case")," 1983) – in which the State of Tasmania unsuccessfully disputed the *WHP Act* that empowered the Commonwealth to impede the construction of a dam in the Franklin River that would affect the *Tasmanian Wilderness World Heritage site.*

"In **1998**, the Commonwealth and state and territory governments committed to the creation of a *National Representative System of Marine Protected Areas – NRSMPA* by **2012**" (DSEWPC, 2013a). As a result, 40 new Commonwealth marine reserves were established throughout Australia, adding extra 2.3 million sq km of marine reserves to the *Commonwealth Marine Reserve Network – CMRN*, that reached a total of 3.1 million sq km (DSEWPC, 2013a). NRSMPA complements the *National Reserve System – NRS*, which is the network of terrestrial Australian PAs that in **2010** accounted for a total coverage of 1,032,990 sq km (DSEWPC, 2012b).

Figure 50 and *Figure 51* portray Australia as having 13% more PA coverage over the sum of marine and land territory than Brazil. While the total area of Brazilian PAs portrays a fairly reasonable distribution among most *IUCN Categories*, with the exception of categories Ib, III and IV, in the Australian case, there is a more evident concentration in the categories of *National Park* (II) and *PA with Sustainable Use of Natural Resources* (VI). Very representative in Australia, category IV is practically inexistent in Brazil.

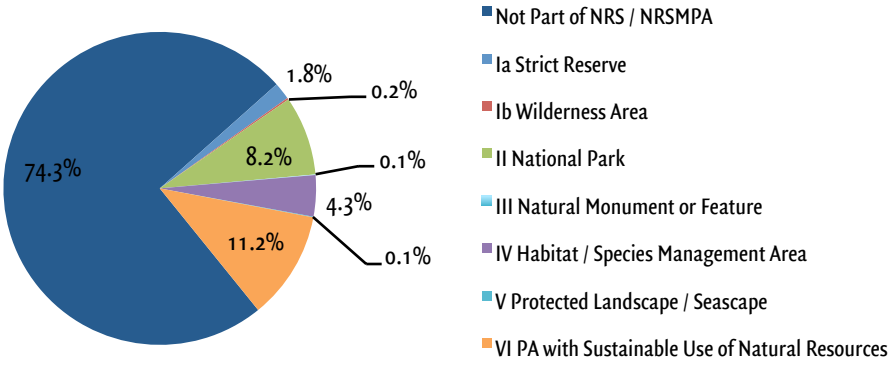
[110] *Parque Nacional Marinho de Fernando de Noronha*. Further information about its proclamation and implementation can be found in *Chapter 8*.

Figure 50 | PAs Coverage by IUCN Category – Brazil



Source | Data compiled from CNUC (2012a, 2012b)

Figure 51 | PAs Coverage by IUCN Category – Australia

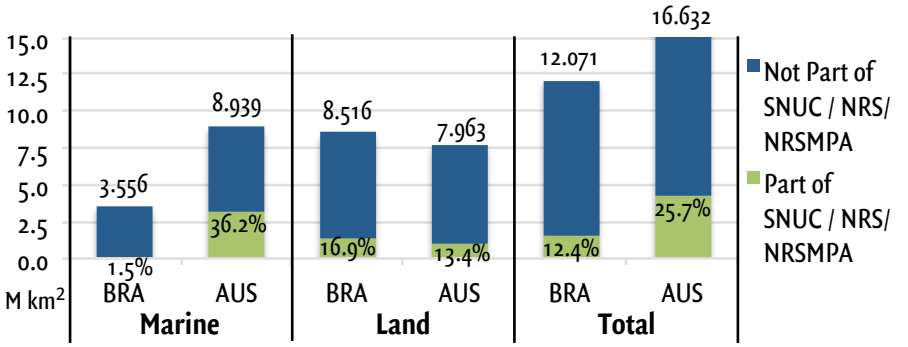


Source | Data compiled from and DSEWPC (2005, 2012b, 2012d, 2012e, 2012f, 2012g, 2012h, 2012i) and Geoscience Australia (2010)

When Brazil and Australia are compared in relation to their marine territory coverage of PAs, the recent implementation of the *Commonwealth Marine Reserve Network* imposes a great difference. While Brazil protects only 1.5% of its marine territory, Australia has reached 36.2% coverage of its marine areas. Two main factors seem to hold the Brazilian Government from adopting a similar approach to that in place in Australia: lack of research; and the yet to be resolved Brazilian claim to the UN for the extension of Brazil's jurisdiction to the continental platform exceeding the current *Exclusive Economic Zone* – EEZ of 200 Nautical Miles, which would add extra 950.000 sq km of marine areas to the Brazilian territory. Both factors are intimately related to Brazil's traditional exploration of underwater oil resources, which recently gained great attention with the discovery of impressive reserves in the pre-salt layer along the coasts of São Paulo and Rio de Janeiro. It seems that until Brazil's marine territory extension claims are fully recognised and further research is conducted into its underwater mineral resources and ecosystems, the declaration of new PAs will be restricted to coastal and island areas. *Figure 52* portrays the differences in

total recognised marine and land territories for Brazil and Australia and respective coverage of PAs under SNUC and the NRS. Despite great differences in marine areas, in terms of land, both countries portray similar PA coverage.

Figure 52 | PAs Coverage by Territory – Brazil Vs. Australia

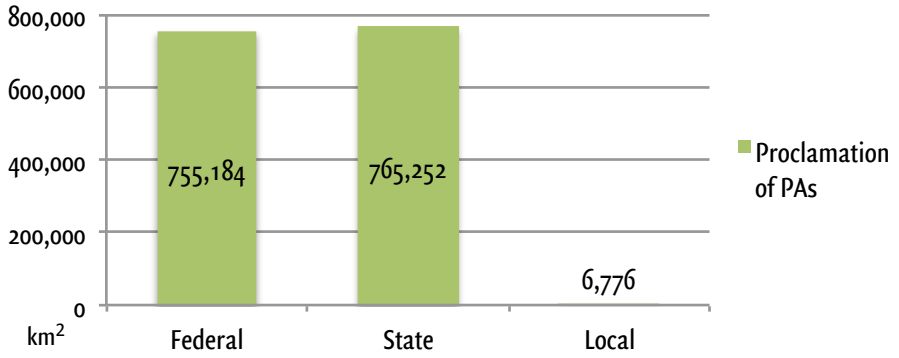


Source | Data compiled from CNUC (2012a, 2012b), DSEWPC (2005, 2012b, 2012d, 2012e, 2012f, 2012g, 2012h, 2012i) and Geoscience Australia (2010)

It is interesting to observe the reflections of political and legal historical backgrounds in the proclamation of PAs, when the coverage of PAs is compared in terms of their proclamation by different government levels. Despite still being a country where power is fairly centralised at the Federal level, Brazil portrays a balance between Local, State and Federal levels that seems more equitable than the one in Australia, where power is greatly concentrated at the State Level. The Brazilian Constitution and environmental legal framework allow different levels of governance to overlap in terms of their jurisdiction to proclaim PAs. Environmental conservation through the proclamation of PAs on the Brazilian territory is therefore a responsibility of the three levels, which act based on the recognition of local, regional or national environmental significance of areas. In cases where there is overlapping of proclaimed PAs in Brazil, upper level and more restrictive proclamation supersede lower level or less restrictive ones. SNUC is a single piece of legislation that regulates the proclamation of PAs by the three levels. All PAs proclaimed in Brazil by the three levels are therefore part of SNUC and integrate the *National Registry of Conservation Units – CNUC*[III]. *Figure 53* portrays the coverage of PAs proclaimed by each government level in Brazil by **2012**, showing that State and Federal coverage is fairly similar and higher than Local. ICCAs are not part of SNUC and being a separate type of PA in Brazil. In Australia, they integrate the NRS.

[III] *Cadastro Nacional de Unidades de Conservação.*

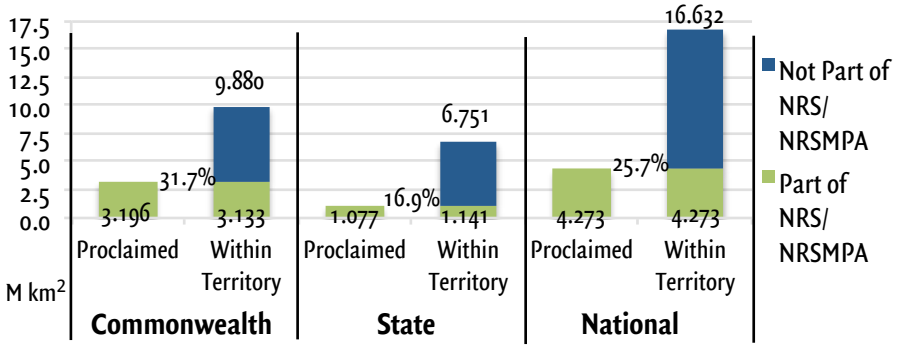
Figure 53 | PAs Proclaimed by Government Level – Brazil



Source | Data compiled from CNUC (2012a)

In Australia, there is a clear division between State and Commonwealth land and marine territory. In general terms, each level only proclaims PAs on their own territories[112]. *Figure* 54 portrays the coverage of PAs proclaimed by Commonwealth and State levels in comparison to PAs lying on their territories, showing Commonwealth coverage is almost double that of State.

Figure 54| PAs Proclaimed by Government Level - Australia

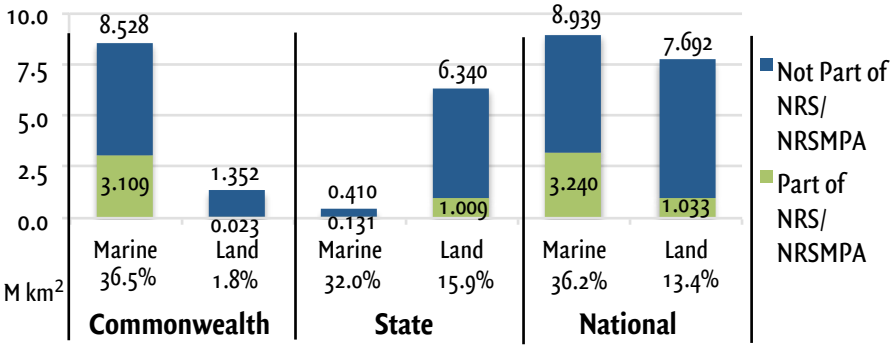


Source | Data compiled from DSEWPC (2005, 2012b, 2012d, 2012e, 2012f, 2012g, 2012h, 2012i) and Geoscience Australia (2010)

However, when data is analysed by type of territory, it can be observed that Commonwealth level has concentrated its efforts in establishing PAs in marine areas, whereas States have done so in land areas (see *Figure* 55).

[112] Exceptions include the *Commonwealth Great Barrier Reef Marine Park* that extends on QLD waters and the *QLD Great Barrier Reef Coast Marine Park* that extends on Commonwealth waters.

Figure 55 | PAs coverage by Territory and Government Level - AUS



Source | Data compiled from DSEWPC (2005, 2012b, 2012d, 2012e, 2012f, 2012g, 2012h, 2012i) and Geoscience Australia (2010)

Figure 56 and *Figure 57* presented at the end of this chapter portray the geographical distribution of PAs in Brazil and in Australia by *IUCN category*. They provide an interesting insight into the Brazilian and Australian States with greatest coverage of PAs and make it evident the great difference in marine protection between Australia and Brazil.

National Participation in Global Conservation Schemes

As founding members of **UNESCO**, both Brazil and Australia have adhered to UNESCO's *MaB Program*. Brazil did so in **1974**, creating in that same year, the *Brazilian Commission for the MaB Program – COBRAMAB*[113] (Brasil, 1999; RBMA, 2004a). Since **1991**, UNESCO has recognised 6 *Biosphere Reserves* – BRs nominated by the Brazilian Government, that cover about 1,300,000 sq km of the Brazilian territory, representing the 6 main Brazilian biomes (RBMA, 2004b). Overall, the implementation of BRs in Brazil help implement mosaics of PAs that cater for integrated management and creation and implementation of new PAs. While BRs are not PAs per se, they are formed by different types of nationally implemented PAs that account for their core, buffer and transition zones, being therefore an instrument for the creation and management of networks of integrated PAs. When compared to the Brazilian case that is based in biomes, Australian BRs are substantially smaller as they tend to encompass fewer PAs and focus on smaller scale ecosystems. Despite UNESCO's recognition of 14 BRs in Australia since **1977**, they represent a little more than 70,000 sq km (UNESCO, 2012), or about 5% of the area of all Brazilian BRs (RBMA, 2004b). In Australia, nominations for BRs fall under the *Australian National Commission for UNESCO* created in **1947** by the Federal cabinet (UNESCO, 2013).

Brazil and Australia are also founding signatories of the *Convention on Biological Diversity – CBD*, becoming parties of the convention by ratification

[113] *Comissão Brasileira do Programa Homem e Biosfera.*

on the 28th of February **1994** and 18th of June **1993**, respectively (SCBD, 2013). However, despite *CBD*'s use of *The IUCN Red List of Threatened Species* as one of its monitoring indicators, neither Brazil nor Australia have officially incorporated *The Red List* into their public policies. Instead, Brazil has developed and published by *Normative Instructions* its own *National Lists of Threatened Species* based on recommendations of its *National Commission on Biodiversity*[114] (MMA, 2008). Through its *EPBC Act*, Australia defines different categories to which species must be listed according to the level of threat they are under. Despite most *EPBC Act* categories being fairly similar to those used by *IUCN* (*Extinct*, *Extinct in the Wild*, *Critically Endangered*, *Endangered* and *Vulnerable*), *Near Threatened* and *Least Concern* categories are not part of Australia's *Index*, which also defines an extra *Conservation Dependent* category. Listing in any category requires public consultation and advice from the *Australian Threatened Species Scientific Committee* (DSEWPC, 2012j).

When it comes to the use of the *IUCN Protected Areas Categories*, both Brazil and Australia apply the categories to proclaimed *PA*s as units, but only Australia also applies it to different zones that are defined within each *PA*. In the case of Brazil, zones are not automatically associated with *IUCN categories* and tend to be defined on a case by case basis, with the exception of *National Parks*, which have their own regulatory instrument for zoning and management[115] (GPR, 1979).

Both Brazil and Australia are also founding signatories of the **1972** UNESCO's *World Heritage Convention*, having accepted/ratified it in **1977** and **1974** respectively. In Brazil, the *Ministry of Culture* and the *Ministry for the Environment* are responsible for managing respective cultural and natural *World Heritage Properties - WHPs*, while in Australia there is a single department for both types of *WHP*s. Perhaps reflecting this situation, all inscribed Brazilian sites are either natural or cultural while quite a few Australian sites are mixed (listed because of both natural and cultural criteria) – see *Table 15* and *Table 16*.

[114] *Comissão Nacional de Biodiversidade*.
[115] All maps produced for this thesis that portray *PA*s and/or their zoning have used a conversion table developed by the author (see *Appendix 1*) to show zones according to *IUCN* categories.

Table 15 | Australian World Heritage listed properties

Property Name	Year of Inscription	Extensions (E) / Modifications (M)	Type	Criteria										Property Area (ha)	Buffer Zone Area (ha)
				Cultural						Natural					
				i	ii	iii	iv	v	vi	vii	viii	ix	x		
Great Barrier Reef	1981		1							1	1	1	1	34,870,000	N/A
Kakadu National Park	1981	1987 (E), 1992 (E)								1		1	1	1,979,766	N/A
Willandra Lakes Region	1981										1			240,000	N/A
Lord Howe Island Group	**1982**		1							1			1	**152,000**	N/A
Tasmanian Wilderness	1982									1	1	1	1	1,407,513	N/A
Gondwana Rainforests of Australia	1986	1994 (E)	1								1	1	1	370,000	N/A
Uluru-Kata Tjuta National Park	1987	1994 (E)								1	1			132,566	N/A
Wet Tropics of Queensland	1988		1							1	1	1	1	894,420	N/A
Shark Bay, Western Australia	1991		1							1	1	1	1	2,197,300	N/A
Fraser Island	1992		1							1	1	1		184,000	N/A
Australian Fossil Mammal Sites	1994		1								2	1		10,300	N/A
Territory of Heard Island and McDonald Islands	1997		1								1	1		658,903	N/A
Macquarie Island	1997		1							1	1			540,000	N/A
Greater Blue Mountains Area	2000		1									1	1	1,032,649	86,200
Purnululu National Park	2003		1							1	1			239,723	79,602
Royal Exhibition Building and Carlton Gardens	2004	2010 (M)												26	55
Sydney Opera House	2007													6	438
Australian Convict Sites	2010													1,503	3,747
Ningaloo Coast	2011		1								1		1	705,015	N/A
		Total	**19**	**2**	**1**	**2**	**1**	**2**	**4**	**10**	**12**	**10**	**9**	**45,615,690**	**170,042**
		Natural	**12**											**41,854,310**	
		Mixed	**4**											**3,759,845**	
		Cultural	**3**											**1,535**	

Source | Data compiled from http://www.unesco.org

While the *Lord Howe Island Group – LHIG* was among the first five Australian properties to be listed as *WH*, the *Brazilian Atlantic Islands – BAI* were among the last five Brazilian properties to be listed as *WH*.

Table 16 | Brazilian World Heritage listed properties

Property Name	Year of Inscription	Extensions (E) / Modifications (M)	Type	Criteria										Property Area (ha)	Buffer Zone Area (ha)
				Cultural						Natural					
				i	ii	iii	iv	v	vi	vii	viii	ix	x		
Historic Town of Ouro Preto	1980													326	N/A
Historic Centre of the Town of Olinda	1982													120	920
Jesuit Missions of the Guaranis[116]	1983	1984 (E)												20	N/A
Historic Centre of Salvador de Bahia	1985													80	N/A
Sanctuary of Bom Jesus do Congonhas	1985													0.1	N/A
Iguaçu National Park	1986		1							1			1	170,086	N/A
Brasília	1987													11,250	N/A
Serra da Capivara National Park	1991													129,140	N/A
Historic Centre of São Luís	1997													220	N/A
Atlantic Forest South-East Reserves	1999		1							1		1	1	468,193	N/A
Discovery Coast Atlantic Forest Reserves	1999		1									1	1	111,930	N/A
Historic Centre of the Town of Diamantina	1999													29	N/A
Central Amazon Conservation Complex	2000	2003 (E)	1									1	1	5,323,018	N/A
Pantanal Conservation Area	2000		1							1		1	1	187,818	N/A
Brazilian Atlantic Islands: FDN and ADR	**2001**		1							1		1	1	**42,270**	**140,713**
Cerrado Protected Areas: Veadeiros and Emas PARNAS	2001		1									1	1	367,356	N/A
Historic Centre of the Town of Goiás	2001													40	44
São Francisco Square in the Town of São Cristóvão	2010													3	2,500
		Total	18	3	4	3	9	1	1	4	0	6	7	6,811,899	144,177
		Natural	11											6,670,671	
		Mixed	0											0	
		Cultural	7											141,228	

Source | Data compiled from http://www.unesco.org

Table 17 points that both Australia and Brazil have been part of the *WH Committee* for 23 years or about 64% of the time. The proportion of their properties inscribed while they were members of the committee was slightly higher: 68% for Australia and 67% for Brazil. They were also active as hosts, and achieved similar numbers of listed properties: 19 (AUS) and 18 (BRA).

[116] *Ruins of São Miguel das Missões* (property also comprises sites in Argentina).

Table 17 | WH Committee Membership: Australia and Brazil

Word Heritage Committee Sessions					Australia			Brazil		
	Ordinary Sessions	Extraordinary Sessions		Year	Membership	Inscriptions	Extensions (E) / Modifications (M)	Membership	Inscriptions	Extensions (E) / Modifications (M)
1	Paris, France			1977	✓					
2	Washington, D.C.			1978	✓					
3	Luxor, Egypt			1979	✓					
4	Paris, France			1980	✓				1	
5	**Sydney, Australia**	1	Paris, France	1981	✓	**3**		✓		
6	Paris, France[117]			1982	✓	**2**		✓	1	
7	Florence, Italy			1983	✓			✓	1	
8	Buenos Aires, Argentina			1984	✓			✓		1 (E)
9	Paris, France			1985	✓			✓	2	
10	Paris, France			1986	✓	1		✓	1	
11	Paris, France	2	Paris, France	1987	✓	1	1 (E)	✓	1	
12	**Brasília, Brazil**			1988	✓	1		✓		
13	Paris, France			1989	✓			✓		
14	Banff, Canada			1990				✓		
15	Carthage, Tunisia			1991		1		✓	1	
16	Santa Fe, USA			1992		1	1 (E)	✓		
17	Cartagena, Colombia			1993				✓		
18	Phuket, Thailand			1994		1	2 (E)	✓		
19	Berlin, Germany			1995				✓		
20	Mérida, Mexico			1996	✓			✓		
21	Naples, Italy			1997	✓	2		✓	1	
22	Kyoto, Japan			1998	✓			✓		
23	Marrakesh, Morocco	3-4	Paris, France	1999	✓			✓	3	
24	**Cairns, Australia**			2000	✓	**1**			2	
25	Helsinki, Finland[118]	5	Paris, France	2001	✓				**3**	
26	Budapest, Hungary			2002						
27	Paris, France	6	Paris, France	2003		1				1 (E)
28	Suzhou, China	7	Paris, France	2004		1				
29	Durban, South Africa			2005						
30	Vilnius, Lithuania			2006						
31	Christchurch, New Zealand	8	Paris, France	2007		1				
32	Quebec City, Canada			2008	✓			✓		
33	Sevilla, Spain			2009	✓			✓		
34	**Brasília, Brazil**	9	Paris, France	2010	✓	1	1 (M)	✓	**1**	
35	Paris, France	10	Paris, France	2011	✓	1		✓		
36	Saint Petersburg, Russian Fed.			2012						
	36		**10**	36	**23**	**19**	**5**	**23**	**18**	**2**
			Member (%)		63.8	68.4	-	63.8	66.6	-
			Non-Member (%)		36.1	31.5	-	36.1	33.3	-

Source | Data compiled from http://www.unesco.org

[117] *Lord Howe Island Group* property is inscribed.
[118] *Brazilian Atlantic Islands: Fernando de Noronha and Atol das Rocas Reserves* property is inscribed.

There is considerable difference in the way natural heritage aspects of the WH Convention have been undertaken by Brazil and Australia in terms of resulting federal legal instruments. In the case of Brazil, the only instruments were the acceptance of the Convention by a presidential decree in **1977** (Brasil, 1977b) following the approval of the Convention by the *Brazilian National Congress* through a Legislative Decree in that same year (Brasil, 1977a). In Australia, not only has the convention been ratified in **1974**, there has been the enactment of the *WH Properties Conservation Act* of **1983** (Australia, 1983), superseded (and incorporated) by the *EPBC Act* of **1999** (Australia, 1999a) through the Environmental Reform Act of **1999** (Australia, 1999b).

With no legal instrument regulating the implementation of the Convention in regards to natural WH in Brazil, responsibilities have become blurred and the management of WH sites is carried out mostly through the management of overlapping national protected areas. However, the boundaries and conservation objectives of both areas are not always fully aligned, leaving portions and some conservation objectives of *WHP*s unmanaged. This is the reflection of a system of protected areas that still needs refinement and adjustment as it presents a plethora of typologies that are only recently starting to be integrated in terms of the strategy for the proclamation of new protected areas and their management, through mosaic approaches including the creation of mosaic management councils. Through this approach, international level typologies of protected areas such as *BR*s and *WHP*s pose an opportunity for the consolidation of integrated management in Brazil. So far, this approach seems more successful in the case of *BR*s, due to their overarching global strategy of establishing a network of national commissions, regional and state committees and reserve management councils, something that is not a formal requirement in the case of the *World Heritage Listing – WHL* strategy. This is evident in the overall strategy pursued by the *Brazilian Government* in which it tries to integrate the two instruments by seeking nomination of Natural WH sites as the core areas of proposed *BR*s. The launch of the *Natural WH sites Biodiversity Conservation Program* (UNESCO, 2010) by the *Ministry for the Environment* in **2004** is a clear example of that, as it prioritises *Natural World Heritage Properties - NWHP*s that are part of single *BR*s, excluding *BAI-FDN-ADR* (for no apparent reason) and the *Chapada dos Veadeiros National Park* and the *Emas National Park* (each Park is part of a different *Biosphere Reserve* but both are part of the same *WHP*). Overall, *WHL* seems to be used by the *Brazilian Government* mostly as a means of seeking support for political decision-making and investments to be directed to the sites, rather than an implemented layer of protection and monitoring.

The Australian *EPBC Act* of **1999** (Australia, 1999a) makes it clear that the *Commonwealth Government* must prepare management plans for *WHP*s that are located in areas under Commonwealth jurisdiction and that it must ensure

that these plans are prepared in cooperation with States or Territories where the properties are under their jurisdiction. The *EPBC Regulations* of **2000** (Australia, 2000) delineates through its Schedule 5: *Australian WH Management Principles* (regulation 10.01) what these plans must include, how they should be prepared and how frequently they should be reviewed. These legal instruments have forced the emergence of a federal level structure that oversees and provides assistance to the management of WHPs in Australia. Through the *Caring for our Country* program (Australia, 2008b), which focuses on the fulfilment of Commonwealth obligations under the *EPBC Act* and respective *Regulations*, a structure of local *WH Advisory Committees* has been established and a *WH Manager* has been funded for most properties. "The *Australian World Heritage Advisory Committee* – AWHAC was [also] established by the *Environment Protection and Heritage Council* – EPHC to provide advice to Commonwealth and State/Territory Ministers on issues of a national, cross-cutting nature that affect Australia's World Heritage sites" (Department of the Environment, 2013). AWHAC comprises representatives of all Australian WHPs, usually the appointed Chair for the local *WH Advisory Committee* (AWHAC, 2010). This structure has made *WH management* a reality that is better integrated with overlapping protected areas and adjacent areas under the management of state and local governments in Australia.

Contrasting the governmental structures and systems of Brazil and Australia provides part of the answer to why *WHL* has been more broadly incorporated to the legal system of Australia. The development and enactment of the ***WHPs Conservation Act of 1983*** is the result of political disputes between the Commonwealth and the State levels of governance in Australia over control of development and environmental protection - it is the successful attempt of the Australian Commonwealth Government to gain some power over state land through its duty to uphold international agreements such as the *WH Convention*. Apart from *Commonwealth National Parks*, all other parks are proclaimed and managed by State Governments in Australia (Australia, 1900). *Commonwealth National Parks* only exist in areas that are under direct jurisdiction of the Commonwealth Government such as in the *NT*, in the *ACT* and on the Australian oceanic islands that are not part of any state, such as *Norfolk Island* and *Christmas Island*. The same is true for *Commonwealth National Marine Parks* as they can only exist in *Commonwealth Waters*. This can be a reflection of the different processes of Federation that occurred in the two countries – while Brazil had previously been united as a single Empire prior to becoming a Federative Republic, Australia used to be a group of British Colonies prior to becoming a country. This way, the Brazilian process is that where the federal level gives up power to the states through federation, while the Australian is one where former colonies give up power to the Commonwealth in order to become federated states. This process of systemic structural development resembles the holistic theory proposed by *Koestler* (1967) where *holons* (or systems) are organised in a hierarchical way

and need to struggle between asserting their individuality and freedom and to be subjugate to higher-level systems.

When the implementation of ***Biosphere Reserves – BRs*** and ***WHPs*** are contrasted for the Brazilian case, it can be noted that through the proposal of the establishment of a network, ***BRs*** were slightly better incorporated in terms of legislation (inclusion in the **SNUC**) and much better incorporated in terms of development of organisational structures and programmes (also a result of the strategy). This has resulted in a global conservation strategy that has been implemented in a more integrated way, furthering the reach of existing protected areas and fostering the fulfilment of their objectives.

Chapter Conclusion

This chapter sought to paint the broad landscape of which *FDN* and *LHI* are part at the national level. It started by discussing how *TD* and *LC* have influenced the relational and institutional structures that have developed in Australia and Brazil. While Brazil and Australia have shown to be active players in the international arena when it comes to being part of international forums that discuss how tourism and conservation should be implemented and managed, this chapter makes it clear the influence that these two countries have suffered from the international *context*, when it comes to the implementation of their National Tourism and Environmental Systems of Governance and their *consequences* in terms of the implementation of *PA*s and *TD*.

References

ABAV. (2003). Sobre a ABAV: Breve Histórico. *Associação Brasileira de Agências de Viagens*. from http://www.abav.com.br/texto.aspx?id=3&id_area=1

ABAV. (2013). *Associação Brasileira de Agências de Viagens - ABAV: 1953-2003: 50 anos de História, Lutas e Vitórias*. São Paulo: Associação Brasileira de Agências de Viagens.

ABIH. (2011). Associação Brasileira da Indústria de Hotéis - ABIH: Quem Somos: História. *Associação Brasileira da Indústria de Hotéis*. from http://www.abih.com.br/quem_somos.php

ABS. (1970). Overseas Arrivals and Departures: Part 2: Total and Short-Term Movement: December Quarter 1969. Canberra: Australian Bureau of Statistics.

ABS. (1971). Australian Overseas Arrivals and Departures: December 1970. Canberra: Australian Bureau of Statistics.

ABS. (1972). Australian Overseas Arrivals and Departures: December 1971. Canberra: Australian Bureau of Statistics.

ABS. (1974). Australian Overseas Arrivals and Departures: December 1973. Canberra: Australian Bureau of Statistics.

ABS. (1976). Australian Overseas Arrivals and Departures: November and December 1975. Canberra: Australian Bureau of Statistics.

ABS. (2013a, Mar 06). 3401.0 Overseas Arrivals and Departures: Australia: December 2012. *Australian Bureau of Statistics*. from http://www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/3401.0Dec 2012?OpenDocument

ABS. (2013b, Feb 30). Australian Population clock. from http://www.abs.gov.au/ausstats/abs@.nsf/0/1647509ef7e25faaca2568a900 154b63?OpenDocument

AFTA. (2013). About AFTA. *Australian Federation of Travel Agents*. from http://www.afta.com.au/About

Amaral, Ricardo. (2002). *Cruzeiros Marítimos* (1st ed.). Barueri: Manole.

ATEC. (2013). ATEC's History and Honours List. *Australian Tourism Export Council*. from http://www.atec.net.au/subpage-05a.html

Attard, Bernard. (2010, Mar 04). The Economic History of Australia from 1788: An Introduction. from http://eh.net/encyclopedia/article/attard.australia

Commonwealth of Australia Constitution Act, 1-60 (1900).

National Parks and Wildlife Conservation Act 1975, 1-109 (1975).

World Heritage Properties Conservation Act 1983, 1-26 (1983).

Intergovernmental Agreement on the Environment (IGAE) (1992).

Australia. (1997). Heads of agreement on Commonwealth and State roles and responsibilities for the Environment. Retrieved 13/04/2011, from http://www.environment.gov.au/epbc/publications/coag-agreement/index.html

Environment Protection and Biodiversity Conservation Act 1999, Act Compilation - C2011C00014 C.F.R. (1999a).

Environmental Reform (Consequential Provisions) Act 1999, 1-85 (1999b).

Environment Protection and Biodiversity Conservation Regulations 2000, Legislative Instrument Compilation - F2010C00413 C.F.R. (2000).

Tourism Australia Act 2004, (2004).

Australia. (2008a, Nov 05). Australian Government: Early Australian aviation. *Australian Government.* from http://australia.gov.au/about-australia/australian-story/early-austn-aviation

Australia. (2008b). Caring for our Country: Outcomes 2008-2013 (pp. 1-48). Canberra: Commonwealth of Australia.

The Australian World Heritage Advisory Committee (AWHAC) Terms of Reference (2010).

Bank, The World. (2013). Land Area Country Ranking. from http://data.worldbank.org/indicator/AG.LND.TOTL.K2?order=wbapi_data_value_2010+wbapi_data_value+wbapi_data_value-last&sort=desc

Decreto nº 23.793, de 23 de janeiro de 1934: Código Florestal (1934).

Decreto nº 44.863, de 21 de Novembro de 1958: COMBRATUR, (1958).

Lei No 4.048 de 29 de dezembro de 1961, (1961).

Lei nº 4.771, de 15 de Setembro de 1965: novo Código Florestal, 1-15 (1965).

Decreto Legislativo nº 74, de 1977: Aprovação da Convenção Relativa à Proteção do Patrimônio Mundial, Cultural e Natural (1977a).

Decreto nº 80.978, de 12 de Dezembro de 1977: Promulgação da Convenção do Patrimônio Mundial da UNESCO (1977b).

Decreto de 21 de setembro de 1999: Comissão Brasileira para o Programa "O Homem e a Biosfera" - COBRAMAB (1999).

Lei nº 9.985, de 18 de julho de 2000: Sistema Nacional de Unidades de Conservação - SNUC (2000).

CI. (1998). Megadiversity: The 17 Biodiversity Superstars. from http://www.conservation.org/documentaries/Pages/megadiversity.aspx

CNUC. (2012a). CNUC: Tabela Consolidada das Unidades de Conservação. Retrieved Dec 12, from Ministério do Meio Ambiente - Cadastro Nacional de Unidades de Conservação http://www.mma.gov.br/images/arquivos/areas_protegidas/cadastro_uc/UCs consolidadas esfera de gestao 4.pdf

CNUC. (2012b). CNUC: Unidades de Conservação por Bioma. Retrieved Dec 12, from Ministério do Meio Ambiente - Cadastro Nacional de Unidades de Conservação http://www.mma.gov.br/images/arquivos/areas_protegidas/cadastro_uc/UCs consolidadas por bioma e categoria 4.pdf

Commonwealth v Tasmania ("Tasmanian Dam case") 1-180 (High Court of Australia 1983).

CRC. (2013). Cooperative Research Centres (CRC) website home page. *Cooperative Research Centres Program.* from https://http://www.crc.gov.au/Information/default.aspx

CVC. (2012). História da maior operadora de turismo da América Latina | CVC Viagens. *CVC Viagens.* from http://www.cvc.com.br/institucional/nossa-historia.aspx

Davidson, Jim, & Spearritt, Peter. (2000a). Air Travel and the Rise of the Resort. Melbourne: Melbourne University Publishing.

Davidson, Jim, & Spearritt, Peter. (2000b). The Rise and Fall of the Tourist Bureau. Melbourne: Melbourne University Publishing.

Department of the Environment. (2013, Sep 18). Australian World Heritage Advisory Committee. *Department of the Environment.* from http://www.environment.gov.au/topics/heritage/heritage-organisations/australian-world-heritage-advisory-committee

Douglas, Ngaire, & Douglas, Norman. (2006). Paradise and other Ports of Call: Cruising in the Pacific Islands. Oxfordshire: CAB International.

DSEWPC. (2005). Heard Island and McDonald Islands Marine Reserve: Management Plan (pp. 208]). Kingston: Conmmonwealth of Australia Department of Sustainability, Environment, Water, Population and Communities - Australian Antarctic Division.

DSEWPC (Cartographer). (2012a). Australia's Network of Commonwealth Marine Reserves. Retrieved from http://www.environment.gov.au/marinereserves/pubs/map-national.pdf

DSEWPC. (2012b, Dec 13). The Australian National Reserve System (NRS) - Collaborative Australian Protected Area Database (CAPAD) 2010. from http://www.environment.gov.au/parks/nrs/science/capad/2010/index.html

DSEWPC (Cartographer). (2012c). Collaborative Australian Protected Areas Database: National Reserve System per IUCN Reserve Types [Environmental Map]. Retrieved from http://www.environment.gov.au/parks/nrs/science/pubs/iucn.pdf

DSEWPC. (2012d, Mar 14). Commonwealth Marine Reserves: Coral Sea Commonwealth Marine Reserve: Overview. from http://www.environment.gov.au/marinereserves/coralsea/overview.html

DSEWPC. (2012e, Dec 14). Commonwealth Marine Reserves: North Commonwealth Marine Reserves Network: Overview. from http://www.environment.gov.au/marinereserves/north/overview.html

DSEWPC. (2012f, Dec 14). Commonwealth Marine Reserves: North-west Commonwealth Marine Reserves Network: Overview. from http://www.environment.gov.au/marinereserves/north-west/overview.html

DSEWPC. (2012g, Dec 15). Commonwealth Marine Reserves: South-west Commonwealth Marine Reserves Network: Overview. from http://www.environment.gov.au/marinereserves/south-west/overview.html

DSEWPC. (2012h, Dec 14). Commonwealth Marine Reserves: Temperate East Commonwealth Marine Reserves Network: Overview. from http://www.environment.gov.au/marinereserves/temperate-east/overview.html - fs

DSEWPC. (2012i). Draft South-east Commonwealth Marine Reserves Network Management Plan 2012-22 (Draft ed., pp. 132). Canberra: Conmmonwealth of Australia Department of Sustainability, Environment, Water, Population and Communities.

DSEWPC. (2012j, Sep 10). Threatened species under the Environment Protection and Biodiversity Conservation Act 1999. from http://www.environment.gov.au/biodiversity/threatened/species.html

DSEWPC. (2013a, Feb 14). Commonwealth Marine Reserves. from http://www.environment.gov.au/marinereserves/index.html

DSEWPC. (2013b, Feb 14). Commonwealth Marine Reserves: Public Consultation. from http://www.environment.gov.au/marinereserves/consultation/index.html

Ecotourism Australia. (2012a). About Ecotourism Australia. *Ecotourism Australia.* from http://www.ecotourism.org.au/aboutea.asp

Ecotourism Australia. (2012b). Ecotourism Australia Tourism Partnership Programme: UNESCO World Heritage Centre and Ecotourism Australia's Memorandum of Co-operation on the Development of a World Heritage Tourism Partnership Programme and Fund. *Ecotourism Australia.* from http://www.ecotourism.org.au/unesco.asp

EMBRATUR. (1971). Anuário Estatístico do Turismo - 1971: Ano Base 1970 (Vol. 2, pp. 1-6). Brasília: Empresa Brasileira de Turismo.

EMBRATUR. (1973). Anuário Estatístico do Turismo - 1973: Ano Base 1972 (Vol. 4, pp. 1-8). Brasília: Empresa Brasileira de Turismo.

EMBRATUR. (1975). Anuário Estatístico do Turismo - 1975: Ano Base 1974 (Vol. 6, pp. 1-6). Brasília: Empresa Brasileira de Turismo.

EMBRATUR. (1977). Anuário Estatístico do Turismo - 1977: Ano Base 1976 (Vol. 8, pp. 1-8). Brasília: Empresa Brasileira de Turismo.

EMBRATUR. (1982). Anuário Estatístico do Turismo - 1982: Ano Base 1981 (Vol. 13, pp. 1-7). Brasília: Empresa Brasileira de Turismo.

EMBRATUR. (1993). Anuário Estatístico do Turismo - 1992/1993: Anos Base 1991/1992 (Vol. 22, pp. 1-7). Brasília: Instituto Brasileiro de Turismo.

EMBRATUR. (2004). Anuário Estatístico do Turismo - 2004: Ano Base 2003 (Vol. 31). Brasília: Instituto Brasileiro de Turismo.

Geoscience Australia. (2010, Nov 18). Area of Australia: States and Territories. from http://www.ga.gov.au/education/geoscience-basics/dimensions/area-of-australia-states-and-territories.html

GPR. (1979, Sep 21). Decreto nº 84.017, de 21 de Setembro de 1979: Regulamento dos Parques Nacionais Brasileiros. *Governo da República Federativa do Brasil*. from http://www2.camara.gov.br/legin/fed/decret/1970-1979/decreto-84017-21-setembro-1979-433347-publicacaooriginal-1-pe.html

Hall, Colin Michael. (2002). *Introduction to Tourism: Development, Dimensions and Issues*. South Melbourne: Adison Wesley.

Hall, Colin Michael, Jenkins, John M., & Kearsely, Geoff. (1997). *Tourism planning and policy in Australia and New Zealand: cases, issues and practice*. Sydney: Irwin.

Hotéis, Revista. (2009, Aug). Tropical Hotels & Resorts - completa 50 anos de história e conquistas. *Revista Hotéis*. Retrieved 80, from http://www.revistahoteis.com.br/materias/2-Administracao/2862-Tropical-Hotels-Resorts-completa50-anos-de-historia-e-conquistas

IBAMA. (2012). IBAMA-MMA: Histórico. from http://www.ibama.gov.br/acesso-a-informacao/historico

IBGE, . (2013). Países@. Retrieved 24/01/2013, from http://www.ibge.gov.br/paisesat/

ICMBio-MMA. (2012a). ICMBio-MMA: O Instituto. from http://www.icmbio.gov.br/portal/quem-somos/o-instituto.html

ICMBio-MMA (Cartographer). (2012b). Unidades de Conservação Federais, RPPNs, Centros Especializados e Coordenações Regionais [Environmental Map]. Retrieved from http://www.icmbio.gov.br/portal/images/stories/comunicacao/downloads/MapaUCSJul2012_Web.pdf

ITR. (2003). Tourism White Paper: a medium to long-term strategy for tourism. *Department of Industry, Tourism and Resources - ITR - Commonwealth Government of Australia*.

Jetstar. (2013). Jetstar: Our Company. *Jetstar*. from http://www.jetstar.com/au/en/about-us/our-company

Koestler, Arthur. (1967). *The ghost in the machine*. London: Hutchinson.

Medeiros, Rodrigo. (2006). Evolução das Tipologias e Categorias de Áreas Protegidas no Brasil. *Ambiente & Sociedade IX*(1), 1-25.

MMA. (2008). Espécies Ameaçadas de Extinção: Nota de esclarecimento do Ministro de Estado do Meio Ambiente, Carlos Minc. from http://www.mma.gov.br/biodiversidade/esp%C3%A9cies-amea%C3%A7adas-de-extin%C3%A7%C3%A3o/nota-de-esclarecimento

MMA, DAP SBF (Cartographer). (2011). Mapa Ilustrativo do Sistema Nacional de Unidades de Conservação da Natureza [Environmental Map]. Retrieved from http://www.mma.gov.br/estruturas/240/_arquivos/mapa_ucs_cnuc_maio2011_240.pdf

MTur. (2005). Anuário Estatístico do Turismo - 2005: Ano Base 2004 (Vol. 32). Brasília: Ministério do Turismo.

MTur. (2012). Anuário Estatístico do Turismo - 2012: Ano Base 2011 (Vol. 39). Brasília: Ministério do Turismo.

MVOP. (1927). Relatório do Ministério da Viação e Obras Públicas 1926 (pp. 25-26). Rio de Janeiro: Ministério da Viação e Obras Públicas.

MVOP. (1928). Relatório do Ministério da Viação e Obras Públicas 1927 (pp. 335-359). Rio de Janeiro: Ministério da Viação e Obras Públicas.

Nichols, Daphne. (2006). *Lord Howe Island Rising*. Brookvale: BA Printing and Publishing Services.

Nogueira de Moraes, Leonardo. (2003). *Sistema Nacional de Turismo: gestão, organização e planejamento do turismo: o modelo australiano de gestão aplicado ao caso brasileiro*. (Bachelor of Tourism Honours Thesis), Universidade de São Paulo, São Paulo.

Nogueira de Moraes, Leonardo. (2004). *Sustentabilidade Mercadológica do Produto Turístico: Uma discussão sobre o alcance da vantagem competitiva sustentável de destinações turísticas através da análise do caso australiano de regionalização*. (Master by Coursework in Hospitality and Tourism Marketing Management Minor Thesis), Universidade de São Paulo, São Paulo.

NSW Department of Lands. (1879). *Supplement to the New South Wales Government Gazette: National Park*. Sydney: New South Wales Government.

Palhares, Guilherme Lohmann. (2006). *Transportes Turísticos* (2nd ed.). São Paulo: Editora Aleph.

Phillipps, Peter A. R. (2009). *The Flying Boat Days: The Early Aviation History of Lord Howe Island*. West Lakes [SA]: Seaview Press.

QANTAS. (2013a). QANTAS: History: Small Begininngs. *QANTAS*. from http://www.qantas.com.au/travel/airlines/history-beginning/global/en

QANTAS. (2013b). QANTAS: History: Venturing Overseas. *QANTAS*. from http://www.qantas.com.au/travel/airlines/history-flying-overseas/global/en

RBMA. (2004a). MaB - O Programa Homem e Biosfera: COBRAMAB - Comissão Brasileira do Programa Homem e Biosfera. from http://www.rbma.org.br/mab/unesco_02_cobramab.asp

RBMA. (2004b). MaB - O Programa Homem e Biosfera: Rede Brasileira de Reservas da Biosfera. from http://www.rbma.org.br/mab/unesco_02_rbrb.asp

Rejowski, Mirian (Ed.). (2002). *Turismo no Percurso do Tempo*. São Paulo: Editora Aleph.

RET. (2013). Department of Resources, Energy and Tourism Website. *Department of Resources, Energy and Tourism*. from http://www.ret.gov.au/Pages/default.aspx

Richardson, John Ivor. (1999). The world: how travel and tourism developed. Elsternwick: Hospitality Press Pty Ltd.

SCBD. (2013). Convention on Biological Diversity: List of Parties. from http://www.cbd.int/convention/parties/list/

STCRC. (2010a). Partners of Sustainable Tourism Cooperative Research Centre. *Sustainable Tourism Cooperative Research Centre.* from http://www.crctourism.com.au/Page/About+Us/Partners.aspx

STCRC. (2010b). Sustainable Tourism CRC - About Sustainable Tourism Cooperative Research Centre. *Sustainable Tourism Cooperative Research Centre.* from http://www.crctourism.com.au//Page/About+Us/Who+we+are.aspx

Tiger Airways. (2013). Tiger Airways. *Tiger Airways.* Retrieved 03/05/2012, from http://www.tigerairways.com/au/en/about_us.php

Tourism Australia. (2013). Tourism Australia Website. *Tourism Australia.* from http://www.tourism.australia.com/

Tretheway, Michael W. (2007, Oct 20). *Air Transportation: Why the Competition Agenda Will Still be Active In Australia*, Barossa Valley.

Trigo, Luiz Gonzaga Godoi (Ed.). (2005). *Análises Regionais e Globais do Turismo Brasileiro*. São Paulo: Rocca.

TTF. (2013). Tourism & Transport Forum: History. *Tourism & Transport Forum.* from http://www.ttf.org.au/Content/history.aspx

UN. (2012). United Nations Statistics: World GDP Ranking. New York: United Nations.

UNESCO. (2010, Jul). World Heritage in Brazil. *World Heritage Review*, 1-92.

UNESCO. (2012, Nov). UNESCO: Ecological Sciences for Sustainable Development: Australian Biosphere Reserves. from http://www.unesco.org/new/en/natural-sciences/environment/ecological-sciences/biosphere-reserves/asia-and-the-pacific/australia/

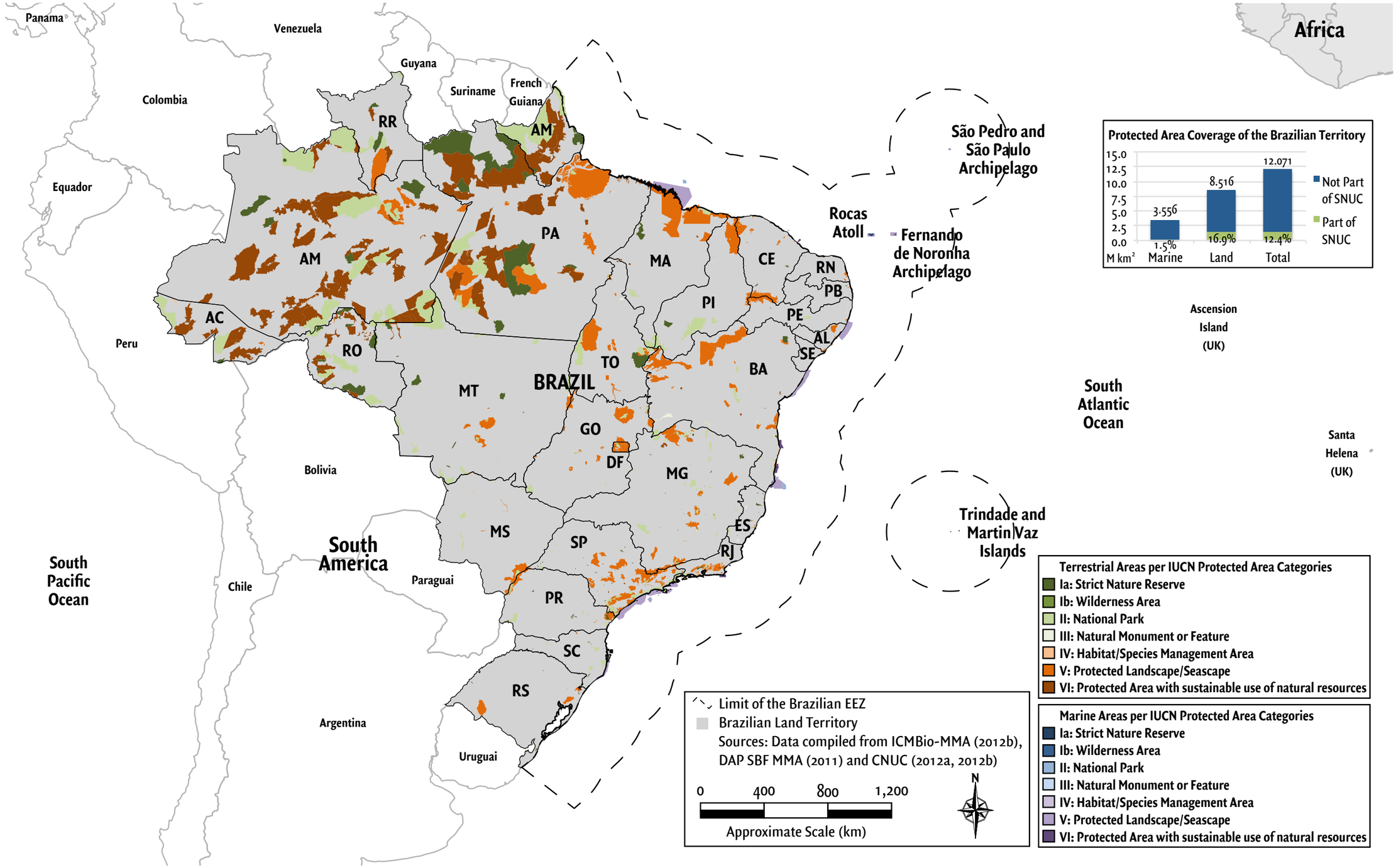
UNESCO. (2013, Feb 30). UNESCO: Australian National Commission for UNESCO. from http://www.unesco.org/nac/geoportal.php?country=AU&language=E

University of British Columbia. (2013). Sea Around Us Project - Fisheries, Ecosystems and Biodiversity: Exclusive Economic Zones (EEZ). from http://www.seaaroundus.org/eez/

UNWTO. (2013). World Tourism Organization - UNWTO: Member States. *United Nations World Tourism Organisation.* from http://www2.unwto.org/en/members/states

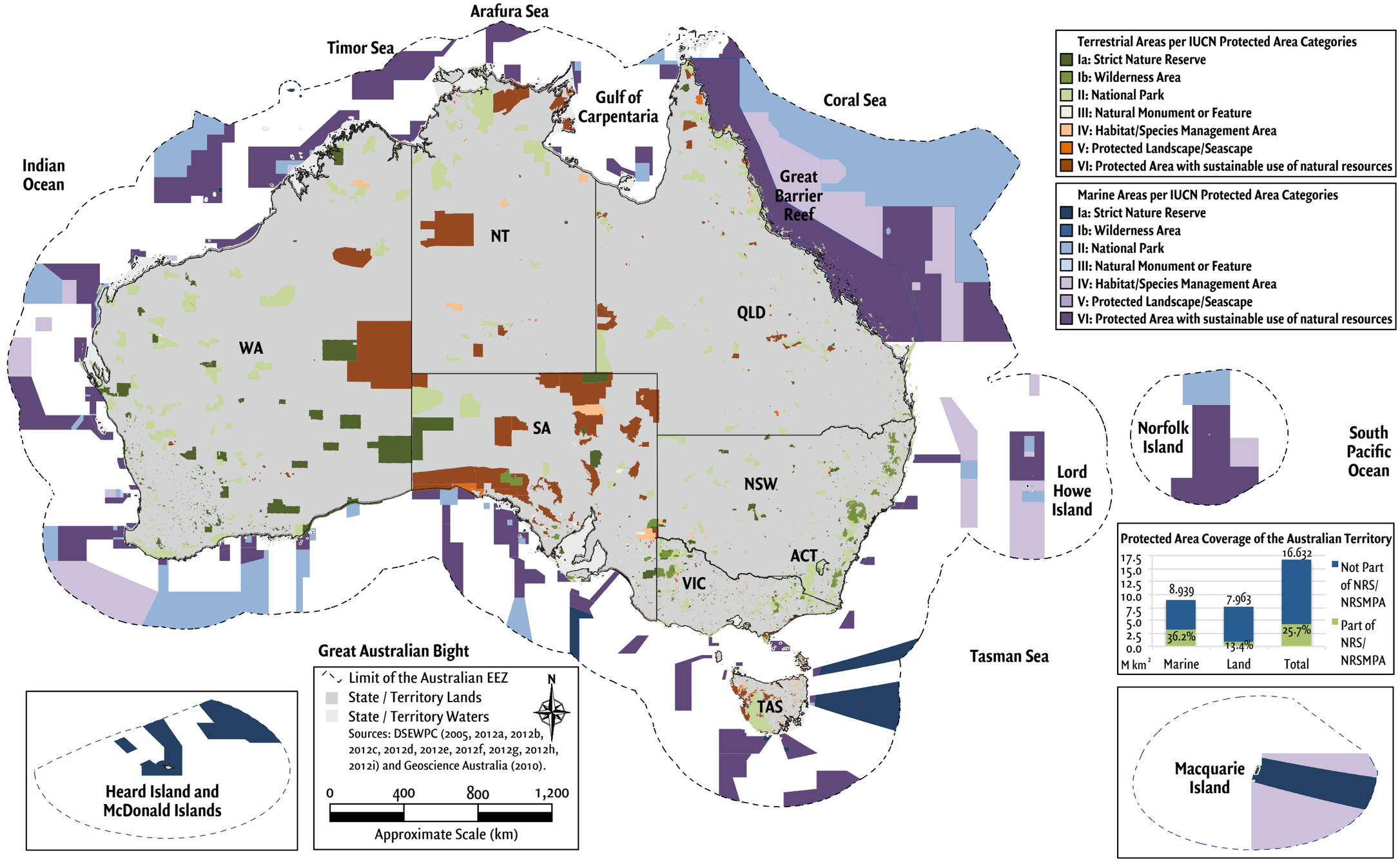
Virgin Australia. (2013). Virgin Australia: History. *Virgin Australia.* from http://www.virginaustralia.com/au/en/about-us/company-overview/virgin-australia-history/

Figure 56 | Brazilian National System of Conservation Units – SNUC



Leonardo Nogueira de Moraes

Figure 57| Australian National Reserve System – NRS incorporating the Commonwealth Marine Reserve Network



Fernando de Noronha Archipelago

Chapter 7 | Intervening Conditions

The influence of Environmental and Demographic Features on TD and PAs

> *"Intervening conditions are the broad and general conditions bearing upon action/interaction strategies" (Strauss & Corbin, 1990, p. 103).*

This chapter seeks to address the third secondary research question (2.3)[119] discussing the role of environmental and demographic features of the two case study sites as *intervening conditions* influencing the way ***Tourism Development – TD*** and ***Localised Conservation – LC*** through the proclamation of ***World Heritage Properties – WHPs*** and ***Protected Areas – PAs*** affect processes of self-organisation by means of competition and cooperation. In this chapter, the oceanic island environments and the population features of the Brazilian and the Australian sites are characterised.

According to *Strauss* and *Corbin* (1998, p. 131), "*intervening conditions* are those that mitigate or otherwise alter the impact of *causal conditions* on *phenomena*". For the purpose of this research, *contextual conditions* (*Chapter 5* and *Chapter 6*) are recognised as **external** conditions influencing the way *causal conditions* (*Chapter 10*) and *(inter)action strategies* (*Chapter 8* and *Chapter 9*) affect the *phenomenon* (*Chapter 10*) of study, while *intervening conditions* as those **internal**. Hence, *contextual conditions* refer here to the global SECAS and its global environment, whereas *intervening conditions* to the local SECAS (mainly its agents) and its local environment. Environmental features of the case study sites for this research include geographical, geological, hydrological, atmospheric, climatologic, biological and ecological characteristics. As for demographic features, these include quantitative and qualitative characteristics of the population of the two island groups. In that regard, the main groups coexisting in each island group are characterised as a basis for the analysis of their interaction carried out in *Chapter 10*. Some considerations on the interaction between environmental and demographic features are carried out in the end of this chapter, helping to characterise the local SECASs.

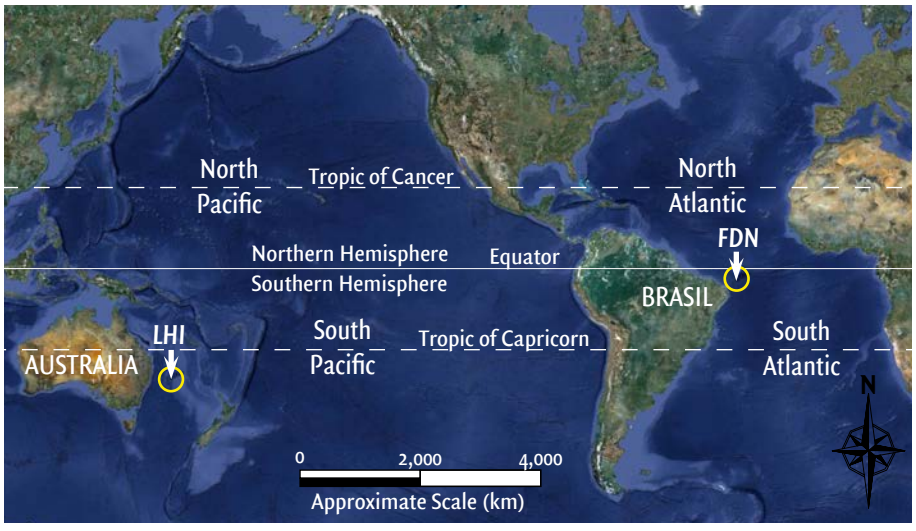
This chapter argues that geographical and social isolation can serve both as barriers and facilitators to the process of globalisation that pushes and is boosted by the implementation of *LC* (through *WHPs* and *PAs*) and *TD* and that ***Local Social Cohesion*** and ***Local Empowerment*** are highly impacted by regulations that help define and acknowledge the rights of different social groups sharing isolated local areas. Finally, this chapter uses the ecological metaphor of traditional/endemic species to help understand cultural differentiation arising from isolation driving the appearance of different local cooperative and competitive social groups within the same human species.

[119] See page 117 in *Chapter 4*.

Location and Isolation

As pointed in *Chapter* 4, in the section detailing the case study selection process, both *Fernando de Noronha* and *Lord Howe Island* – *LHI* are small oceanic islands. *Fernando de Noronha* is the main island of the *Fernando de Noronha Archipelago* – *FDN*, which comprises a total of 18 islands and islets and several rocks. The total land area of the archipelago is about 26 sq km, with the main island covering an area of approximately 17 sq km (Brasil, 2001, p. 4). *LHI* stretches over 14.54 sq km and is the main island of the *Lord Howe Island Group* – *LHIG*, which also comprises 27 smaller islands, islets and rocks (Hutton, 2008, p. 233), including the *Admiralty Islands* (*North Rock*, *Tenth of June*, *South Island* and *Roach Island*), *Mutton Bird Island*, *Blackburn Island*, *Gower Island*, *Balls Pyramid* and offshore islets representing a total of 17.3 sq km of land (IUCN, 1982, p. 3; Mackay, 2010, p. 5). Both *FDN* and *LHI* are located in the Southern Hemisphere; *FDN* lays in the *South Atlantic Ocean*, about 345 km from the Brazilian Northeast Coast (*São Roque Cape* in Rio Grande do Norte), about 3°S of the Equator (Brasil, 2001, p. 4), while *LHI* is located in the *Pacific Ocean*, some 570 km off the Australian Southeast Coast (*Port Macquarie*), about 31°S of the Equator (see *Figure* 58). While *FDN* is located within the tropics, *LHI* is located in the temperate zone. Both island groups are located somehow close to isolated atolls/reefs that are comprised within Protected Areas (see *Figure* 59 and *Figure* 60). *FDN* is about 144 km E from *Rocas Atoll Biological Reserve* – *REBIO-ADR*[120] (IUCN Category Ib) (Brasil, 2001, p. 4; WCMC, 2011, p. 2) and *LHI* is about 185 km SW from *Elizabeth Reef* (IUCN Category IV) and 259 km SW of *Middleton Reef* (IUCN Category II) *Marine National Nature Reserves* (MPA NSW & Australian Government DSEWPC, 2009, p. 5), the world's southernmost coral atolls, representing 64 species and covering about 98 sq km (Waterways Authority, 2003, p. 7).

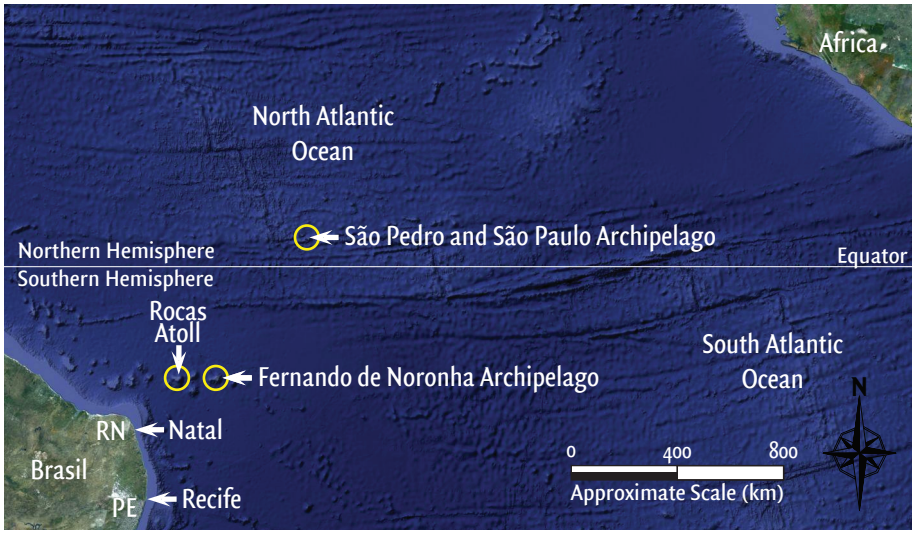
Figure 58| Geographical location of the two case study sites



Source | Adapted from Google Imagery & NASA (2011)

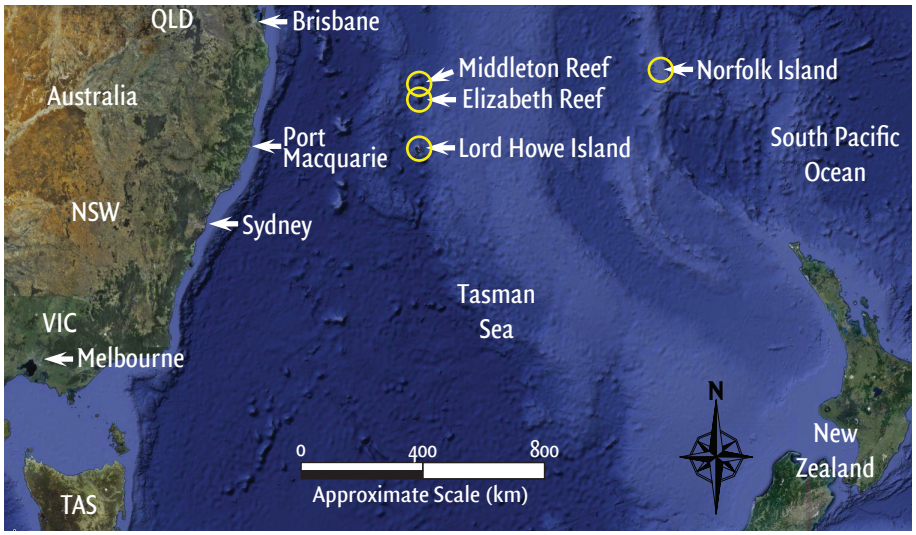
[120] Reserva Biológica de Atol das Rocas

Figure 59 | FDN Regional Location



Source | Adapted from Google Imagery & NASA (2011)

Figure 60 | LHI Regional Location

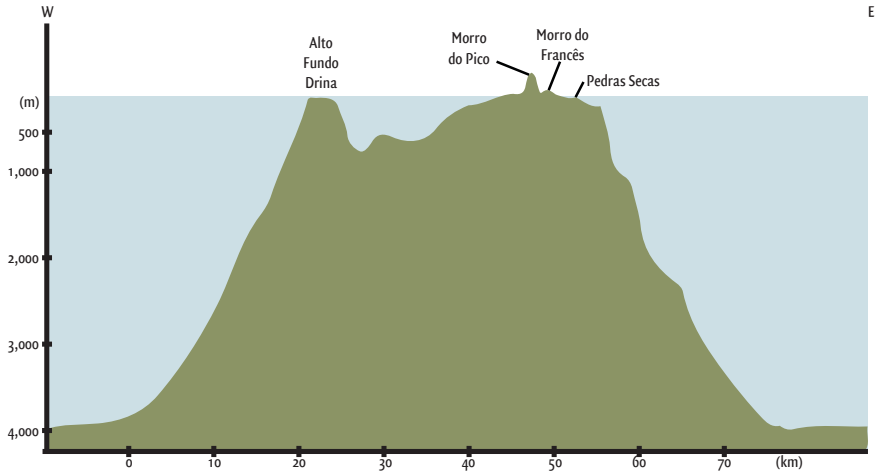


Source | Adapted from Google Imagery & NASA (2011)

Foundations for Life

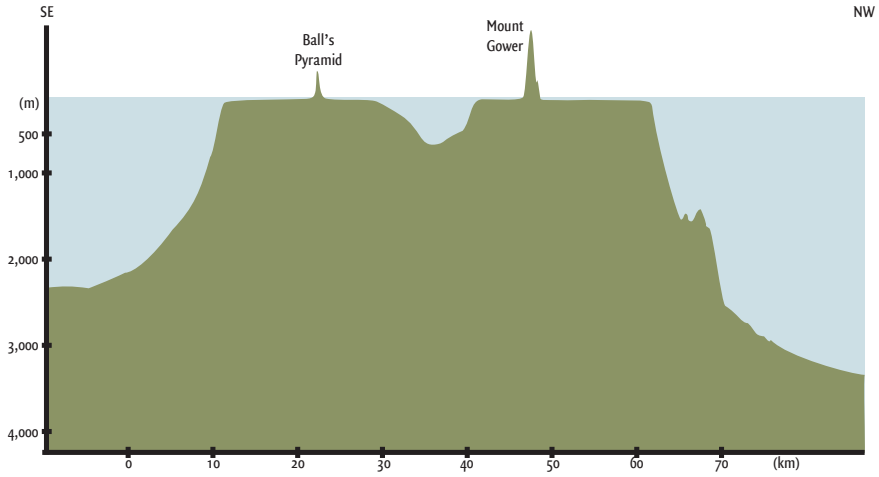
Both island groups are the result of hotspots springing from the ocean floor, being, therefore, volcanic formations. *Figure 61* and *Figure 62* illustrate the remainders of the eroded extinct volcanic cones that originated *FDN* and *LHI*.

Figure 61 | Topographic Profile of FDN Hot Spot Volcano



Source | Based on Wildner, Valença Ferreira, and Schobbenhaus (2011)

Figure 62 | Topographic Profile of LHI Hot Spot Volcano



Source | Based on Mleczko, Sagar, Spinoccia, and Brooke (2010, p. 42)

In both cases, the remainders of the volcanic walls have been split into 2 sections: one containing the main islands and islets and the second containing secondary formations that are either underneath the surface (Alto Fundo Drina in FDN) or rising high and abruptly above sea level (Ball's Pyramid in LHI). The highly vertical volcanic walls underneath the surface cater for a variety of depths that result in a rich mixture of species in the waters surrounding FDN and LHI. Overall, FDN's topographic character is not as steep and high as LHI's. While FDN's highest peak (Morro do Pico) reaches 323m above sea level, LHIs highest point (Mount Gower) is 875m above sea level. The combination of greater altitudes and flat mountain tops resulted in microclimates hosting a rich variety of land ecosystems on LHI, so, "[d]espite the relatively small area of 1,463 hectares for the whole of the LHIG, there is an extraordinary diversity of landscapes and a rich array of

microhabitats for different species to adapt and evolve" (Hutton, 2008, p. 110).

Figure 63 | FDN satellite view

Sources | Google Imagery & DigitalGlobe GeoEye (2011)

Figure 64 | FDN Landscape View

Figure 65| LHI satellite view

Source | Google Imagery & DigitalGlobe GeoEye (2011)

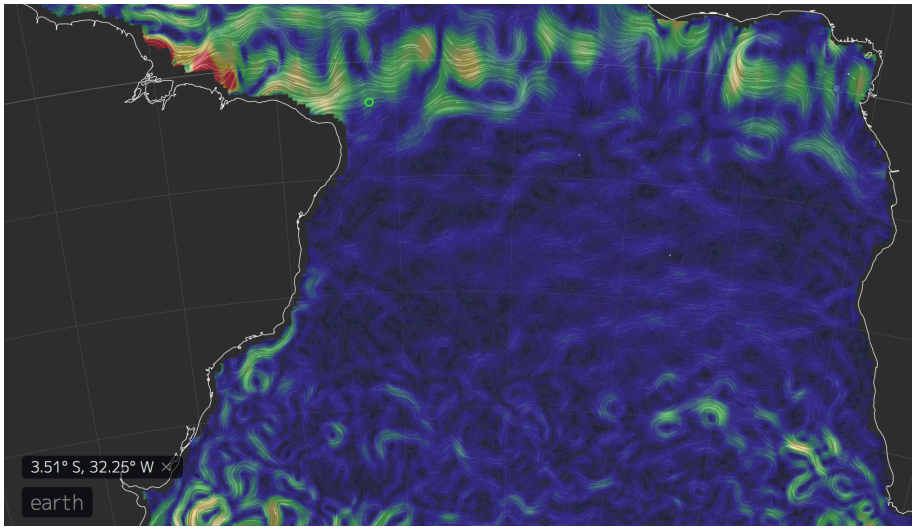
Figure 66| LHI Landscape View

Source | Lord Howe Island Tourism Association

Climate Features Breaking Isolation and Sustaining Life

Figure 67 portrays that *FDN* (green circle) and *ADR* "lie in the west-flowing nutrient-poor Southern Equatorial current and in this relatively barren part of the ocean the archipelago and atoll are oases of marine life" (WCMC, 2011, p. 2). This warm stream coming from the Northern part of the African continent has facilitated the discovery of the island by the Portuguese in the **1500s** and made *FDN* a strategic stop for sea voyages from Europe to Brazil. The warm water temperatures have also made *FDN* prone to the formation of coral reefs in its surrounding seabeds, hosting a rich variety of marine species, from fish to crustaceous, mammals to reptiles.

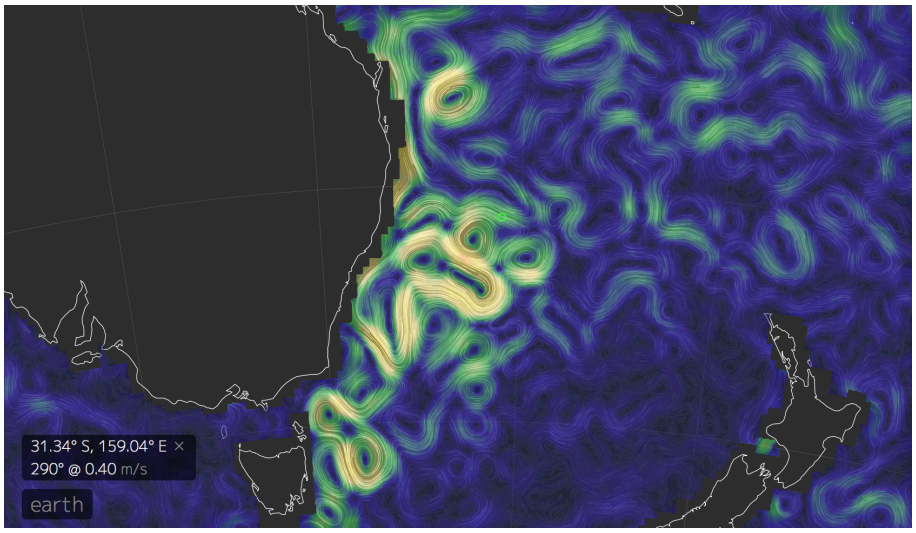
Figure 67 | Marine Currents Affecting FDN



Source | Based on Beccario (2014a)

Figure 68 shows that *LHI* (green circle) is also under the influence of a warm stream, the *East Australian Current*. But due to its location, cold streams coming from South and East also affect *LHI*. "In Summer, the [*East Australian Current*] flows around *Lord Howe Island* and water temperatures reach 25 or 26 degrees Celsius. In Winter, it passes North of the island, and water temperatures are as low as 17 degrees Celsius" (Hutton, 2008, p. 209). Being in this confluence of warm and cool streams meant that the variety of fish and coral species inhabiting *LHI* is even greater than that of *FDN* and that by being used to greater shifts in temperatures and conditions *LHI* species might be more resilient and capable to adapt to climate change. "Owing to the fact that the East Australian current brings warmer waters from the tropics, [...] it maintains sea temperatures above 17 degrees Celsius, the critical temperature for the survival of coral, [...] the most southerly [...] in the world" (Hutton, 2008, p. 209).

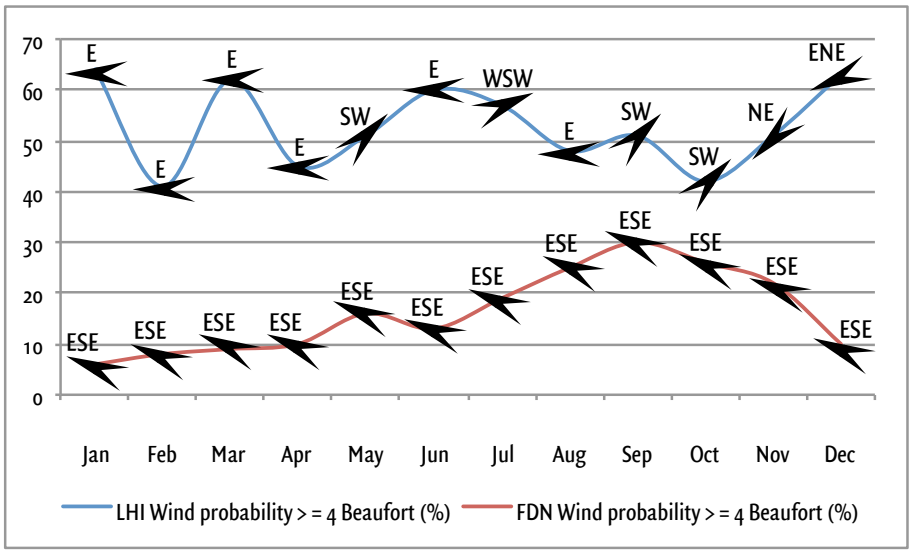
Figure 68 | Marine Currents Affecting LHI



Source | Based on Beccario (2014b)

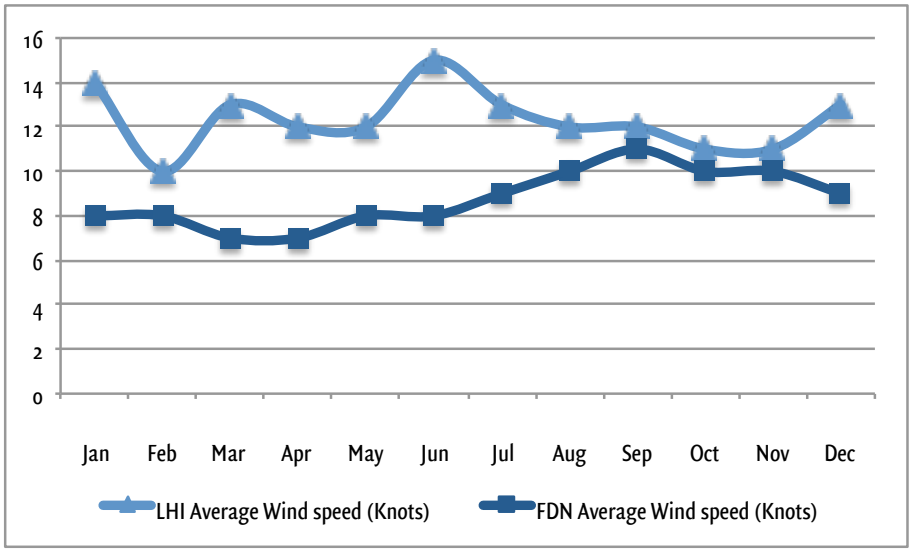
In terms of wind patterns, *FDN* and *LHI* differ quite a lot. Presenting a much higher wind probability and wind speed than *FDN* (yearly average of 16% probability and speed of 8 knots), *LHI* (yearly average of 52% probability and speed of 12 knots) is affected by dominant E winds for half of the year and by dominant SW winds for 3 months, with the other 3 months varying from WSW and NE to ENE. In contrast, *FDN* is dominated by ESE winds throughout the year (see *Figure 69* and *Figure 70*). When these wind patterns are combined to the topography of the two islands, they help explain the patterns of occupation that took place and as a *consequence*, the way *Protected Area – PA* boundaries were defined. In general, higher areas became part of *PAs* for being uninhabited, not only because of harder access, but also because of exposure to wind. The same logic applied to several beach areas in *FDN* for many years. Islanders would tend to build their homes inland and not close to the beach, to protect themselves from the wind. This logic was inverted with the introduction of tourism, as tourists tended to prefer accommodation that was as close as possible to the beach and preferably with a view of the ocean (an example being the recent developments around the Italcable area in *FDN*).

Figure 69| Wind Probability & Dominant Direction FDN & LHI



Source | Data compiled from WindFinder (2012a, 2012b)

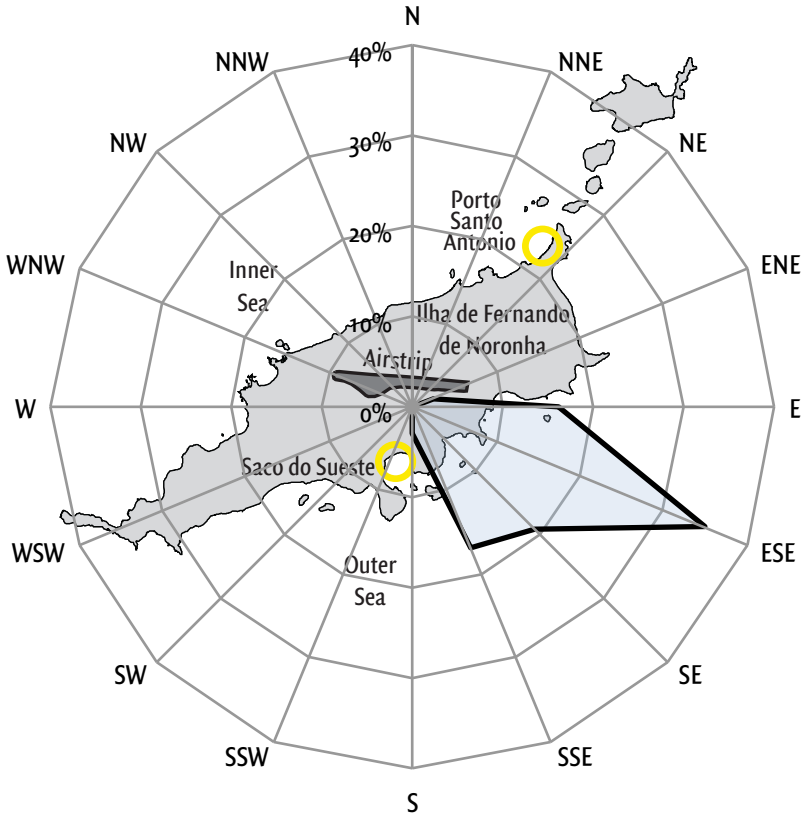
Figure 70 | Monthly Average Wind Speed for FDN & LHI



Source | Data compiled from WindFinder (2012a, 2012b)

Figure 71 portrays the yearly dominant wind patterns for FDN in relation to its territory that stretches on the WSW-ENE axis. It shows that by concentrating in the E-SSE quadrant, most of the time winds are blowing against the southern coast of the main island. This has resulted in greater waves hitting the islands South shore most of the year, making it harder for navigation and human settlement on that side of the island. As a *consequence*, the waters SE of the island are known as the *Outer Sea* and those NW as the *Inner Sea*. FDN's main port was built on the NE tip of the island, facing the *Inner Sea*, *Saco do Sueste* being an emergency alternative.

Figure 71 | Wind Patterns FDN



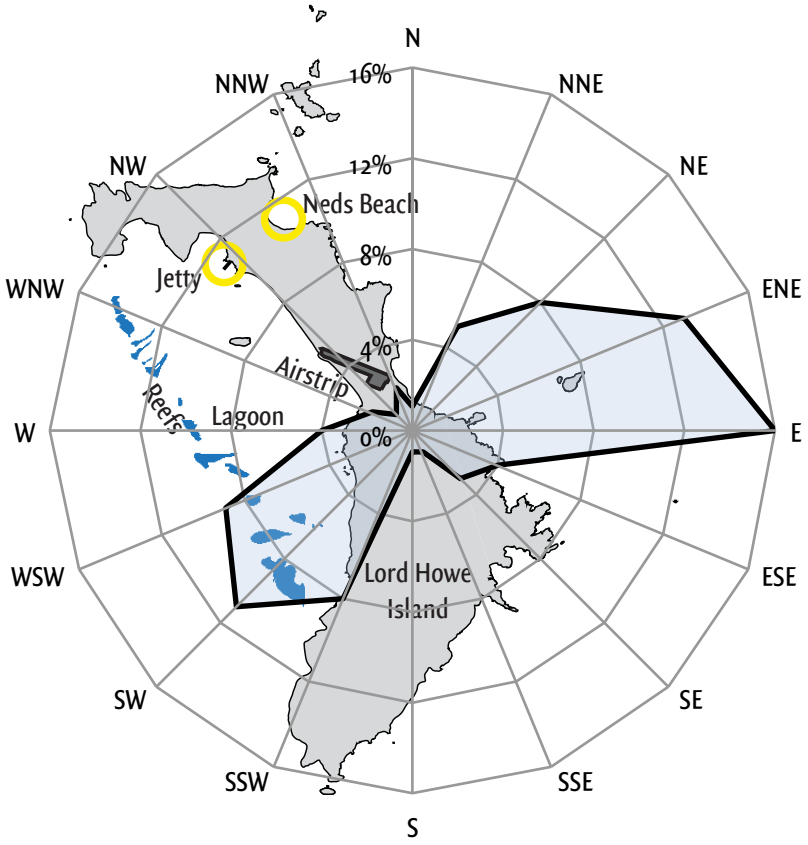
Source | Data obtained from WindFinder (2012a)

Figure 72 presents the yearly dominant wind patterns for *LHI* in relation to its main island and surrounding islets stretching on the NNW-SSE axis. Differently to *FDN*, *LHI* is greatly affected by winds from opposing quadrants. While dominant winds come from the E-NNE quadrant, there is also significant incidence of winds from the W-SSW quadrant. This way, both E and W sides of *LHI* can be fairly windy. However, the formation of coral reefs stretching along the WSW side of the island has created a lagoon of protected waters by partly blocking the waves formed by winds from the WSW-SSW quadrant. As a result, the island's jetty is located on the WSW side of the island. However, despite offering reasonable protection to the WSW shores from waves, reefs do not protect them from the wind. Therefore, in times when it is not possible for ships to moor on the WSW side, they usually seek refuge within Ned's Beach Bay on the NNE side of *LHI*. Despite not offering the same facilities as the main port, ships can still unload cargo on Ned's Beach with the use of small boats.

Being in the *Pacific Ocean* somewhat close to *Pacific Ring of Fire*, *LHI* is prone to *Tsunamis*. In conjunction with the *Lord Howe Island Board – LHIB*, *NSW State Emergency Services* has defined a set of procedures and Assembly Areas for those in *LHI* in case Tsunami warnings are issued by the *Bureau of Meteorology*

– *BOM* and there is need to evacuate residences (NSW-SES, 2013). *LHI* is also prone to cyclones (B. Nichols, 2011, p. 7).

Figure 72 | Wind Patterns LHI

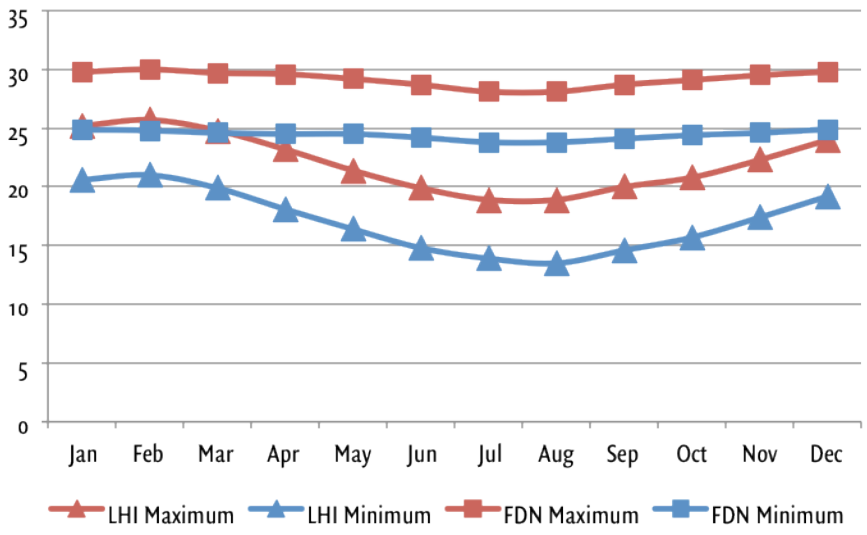


Source | Data obtained from WindFinder (2012b)

As portrayed by *Figure 73* and *Figure 74*, whereas seasons in *FDN* are clearly defined as wet or dry with very low temperature variations, in *LHI* they are defined as cooler or warmer, with very little variation in terms of rainfall. While *FDN* can be classified as having a tropical climate (Brasil, 2001, p. 26), *LHI* present a humid subtropical climate (IUCN, 1982, p. 4). These combined specific conditions greatly affect tourism development on both islands. In the case of *FDN*, despite making the island more attractive to tourists in times they are most available to travel, the lack of rain in peak season brings a considerable constraint in the availability of water on the island in times when its total population is at its peak, with the increment brought by greater numbers of tourists and temporary workers adding to its permanent population. The great concentration of rainfall in the months of March to June also means that scuba diving conditions are affected during this time due to increased quantities of sediment from soil erosion caused by rain in combination with poorly planned urban development. Despite that, considering that the mean number of cloudy days is low and stable (see *Figure 75*) and that mean temperatures remains warm and also stable, *FDN* is capable of offering tourists sunny and warm weather throughout the year. As

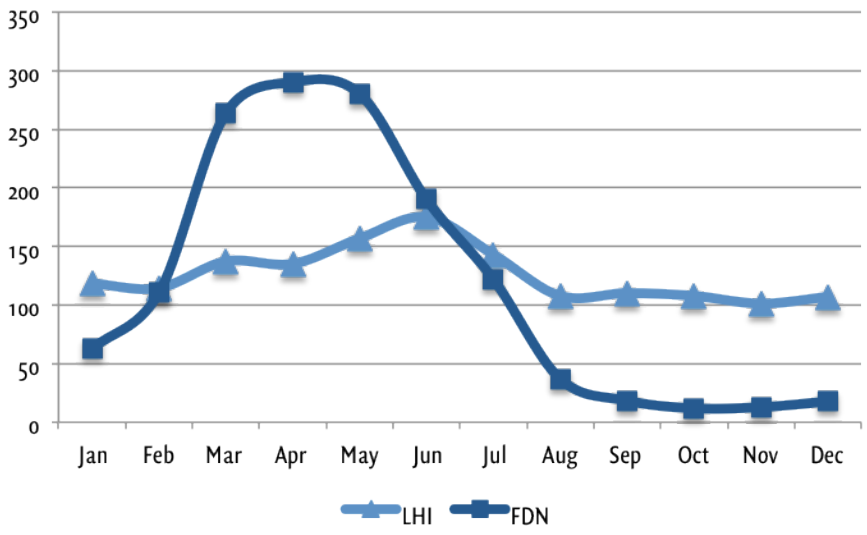
for LHI, the opposite it true. Since rainfall patterns are more stable throughout the year, there are fewer constraints to water sourcing / drinking water supplies and less impact on underwater visibility for scuba diving. However, by presenting a greater average number of cloudy days that vary considerably throughout the year, with temperatures reaching below 15 Celsius degrees in winter, LHI may not be as attractive throughout the year to those only seeking sun and beach tourism.

Figure 73 | Monthly Mean Temperature (°C) FDN and LHI



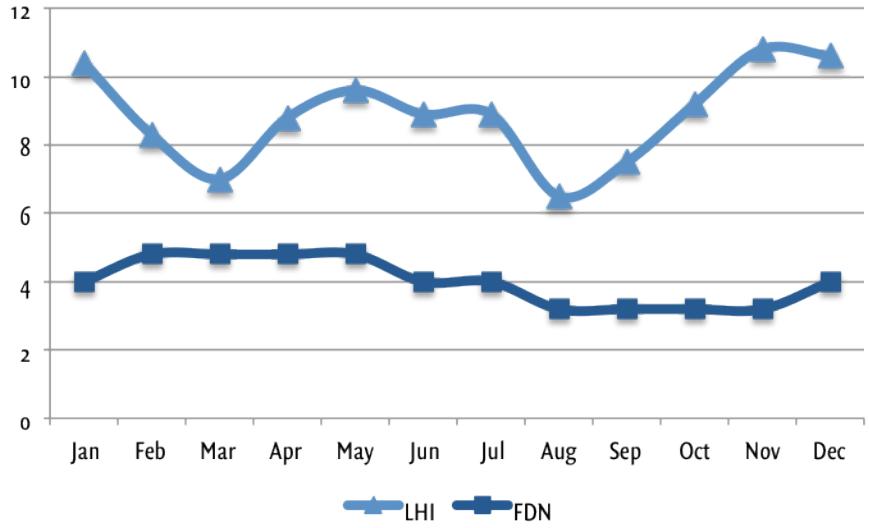
Source | Data Compiled from BOM (2012) and UN (2012)

Figure 74 | Monthly Mean Rainfall (mm) FDN and LHI



Source | Data Compiled from BOM (2012) and UN (2012)

Figure 75| Monthly Mean Number of Cloudy Days LHI and FDN



Source | Data Compiled from BOM (2012) and UN (2012)

Key Species and Key Ecosystems in Place

In terms of marine life, FDN hosts the greatest population of *Spinner Dolphins* (*Stenella longirostris*) registered in the *South Atlantic* and is one of the most important feeding areas for *Green Sea Turtles* (*Chelonia mydas*) and *Hawksbill Turtles* (*Eretmochelys imbricate*) and spawning areas for *Green Sea Turtles* in Brazil (APA-FN, 2008) . Despite not breeding on LHI, these two turtle species are also found there (NSW MPA & Environment Australia, 2001, p. 60) and are currently protected species of the *Lord Howe Island Marine Park* – LHIMP (MPA NSW, 2010a, p. 7). *Leatherback Turtles* (*Dermochelys coriacea*) have been sighted occasionally on LHI and are likely to immigrate periodically through LHIMP's waters, while *Loggerhead Turtles* (*Caretta caretta*) are LHIMP's visitors during trans-Pacific migrations (MPA NSW, 2010b, p. 38). *The IUCN Red List on Threatened Species* lists *Green Sea Turtles* (IUCN, 2012b) and *Loggerhead Turtles* (IUCN, 2012a) as *Endangered Species* (with Green Sea presenting decreasing population) and *Hawksbill* (IUCN, 2012f) and *Leatherback Turtles* (IUCN, 2012d) as a *Critically Endangered Species*. Endemic to *South Atlantic Islands* including FDN and ADR, *Yellow and Purple Land Crab*[121](*Gecarcinus lagostoma* or *Johngarthia lagostoma*) is listed by the *Brazilian Government* as an *Endangered Species* (ICMBio-MMA, 2012).

In FDN, *Sea Turtles* are key social-ecological species because of the species and habitat conservation efforts that have been employed and have affected the island's development. In the **1980s**, *IBDF* started carrying out *Sea Turtles* conservation efforts in FDN, establishing, in **1982**, an agreement with *Fernando de Noronha Federal Territory*[122] – TFFN's Government to implement in

[121] *Caranguejo-Ladrão* or *Carango*
[122] *Território Federal de Fernando de Noronha*

FDN an administration office for *REBIO-ADR* that would also support the work with *Sea Turtles* and *Migrant Sea Birds* (IBAMA & FUNATURA, 1990, p. 11). Created in **1980** by *IBDF*, the *Brazilian Program for the Conservation of Marine Turtles – Projeto TAMAR*[123] has the mission to research, conserve and manage the five species of marine turtles that occur in the Brazilian coast and oceanic islands. The program is co-managed between *ICMBio*'s *National Centre for Research and Conservation of Marine Turtles – Centro TAMAR*[124] and the *Foundation Centre for Protection and Research of Marine Turtles – Fundação Pró-TAMAR*[125]. Starting its activities in *FDN* in **1984**, *Projeto TAMAR* pushed for the creation of *PARNAMAR-FDN* in **1988** and by **1996** it opened a visitor centre in the archipelago (TAMAR, 2011a, 2011b, 2011c). Part of the program comprises the environmental education of residents and tourists through seminars with experts and controlled observation of marine turtles' behaviour in nature, including the hatching of marine turtle eggs and the run of newborn to the sea on beaches that are known reproductive sites in *FDN*.

The presence of great numbers of *Spinner Dolphins*, the lack of scientific data and the imminent unplanned tourism growth in *FDN* lead to the creation of the *Spinner Dolphin Project – PGR*[126] on **23rd August 1990** (REMA Brasil, 2007, p. 44). Following a similar management structure to *Projeto TAMAR*, *PGR* is now co-managed between *ICMBio*'s *National Centre for Research and Conservation of Aquatic Mammals – CMA-ICMBio*[127] created in **1998** (CMA-ICMBio, 2013; REMA Brasil, 2007, p. 45) and the *NGO Spinner Dolphin Centre – CGR*[128], created in *FDN* in **1992** (RFB, 2010). Both *Fundação Pró-TAMAR* and *CGR* are members of the *Fernando de Noronha National Marine Park Advisory Board – CONPARNAMAR-FDN*[129] and the *Fernando de Noronha Environmental Protection Area Advisory Board – CONAPA-FDN*[130].

In terms of avifauna, both islands are important points for migrating seabirds seasonal breeding: for instance, *Providence Petrels* (*Pterodroma solandri*) have the southern section of *LHI* as their only substantial breeding site in the world being listed by *IUCN* as a *Vulnerable* species (IUCN, 2012i). Bird watchers, a specialised typology of ecotourists, have been attracted by the great concentration of different bird species in such small territories, specially by *LHI* where a total of 202 species have been recorded (Hutton, 2010a, p. 2). In terms of landbirds, the endemic species of each island represent key species for their fairly low numbers and distribution. In *FDN*,

[123] *Programa Brasileiro de Conservação das Tartarugas Marinhas*
[124] *Centro Nacional de Pesquisa e Conservação das Tartarugas Marinhas*, one of eleven Federal Government Research and Conservation Centres.
[125] *Fundação Centro Brasileiro de Proteção e Pesquisa das Tartarugas Marinhas*, an *NGO* recognised by the Brazilian Government as being of Federal Public Utility.
[126] *Projeto Golfinho Rotador.*
[127] *Centro Nacional de Pesquisa e Conservação de Mamíferos Aquáticos.*
[128] *Centro Golfinho Rotador.*
[129] *Conselho do Parque Nacional Marinho de Fernando de Noronha.*
[130] *Conselho da Área de Proteção Ambiental de Fernando de Noronha.*

Noronha Elaenia[131] (*Elaenia ridleyana*) and *Noronha vireo*[132] (*Vireo gracilirostris*) are respectively classified by *IUCN* as *Vulnerable* (IUCN, 2012e) and *Near Threatened* (IUCN, 2012j), while in *LHI*, the *Lord Howe Island Woodhen* (*Gallirallus sylvestris*), once critically endangered and near extinct, has grown in numbers after the eradication of feral and domestic pigs, and consistent specific conservation efforts. It has now reached stable numbers and is currently classified as *Endangered* on the *IUCN Red List* (IUCN, 2012g). However, that was not the case for all sixteen species of landbirds (out of which 13 were endemic) found on *LHI* when it was discovered, as nine of them are now extinct: either by being eaten into extinction – *White gallinule* (*Porphyrio alba*) and *White-throated pigeon* (*Columba vitiensis*); eliminated by humans for being pests to fruit and grain crops – *Red-fronted parakeet* (*Cyanoramphus nvaezelandiae subflavescens*); decimated by introduced *Rattus rattus* – the cases of *Vinous-tinted Blackbird* (*Turdus xanthopus vinitinctus*), *Lord Howe Gerygone* (*Gerygone Insularis*), *Lord Howe Fantail* (*Rhipidura cervina*), *Robust Silvereye* (*Zosterops strenua*) and *Tasman Starling* (*Aplonis fuscus hullianus*); or eliminated by introduced competitor *Tyto novaehollandiae* – the case of *Lord Howe Boobook Owl* (*Ninox Novaeseelandiae albaria*) (Hutton, 2008, pp. 124-5).

In terms of land reptiles, *FDN* hosts the endemic *Noronha Skink*[133] (*Mabuya maculata or Trachylepis atlantica*) while *LHI* hosts the *Lord Howe Island Skink* (*Oligosoma lichenigera*) and the *Lord Howe Island Southern Gecko* (*Christinus guentheri*), which are listed as *Vulnerable* by *IUCN* and are also found on *Norfolk Island* (IUCN, 2012c, 2012h).

Both islands have experienced the introduction of new flora and fauna species that came along with human settlement and development. *Feral Mice*[134] (*Mus musculus domesticus*) and *Ship Rats*[135] (*Rattus rattus*) were accidentally introduced on *LHI* in **1860** and **1918**, respectively (McFadyen, 2006, p. 48; D. Nichols, 2006, p. 118). They were also introduced to *FDN* along with *Brown Rats*[136] (*Rattus norvegicus*) in the **1960s** when the island was a quarantine area for the *Ministry of Agriculture* (Serafini, de França, & Andriguetto-Filho, 2010, p. 294). In **1959**, the military brought to *FDN* a pair of *Common Tegus*[137] (*Tupinambis merianae*) to try to control the rodent population on the island. However, not only have *Common Tegus* not preyed upon rodents because of their activity time differences, they have also become a threat to other *FDN* key species such as *Green Sea Turtles*, *Noronha Skinks*, *Yellow and Purple Land Crabs* and some avifauna (Instituto Hórus & The Nature Conservancy, 2005b). Between **1922** and **1930**, *Masked Owls* (*Tyto novaehollandiae*) were introduced on *LHI* as a means to control rodents. Not only was it ineffective, it also lead to the extinction of the Island's endemic

[131] *Cocoruta*.
[132] *Juruviara-de-Noronha*.
[133] *Mabuia*
[134] *Catita*
[135] *Rato*
[136] *Ratazana* or *Rato-Guabiru*
[137] *Teju* or *Lagarto-Teiú*

owl, the *Lord Howe Island Boobook* (*Ninox novaeseelandiae*) (Hutton, 2008, p. 128; D. Nichols, 2006, pp. 119-120). *Magpie Larks* (*Grallina cyanoleuca*) were also deliberately introduced on *LHI* with 10 being "shipped to the island in **1924** in response to rats exterminating a number of small passerine birds" (Hutton, 2008; Museum, 2014, p. 128). On *LHI*, pigs (*Sus scrofa domestica*) and goats (*Capra aegagrus hircus*) were intentionally released to breed in the wild in the early **1800s** to serve whaling vessels that called in frequently after food supplies (McFadyen, 2006, p. 12; D. Nichols, 2006, p. 118), while in *FDN*, *Rock Cavies*[138] (*Kerodon rupestris*) were introduced in the **1960s** by the military to serve as hunting game for soldiers (Instituto Hórus & The Nature Conservancy, 2005a). Cats (*Felis catus*), dogs (*Canis familiaris*), sheep (*Ovis aries*), horses (*Equus ferus caballus*) and cattle (*Bos primigenius*) have also been introduced on *FDN* and *LHI*. Cats became feral and greatly interfered with both islands' birdlife. On *LHI*, there has been a ban on cats and feral pig and cat populations have recently been successfully eradicated, with land birds beginning to recolonise the island (D. Nichols, 2006, pp. 120-1).

Since **1920**, nine bird species became natural colonizers of *LHI* due to the modifications to the environment brought by humans (mainly clearing of lowland forest for pasture and housing), including: *Buff Banded* (*Rail Gallirallus philippensis*), *White-Faced Heron* (*Ardea novae-hollandiae*), *Nankeen Kestrel* (*Falco cenchroides*), *Welcome Swallow* (*Hirundo neoxena*), *Blackbird* (*Turdus merula*) *Song Thrush* (*Turdus ericetorum*), *European Starling* (*Sturnus vulgaris*) *Purple Swamphen* (*Porphyrio porphyrio*) and *Masked Lapwing* (*Vanellus miles*) (Hutton, 2008, p. 128).

In terms of flora, "there are at least 400 introduced plant species found on the main *LHI*, of which around 250 species have become naturalised, mostly, but by no means exclusively in the settlement area", there being 17 declared noxious weeds (NSW, 2011, p. 21). A similar situation occurs with *FDN*, where introduced noxious weeds have covered extensive areas of the archipelago, suffocating trees and bushes (IBAMA & FUNATURA, 1990, p. 37). In March **1995**, concern over the expanding noxious weed problem on *LHI* resulted in a voluntary weeding program being proposed by *LHI* resident and naturalist Ian Hutton. First volunteers came from Sydney and Canberra in June that same year (D. Nichols, 2006, p. 122). The program expanded and is now formally part of *LHI's Biodiversity Management Plan* (NSW DECC, 2007). By **2006** a total of 30 trips and over 10,000 hours of voluntary labour had been given to weed removal on *LHI* (D. Nichols, 2006, p. 123).

In terms of key local ecosystems, "the complex landscape of lowland, valley, mountain and ridge [found on *LHI*] provides microhabitats for diverse types and associations of plants [...] with 105 of the 243 species of native vascular plants unique to the Island" (Hutton, 2010b, p. 4). Two of those unique species, the *LHI Kentia Thatch Palm* (*Howea forsteriana*) and the *Kentia Curly*

[138] *Mocó*

Palm (*Howea belmoreana*), are since the **1870s** an important export produce of *LHI* (McFadyen, 2006, p. 44). They triggered the creation of a *Co-operative* in **1906** comprising 21 islanders as shareholders (McFadyen, 2006, p. 47) and influencing the development of a unique governance structure for *LHI* (D. Nichols, 2006, pp. 98-105). The fact that only seeds are harvested and not timber, has catered for a sustainable use of *Kentia Palms* as natural resources. Two similar, but endemic plant species of *FDN* and *LHI* are also worth mentioning because of the size they can reach: the *Noronha Banyan*[139] (*Ficus Noronhae*) and the *Lord Howe Island Banyan* (*Ficus macrophylla f. columnaris*).

In regard to *FDN*'s vegetation, it is classified as *Insular Atlantic Forest*, "a subtype of *Atlantic Rainforest* which is considered the world's most threatened tropical forest", with over 400 species of vascular plants having been recorded by **2001**, three of which being endemic to *FDN* (IUCN, 2001, p. 132). Despite there being barely any differences in temperature between *FDN*'s winter and summer, differences in precipitation leads to cycles of great vegetation growth during winter and considerable natural clearing due to drought during summer. Adjacent to *Saco do Sueste* Beach, *FDN* also hosts the only oceanic mangrove in the South Atlantic, which is an important reproduction area for many of *FDN*'s marine species. Despite being classified as threatened due to impacts from sand extraction used as construction material prior to the creation of *PARNAMAR-FDN* and previous silting from the operation of a quarry upstream, the mangrove already shows signs of recovery (IBAMA & FUNATURA, 1990).

On its western side, *LHI* hosts a five-kilometre long true coral reef. It is the world's southern most coral reef, although in colder periods, it is dominated by calcareous algae instead of coral (IUCN, 1982, p. 1). The confluence of currents with different temperatures coming from North, South and East provide the waters surrounding *LHI* with "an unusual mixture of temperate and tropical organisms, 477 fish species having been recorded in 107 families of which 4% are unrecorded elsewhere other than in *Norfolk Island-Middleton Reef* waters" (IUCN, 1982, p. 7). In *FDN*, a total of 237 species of marine fauna was recorded in **1990**, of which 168 were molluscs, with 77 previously unrecorded species. Despite offering excellent conditions for the development of coral and hydrocoral, *FDN* presents small and disperse coral constructions (IBAMA & FUNATURA, 1990, p. 67). "Above average sea temperatures throughout the early part of **2010** have led to first recorded major coral bleaching event at *LHI*" (Southern Cross University, 2010). However, by March 2011 there were "signs of recovery at most sites" (News, 2011). In May **2010**, a similar event occurred in *FDN*, with bleaching being recorded because of rising water temperatures (Reef Check Brazil, 2011). Reefs are important ecosystems for the great variety of marine life they support. They are also extremely relevant economical assets for both *FDN* and *LHI* for the number of divers they attract every year.

[139] *Gameleira*

Human Settlement and Development

In terms of demographic features, FDN and LHI are very distinct in several ways. Differences start with their year of discovery and early settlement. While FDN was discovered in the early **1500**s by the Portuguese with its first permanent inhabitants arriving in **1737** (Borges Lins e Silva, 2007, p. 18), LHI was discovered by the English in **1788** with first settlement occuring only in **1833** (McFadyen, 2006, p. 13), almost 100 years later than in FDN.

Differences are also evident when their current population numbers are compared, as well as their growth trends. *Table 18* portrays the current demographic densities for FDN and LHI considering their total land areas and those not part of development restricted areas – comprised by PARNAMAR-FDN and LHI-PPP. When the total land area for FDN *Archipelago* and LHI *Group* are considered, FDN's population density is about 6.5 times higher than that of LHI. However, if accounted only those land areas on their main islands that are not part of PARNAMAR-FDN and LHI-PPP, the difference goes up to 8.4 times.

Table 18 | Demographic Densities for FDN and LHI

	Archipelago / Island Group									
	Total Land Area			Restrictive Land Areas			Other Land Areas			
NWHP	Land Area*	Population	Density*	Protected Area	Land Area*	Ratio	Land Area	Ratio	Population**	Density*
FDN	26	3600	**138**	PARNAMAR-FDN	20.89	80.3%	5.11	19.7%	3600	**705**
LHI	17.3	360	**21**	LHI-PPP	13	75.1%	4.3	24.9%	360	**84**

	Main Island									
	Total Land Area			Restrictive Land Areas			Other Land Areas			
NWHP	Land Area*	Population	Density*	Protected Area	Land Area*	Ratio	Land Area	Ratio	Population**	Density*
FDN	17.01	3600	**212**	PARNAMAR-FDN	11.9	70.0%	5.11	30.0%	3600	**705**
LHI	14.54	360	**25**	LHI-PPP	10.24	70.4%	4.3	29.6%	360	**84**

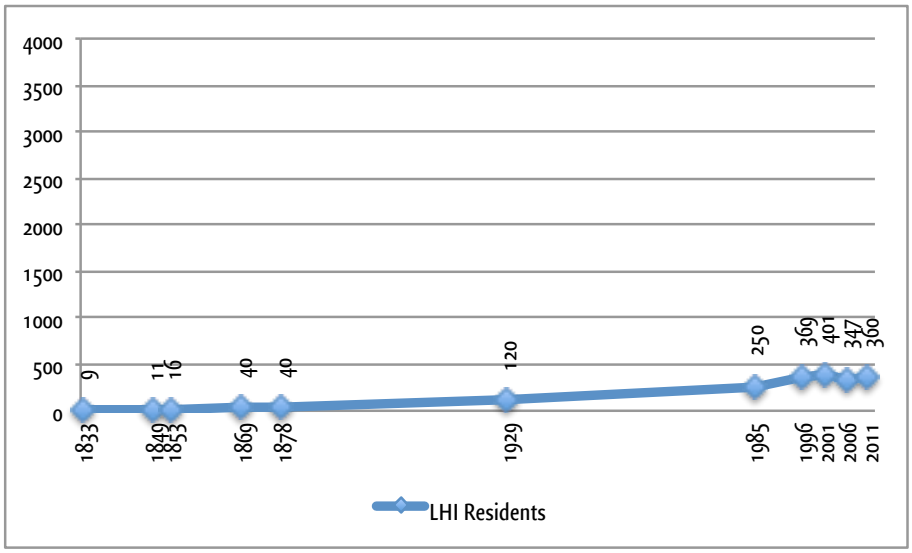
* Areas in sq km and density in people per sq km

** Population for FDN was estimated based on growth trend projected from ADEFN accounts for 1995 and 2007

Sources | Data compiled from ABS (2012), Arruda de Carvalho (1999, p. 54), Brasil (2001, p. 10), Duarte de Araújo (2009a), IUCN (1982, p. 3; 2001, p. 131), Mackay (2010, p. 5) and NSW (2011, p. 1)

In **1878**, "there were 40 inhabitants in 15 dwelling houses" on LHI (McFadyen, 2006, p. 21), whereas in **2011**, there were 360 people residing in 197 dwellings (ABS, 2012). *Figure 76* portrays the population growth trend for LHI. It indicates that from **1990**s onwards, LHI's local population stabilised at around 360-400 residents. This population stabilisation seems to reflect the tight regulations in place, including LHI's *Local Environmental Plan – LEP* that established in **2005** that no more than 25 consents for the building of new dwellings should be granted for a period of 20 years (NSW, 2010). As for FDN, not only is its current population about 10 times higher than that of LHI, FDN presented an average growth trend of about 1.7% in the last few years, almost 50% higher than the Brazilian population national average growth rate of 1.12% (Agência Brasil, 2012).

Figure 76| Resident Population Growth in LHI

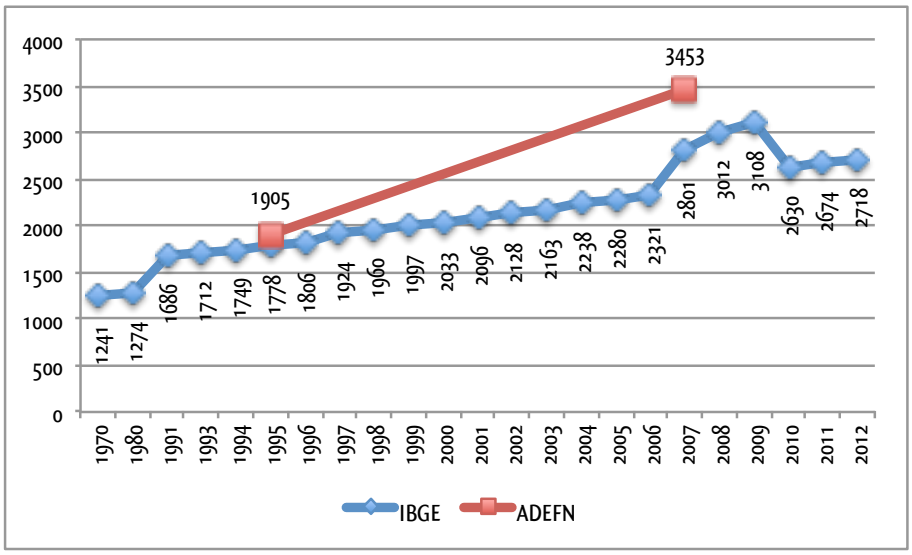


Sources | ABS (1997, 2002, 2007, 2012), Darnell-Smith (1929, p. 1), McFadyen (2006, p. 21), D. Nichols (2006, p. 36) and Serventy (1985, p. 120)

Figure 77 portrays FDN population according to the official census (carried out in **1970**, **1980**, **1991**, **2000** and **2010**) and estimates (all other years) of the *Brazilian Institute of Geography and Statistics – IBGE*[140] in blue and two population accounts conducted by *Fernando de Noronha State District Administration – ADEFN*[141] in **1995** and **2007**. Apparently, the difference between *IBGE* numbers and those of *ADEFN* reflect two issues: *ADEFN* counts residents by classifying them into permanent and temporary residents and issues them with identification cards that allow *Environmental Preservation Tax – TPA*[142] payment exemption. This way, it is in every resident's interest to be accounted for by *ADEFN*, even those living temporarily on the mainland for study or health treatment reasons; as for the census conducted by *IBGE*, researchers visit each residence and ask the owner the number of people living on the premises. Since, despite not being supposed to, many families rent rooms to temporary residents without having the proper infrastructure – which often have been built without the approval of *ADEFN*, respondents tend to account only for their family members when surveyed by *IBGE*.

[140] *Instituto Brasileiro de Geografia e Estatística.*
[141] *Administração do Distrito Estadual de Fernando de Noronha.*
[142] *Taxa de Preservação Ambiental* – further information presented on page 245.

Figure 77| Resident Population Growth in FDN



Sources | Data compiled from Arruda de Carvalho (1999, p. 54), Duarte de Araújo (2009b, p. 11) and IBGE (1993, 1994, 1995, 1996, 1997, 1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012)

In **2004**, the population of 2338 inhabitants accounted by IBGE occupied 480 houses, of those 460 were connected to water, 432 to sewage collection and 456 to the electricity grid (Borges Lins e Silva, 2007, p. 18). In **2007**, out of the 3453 people accounted by ADEFN, there was a total of 2125 permanent residents and 1328 temporary residents in FDN (elabore & IBAMA, 2007, p. 142). If the growth trend from **1995** to **2007** were maintained, it is likely that ADEFN population numbers may have reached something between 3,600 and 4,000 residents in **2012**. This is roughly 10 times the population of LHI, which has been fairly stable since **1996**, between 360 and 400 people (see *Figure 76*).

Reasons for the ongoing population growth in FDN are many, and vary from regulatory loopholes, to lack of enforcement, political dispute, governance structure, pressure from tourism development and the national *context* in which FDN is inserted. Nevertheless, being isolated small islands, FDN and LHI's carrying capacity and limits to population growth have long been concerns of their population and administrative bodies. In **2000**, MRS *Estudos Ambientais* calculated FDN's ***potential*** *carrying capacity* at 6,000 people. However, at that time, the archipelago only had the necessary structure to serve up to 1,433 people and already accounted for about 2,900 people including residents and tourists (ADM&TEC, 2000). Increments in infra-structure could never catch up with population growth and in **2008**, despite hosting an estimate of 4,000 people inclusive of residents and tourists, FDN only had the necessary structure to host 2,550 (ICMBio & e labore, 2008, p. 280).

Years earlier, in **1996**, in light of the already fast growing population of Fernando de Noronha, *ADEFN* issued a Normative Instruction[143] to regulate the entry and permanent residency of Brazilians in *FDN* (ADEFN, 1996). Unable to prohibit the access, transit and stay in *FDN* to those legally in the Brazilian territory (Brazilians and Foreigners)[144], *ADEFN* classified those in *FDN* as permanent residents, temporary residents and tourists for the purposes of payment of *TPA*. This way, it could regulate the entry of migrants by establishing in which instances they are free from payment of *TPA* – for instance, through marriage. From that moment on, only those who are permanent residents were allowed to apply for land leases in *FDN*.

A slightly similar logic applies to *LHI*. In **1953**, the *Lord Howe Island Act* (NSW, 1953) stated that *Lord Howe "Islanders* have the first option to lease land on *LHI* and only islanders can be elected as members of the *LHIB*" (LHIB, 2007). When the act came into force, islanders were considered those who held permissive occupancy leases on *LHI* on **22 April 1954** as well as their spouses and lineal descendants (children, grandchildren, great grandchildren and so on). In **1981**, an *Amendment to the Act of 1953* (NSW, 1953) established that, from **1st of January 1982**, those residing on the island over a period of 10 consecutive years could also be granted *Islander Status* – this group of migrant islanders are usually referred to as *10-year islanders*, while those who are lineal descendants of 1954 islanders are known as *1981 islanders* – referring to the year of the amendment (LHIB, 2007) or *generational islanders*. Being migrant islanders, 10-year islanders are liable to lose their Islander Status if they cease to reside on the island for reasons other than: "to attend an educational institution off the Island; or to gain employment experience off the Island where the periods of absence for this purpose do not total more than 10 years" (LHIB, 2007). Despite not running the risk of losing their island status, generational islanders run the risk of losing their perpetual leases if they are not residing on the island under any of the allowed situations.

The differentiation of those coexisting in *FDN* and *LHI* by means of regulations that determine different rights and obligations has lead to the formation of groups in the local scale that greatly resemble macro-groups at the national scale associated with immigration and recognition of citizenship. To understand the foundations of current demographics for *FDN* and *LHI*, it is important to go back in time and explore the historical *context* in which human settlement and development took place in these two islands. An historical account for *FDN* is presented in *Chapter 8* and for *LHI* in *Chapter 9*. A summary of the resulting *Social-Ecological Key Groups* for *FDN* and *LHI* are presented in the next section.

[143] *Instrução Normativa No. 002/1996.*
[144] According to the Brazilian Constitution Paragraph XV, Article 5, Chapter I, Title II, Brazilian and Legal Foreign Residents are free to move around the national territory as they wish in times of peace.

Resulting Key Social-Ecological Groups

A mixture of land tenure, citizenship, conservation and taxation regulations allied to cultural traits deriving from the history of human settlement and development on *FDN* and *LHI* have resulted in the establishment of different social-ecological agent groups. For the purpose of this research, the identification of these groups was carried out by the triangulation of secondary sources, direct observation and semi-structured interviews. To facilitate comprehension and comparison of these groups, *Key Ecological Groups*, comprising *Key Species* and *Key Ecosystems* are portrayed in *Figure 78*[145] and *Key Social Groups* in *Figure 79*[146]. This separation was used only as a classification tool and by no means implies a lack of relationship between agents of each group. Quite the opposite, these relationships are directly dealt with in *Chapter 10*, which deals with the focused *phenomenon* of this research, the relationships of competition and cooperation among groups of *FDN* and *LHI SECAS* agents.

Identification of key ecosystems and species portrayed in *Figure 78* was based on their contribution to vital ecological processes, to their conservation and economic values and to the level of interference they bring to human development or the level of impact they receive from it. By attracting not only focused conservation efforts but having contributed to greater conservation of habitats while being perceived as island's assets, *LHI Woodhens* and *FDN Spinner Dolphins* and *Marine Turtles* have been considered key species for the conservation movement in each island. *Kentia Palms* have also been included because by being endemic, allowing sustainable harvesting of their seeds and representing relevant economic value, their importance have triggered conservation efforts on *LHI* that encompassed most of its lands. As for introduced species, their relevance to this research depends on their capacity to impact the distribution and population domain of attraction of other species on the islands (all groups) and also aspects related to islanders food self-sufficiency and food security (mainly livestock).

In relation to main social groups, generational islanders and immigrant islanders are some of the most relevant categories found on both islands. The first because it represents heritage, tradition and local knowledge, while the second, for its global knowledge and global connections. The relationship between these two groups is not always harmonious and many times tends to conflict, a lot because of scarceness of local resources – especially land, and limitations imposed by regulations. The need to label these groups seems to derive not only from regulations, but also the groups themselves, in a pursuit for identity and differentiated treatment. In *FDN*, for instance, considering most families have not been on the island for as many generations as in *LHI*, the term *native* seems to be more widely used than *lineal descendent*. In fact, being born on the island seems to carry such

[145] See page 251.
[146] See page 252.

significance that despite regulations requiring pregnant women to go to hospitals on the mainland for delivery (due to *FDN*'s hospital not holding the necessary infrastructure), there are cases in which mothers-to-be hide on the island and give birth with the assistance of midwives. *Noronheses*, or natives, are therefore culturally recognised in *FDN* as those born on the island, whereas islanders as those holding permanent residency status regardless of place of birth. Migrant islanders, or those who acquired permanent residency status by the 10-year residency requirement or through marriage and those who are temporary residents are labelled as *Haoles*, a pejorative Hawaiian term very common among surfers meaning foreigner or invader. On *LHI*, 10-year islanders and temporary residents can be labelled with the highly pejorative term *FNIC*[147], whereas those migrants who married generational islanders are automatically incorporated in the community. On *LHI*, being lineal descent of early settlers carry such weight that there are cases in which the offspring of male migrant islanders and female generational islanders end up being registered with hyphenated surnames, so as to carry the surname identifying their linkage to early settlers.

Temporary residents are known as those residing on the islands who have not been granted Islander Status by birth, lineal descent or residency requirements. They are usually on the islands as public servants or employees of tourist related businesses. Tourists are probably just as relevant, considering they are the engine behind tourism development and pose a great deal of influence on Island affairs decision-making. They are those visiting the islands for matters ranging from pleasure to business. Their classification as *Airline*, *Cruiseline* and *Sailing Tourists* is relevant, considering the different way they are perceived by residents and taxed by local administration considering their different impacts on tourism development, environmental conservation and social interference. External investors and global capital also pose a great deal of influence by helping overcome local challenges, whilst promoting global dependence.

Figure 79 portrays the way different rights and obligations help define and enforce the key social groups in *FDN* and on *LHI*. They include rights to apply for land, to vote and be elected and the incidence of taxation for: *FDN*, such as the *Environmental Preservation Tax – TPA*[148], the *Mooring Tax – TA*[149], the *PARNAMAR-FDN Entrance Fees – TI*[150] and the *Social Contribution Tax – TCS*[151]; and for *LHI*, such as the *Environmental Levy – EL* and the *Mooring Fee – MF* (ADEFN, 2004; ICMBio & e labore, 2008; Jenny Rand & Associates, 2010; NSW, 1953; Pernambuco, 1989).

[147] *F***ing Non-Islander C***s.*
[148] *Taxa de Preservação Ambiental.*
[149] *Taxa de Ancoragem.*
[150] *Taxa de Ingresso.*
[151] *Taxa de Contribuição Social.*

Chapter Conclusion

Chapter 7 has explored some of the main environmental and demographic characteristics of *FDN* and *LHI*, highlighting the struggle between endemic/traditional and invasive species in isolated *SECAS* that have become more globalised. Isolation and time have greatly contributed to the establishment of unique local ecosystems in *FDN* and on *LHI* that were forced to adapt when new species were introduced. From a resilience perspective, the impact on local systems of the introduction of different species led local populations to different new domains of attraction, including stability, instability and extinction. When it is taken into account that there is no current evidence of the presence of humans on *FDN* and *LHI* prior to their respective discovery by Europeans in the **1500s** and **1700s**, to a certain extent humans could also be considered invasive species to both *FDN* and *LHI*. However, the same way other introduced species may have become new species after generations of isolation in specific environmental conditions and sharing of the same gene pools, *Noronhenses* and *Lord Howe Islanders* have also somehow specialised, if not in terms of biological genetics, definitely in terms of their cultural gene pool. That not only defined them as a specific social group, but also meant they developed a specific way to interact with the local environment and therefore being part of local ecosystems in unique ways. Perhaps these differences can be observed more keenly on *LHI* due to its local population being more permanent throughout its history, in opposition to *FDN*, where residents came and left as they were designated to serve on the island or sentenced to imprisonment and leaving at the end of their sentences[152].

As globalisation emerged and the two islands experienced greater connection with the mainland, new waves of human migration with a mainland cultural background forced new rearrangements of the islands' ecosystem and economic processes, pushing *Noronhenses* and *Lord Howe Islanders* to change the way they interacted with the local environment and among themselves. Having lived on the island for longer, generational islanders hold a great deal of practical knowledge on how things operate on the islands, what works, what does not work and most importantly, how local systems are likely to react when impacted in certain ways. However, new migrants know how to tap into global resources and knowledge to overcome local challenges – they know how to operate in a globalised reality. When in cooperation, the two groups seem to be able to ally local and global knowledge, becoming more resilient as a local human population. When the two groups are in competition, greater weight is likely to be given to local or global knowledge depending on the level of globalisation experienced at the local economic and ecological levels; the extent to which a local community can be retained despite the entry of new migrants, being central to this debate. Finally, when *FDN* and *LHI* are contrasted, it seems ***Local***

[152] Refer to *Chapter 8*.

Empowerment plays a significant role in maintaining stronger ***Local Social Cohesion***. This is further explored in the upcoming chapters. They portray the local development histories experienced by *FDN* and *LHI* and how they were influenced by the proclamation of *PA*s and *TD* at the local level within the *context* presented in *Chapter 5* and *Chapter 6* and the *intervening conditions* presented in this present chapter.

References

ABS. (1997, Jul 01). 1996 Census Data: Lord Howe Island. *Australian Bureau of Statistics*. from http://www.abs.gov.au/ausstats/abs@.nsf/DetailsPage/96bcp125108859199 6?OpenDocument&tabname=Details&prodno=96bcp125108859 &issue=1996&num=&view=&%23Basic Community Profile

ABS. (2002, Nov 19). 2001 Census Community Profile Series: Lord Howe Island. *Australian Bureau of Statistics*. from http://www.censusdata.abs.gov.au/ABSNavigation/prenav/ViewData?&amp ;action=404&documentproductno=UCL148840&documenttype= Details&tabname=Details&areacode=UCL148840&issue=2 001&producttype=Community Profiles&&producttype=Community Profiles&javascript=true&textversion=false&navmapdisplay ed=true&breadcrumb=PLD&%23Basic Community Profile

ABS. (2007, Oct 25). 2006 Census QuickStats: Lord Howe Island. *Australian Bureau of Statistics*. from http://www.censusdata.abs.gov.au/ABSNavigation/prenav/ViewData?actio n=402&documentproductno=125108859&documenttype=Main Features&order=1&tabname=Summary&areacode=1251088 59&issue=2006&producttype=QuickStats&javascript=true& amp;textversion=false&navmapdisplayed=true&breadcrumb=PL D&&collection=census&period=2006&producttype=Q uickStats&method=Place of Usual Residence&

ABS. (2012, Oct 30). 2011 Census QuickStats: Lord Howe Island. *Australian Bureau of Statistics*. from http://www.censusdata.abs.gov.au/census_services/getproduct/census/201 1/quickstat/SSC11408?opendocument&navpos=220

Instrução Normativa No 002 de 14 de junho de 1996 (1996).

Decreto Distrital No 018/2004: Disciplina Não Incidência da TPA (2004).

ADM&TEC. (2000). Plano de Gestão do Arquipélago de Fernando de Noronha, Ecoturismo e Desenvolvimento Sustentável – Fase 1 (Capacidade de Suporte): Relatório Final. Recife: Instituto de Administração e Tecnologia.

Agência Brasil. (2012, Oct 26). Portal Brasil: Crescimento populacional do Brasil é o menor já registrado - Portal Brasil. from http://www.brasil.gov.br/noticias/arquivos/2011/10/26/crescimento-populacional-do-brasil-e-o-menor-ja-registrado

APA-FN (2008, Oct 08). [Operação Turística do Navio M.V. Pacific em Fernando de Noronha 2008/2009].

Arruda de Carvalho, Luis Fernando. (1999). *Impactos do turismo no arquipélago de Fernando de Noronha: um estudo no caminho do desenvolvimento sustentável*. (Bachelor of Tourism), Universidade de São Paulo, São Paulo.

Beccario, Cameron. (2014a). Snapshot of Earth: an animated map of global wind and weather: South Atlantic Ocean [Digital].

Beccario, Cameron. (2014b). Snapshot of Earth: an animated map of global wind and weather: SouthWest Pacific Ocean [Digital].

BOM. (2012, Dec 12). Climate statistics for Australian locations: Monthly Climate Statistics: Lord Howe Island Aero. *Australian Government Bureau of Meteorology*. from http://www.bom.gov.au/climate/averages/tables/cw_200839.shtml

Borges Lins e Silva, Marieta. (2007). *Fernando de Noronha: Cinco Séculos de História* Vol. 1. *Cadernos Noronhenses*

Brasil. (2001). Fernando de Noronha Archipelago / Rocas Atoll Tropical Insular Complex: Nomination for Inclusion as an Unesco World Heritage Natural

Site *Ministry of the Environment* (pp. 1-351). Brasília: Ministry of the Environment.

CMA-ICMBio. (2013, Feb 21). CMA-ICMBio: Histórico. from http://www4.icmbio.gov.br/cma/index.php?id_menu=21

Darnell-Smith, G. P. (1929). The Kentia Palm Seed Industry, Lord Howe Island. *Bulletin of Miscellaneous Information (Royal Gardens, Kew)*, *1929*(1), 1-4.

Duarte de Araújo, Gustavo Antônio. (2009a). Grupo de Trabalho para Mudança da Matriz Energética do Arquipélago de Fernando de Noronha (pp. 1-120). Recife: Governo do Estado de Pernambuco.

Duarte de Araújo, Gustavo Antônio. (2009b). Grupo de Trabalho para Mudança da Matriz Energética do Arquipélago de Fernando de Noronha: Resumo Executivo (pp. 1-33). Recife: Governo do Estado de Pernambuco.

elabore, & IBAMA. (2007). Estudo e Determinação da Capacidade de Suporte e Seus Indicadores de Sustentabilidade com Vistas à Implantação do Plano de Manejo da APA-FN: Produto 2 (pp. 1-191): Instituto Brasileiro do Meio Ambiente e dos Recursos Naturais Renováveis.

Google Imagery, ., & DigitalGlobe GeoEye, . (2011). Fernando de Noronha Satellitte Image [Digital]: Google Maps.

Google Imagery, ., & NASA. (2011). Earth Satellite Image [Digital]: Google Maps.

Hutton, Ian. (2008). *A guide to World Heritage Lord Howe Island*. Lord Howe Island: Ian Hutton.

Hutton, Ian. (2010a). *A fieldguide to the birds of Lord Howe Island*. Lord Howe Island: Ian Hutton.

Hutton, Ian. (2010b). *A fieldguide to the plants of Lord Howe Island* (2nd ed.). Lord Howe Island: Ian Hutton.

IBAMA, & FUNATURA. (1990). Plano de Manejo: PARNAMAR-FN (pp. 1-253). Fernando de Noronha: Instituto Brasileiro do Meio Ambiente e dos Recursos Naturais Renováveis.

IBGE. (1993, Aug 30). Resolução No 20 de 23 de agosto de 1993: Estimativa Populacional. *Diário Oficial da União*, pp. 12827-12852. Retrieved from http://portal.in.gov.br/

IBGE. (1994, Feb 21). Resolução No 5 de 19 de janeiro de 1994: Áreas Municipais. *Diário Oficial da União*, pp. 1021-1044. Retrieved from http://portal.in.gov.br/

IBGE. (1995, Aug 30). Resolução No 38 de 25 de agosto de 1995: Estimativa Populacional. *Diário Oficial da União*, pp. 1331-1337.

IBGE. (1996, Aug 30). Resolução No 27 de 27 de agosto de 1996: Estimativa Populacional. *Diário Oficial da União*, pp. 16993-17017. Retrieved from http://portal.in.gov.br/

IBGE. (1997, Aug 26). Resolução No 24 de 25 de julho de 1997: Áreas Municipais. *Diário Oficial da União*, pp. 18569-18595. Retrieved from http://portal.in.gov.br/

IBGE. (1998, Aug 27). Resolução No 28 de 25 de agosto de 1998: Estimativa Populacional. *Diário Oficial da União*, pp. 50-77. Retrieved from http://portal.in.gov.br/

IBGE. (1999, Aug 30). Resolução No 5 de 25 de agosto de 1999: Estimativa Populacional. *Diário Oficial da União*, pp. 81-108. Retrieved from http://portal.in.gov.br/

IBGE. (2000, Aug 29). Resolução No 9 de 8 de agosto de 2000: Estimativa Populacional. *Diário Oficial da União*, pp. 60-87. Retrieved from http://portal.in.gov.br/

IBGE. (2001, Aug 29). Resolução No 7 de 15 de agosto de 2001: Estimativa Populacional. *Diário Oficial da União*, pp. 4-34. Retrieved from http://portal.in.gov.br/

IBGE. (2002, Aug 30). Resolução No 4 de 21 de agosto de 2002: Estimativa Populacional. *Diário Oficial da União*, pp. 118-139. Retrieved from http://portal.in.gov.br/

IBGE. (2003, Aug 30). Resolução No 2 de 25 de agosto de 2003: Estimativa Populacional. *Diário Oficial da União*, pp. 1-22. Retrieved from http://portal.in.gov.br/

IBGE. (2004). Vocabulário Básico de Recursos Naturais e Meio Ambiente (pp. 1-332). Brasília: Instituto Brasileiro de Geografia e Estatística.

IBGE. (2005, Aug 31). Resolução No 5 de 30 de agosto de 2005: Estimativa Populacional. *Diário Oficial da União*, pp. 272-293. Retrieved from http://portal.in.gov.br/

IBGE. (2006, Aug 31). Resolução No 2 de 28 de agosto de 2006: Estimativa Populacional. *Diário Oficial da União*, pp. 137-159. Retrieved from http://portal.in.gov.br/

IBGE. (2007, Oct 05). Resolução No 7 de 4 de outubro de 2007: Estimativa Populacional. *Diário Oficial da União*, pp. 137-154. Retrieved from http://portal.in.gov.br/

IBGE. (2008, Aug 29). Resolução No 8 de 27 de agosto de 2008: Estimativa Populacional. *Diário Oficial da União*, pp. 107-125. Retrieved from http://portal.in.gov.br/

IBGE. (2009, Aug 14). Resolução No 7 de 11 de agosto de 2009: Estimativa Populacional. *Diário Oficial da União*, pp. 103-121. Retrieved from http://portal.in.gov.br/

IBGE. (2010). IBGE Censo 2010. *Instituto Brasileiro de Geografia e Estatística*. from http://www.censo2010.ibge.gov.br/sinopse/index.php?dados=27&uf=26

IBGE. (2011, Aug 31). Resolução No 06 de 30 de agosto de 2011: Estimativa Populacional. *Diário Oficial da União*, pp. -133. Retrieved from http://www.in.gov.br/visualiza/index.jsp?data=31/08/2011&jornal=1&pagina=133&totalArquivos=192

IBGE. (2012, Aug 31). Resolução No 07 de 30 de agosto de 2012: Estimativa Populacional. *Diário Oficial da União*, pp. 81-88.

ICMBio, & e labore. (2008). Estudo e Determinação da Capacidade de Suporte e Seus Indicadores de Sustentabilidade com Vistas à Implantação do Plano de Manejo da APA-FN: Produtos 3 e 4 - Relatório Final (pp. 1-316): Instituto Chico Mendes de Conservação da Biodiversidade.

ICMBio-MMA. (2012). Livro Vermelho da Fauna Brasileira Ameaçada de Extinção: Caranguejo - Gecarcinus lagostoma. from http://www.icmbio.gov.br/portal/biodiversidade/fauna-brasileira/lista-especies/1230-caranguejo-gecarcinus-lagostoma.html

Instituto Hórus, & The Nature Conservancy. (2005a, Jul 28). Kerodon rupestris. from http://www.institutohorus.org.br/index.php?modulo=inf_ficha_kerodon_rupestris

Instituto Hórus, & The Nature Conservancy. (2005b, Jul 28). Tupinambis merianae. from http://www.institutohorus.org.br/index.php?modulo=inf_ficha_tupinambis_merianae

IUCN. (1982). World Heritage Nomination - IUCN Technical Evaluation: Lord Howe Island Group (Australia). Gland, Switzerland: International Union for the Conservation of Nature.

IUCN. (2001). World Heritage Nomination - IUCN Technical Evaluation: Fernando de Noronha Archipelago/Rocas Atoll Tropical Insular Complex (Brazil). Gland, Switzerland: International Union for the Conservation of Nature.

IUCN. (2012a). The IUCN Red List of Threatened Species: Caretta caretta (Loggerhead Turtle). *The IUCN Red List of Threatened Species.* 2012.2. from http://www.iucnredlist.org/details/full/3897/0

IUCN. (2012b). The IUCN Red List of Threatened Species: Chelonia mydas. *The IUCN Red List of Threatened Species.* 2012.2. from http://www.iucnredlist.org/details/4615/0

IUCN. (2012c). The IUCN Red List of Threatened Species: Christinus guentheri. 2012.2. from http://www.iucnredlist.org/details/4801/0

IUCN. (2012d). THe IUCN Red List of Threatened Species: Dermochelys coriacea (Leatherback Turtle). *The IUCN Red List of Threatened Species.* 2012.2. from http://www.iucnredlist.org/details/full/6494/0

IUCN. (2012e). The IUCN Red List of Threatened Species: Elaenia ridleyana (Noronha Elaenia). *The IUCN Red List of Threatened Species.* 2012.2. from http://www.iucnredlist.org/details/full/106004140/0

IUCN. (2012f). The IUCN Red List of Threatened Species: Eretmochelys imbricata. *The IUCN Red List of Threatened Species.* from http://www.iucnredlist.org/details/summary/8005/0

IUCN. (2012g). The IUCN Red List of Threatened Species: Gallirallus sylvestris. *The IUCN Red List of Threatened Species.* 2012.2. from http://www.iucnredlist.org/details/full/106002850/0

IUCN. (2012h). The IUCN Red List of Threatened Species: Oligosoma lichenigera (Lord Howe Island Skink). 2012.2. from http://www.iucnredlist.org/details/full/40796/0

IUCN. (2012i). The IUCN Red List of Threatened Species: Pterodroma solandri (Providence Petrel). *The IUCN Red List of Threatened Species.* 2012.2. from http://www.iucnredlist.org/details/106003902/0

IUCN. (2012j). The IUCN Red List of Threatened Species: Vireo gracilirostris (Noronha Vireo). *The IUCN Red List of Threatened Species.* 2012.12. from http://www.iucnredlist.org/details/full/106005586/0

Jenny Rand & Associates. (2010). Lord Howe Island Regional Tourism Plan 2010.

LHIB. (2007). Plain Language Guide to the Lord Howe Island Act: Information Sheet 4: Who is a Lord Howe Islander?

Mackay, Janet. (2010). *Strategic Plan for the Lord Howe Island Group World Heritage Property*. Lord Howe Island: Lord Howe Island Board.

McFadyen, Kerry. (2006). *Pinetrees, Lord Howe Island 1842-1992: a brief history of the Andrews-Nichols-Kirby families*. Lord Howe Island: Pinetrees.

Mleczko, Richard, Sagar, Stephen, Spinoccia, Michele, & Brooke, Brendan. (2010). The Creation of High Resolution Bathymetry Grids for the Lord Howe Island Region (Vol. 2010, pp. 58). Canberra: Geoscience Australia.

MPA NSW, . (2010a). Lord Howe Island Marine Park: Summary of Social, Cultural and Economic Uses. Retrieved 11/11/2010, from http://mpa.nsw.gov.au/pdf/Summary-Cultural-Social.pdf

MPA NSW, . (2010b). Natural Values of Lord Howe Marine Park. Retrieved 10/11/2010, from http://mpa.nsw.gov.au/pdf/Natural-Values.pdf

MPA NSW, ., & Australian Government DSEWPC, . (2009). *Lord Howe Island Marine Park and Elizabeth and Middleton Reef Marine National Nature Reserves: Compliance and Enforcement Plan 2009-2011*. Lord Howe Island: Marine Parks Authority New South Wales; Australian Government Department of Sustainability, Environment, Water, Population and Communities.

Museum, Lord Howe Island. (2014). Magpie lark (Grallina cyanoleuca). *Lord Howe Island Museum*. from http://www.lhimuseum.com/species/view/123

News, ABC. (2011, Apr 03). Lord Howe Island coral reef recovers from 'bleaching'. from http://www.abc.net.au/news/2011-03-03/lord-howe-island-coral-reef-recovers-from-bleaching/1964610

Nichols, Barney. (2011, Mar 18). The Lord Howe Island Signal. *The Lord Howe Island Signal*, pp. 1-16.

Nichols, Daphne. (2006). *Lord Howe Island Rising*. Brookvale: BA Printing and Publishing Services.

NSW. (1953). Lord Howe Island Act. Retrieved 20/09/2010, from http://www.austlii.org/au/legis/nsw/consol_act/lhia1953166/

NSW. (2010). Lord Howe Island Local Environment Plan 2010. from http://www.legislation.nsw.gov.au/sessionalview/sessional/epi/2010-88.pdf

NSW. (2011). Lord Howe Island Permanent Park Preserve Plan of Management (pp. 1-61). Lord Howe Island: NSW Government Department of Environment Climate Change and Water.

NSW DECC, . (2007). Lord Howe Island Biodiversity Management Plan. Retrieved 10/11/2010, from http://www.environment.nsw.gov.au/parkmanagement/lordhowebiodiversitymgmtplandraft.htm

NSW MPA, & Environment Australia. (2001). Lord Howe Island Marine Park Issues Paper: a Planning Issues Paper for the Lord Howe Island Marine Park (State and Commonwealth Waters) (pp. 1-1). Sydney: New South Wales Marine Parks Authority.

NSW-SES. (2013). Lord Howe Island Tsunami Safe. Sydney: New South Wales State Emergency Services.

Lei nº 10.403, de 29 de Dezembro de 1989: Lei Tributária do Distrito Estadual de Fernando de Noronha, (1989).

Reef Check Brazil. (2011, Mar 25). Reef Check News: A New Phase for Coral Reef Monitoring in Brazilian Federal MPAs. from http://www.reefcheck.org/news/news_detail.php?id=714

REMA Brasil. (2007). Estratégias de Conservação da Biodiversidade no Brasil (pp. 1-116): Rede Marinho-Costeira e Hídrica do Brasil.

RFB. (2010). Comprovante de Inscrição e Situação Cadastral: Centro Golfinho Rotador (pp. 1-1). Brasília: Receita Federal do Brasil.

Serafini, Thiago Zagonel, de França, Georgeana Barbosa, & Andriguetto-Filho, Jose Milton. (2010). Brazilian oceanic islands: known biodiversity and its relation to the history of human use and occupation. *Journal of Integrated Coastal Zone Management*, 10(3), 281-301.

Serventy, Vincent. (1985). *Australia's World Heritage Sites*. South Melbourne: Macmillan.

Southern Cross University. (2010, Apr 24). Rising sea temperatures stress corals at Lord Howe Island. from http://www.scu.edu.au/news/media.php?item_id=1504&action=show_item

Strauss, Anselm L., & Corbin, Juliet M. (1990). *Basics of qualitative research: grounded theory procedures and techniques*. Newbury Park, Calif.: Sage Publications.

TAMAR, Projeto. (2011a). Projeto TAMAR: Fernando de Noronha - PE. from http://www.tamar.org.br/centros_visitantes.php?cod=7

TAMAR, Projeto. (2011b). Projeto TAMAR: História. from http://www.tamar.org.br/interna.php?cod=64

TAMAR, Projeto. (2011c). Projeto TAMAR: O Que é. from http://www.tamar.org.br/interna.php?cod=63

UN. (2012, Dec 12). UNdata: World Meteorological Organisation Standard Normals. *United Nations.* from http://data.un.org/Explorer.aspx?d=CLINO

Waterways Authority. (2003). Lord Howe Island Marine Oil and Chemical Spill Contingency Plan. Retrieved 11/11/2010, from http://pandora.nla.gov.au/pan/45574/20041028-0000/www.maritime.nsw.gov.au/docs/LHIPlan.pdf

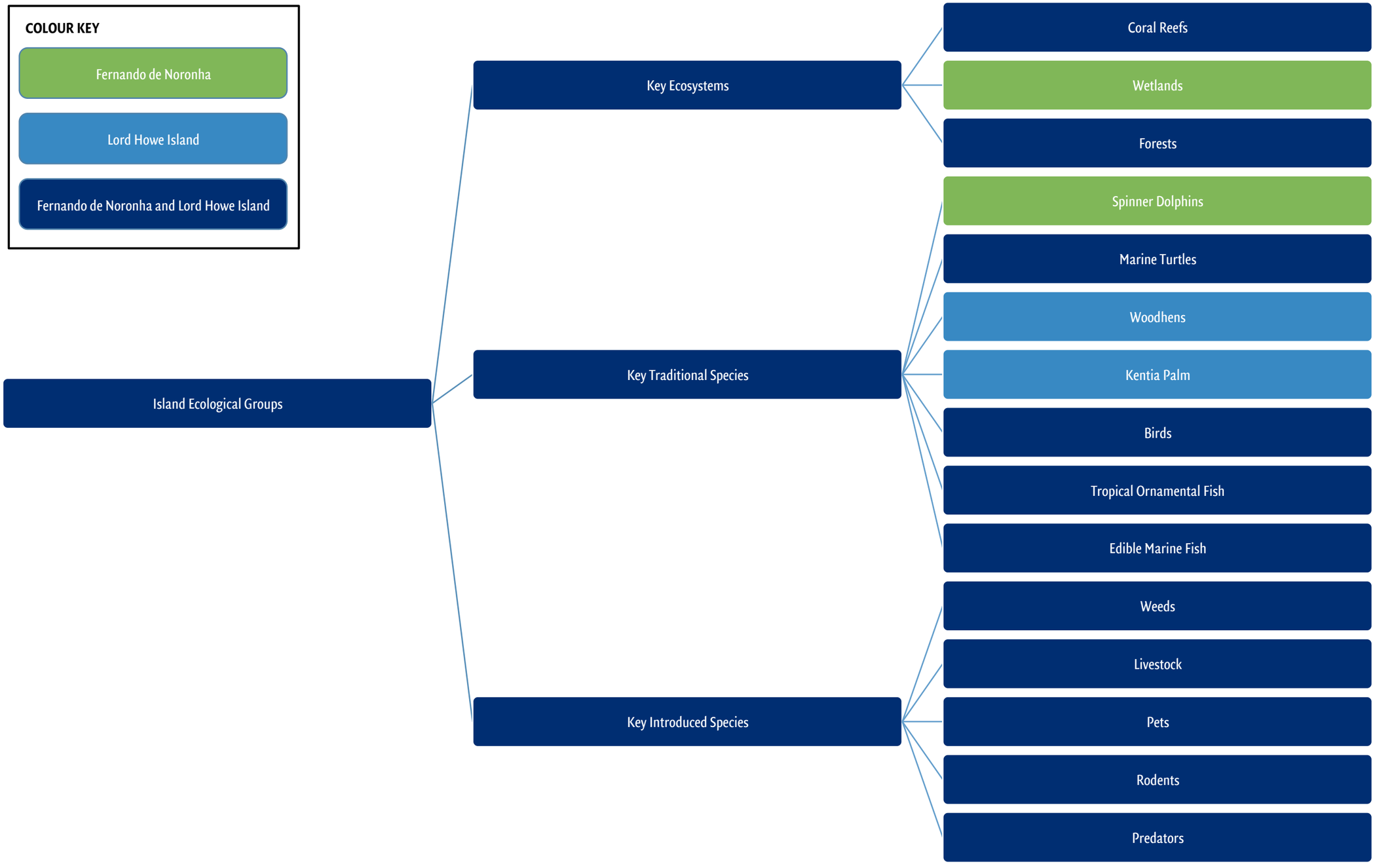
WCMC, UNEP. (2011). UNEP WCMC World Heritage Information Sheets: Brazilian Atlantic Islands: Fernando de Noronha Archipelago & Atol das Rocas Reserves. Cambridge: United Nations Environment Programme World Conservation Monitoring Centre.

Wildner, Wilson, Valença Ferreira, Rogério, & Schobbenhaus, Carlos. (2011). Geoparque Fernando de Noronha - PE (Proposta): Descrição Geral do GeoParque. *CPRM Serviço Geológico do Brasil.* from http://www.cprm.gov.br/geoecoturismo/geoparques/noronha/index.php?GEOPARQUE=5

WindFinder. (2012a, Dec 12). Wind & weather statistic Fernando de Noronha. *windfinder.com.* from http://www.windfinder.com/windstats/windstatistic_ilha_noronha.htm

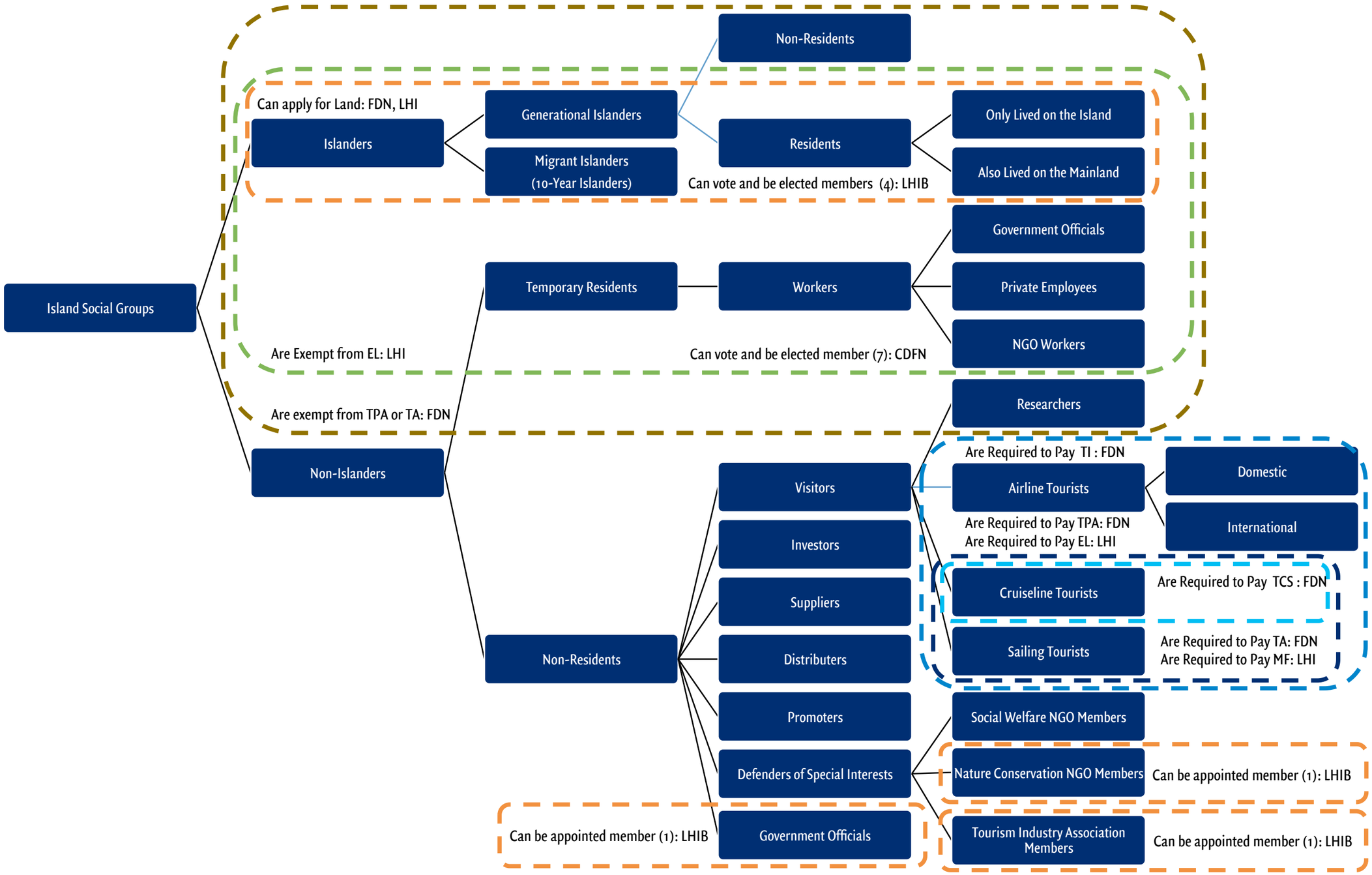
WindFinder. (2012b, Dec 12). Wind & weather statistic Lord Howe Island. *windfinder.com.* from http://www.windfinder.com/windstats/windstatistic_lord_howe_island.htm

Figure 78 | Key Ecological Groups for FDN and LHI



Sources | Data compiled from Semi-Structured Interviews, Direct Observation, Brasil (2001), IUCN (1982), Hutton and Le Cussan (2001), LHIB (2009).

Figure 79 | Key Social Groups for FDN and LHI



Sources | Data compiled from Semi-Structured Interviews, Direct Observation, Pernambuco (1989), ICMBio and e labore (2008), ADEFN (2004), Jenny Rand & Associates (2010), NSW (1953).

Fernando de Noronha Archipelago

Chapter 8 | (Inter)Action Strategies – Fernando de Noronha Archipelago

Tourism Development and the Implementation of Protected Areas in Fernando de Noronha Archipelago

This chapter seeks to address the first secondary research question (2.1)[153] for the *Fernando de Noronha Archipelago* – FDN, presenting and discussing the history of *Tourism Development* – TD and *Protected Areas* – PAs implementation in FDN. It covers a period over 500 years, stretching from discovery and early settlement to current days. The starting point for the development of this historical account was the preliminary secondary research on FDN carried by the author prior to his first field trip. During fieldwork, direct observation of FDN's current situation and the data collected through semi-structured interviews opened up new data demands that had to be met through further secondary sources research. Being a historical account, this chapter only portrays events that have been documented, providing references to the documents that can back them up. Despite not being clearly referenced in this chapter, direct observation of FDN's current situation has guided the selection of which events were relevant to the object of study and should be included in this chapter. As for semi-structured interviews, not only have they been used as a secondary data selection tool, but have also helped make sense of the relationship between different events and most importantly, were an effective triangulation tool to deal with non coherent sources.

The chapter's first section deals with the early history of FDN, exploring the way its strategic location played a role in defining the type of settlement, activities and governance regime that took place during most of its history. The second section portrays how the process of democratisation influenced the constitution of a social-environmental agenda. This is followed by a section that explored the way political dispute culminated in a reverse process to democratisation leading to social and environmental rupture. The last historical section deals with the most recent events, exploring the way local agency led to greater local empowerment, re-establishing the process of democratisation of FDN and promoting again the reunion of social and environmental agendas. The conclusion section of this chapter focuses on the way two properties (TD and PAs) of the global and local SECAS that are the object of this study emerged, also discussing their interplay and feedback on the local SECAS. This chapter argues that TD and PAs are emergent properties that are mutually self-reinforcing and self-regulating forces that influence not only one another, but also the way the local and the global SECAS interact, therefore posing great weight on the way local independence and resilience can develop and local empowerment can take place. These concepts are further explored in *Chapter 9* on *Lord Howe Island*, *Chapter 10* on *causal conditions* and *phenomenon* and *Chapter 11* on *consequences*.

[153] See page 117.

Strategic Location, Penal Colony and Dictatorship

Officially discovered in **1503** by *Américo Vespúcio*, FDN already appeared in a planisphere by *Juan de la Cosa* dated from **1500**. Until **1736**, the island experienced periods of abandonment, temporary occupation and was approached by the Portuguese, the French and the Dutch, among others. It was only when the Portuguese expelled the French in **1737** that FDN started being systematically colonised, with the erection of a system of forts and the institution of a penal colony. Right until **1988**, FDN was a heavily militarized area for its strategic location and purposes. From **1737** to **1938**, it was also a penal colony for dangerous criminals and for political prisoners (Borges Lins e Silva, 2007, pp. 18-19). In fact, the latter were only transferred out of the island in **1942**, when the island control was transferred from the *State of Pernambuco* to the *Brazilian Federal Government*, transforming it into the *Federal Territory of Fernando de Noronha – TFFN*, a *National Security Area* (GPR, 1942a) administered by the *Ministry of the Army* (GPR, 1943). In that same year, the *Penal Agrarian Colony of FDN*[154] created in **1938** to host political prisoners became the *Penal Agrarian Colony of the Federal District*[155] and was transferred to the Southeast part of *Ilha Grande*, a coastal island of the *State of Rio de Janeiro* (GPR, 1942b). Also in **1942**, an agreement was signed with the US Government, allowing the construction and operation of a US military base in FDN to help fight German submarines in the Atlantic during the *II World War*, which operated until the end of the war in **1945**. Later in **1957**, in the midst of the *Cold War*, the *Brazilian Government* signed a new agreement with the *US Government* for the set up of a *Post of Observation of Teleguided Missiles – POT*[156] in FDN's *Boldró Village*, which operated until **1965** (Borges Lins e Silva, 2007, pp. 81-6).

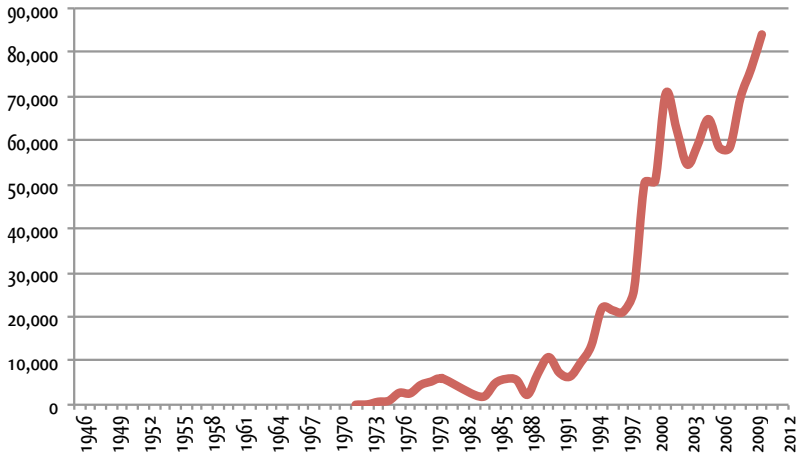
In **1949**, seven years after ceasing to host prisoners and four years after the end of *Second World War*, the first project to channel financial resources to assess the tourism potential of FDN is proposed by *Brazilian Federal MP Costa Porto*. This was followed, in **1959**, by studies conducted by *Brazilian Tourism Commission – COMBRATUR* on the feasibility of tourism development in FDN, commissioned by then *Governor of TFFN Cel. Francisco Costa*. Despite there being an airstrip in FDN since **1934** (Borges Lins e Silva, 2007, p. 264) and previously to that, the island had been visited by flying boats since **1927** (MVOP, 1928, p. 355), it was only in **1963** that an outbound tour operator from Recife called *Luck* signed an agreement with the *Federal Government* and brought to FDN a few tourists in chartered flights. However, the lack of local infrastructure and the small scale of the operation highly impacted the venture's feasibility (Borges Lins e Silva, 2007, p. 279). A year later, in **1964**, *Brazilian President João Goulart* was forced out of office by a *coup d'etat* backed up by fear of communism and supported by the US, that resulted in a military dictatorship that lasted until **1985**. From **1964** to **1972** the island was back to

[154] *Colônia Agrícola de Fernando de Noronha.*
[155] *Colônia Agrícola do Distrito Federal.*
[156] *Posto de Observação de Mísseis Teleguiados.*

hosting political prisoners against the regime (Borges Lins e Silva, 2007, pp. 221-34), tourism was interrupted and *Luck* was compensated by the *Federal Government* (Arruda de Carvalho, 1999, p. 30).

In **1969**, the military government of TFFN obtained authorization from the *Ministry of the Army* to develop tourism in FDN respected the internal security aspects of the area (Borges Lins e Silva, 2007, p. 279). However, the highly dictatorial government of *Brazilian President Emílio Garrastazu Médici* did not make it easy for tourism to develop on a military controlled island. In contrast with dictatorship reaching its peak, the effects of the *Oil Crisis* of the early **1970s**, allied to high inflation, social discontent and increase of civil movements against the military in Brazil, led to the beginning of a transition process into liberalisation and democratisation starting with military *Brazilian President Ernesto Geisel* in **1974**. In that same year, tourism started being more consistently developed in FDN, with the signature of an agreement between the *Government of* TTFN and *TransBrasil* for the establishment of a regular weekend air service and government investment for the creation of *Pousada Esmeralda* through improvements to the old structures of the *American POT* in the *Boldró Village* (Rezende de Souza, 2007, pp. 52). Previously to that, *Novo Hotel Casa 16* ("*Casa de Hóspedes*", opened in **1952**) and *Pousada Dona Pituca* (opened in **1969**) were the only places where civilian visitors could seek lodging. In **1976**, external private group *Meira Lins* takes control of tourism on the island, introducing boats, minibuses and motorcycles for small groups of tourists to go on tours around the island (Borges Lins e Silva, 2007, p. 279). Increment in passenger arrivals from the establishment of the regular weekend service can be observed in *Figure 80*.

Figure 80 | FDN Passenger Arrivals



Source | Data compiled from EMBRATUR (1973, 1975, 1977, 1979, 1981, 1983, 1985, 1987, 1989, 1993), DAC (1994, 1995, 1996, 1997, 1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005) and ANAC (2006, 2007, 2008, 2009, 2010, 2011)

In **1980**, the Archipelago of FDN figures in the *World Conservation Strategy* by the *International Union for Conservation of Nature – IUCN*, the *United Nations Environment Program – UNEP* and the *World Wide Fund for Nature – WWF* as a "priority mixed island system for the establishment of protected areas" (IUCN, 1980, map section, map 3).

In **1981**, during the government of the last *Brazilian Military President*, the administration of TFFN is transferred to the *Ministry of the Air Force* (GPR, 1981a) and a greater connection with the mainland is established, tourism becoming more of a government priority (GPR, 1981b; Rezende de Souza, 2007, p. 52). In that same year, FDN is visited by a cruiseship for the first time (Borges Lins e Silva, 2007, p. 279). However, despite two other calls in **1984** (Amaral, 2002, p. 183-4), it was only from **1990,** after the reincorporation of FDN to the *State of Pernambuco*, that the establishment of yearly cruiseship visitation seasons took place in FDN (Borges Lins e Silva, 2007, pp. 279-280). From **1982** to **1987** tourism to FDN is run by *Falcontur*, which started chartering flights with *VASP*, operating transfers and delivering presentations on the *Archipelago of* FDN, also renovating and improving *Pousada Esmeralda* (Ferreira da Costa Lima, 2002, p. 139).

Democratisation, Civil Government and the Social-Environmental Agenda

In **1985**, the first *Brazilian Civil President* takes office since the *coup d'etat* of 1964. Early in **1986**, the administration of TFFN is transferred to the *Joint Chiefs of Staff of the Armed Forces – EMFA*[157] with the intent to rationalise the administration of the island in regard to the presence of the 3 *Armed Forces*. At that time, tourism development is officially recognised as the *Federal Government*'s strategy for TFFN's economic self-sufficiency so as to reduce its cost to taxpayers (GPR, 1986). As a result, EMFA prepared an economic development plan for FDN, aiming to implement tourist infra-structure to host up to 5,000 tourists per week (de Souza Melo, 2011, p. 34). The first scuba diving operator – *Águas Claras* – was established in FDN in that same year (Ferreira da Costa Lima, 2002, p. 139) and regular Saturday flights linking FDN to the mainland being implemented by *VASP* (Borges Lins e Silva, 2007, p. 279). However, a plan targeting the development of mass tourism proved inacceptable to environmentalists, who under the leadership of *Russel Wid Coffin* (from *Águas Claras*) created a *Committee for the Establishment of the National Marine Park of FDN*[158] in **1986** (IBAMA & FUNATURA, 1990, p. 12) and found support with the *International Wildlife Coalition – IWC*, which mobilised more than 25 countries for the creation of a *Protected Area – PA* in FDN (de Souza Melo, 2011, p. 34). This process culminated in the creation of an *Environmental Protection Area – APA*[159] covering land and marine areas of the *Archipelago of* FDN, *Rocas Atoll* and *São Pedro and São Paulo Archipelago* in **1986**

[157] *Estado-Maior das Forças Armadas.*
[158] *Comitê Pró-Parque Nacional Marinho de Fernando de Noronha.*
[159] *Área de Proteção Ambiental.*

(Brasil, 1986). However, despite targeting the sustainable use of resources, APAs are the least restrictive category of PAs in the *Brazilian Legislation*. Therefore, the creation of *APA-FDN* was found by environmentalists as unlikely to stop mass tourism from taking place in FDN.

Furthering the process of democratisation and return of power from military to civilians, in **1987**, *Brazilian Civil President José Sarney* sanctioned a law approved by the *Brazilian National Congress* that transferred the administration of TFFN to the *Ministry of Interior* and established four objectives for the management of FDN: **social care** (specially in the areas of education, health and housing); **infra-structure** (prioritising water supply, sewage, energy, communication and airport structures); **economic development** (through farming and the exploration of natural resources); and the **protection** of the island's **natural and cultural heritages** (GPR, 1987). This was clearly a shift from the objectives established one year earlier, when the TFFN had been transferred to EMFA, and an agenda of defence and economic development had been established with the objectives to benefit Brazil and its Northeast region, without taking to account any local residents or local environment and cultural heritage. In that same year, *Fernando César Mesquita* is appointed the first Brazilian civilian to govern TFFN (Borges Lins e Silva, 2007, p. 57).

A new political agenda was adopted, incorporating social and economic objectives that included local residents bringing a lot of transformations to FDN. *Falcontur* lost the right to administer *Hotel Esmeralda*, which was handed to then newly established *Empresa Noronhense de Desenvolvimento*, a cooperative comprising around 100 islanders that had purchased its quotes. At that same time, a *Community Council*[160] was formed and quite a few islanders held positions in office. As part of the social agenda, a project of sewage treatment was developed, a local school started being structured and locals received incentives to develop crafts and agriculture (Pereira de Ávila, 2008, p. 99-103). As a result of the environmental agenda, in April **1988**, *Brazilian President José Sarney* signs the *Ecological Defense Zoning* (*Zoneamento para a Defesa Ecológica*) for TTFN. *Figure 100* presents a translation into IUCN categories of the four zoning categories applied to TFFN: *Areas of Ecological Preservation – APTs* (IUCN Category Ib), *Areas of Ecological Conservation – ACSs* (IUCN *Category II*), *Areas of Ecological Restoration – ARTs* (IUCN Category IV) and *Areas of Use and Occupation - AUOs* (IUCN Category VI) (GPR, 1988b).

Political Dispute: Social and Environmental Rupture

As part of the process of democratisation, general federal elections were called in the end of **1986** to elect *Members of Parliament – MPs* and *Senators* that composed an *Assembly* to vote a new *Constitution for Federative Republic of Brazil*. The newly elected *Assembly* began working in February **1987**. In a scenario where the government of TFFN privileged the exploration of tourism by

[160] *Conselho Comunitário.*

locals, external entrepreneurs wishing to take part in the development of tourism in FDN supported a movement of *Reincorporation of FDN to the State of Pernambuco*. Instigated by *Recife Local Councillor Liberato Júnior* and supported by *Federal MPs Nílson Gíbson* e *Cristina Tavares* (Pereira de Ávila, 2008, p. 99-100), *Federal MP José Moura* submitted an amendment for that purpose (*Emenda Aditiva* 2P01384-8) to the *Constitution Assembly* in January **1988.** Never consulted about whether they wished to become part of Pernambuco, FDN's local population feared this change would interfere with the social gains obtained through the civil government of TFFN. In response to this threat, and with the support of *Queiroz Galvão* (the building company contracted for most of TFFN's infrastructure works, which feared losing its contracts with the reincorporation), locals organised trips to *Brasília* to try to convince the *Brazilian Congress* to reject the project. Despite finding support among some *Federal MPs*, including *Fábio Feldmann*, *Aécio Neves* and *Mário Maia*, they were not able to stop the project that was voted favourably in the first round in June **1988**, just a couple of months after the *Ecological Defence Zoning* for FDN had been signed.

A second attempt to stop the reincorporation happened through amendments voted in a second round on 31st August **1988**, however it was also not successful. Arguments from those defending the continuance of the TFFN were based mostly in environmental and social grounds and the greater financial capacity of the Federal level to secure the necessary annual budgets for the archipelago. Those defending the reincorporation argued that the archipelago had just been borrowed by the *Federal Government* and now should be returned to the *State of Pernambuco* that did have the financial capacity to take care of it, this way, reducing the costs of the *Federal Government* with FDN. Overall, there was a feeling that all *Federal Territories* should cease to exist, considering their administrative arrangements were highly centralised and not democratic enough with governors being appointed by the president, also bringing excessive costs to the *Federal Government*. In the case of FDN, quite a few *MPs* expressed their discontent with then current per capita budgets spent by the *Federal Government* with TFFN in comparison to other units of the *Federation*.

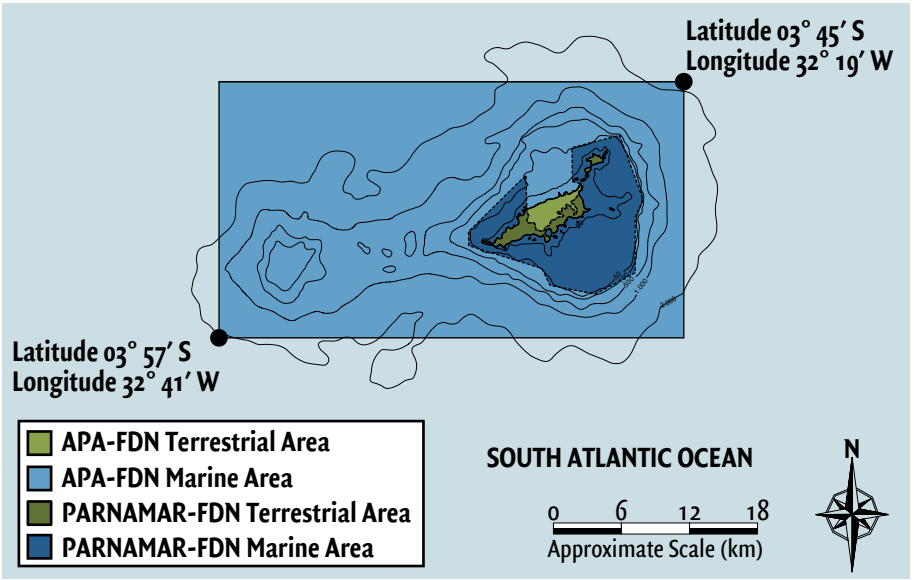
Two weeks later, on 14th September **1988**, *Brazilian President José Sarney* proclaims the *National Marine Park of Fernando de Noronha – PARNAMAR-FDN* (GPR, 1988a). Despite previous pressures to establish a *National Marine Park* on the island, it was only when political justification arose that it became a reality. With the proclamation, the *Federal Government* retained control over the land - 16.91 sq km and marine areas[161] - 95.79 sq km comprised in PARNAMAR-FDN - 112.7 sq km while also creating a more solid layer of formal protection within the area of PARNAMAR-FDN, and later on in its

[161] Brazilian Marine Parks often comprise portions of land as well as water, the justification being that coastal habitats portray a web of relationships that go over the boundaries established by the sea/land limits – seabirds representing a classical example of species that interact with both land and marine environments.

surrounding areas by means of buffer zones required by the environmental reform of **2000** (Brasil, 2000). *Figure 100* and *Figure 101* portray how the boundaries of PARNAMAR-FDN were defined so as to incorporate most of the APTs and ACSs and great part of the ARTs, practically leaving out the entirety of the AUOs.

In terms of PARNAMAR-FDN marine areas, the boundaries roughly follow the contour of the 50-meter isobath, resulting in a polygon of more than 10 vertices and leaving out the marine areas adjacent to coastal ACS areas in the north middle part of the main island. As for APA-FDN, despite encompassing most of the area comprised within the 2,000-meter isobath, it is likely to have been designed in the shape of a rectangle so as to facilitate identification of the area by navigators using only two pairs of latitude and longitude. *Figure 81* presents these two layers of federal level *Protected Areas* proclaimed in FDN: the *Environmental Protection Area* (APA-FDN) and the *National Marine Park* (PARNAMAR-FDN). Having been declared earlier – in **1986**, the APA used to comprise the whole area inside the light blue box. However, being PARNAMAR a more restrictive type of protected area (IUCN category II), the areas in dark blue and dark green were subtracted from APA-FDN (IUCN category V), once PARNAMAR-FDN was declared in **1988**. Since then, the whole territory and surrounding waters of FDN was divided between APA-FDN (light green and light blue) and PARNAMAR-FDN (dark green and dark blue).

Figure 81 | FDN Protected Areas - Federal Level



Source | Data compiled from Tetraplan (2004, p. 4) and (Brasil, 2001a)

On **29th September 1988**, on the verge of extinction of TFFN, *Brazilian President José Sarney* signed two decrees: the first (GPR, 1988c) transferred the airstrip, airport and associated infrastructure including the attached

residential village to the *Ministry of AirForce*; and the second (GPR, 1988d) transferred the administration of many of the buildings in the *Boldró Village* to the *Brazilian Institute for Forestry Development – IBDF*, including *Hotel Esmeralda* (Borges Lins e Silva, 2007, p. 254). From that moment onwards, despite still being run by *Empresa Noronhense de Desenvolvimento* and owned by the *Federal Government*, *Hotel Esmeralda* became the responsibility of *IBDF*. At the time *PARNAMAR-FDN* was created, *IBDF* was responsible for the management of *National Parks* while the *Special Secretariat for the Environment – SEMA* was the one responsible for managing *APAs*. This way, *IBDF* was the one responsible for *PARNAMAR-FDN* and *SEMA* for *APA-FDN*. Not having any ground staff on the island, *SEMA* practically left *APA-FDN* on its own.

On **5th October 1988**, the new *Brazilian Constitution* is promulgated and *FDN* is officially reincorporated to the *State of Pernambuco* at the same time *TFFN* is extinct (Brasil, 2012). However, despite the reincorporation, according to *Article 20* of the that same *Constitution* (Brasil, 2012), because *FDN* is an oceanic island that is fully comprised within 2 Federal *PAs* (being also a strategic defence site housing a *Brazilian Air Force* base, while not being the headquarters of a municipality), all its lands are the domain of the *Federation* and are the responsibility of the *Federal Real State Secretariat – SPU*[162] of the *Ministry of Planning, Budget and Management – MPOG*[163]. This resulted in a unique land tenure system through which the *State of Pernambuco* became the administrator of the *FDN* areas that are not part of *PARNAMAR-FDN* on behalf of the *Federal Government*. Therefore, despite being part of the political and administrative boundaries of the *State of Pernambuco*, *FDN* remained a property of the *Federation*, the *State of Pernambuco – PE* becoming the manager of land use and occupation within *APA-FDN*, subject to respecting existing environmental legislation related to *APA-FDN* and respective current *Zoning* and *Management Plan*. Despite *SPU* being the designated responsible federal government department to supervise the management of federal real state, until **2002** it was very distant from *FDN* affairs. As for *IBAMA*, the statutory federal body responsible for the management of PAs from **1989** to **2007**, following *SEMA*'s position, it practically left aside *APA-FDN* affairs and using former *IBDF*'s structure on *FDN*, it concentrated its efforts mostly on *PARNAMAR-FDN* until **2002** (Gabeira, 2002, p. 28-9).

As a result of *TFFN*'s extinction, *TFFN*'s *Community Council* was dissolved and a transitional state organism[164] is created to administer the archipelago until the necessary legal provisions defining the structure, administrative organisation and legal nature of the *FDN* territory could be created (GEP, 1988). This led the local population to form, on **12th December 1988**, an independent representative organisation entitled *People's Assembly of Noronha – APN*[165], with the objective of "securing the free exercise of citizenship by

[162] *Secretaria do Patrimônio da União.*
[163] *Ministério do Planejamento, Orçamento e Gestão.*
[164] *Comissão Executiva do Arquipélago de Fernando de Noronha.*
[165] *Assembléia Popular Noronhense.*

FDN residents, representing them to Brazilian official authorities, fighting for social welfare and the protection of the environment" (APN, 1989). A great number of public service jobs left the island along with the *Government of TFFN*. While some federal public servants were transferred to the *Brazilian Institute for the Environment and the Natural Renewable Resources – IBAMA* and other Federal organisations that remained on the island and a few were absorbed by *ADEFN*, many were left to look for new occupations in *FDN*. Tourism seemed like a promising investment for many of the locals. By the **end of 1988**, eight extra accommodation businesses had been opened – before that, there were only 2, with a total of 90 beds, 80 at *Hotel Esmeralda* and 10 at *Pousada Dona Pituca* (Rezende de Souza, 2007, p. 53).

The need to consolidate its political power over *FDN* led the *Governor of the State of Pernambuco* to issue a decree on **7th April 1989** (Pernambuco, 1989b) declaring the whole archipelago a *State Environmental Protected Area*, claiming that, with the *Reincorporation of the Archipelago to the State of Pernambuco* on the **5th of October 1988**, the *National Marine Park* would have ceased to exist considering it was no longer under the jurisdiction of the *Federation*. However, this decree ended meaningless, considering that state legislation could not override federal legislation. Furthering the process of developing a regulatory framework to allow administration of the island, *Article 16* of the new *Constitution of the State of Pernambuco* promulgated on the **5th October 1989**, formalised the status of *State District* to *FDN* and delineated its governance structure. Despite *Recife Local Councillor Liberato Júnior*'s plan to have *FDN* incorporated to the *City of Recife* as its second district, *FDN* was kept as a *State District of Pernambuco – DEFN*[166], only of its kind within the Brazilian government structure. The governance system implemented with the reincorporation still remains, with *FDN* being managed by a statutory authority[167], the *Fernando de Noronha State District Administration – ADEFN*[168], currently reporting directly to the *Secretariat of Science and Technology – SCT*[169] of the *State Government of Pernambuco – GEP*[170], with the *State Governor* appointing and nominating the *General Manager – AG*[171] for the island, decision which must be approved by the *State Assembly*[172] (Pernambuco, 1995). The governance structure included the institution of a *District Council* holding advisory and auditing roles formed by 7 members elected by resident citizens of *FDN*, however, without any decision-making powers. It also provided that FDN would be transformed into a municipality, once it reached the minimum requirements set forth by complementary state legislation (Pernambuco, 1989a), which has not happened to date.

[166] *Distrito Estadual de Fernando de Noronha*.
[167] *Autarquia Estadual*.
[168] *Administração do Distrito Estadual de Fernando de Noronha*.
[169] *Secretaria de Ciência e Tecnologia*.
[170] *Governo do Estado de Pernambuco*.
[171] *Administrador Geral*.
[172] *Assembléia Legislativa do Estado de Pernambuco*.

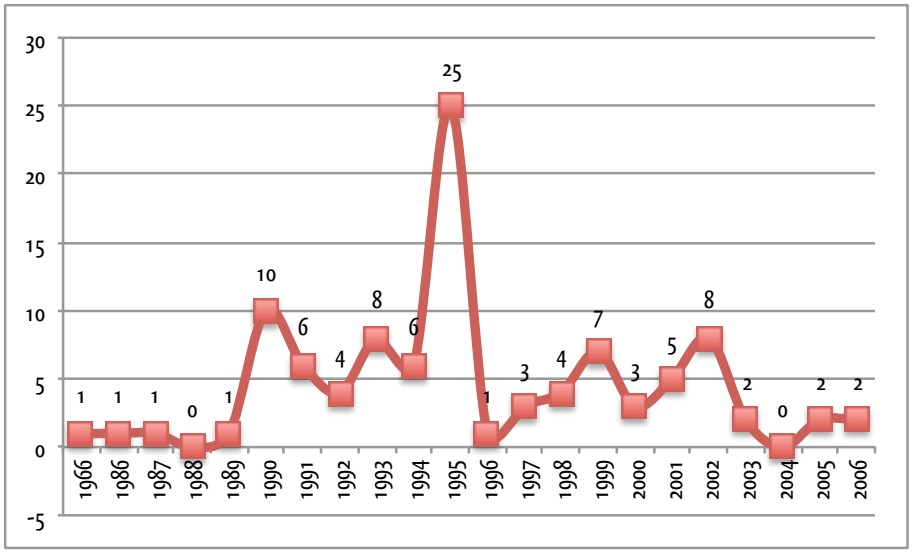
Following that, on **29th December 1989**, the *State Taxation Law* for DEFN came into force, instituting among others, the *Environmental Preservation Tax* – TPA[173] (per person per day) and the *Mooring Tax* – TA[174] (per size of boat per day), both applied to non-residents visiting the island for tourism purposes. Also in **1989**, a consultation commission is formed to elaborate a *Strategic Plan for the Archipelago of FDN* and the first carrying capacity study is developed. Considering the number of tourist beds, water management issues and the *United Nations World Tourism Organisation* – UNWTO's recommended ratio of 15 to 20 tourists per day per square km for volcanic oceanic islands (Arruda de Carvalho, 1999), the plan set a limit of 250 tourists per day for FDN (CONAMA, 1990).

However, by **1990**, there were 40 businesses offering 470 beds (Pagano, 2000, p. 56-8) with tourist numbers reaching 400 tourists per day "bringing serious ecological, economic and social *consequences*" and leading the *National Environment Council - CONAMA* (1990) to urge IBAMA and GEP to work in cooperation for the appropriate zoning of FDN to secure economic development, social welfare and environmental preservation. In October **1990**, *National Council for Protected Areas* approves the *Management Plan for PARNAMAR-FDN* containing the zoning[175] for that PA, recommending that tourism impact is closely monitored so that carrying capacity thresholds could be established (IBAMA & FUNATURA, 1990). In **1991,** tourist flows to FDN impacting PARNAMAR-FDN led IBAMA to issue an administrative ruling establishing specific carrying capacity limits to some of the tourist attractions within its boundaries, including *Praia do Leão* and *Praia do Atalaia* and the observation decks of *Baía dos Golfinhos* and *Praia do Leão* (IBAMA, 1991).

In that same year**,** in light of the growing trend of conversion of homes into bed and breakfast accommodation in FDN (see *Figure 82*), the *Coordination of Administration for the Archipelago* (now ADEFN) issued three administrative rulings[176]: to establish a *System of Control of Accommodation Provision*; to prohibit the establishment of new accommodation businesses and the increase of the number of beds in existing businesses; and to establish a *System of Home Bed and Breakfast Accommodation* – SIHD[177] in FDN with the intent to regulate and offer voluntary classification of accommodation businesses on the island.

[173] *Taxa de Preservação Ambiental.*
[174] *Taxa de Ancoragem.*
[175] *Figure 102* illustrates the different zoning categories applied to PARNAMAR-FDN in contrast to those from the *Zoning for the Ecological Defense of TFFN* (*Figure 101*).
[176] Respectively, *Portarias GOPE/DEFN 098/91* and *099/91*, *Portaria GOPE/DEFN 100/91*, and *Portarias GOPE/DEFN 022/1991 and 121/91.*
[177] *Sistema de Hospedagem Domiciliar.*

Figure 82 | New Accommodation Business per Year in FDN



Source | ICMBio and e labore (2008)

Table 19| Accommodation Categories and Classification for FDN

Lodge Category	Classification				Lodges per Category	Rooms	Beds
	1 Dolphin	2 Dolphins	3 Dolphins	Not Classified			
B&Bs	56	8	5	38	107	600	1556
Hotels	-	-	-	1	1	11	24
Others	-	-	-	2	2	5	23
Totals	**56**	**8**	**5**	**41**	**110**	**616**	**1603**

Source | ICMBio and e labore (2008)

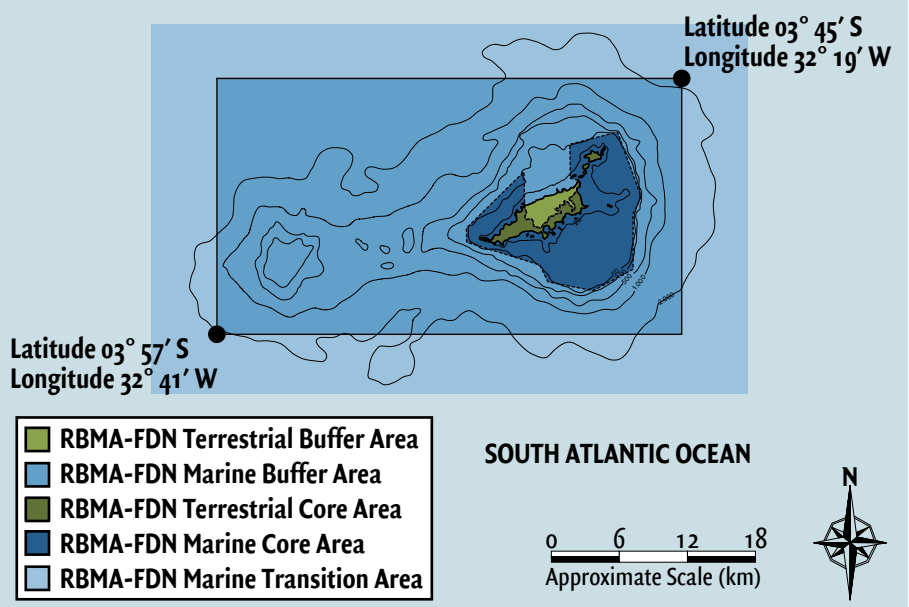
Three levels of categories were defined for classification, based on the identification and registration of the 33 accommodation providers operating in December **1989** and the development of a *Classification Matrix*[178] (Pagano, 2000, p. 52). The *Classification Matrix* is first reviewed in **1999** (de Souza Melo, 2011, p. 36) when a requirement for the owners to guarantee their families had proper accommodation before hosting tourists was implemented (JC Online, 2001). Still in operation, it received its second review in **2005** (ADEFN, 2005b) and its third in **2012** (ADEFN, 2012). *Table 19* portrays the overall classification and distribution of accommodation for FDN in **2007**. Despite the official classification scheme, some tour operators have their own classification typology[179] as a selling tool.

In **1993**, FDN was also included in the *Atlantic Forest Biosphere Reserve* – RBMA through *Phase 4* of its implementation program (Corrêa, 1995, p. 11). *Figure 83* portrays the way the RBMA incorporated FDN. Working with the concept of a mosaic of PAs, the RBMA made use of the existing PARNAMAR-FDN and APA-FDN to respectively define its core and buffer areas. In addition, it

[178] *Matriz de Classificação de Hospedarias Domiciliares.*
[179] See *Luck Noronha*: http://www.lucknoronha.com.br/site/pousadas.php

defines a transition area surrounding the APA (buffer area). A second attempt by GPE to undertake control of the whole territory of FDN was made through the enacting of the *District Constitution Law*[180] on 28th December **1995,** declaring the whole territory of FDN as a *State Marine Park* (Pernambuco, 1995, título VIII, artigo 97). The proclamation ended meaningless since it could not overrule upper level legislation. Tourist flows to FDN continued to grow, and by **1995**, there were 71 businesses offering 700 beds (Pagano, 2000, p. 56-8). In the same year, ADEFN issued an administrative ruling[181] raising the official tourism limit to 420 tourists per day (ADM&TEC, 2000, p. 10); and the group of owners of *Bed and Breakfast Providers* - B&Bs created their representative association: *Fernando de Noronha Bed and Breakfast Providers Association* – AHDFN[182] (Ferreira da Costa Lima, 2002, p. 171).

Figure 83| FDN Protected Areas - Biosphere Reserve



Source | Data compiled from Tetraplan (2004, p. 17) and (Brasil, 2001a)

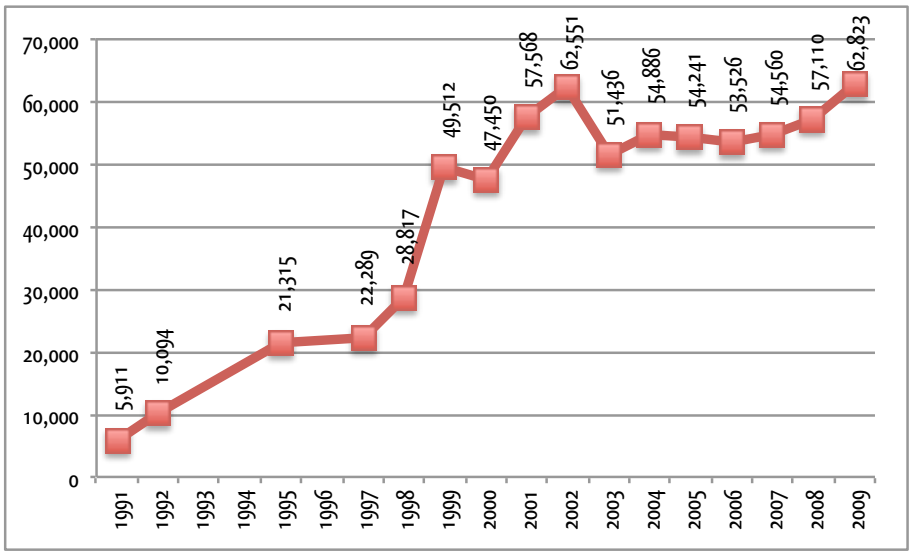
Biased Cooperation and The Rise of Tourism

During the period of January **1999** to December **2002**, FDN lived a period of greater cooperation between the Federal and the State levels, with the Vice-President of Brazil (originally from PE) and the State Governor of PE belonging to the same political alliance. The second half of the **1990s** was also marked by greater attention to tourism as an instrument of social and economic development, being greatly pushed by joint federal-state government infrastructure investment programs such as the *Northeast Region Tourism Development Program* – PRODETUR-NE launched in **1994**.

[180] *Lei Orgânica.*
[181] *Portaria AG/DEFN No. 025/1995.*
[182] *Associação das Hospedarias Domiciliares de Fernando de Noronha.*

At that time, Federal level interference in the area of APA-FDN was practically inexistent and the manager of PARNAMAR-FDN developed strong ties with ADEFN. During this period, tourism increased considerably, stepping from 28,817 tourists in **1998** to 49,512 in **1999** and to 62,551 in **2002** (see *Figure 84*). In **2000**, prior to the conclusion of the *Management Plan* for the archipelago, ADEFN issued a normative instruction[183] to discipline tourist flows to FDN (ADM&TEC, 2000). It adjusted the limit of simultaneous tourists per day, raising it to 450, to be controlled through the monthly average daily limit of 130 tourists entering the archipelago, observing the average length of stay of 3.4 days per tourist in **1999**. It also allowed ADEFN to authorize the operation of extra flights in peak season (December to March, July and public holidays) respecting a limit of increment of 50% on top 450 for these periods (ADEFN, 2000).

Figure 84 | Yearly Tourist Flows to FDN

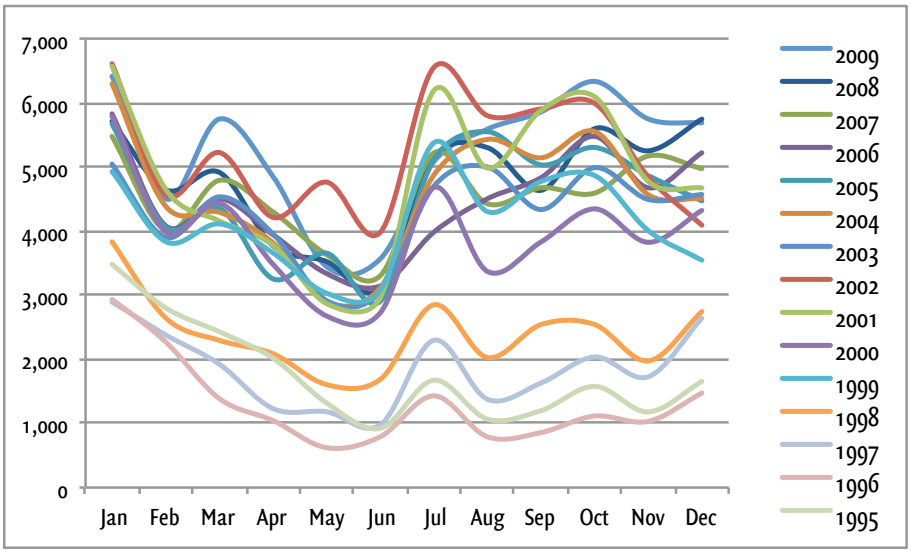


Source | ADEFN (2005a, 2009, 2010)

In **2007**, the monthly average daily limit of tourists entering the archipelago by plane was raised to 246 for the same average length of stay of 3.4 days (ADEFN, 2007b), resulting in the limit of 836 simultaneous tourist per day. *Figure 85* portrays the variation of tourist flows entering FDN per month from **1995** to **2009**.

[183] *Instrução Normativa No. 001/2000.*

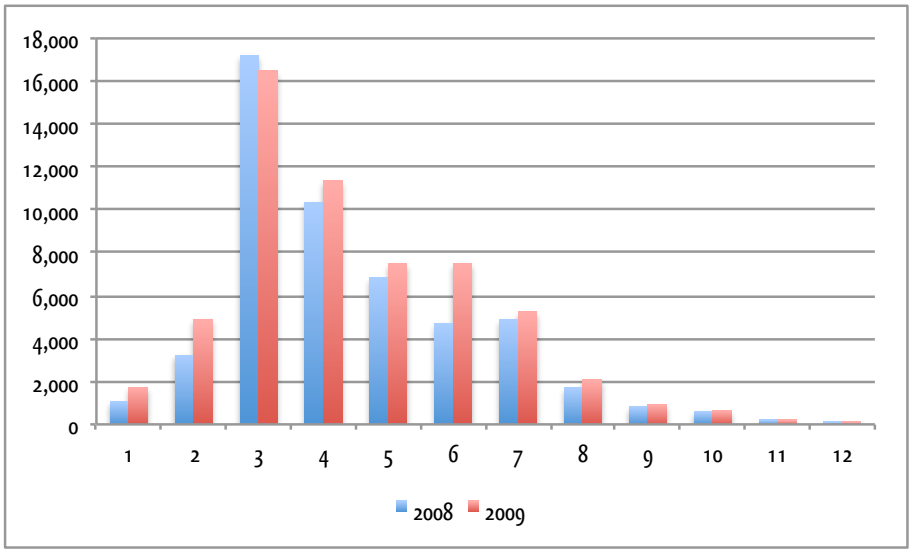
Figure 85 | Average Monthly Tourist Flows to FDN per Year



Source | ADEFN (2005a, 2009, 2010)

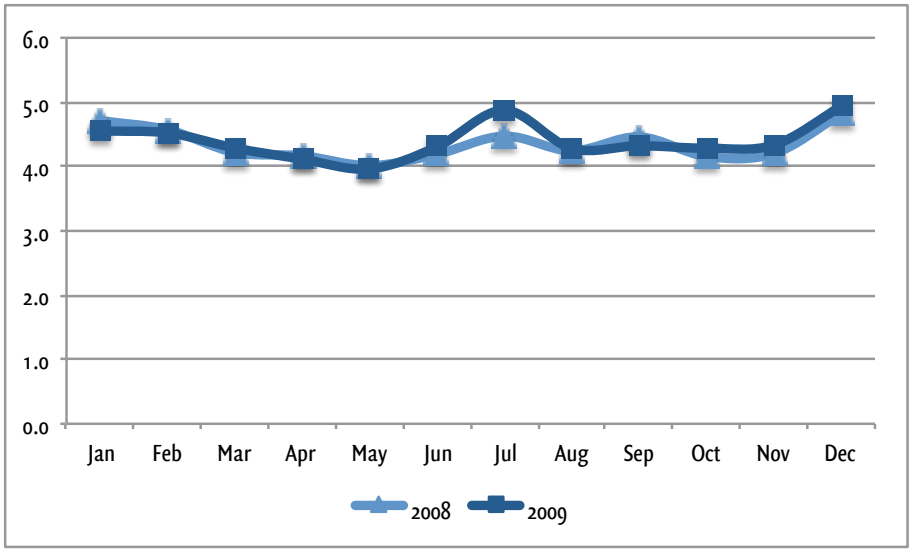
In **2008**, most tourists were spending 3 days in FDN (see *Figure 86*) and the yearly average length of stay reached 4.2 days per tourist, with slight variations during the year and peaks during school holidays, mainly in July, December and January (see *Figure 87*). *Figure 88* contrasts the *Tourism Carrying Capacity* – TCC for FDN redefined in **2007** and its 50% addition to peak times with the yearly and monthly average number of tourists in FDN for **2008** and **2009**. It shows that only in the months of January and July **2009** the baseline TCC has been overshot, with numbers still within the 50% allowed addition for peak times.

Figure 86 | Yearly Number of Tourists per Length of Stay for FDN



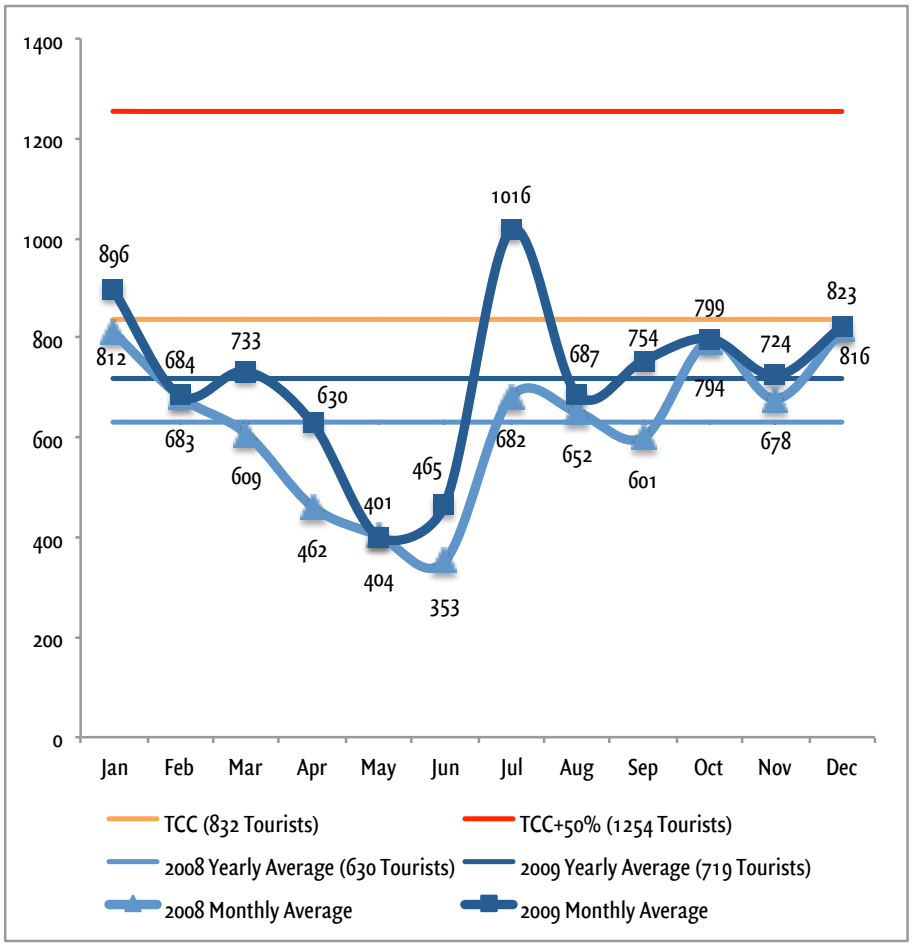
Source | Data Compiled from ADEFN (2009, 2010)

Figure 87 | Monthly Average Tourist Length of Stay for FDN



Source | Data Compiled from ADEFN (2009, 2010)

Figure 88 | Yearly and Monthly Average Number of Tourists per Day Vs. TCC and TCC +50% for FDN



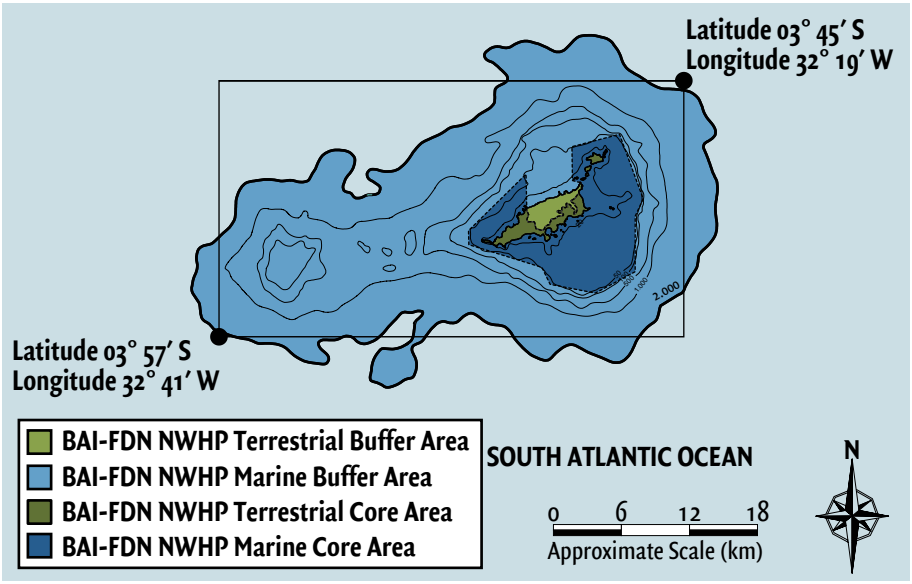
Source | Data Compiled from ADEFN (2009, 2010)

The first phase of the *Management Plan* was related to the study of FDN's carrying capacity and it was concluded in July 2000. It pointed that at the time, the most limiting factor was sewage treatment, capable to serve up to 1,433 people. Considering that at the time, the archipelago was receiving up to 800 tourists during peak season, on top of a permanent population of about 2,100 people, FDN's carrying capacity was being exceeded by almost 100% during peak flows of tourists. Yet, according to the study, FDN presented a future potential carrying capacity of around 6,000 people per day (ADM&TEC, 2000).

Seeking to bring international recognition to FDN as a tourist destination, a partnership between Federal and State levels submits to the *United Nations Educational, Scientific and Cultural Organisation – UNESCO* a nomination of FDN to be part of the *World Heritage List* in February **2001** (Brasil, 2001b). Following the positive recommendation of *IUCN* in its *Technical Evaluation Report* (IUCN, 2001), in December **2001**, the *World Heritage Committee – WH Committee* decides to inscribe FDN (along with *Rocas Atoll – ADR*[184]) on the *World Heritage List* as part of the *Brazilian Atlantic Islands Natural World Heritage Serial Property – BAI NWHSP*[185] (UNESCO, 2001). As a *Serial Property*, its total area (422.7 sq km) is not contiguous – it comprises two separate core areas defined as the areas of *PARNAMAR-FDN* (112.7 sq km) and *Rocas Atol Biological Reserve – REBIO-ADR*[186] (320 sq km) PAs and two separate buffer areas following the contour of the 2,000 meter isobaths surrounding the FDN and ADR, totalling 1407.13 sq km. *Figure 89* illustrates the *FDN* portion of the *Brazilian Atlantic Islands Serial Natural World Heritage Property – BAI-FDN NWHP*[187]. It portrays that the marine buffer area illustrated in medium blue partly differs to the *APA* marine area portrayed as the transparent black box. This design is likely to have been chosen for its coverage of specific species and ecosystem processes operating in depths down to 2,000 metres. However, by not making use of existing *PA* boundaries, it makes compliance, management and enforcement more complicated as portions of the inscribed property's buffer area are not contained within any proclaimed *PA*.

[184] *Atol das Rocas.*
[185] *Sítio Serial do Patrimônio Mundial Natural da Humanidade das Ilhas Atlânticas Brasileiras.*
[186] *Reserva Biológica de Atol das Rocas.*
[187] *Porção de Fernando de Noronha do Sítio do Patrimônio Mundial Natural da Humanidade das Ilhas Atlânticas Brasileiras.*

Figure 89 | FDN Protected Areas - Natural World Heritage



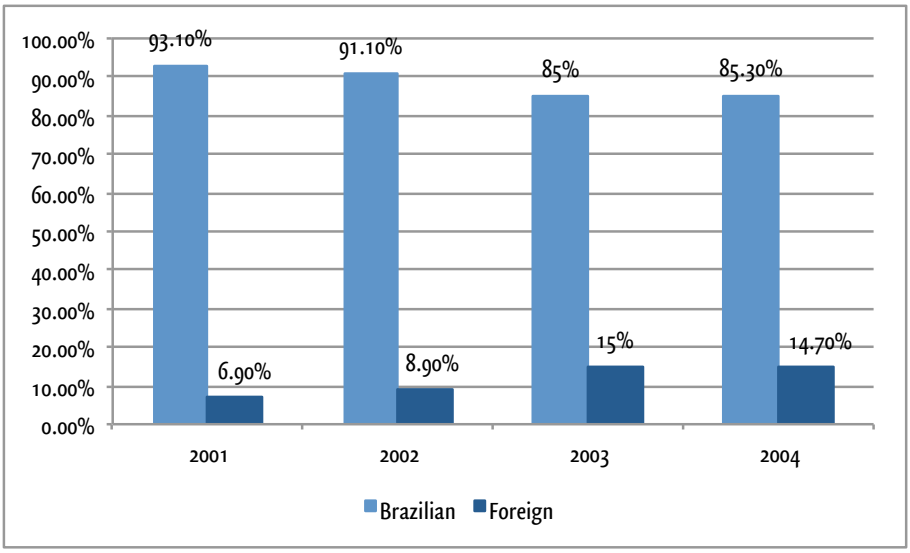
Source | Data compiled from Tetraplan (2004, p. 4) and (Brasil, 2001a)

A survey with tourists departing the island from 2001 to 2004 shows that the ratio of international tourists visiting *FDN* grew more than 100% over the period following its listing as *World Heritage* (from 6.9% in 2001 to 14.7% in 2004 as portrayed in *Figure 90*. Despite there being no concurrent research linking *WHL* and the increment of international tourists for this period, it is possible that listing generated greater international media exposure of *FDN* during that period[188]. Nevertheless, regardless of the role of *WHL* in this increment, the tourism development trend emergent during that period seems to have also raised the interest of external investors in the

[188] Despite common belief that *WH Listing* contributes to the increase of tourist flows to destinations comprising/comprised by *WH* sites, the overall impact of this global conservation strategy on tourism is yet to be understood in its broad dimensions. Research conducted in *FDN* by *Widmer* (2007) illustrates that for the Brazilian case, most of the tourism infrastructure already existed prior to the inscription of the site in the *WH* list and that being inscribed on the list does not constitute the main reason why tourists visit the island. Her research also concludes that the impact of listing on tourism numbers is minimal, considering that despite most visitors' knowledge of the site's inscription as natural *WH* (86.19%), the *WH* brand was the main motivator for visitation for only 1.93% of that group. However, these numbers and their meaning have to be taken with caution as many of the impacts can be indirect ones. The same research points that 42.54% of visitors had the natural attributes of the island as the main motivation for their visit. Considering the high number of tourists that are aware of the fact *FDN* is inscribed as a Natural *WH* by *UNESCO*, a possible linkage between awareness of the inscription and awareness of the destination would have to be researched in order to verify indirect ways WH can draw tourists to destinations. Considering the established tourism carrying capacity for the island, the influence of *WH* on tourist flows should be considered not only from a quantitative but also from a qualitative perspective, as during peak seasons, the title might only be contributing to differences in the type of tourists and not their numbers (with different types of tourists bringing different types of impacts). From an operator's and/or tourism manager's perspective, *WH* listing can influence the perception of what the most attractive aspects of a destination are and should be marketed and/or protected.

archipelago. In a scenario where State management of the island experienced an alliance with the federal level, environmental and social impact management of tourism development became less of a concern at the local level administration. A that time, possession[189] of greater pieces of land were recognised by ADEFN to a few recently established residents (one of them a former manager of PARNAMAR-FDN) who were backed up by external investors, and authorisation for the construction of the first upper level accommodation providers in FDN were conceded as part of a strategy from ADEFN to develop a total of 5 luxury accommodation complexes on the archipelago (Gabeira, 2002).

Figure 90 | International Tourist Growth Post FDN WHL

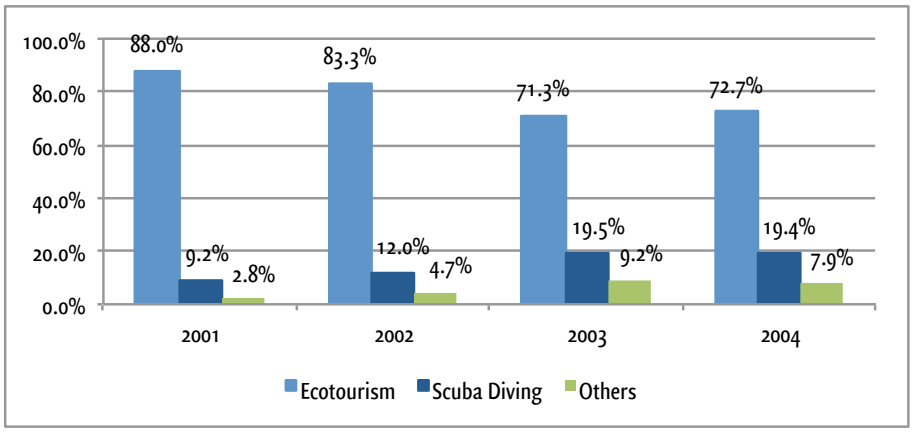


Source | Data compiled from ADEFN (2005a, p. 2)

The period between **2001** and **2004** also experienced a greater diversification in tourist motivation to visit FDN, with ecotourism maintaining its leadership and scuba diving increasing its share in more than 110% in 3 years, being the main motivation to almost 20% of all tourists in **2004** (see *Figure 91*). Staying in average almost 1 extra day on the island than ecotourists, the greater ration of scuba divers helped push the average length of stay from 4.32 days in 2001 to 5.75 in 2004 (see *Figure 92*). Spending up to 62% more than the average ecotourist in **2004** (see *Figure 93*), greater numbers of scuba divers also helped to increase the average spending per tourist per day on the island and may be associated with the development of more sophisticated lodging in FDN.

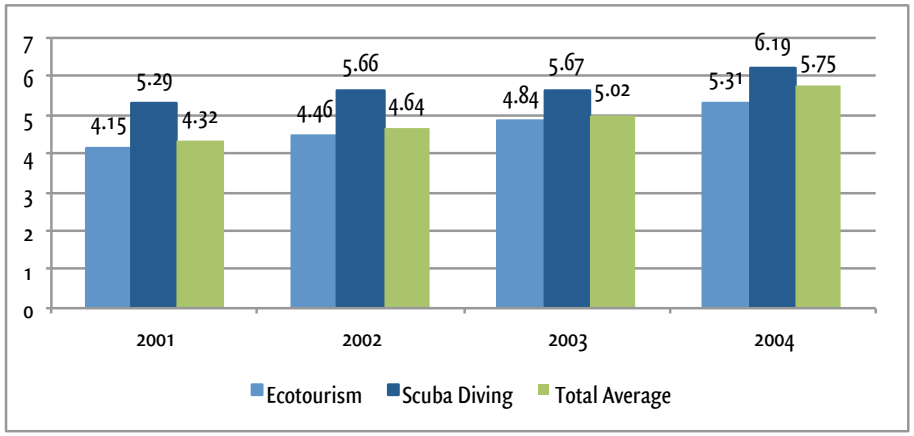
[189] Possession (and not ownership, as the whole of FDN is the property of the Federation) is usually recognized in FDN by means of *Permission of Use Terms – TPUs* (*Termos de Permissão de Uso*). These are issued by ADEFN as the manager of land use and occupation within the areas of APA-FDN under its responsibility.

Figure 91 | Tourist Motivation - FDN



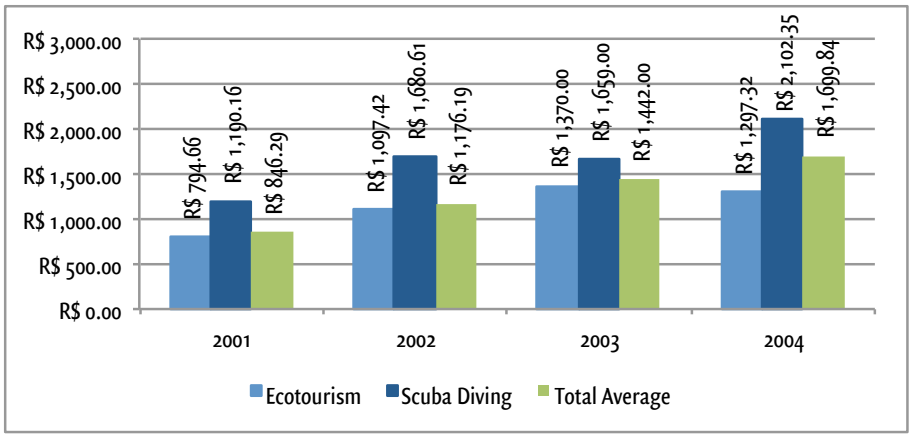
Source | Data compiled from ADEFN (2005a, p. 5)

Figure 92 | Average Length of Stay (Days) per Motivation - FDN



Source | Data compiled from (ADEFN, 2005a, p. 6)

Figure 93 | Average Expenditure per Motivation – FDN



Source | Data compiled from ADEFN (2005a, p. 6)

Local Empowerment and the Rise of a New Social-Environmental Agenda

Previously exclusive to long-term or generational residents, the possession of land and the exploration of accommodation services by newer residents/externals revolted locals who started a movement to stop the operation and construction of luxury accommodation structures. Within a scenario of favouritism and a structure lacking the locally democratic election of representatives holding decision making powers leading to social and environmental impacts, FDN locals visualised in the federal structure of environmental conservation, an opportunity to try to revert the process being carried out by GPE. Through APN they filed a request to a *Republic's Procurer – PR*[190] to intervene and financed by *Noronha Empreendimentos* (operator of *Hotel Esmeralda* and owned by most locals[191]) went to Brasília to expose the situation to *CONAMA*[192] (Gabeira, 2002, 2007), which approved a motion[193] (CONAMA, 2001b) to MMA, GPE, MPF and IBAMA recommending the development of a *Management Plan for* APA-FDN, the revision of PARNAMAR-FDN's *Management Plan*, the instauration of *Management Boards* for APA-FDN and PARNAMAR-FDN and requested that the development of APA-FDN's *Management Plan* and the revision of PARNAMAR-FDN's *Management Plan* were carried out in consultation with the PA's respective *Management Boards*. Later on, *CONAMA* also approved a *Support Motion*[194] (CONAMA, 2001a) to the PR's recommendations to all government bodies involved with FDN in regard to their conduct and observation of the Brazilian legislation applied to FDN. This resulted in the signature of a *Heads of Agreement – TAC*[195] in **2002** (Brasil, 2002b) between the SGP, ADEFN, the *Environmental Agency of Pernambuco – CPRH*[196], IBAMA and SPU, with MMA as intervener. It defined the roles for each of the organisations, established a new and more restrictive temporary zoning (see *Figure 102* in contrast to *Figure 103*) to contain uncontrolled human development on APA-FDN and pressed for the institution of advisory boards for APA-FDN and for PARNAMAR-FDN and the preparation of new management plans and zoning for both PAs, setting a timeframe for their completion (ibid).

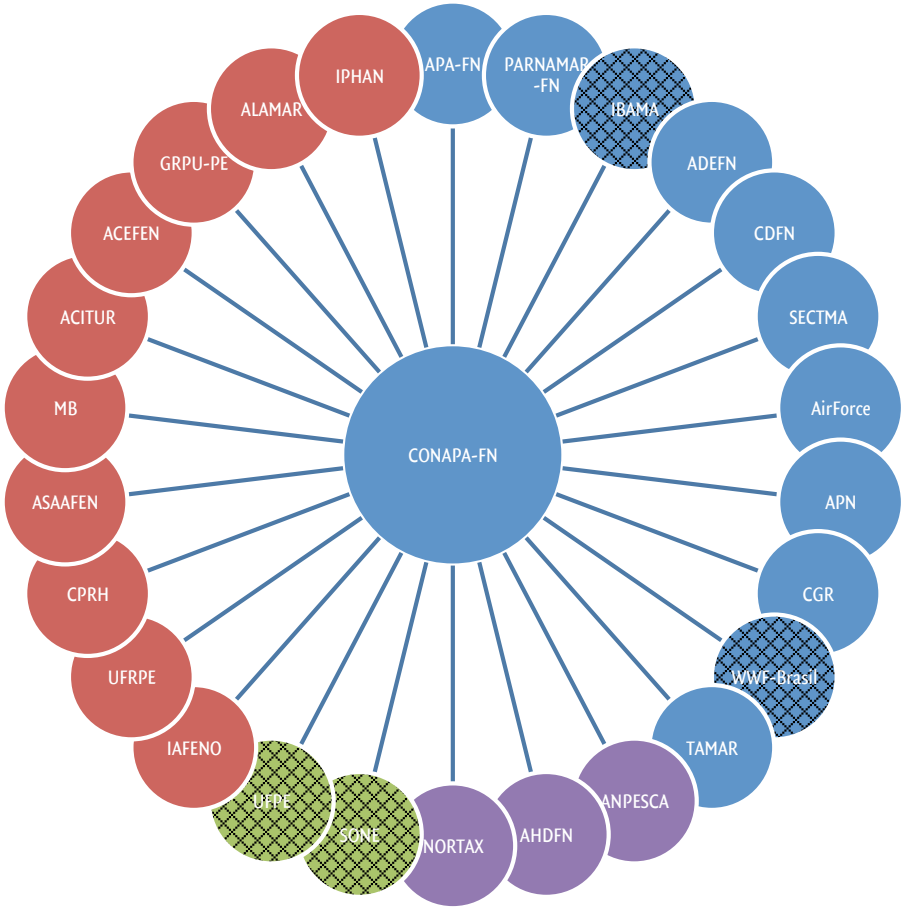
[190] *Procurador da República* – a legal law enforcer in the Brazilian judicial system that is part of the *Federal Public Ministry* and that is independent and free to file lawsuits against any cases believed to be in breach of the law. PFs are public defenders of the Brazilian Republic through the pursuit of the enforcement of Federal legislation.
[191] According to the transcript of the meeting in Brasília, IBAMA had been trying to reclaim the possession of Hotel Esmeralda for the previous 6 years from Noronha Empreendimentos and locals perceived this effort as a way to undermine ***local empowerment*** since *Noronha Empreendimentos* was a cooperative owned by most locals that financed social movements on the island (Gabeira, 2002). The property where Hotel Esmeralda operated was eventually returned to IBAMA and became part of the infrastructure for the management of APA-FDN and PARNAMAR-FDN, some of its apartments hosting the PAs managers and others hosting academics conducting research on the archipelago.
[192] *Conselho Nacional de Meio Ambiente.*
[193] *Moção.*
[194] *Moção de Suporte.*
[195] *Termo de Ajustamento de Conduta.*
[196] *Agência Estadual de Meio Ambiente.*

As a result of *TAC*, in **2002**, *SPU* formally transferred the management of land use and occupation within *FDN*'s *APA* to *ADEFN* by means of a contract[197] (Brasil, 2002a) between the Brazilian Federation[198] and the State of Pernambuco allowing use under special conditions[199]. Through this legal instrument, the state becomes responsible for authorizing the use and occupation of land and respective buildings throughout the land area comprised by the *APA* in the boundaries of *FDN*, despite them still remaining the property of the Federation. It also entitles the State to decide on whether to charge occupancy fees from authorised users/occupants as long as values do not exceed those the Federation would charge in similar conditions (4th paragraph, 6th clause). Since the State of Pernambuco delegates the administration of *FDN* to a statutory authority – *ADEFN*, a management contract is signed between the State of Pernambuco and the State District of *FDN* in **2004**. *Figure 104* illustrates the current management division of *FDN* territory per responsible organisation.

Following the requirements set forth by *SNUC* **in 2000** (Brasil, 2000), in December **2001** *IBAMA* had already created the *PARNAMAR-FDN Advisory Board – CONPARNAMAR-FDN*[200] (IBAMA, 2002a) and the *APA-FDN Management Board – CONAPA-FDN*[201] (IBAMA, 2002b). However, they only started operating in **2003** (CONAPA-FN, 2003), after *TAC* was signed (MPF, 2002). The current composition of *CONPARNAMAR-FDN* and *CONAPA-FDN* is presented in *Figure 94* and *Figure 95*, respectively.

[197] *Contrato de Cessão de Uso em Condições Especiais.*
[198] *União.*
[199] Excluding the areas and buildings in the *APA-FDN* previously transferred to *IBAMA* in **1988** and to the *AirForce* in **1988**, **2001** and **2002**.
[200] Conselho Consultivo do Parque Nacional Marinho de Fernando de Noronha
[201] Conselho Deliberativo da Área de Proteção Ambiental de Fernando de Noronha, Atol das Rocas e São Pedro e São Paulo

Figure 94 | CONAPA-FDN Composition

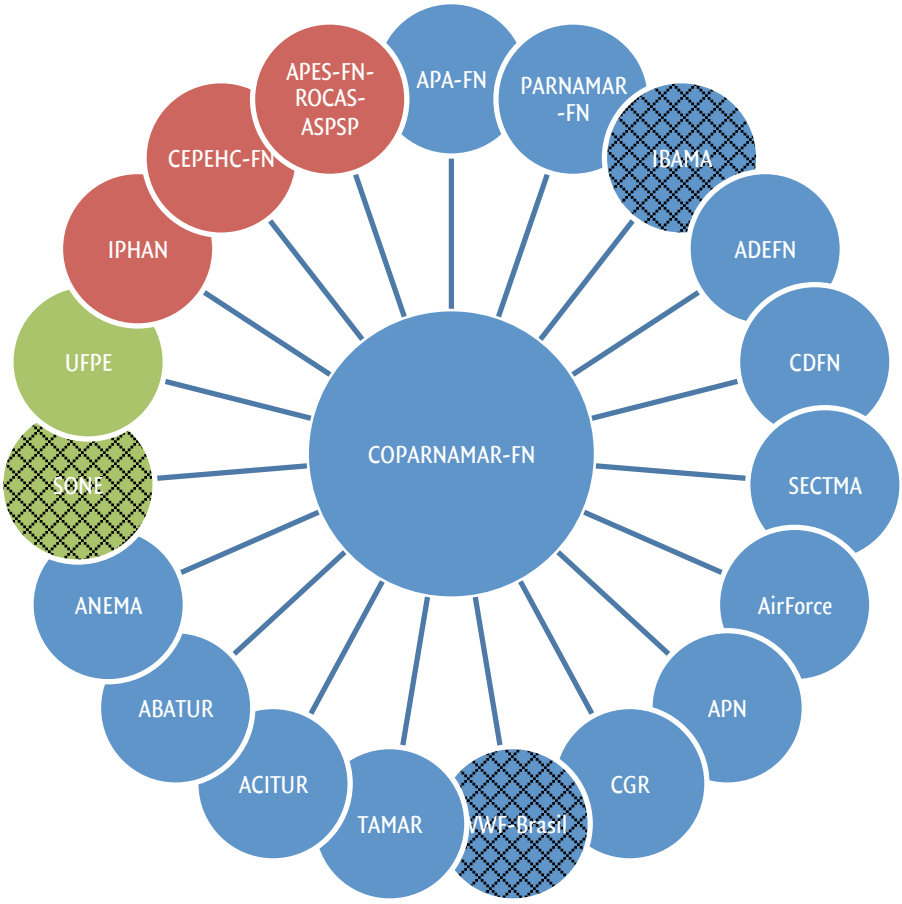


Source | IBAMA (2002b, 2003b) & CONAPA-FDN (2004a, 2004b, 2004c, 2005b)

Members in blue and green were respectively included in the administrative rulings creating and altering the composition of the two boards. Members in purple referred to the 3 *Ecotourism Sector Representatives* that were chosen by the local community for each board. Those in red were included after the boards were already operating, by their own decision. Those with the black grid have ceased to be members of the boards by their own decision (the case of IBAMA) or by decision of the boards (the case of the *Northeast Ecology Society* – SONE[202] and the *Worldwide Fund for Nature – Brazil* – WWF-Brasil). PARNAMAR-FDN ceased to be a member of CONAPA-FDN along with SONE and WWF-Brazil in **2003** by decision of the board, but was readmitted in **2004**. In **2005**, IBAMA issued an administrative ruling (MMA, 2005a) changing the status of CONAPA-FDN from a management board to an advisory board. As well as having the approval of the majority of current members, the inclusion of new members followed a logic of keeping a balance between governmental and non-governmental organisations in the boards[203].

[202] *Sociedade Nordestina de Ecologia.*
[203] Refer to the *List of Acronyms.*

Figure 95 | CONPARNAMAR-FDN Composition



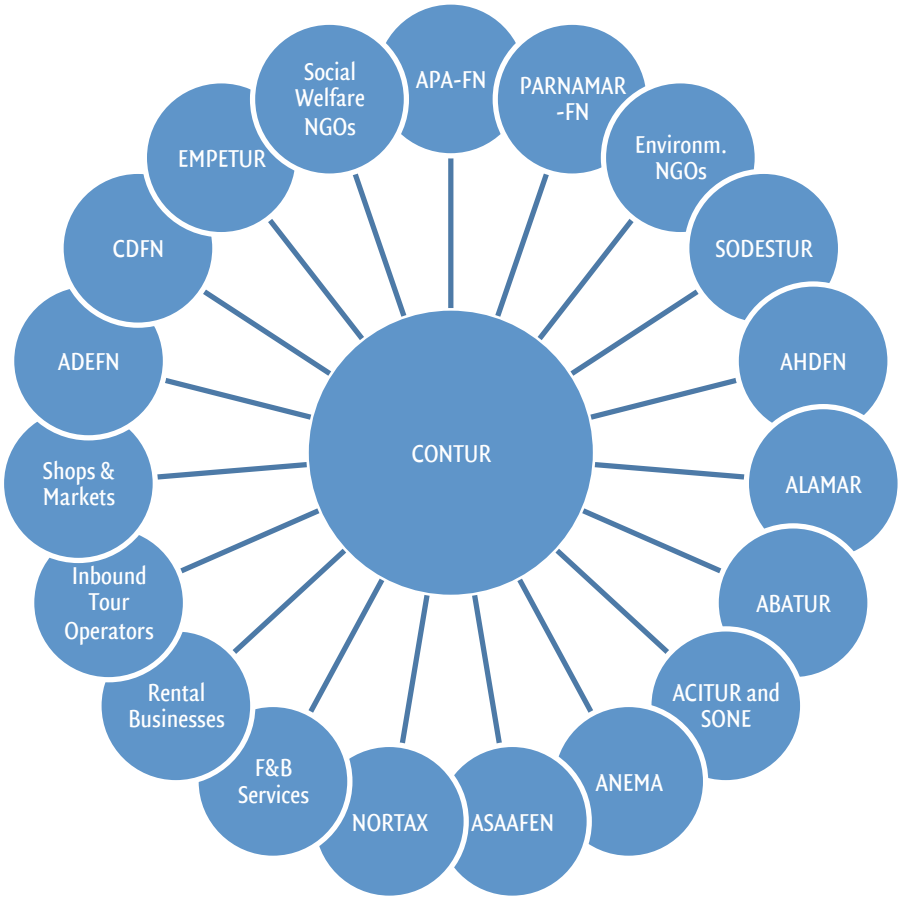
Source | IBAMA (2002a, 2003a) & CONPARNAMAR-FDN (2008a, 2008b, 2008c)

Following the governance model based on advisory boards and in light of the increasing number of specific tourism related local associations arising in FDN (e.g. AHDFN) and the urging need to involve them in policy making for tourism development, ADEFN instituted the *Fernando de Noronha Tourism Advisory Board – CONTUR*[204] in September **2006** (ADEFN, 2006). *Figure 96* portrays the organisations that are part of CONTUR according to its statute (ADEFN, 2007a). CONTUR provides advice on tourism planning, management, marketing and branding to ADEFN's *Department of Ecotourism and Environment*. As well as CONTUR, other sectoral advisory boards were created, including: the *Cities District Council*[205], the *Social Welfare District Council*[206], the *Education District Council*[207], the *Health District Council*[208] and the *Infants, Children and Teenager Protection Council of FDN*[209]. Most of these councils

[204] *Conselho Noronhense de Turismo.*
[205] *Conselho Distrital das Cidades.*
[206] *Conselho Distrital de Assistência Social.*
[207] *Conselho Distrital de Educação.*
[208] *Conselho Distrital de Saúde.*
[209] *Conselho Tutelar de Fernando de Noronha.*

were established following a national model of local conferences aiming to increase the democratisation of federal, state and local governance in Brazil (Costa, 2010).

Figure 96 | Tourism Advisory Board Composition



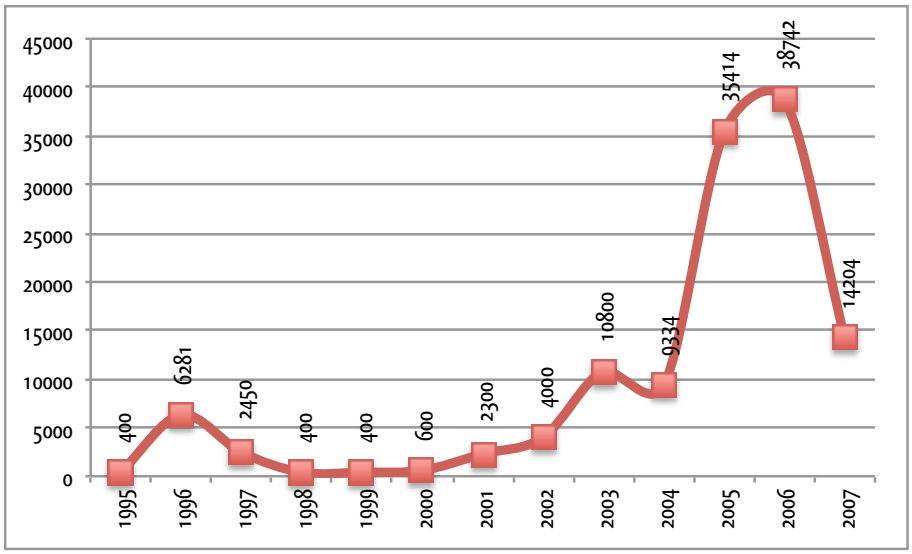
Source | Based on ADEFN (2007a) and CONTUR (2009)

As prescribed in the Constitutions of *CONAPA-FDN* and *CONPARNAMAR-FDN*, both advisory boards established small *Work Groups – WGs*[210] to discuss and produce reports on specific topics that could give substance to the plenary debates and decision-making. In October **2004**, in light of the growing tourist flows from line visits to *FDN*, *CONAPA-FDN* creates a *WG* to discuss the cruiseship operation proposal for 2004/2005 season (CONAPA-FN, 2004c). The growth trend in cruiseline tourist passengers experienced in *FDN* portrayed in *Figure 97* is likely to be a reflection of the growth trend experienced by the segment as a whole in the Brazilian *context*. Pushed by the process of deregulation of the sector started in **1996**, after an amendment to the *Brazilian Constitution* was approved (16th August **1995**), allowing international cruiselines to perform cabotage navigation in Brazilian waters, the cruiseline industry experienced a record growth of 58% in the **2005/2006**

[210] Grupos de Trabalho

season (Pereira Palladino, 2010, p. 15), explaining the figures for **2005** and **2006** for FDN.

Figure 97 | Growth Trend of Cruiseline Tourists to FDN



Following the instauration of CONAPA-FDN, the development of the *Management Plan* for APA-FDN started in **2003** and its final version was approved by IBAMA in **June 2005** (MMA, 2005b). It was financed through the UNDP Project BRA/00/009 for the *Conservation and Management of Brazilian Ecosystems and Management of the Federal System of Protected Areas*[211] funded by the Brazilian Government and executed by IBAMA (UNDP, 2012). The *Management Plan* resulted in a new and more restrictive zoning for APA-FDN that can be visualised in *Figure 102*. In October **2007**, the zoning approved for APA-FDN as part of its *Management Plan* receives an alteration, transforming the *Vacaria* sector from a *Conservation Zone* to an *Urban Zone*, to cater for increasing housing needs in FDN (MMA, 2007). The change can be visualised by comparison of the area within the yellow circle in *Figure 106* and *Figure 105*.

Supported by TAC and SNUC, CONAPA-FDN was able to force ADEFN and CPRH to submit all new proposals of cruiseline visitation to FDN to the evaluation of CONAPA-FDN so as to also be licensed by IBAMA/ICMBio. As a result, the first set of conditions were set forth by CONAPA-FDN/IBAMA for the extension of the **2004/2005** season, including restrictions on the cruiseship length of stay to one night each visit, specific carrying capacity limits to specific land tourist attractions and other requirements pushing for the integration of tour operation based on the use of local associations such as FDN Tour Boats Association - ABATUR[212], FDN Taxi Drivers Association - NORTAX[213] and FDN Tour

[211] Conservação e Manejo dos Ecossistemas Brasileiros e Gestão do Sistema Federal de Unidades de Conservação.
[212] *Associação dos Barqueiros de Turismo de Noronha.*
[213] *Associação Noronhense dos Taxistas.*

Conductors and Information Providers Association - ACITUR[214] (CONAPA-FN et al., 2005). In response to the sudden and concentrated growth experienced in 2005 and 2006, when single cruiseships were bringing more that 600 simultaneous tourists to *FDN* (instead of traditional 400) (CONAPA-FN, 2005a), new restrictions were put forward in **2007** by *CONAPA-FDN*, including the limit of 450 cruiseline tourists per visit and the limits of 300 simultaneous cruiseline tourists in marine tours and 360 in land tours (ICMBio-MMA, APA-FN, PARNAMAR-FN, CMA, & TAMAR, 2007). In 2008, the limit of cruiseline tourists per visit was lifted and the number of simultaneous tourists in land and marine tours was adjusted to 350 each, but the frequency of visitation was restricted to a maximum of 1 visit each 7 days, no visits to occur during peak times such as the periods of New Years Eve, Carnival and Easter and no navigation to occur in *APA-FDN* waters shallower than 100 metres and *PARNAMAR-FDN* waters between 6pm and 8am (ICMBio-MMA, APA-FN, PARNAMAR-FN, CMA, & TAMAR, 2008).

During the process of development of the *Management Plan*, *IBAMA* and *CONAPA-FDN* concluded that for the *Management Plan* to work, there was the need for an in-depth study of *FDN*'s current carrying capacity. This resulted in a new study being contracted by *IBAMA* in **2006**[215] (CONAPA-FN, 2006), that was concluded only in August **2008** and pointed that despite presenting a potential carrying capacity of 6,000 people, *FDN* only held the necessary structure to cater for 2,550 people, and was already hosting an estimate of 4,000 people per day, including residents, workers and tourists. According to the study, this overshooting could result in a prey-predator relationship between the host environment and *FDN*'s local community with overshooting costs being paid by the *natural* and *social capital* of *FDN* and in part by the *natural capital* of supplying regions (ICMBio & e labore, 2008, p. 280).

The study was presented to *CONAPA-FDN* only in June **2009**, when the need for a sustainability program for *FDN* was raised as the natural next step for the archipelago. Titled *Noronha +20*, the development of the program was envisioned to be participative by means of several workshops with the local community (CONAPA-FN, 2009) and was concluded in February **2011**. Eight major areas were defined for the program (ICMBio, SECTMA-PE, ADEFN, & ecooideia, 2011, p. 7-10):

1. Urban and Housing Issues
2. Infrastructure: water, sewage, waste and energy
3. Public use, tourism model and accommodation provision

[214] *Associação dos Condutores e Prestadores de Informação Turística de Fernando de Noronha.*
[215] Also financed by *BRA/00/009*.

4. Conservation and restoration of impacted land and marine environments; protection and management of terrestrial and marine fauna; environmental and sociocultural research

5. Maritime activities regulation; port and vessels; fishing

6. Agriculture and livestock

7. Quality of life and welfare; health; education; environmental education; culture; local crafts; young islanders social inclusion; professional education and training

For supervision and monitoring of the implementation of *Noronha +20*, the program proposed the establishment of a *Sustainability Observatory* comprising 5 local community members, a representative from an international body – *UNESCO*, a representative from the federal government – *MMA*, one from the state government – *SECTMA* and one from a local body – *CDFN* (ICMBio et al., 2011, p. 11).

Chapter Conclusion

This brief history of *FDN* points that, in general, *GEP* was mostly reactive to the process of controlling tourism development**.** It suffered the pressure to establish a governance structure, a local economy, social services and infrastructure that were all self-sufficient, hence the understanding that tourism development should be the main strategy for local development. However, by allowing tourism development to grow more intensively than before and without proper planning and implementation, *GEP* (through *ADEFN*) ended increasing the need for greater investments in infrastructure and social services.

Despite *FDN* being officially handed over from Federal to State level on 5th of October **1988**, the reincorporation of *FDN* by *PE* needs to be understood as a process that began before that date and that is still far from being concluded. Before a clear strategy for tourism development control and management could be implemented, it was necessary that the appropriate regulatory framework could be developed for *FDN* under the new status post Federal Constitution promulgation. Not only was it necessary for *PE* to develop broad pieces of legislation that could legitimate the way the island was administered within the State level structure, but, as importantly, the unique political arrangement between Federal and State levels had to be developed and formalised. The ubiquitous situation in which an area is part of a State without being its property called for initial confusion, blurred responsibilities, dispute for power and conflicting governance of the territory. Interestingly enough, it was through local community discontent that a third party got on-board, bringing up existing legislation and pressuring each party to adhere to the roles and duties prescribed in the

regulations they were bound to. As a *consequence*, the relationships among different stakeholders started being formalised, and local governance moved forward to more integrative planning and management. What can be seen, however, is that tourism development and as a *consequence*, human development, did not wait for the State and Federal levels to reach an agreement on how it should happen.

Greatly motivated by environmental concerns, but also by dispute for power, the implementation of different layers of protected areas in *FDN* has partly resulted in tourism containment but also in tourism growth. If on one hand, federal level protected areas have limited the way tourism can take place, on the other, it has increased the capacity of tourism to compete with other non-tourism sectors like agriculture, fishing and livestock. In regard to *WHL*, in the case of *FDN*, all layers of national and state protected areas were proclaimed prior to and regardless of its inscription as a *WHP* in **2001**. This resulted in a greater weight being given to *WHL* as an instrument of international recognition rather than of conservation.

References

Instrução Normativa No 01/2000: Disciplina o Fluxo de Turistas no Arquipélago de Fernando de Noronha (2000).

ADEFN. (2005a). Comparativo do Perfil do Visitante de Fernando de Noronha 2001-2004 (pp. 1-13). Fernando de Noronha: Administração do Distrito Estadual de Fernando de Noronha.

Decreto Distrital nº 025, de maio de 2005: Matriz de Classificação das Pousadas Domiciliares do Distrito Estadual de Fernando de Noronha (2005b).

Decreto Distrital nº 031, de 27 de setembro de 2006: Conselho Noronhense de Turismo - CONTUR (2006).

Decreto Distrital nº 037, de 25 de junho de 2007: Regimento Interno do Conselho Noronhense de Turismo - CONTUR (2007a).

Instrução Normativa DEFN No 002/2007: (2007b).

ADEFN. (2009). Controle Diário de Visitantes 2008. Fernando de Noronha: Administração do Distrito Estadual de Fernando de Noronha.

ADEFN. (2010). Controle Diário de Visitantes 2009. Fernando de Noronha: Administração do Distrito Estadual de Fernando de Noronha.

Decreto Distrital No 063/2012: Classificação das hospedarias domiciliares do Distrito Estadual de Fernando de Noronha (2012).

ADM&TEC. (2000). Plano de Gestão do Arquipélago de Fernando de Noronha, Ecoturismo e Desenvolvimento Sustentável – Fase 1 (Capacidade de Suporte): Relatório Final. Recife: Instituto de Administração e Tecnologia.

Amaral, Ricardo. (2002). *Cruzeiros Marítimos* (1st ed.). Barueri: Manole.

ANAC. (2006). Anuário do Transporte Aéreo: Dados Estatísticos: 2005 (pp. 1-103). Brasília: Agência Nacional de Aviação Civil.

ANAC. (2007). Anuário do Transporte Aéreo: Dados Estatísticos: 2006 (pp. 1-101). Brasília: Agência Nacional de Aviação Civil.

ANAC. (2008). Anuário do Transporte Aéreo: Dados Estatísticos: 2007 (pp. 1-110). Brasília: Agência Nacional de Aviação Civil.

ANAC. (2009). Anuário do Transporte Aéreo: Dados Estatísticos: 2008 (pp. 1-142). Brasília: Agência Nacional de Aviação Civil.

ANAC. (2010). Anuário do Transporte Aéreo: Dados Estatísticos: 2009 (2nd ed., pp. 1-84). Brasília: Agência Nacional de Aviação Civil.

ANAC. (2011). Anuário do Transporte Aéreo: Dados Estatísticos: 2010 (pp. 1-69). Brasília: Agência Nacional de Aviação Civil.

Regimento Interno da Assembléia Popular Noronhense (1989 Mar 14).

Arruda de Carvalho, Luis Fernando. (1999). *Impactos do turismo no arquipélago de Fernando de Noronha: um estudo no caminho do desenvolvimento sustentável.* (Bachelor of Tourism), Universidade de São Paulo, São Paulo.

Borges Lins e Silva, Marieta. (2007). *Fernando de Noronha: Cinco Séculos de História* Vol. 1. *Cadernos Noronhenses*

Decreto nº 92.755, de 5 de junho de 1986: APA de Fernando de Noronha, Rocas e São Pedro e São Paulo (1986).

Lei nº 9.985, de 18 de julho de 2000: Sistema Nacional de Unidades de Conservação - SNUC (2000).

Brasil (Cartographer). (2001a). Brazilian Atlantic Islands: Fernando de Noronha Natural World Heritage Area. Retrieved from http://whc.unesco.org/download.cfm?id_document=106873

Brasil. (2001b). Fernando de Noronha Archipelago / Rocas Atoll Tropical Insular Complex: Nomination for Inclusion as an Unesco World Heritage Natural Site *Ministry of the Environment* (pp. 1-351). Brasília: Ministry of the Environment.

Brasil. (2002a). *Contrato de Cessão de Uso em Condições Especiais*. Recife: Ministério do Planejamento, Orçamento e Gestão - Secretaria do Patrimônio da União - Gerência Regional do Patrimônio da União em Pernambuco.

Termo de Ajustamento de Conduta número 004/2002 de 06 de dezembro de 2002 (2002b).

Constituição da República Federativa do Brasil - 1988: Texto consolidado até a Emenda Constitucional nº 68 de 21 de dezembro de 2011, 1-58 (2012).

CONAMA (1990, Dec 06). [Resolução CONAMA No 016 de 06 de dezembro de 1990].

CONAMA. (2001a, Aug 30). Moção No 19 de 21 de agosto de 2001: Moção de Apoio ao Arquipélago de Fernando de Noronha. *Diário Oficial da União*, p. 102. Retrieved from http://portal.in.gov.br/

Moção No 022 de 12 de julho de 2001: Planos de Manejo e Conselhos da APA-FN e do PARNAMAR-FN, CONDIMA, TAC, Lei de Uso e Ocupação do Solo e Plano de Gestão (2001b).

CONAPA-FN. (2003, Mar 17). *Ata da I Reunião Ordinária de 2003 do CONAPA-FN em 17 de fevereiro de 2003*. Paper presented at the Conselho Gestor da Área de Proteção Ambiental de Fernando de Noronha - Rocas - São Pedro e São Paulo, Fernando de Noronha.

CONAPA-FN. (2004a, May 15). *Ata da II Reunião Ordinária de 2004 do CONAPA-FN em 15 de abril de 2004*. Paper presented at the Conselho Gestor da Área de Proteção Ambiental de Fernando de Noronha - Rocas - São Pedro e São Paulo, Fernando de Noronha.

CONAPA-FN. (2004b, Aug 12). *Ata da IV Reunião Ordinária de 2004 do CONAPA-FN em 12 de agosto de 2004*. Paper presented at the Conselho Gestor da Área de Proteção Ambiental de Fernando de Noronha - Rocas - São Pedro e São Paulo, Fernando de Noronha.

CONAPA-FN. (2004c, Oct 14). *Ata da V Reunião Ordinária de 2004 do CONAPA-FN em 14 de outubro de 2004*. Paper presented at the Conselho Gestor da Área de Proteção Ambiental de Fernando de Noronha - Rocas - São Pedro e São Paulo, Fernando de Noronha.

CONAPA-FN. (2005a, Feb 18). *Ata da I Reunião Ordinária de 2005 do CONAPA-FN em 18 de Janeiro*. Paper presented at the Conselho Gestor da Área de Proteção Ambiental de Fernando de Noronha - Rocas - São Pedro e São Paulo, Fernando de Noronha.

CONAPA-FN. (2005b, Jun 17). *Ata da III Reunião Ordinária de 2005 do CONAPA-FN em 17 de maio de 2005*. Paper presented at the Conselho Gestor da Área de Proteção Ambiental de Fernando de Noronha - Rocas - São Pedro e São Paulo, Fernando de Noronha.

CONAPA-FN. (2006, Mar 07). *Ata da I Reunião Ordinária de 2006 do CONAPA-FN em 07 de Fevereiro de 2006*. Paper presented at the Conselho Gestor da Área de Proteção Ambiental de Fernando de Noronha - Rocas - São Pedro e São Paulo, Fernando de Noronha.

CONAPA-FN. (2009, Jul 17). *Ata da III Reunião Ordinária de 2009 do CONAPA-FN em 17 de junho de 2009*. Paper presented at the Conselho Gestor da Área de

Proteção Ambiental de Fernando de Noronha - Rocas - São Pedro e São Paulo, Fernando de Noronha.

Homologação de Acordo (2005).

CONPARNAMAR-FN. (2008a, Jul 02). *Ata da III Reunião Ordinária do CONPARNAMAR-FN em 02 de julho de 2008*. Paper presented at the Conselho Gestor do Parque Nacional Marinho de Fernando de Noronha, Fernando de Noronha.

CONPARNAMAR-FN. (2008b, Aug 20). *Ata da IV Reunião Ordinária do CONPARNAMAR-FN em 20 de agosto de 2008*. Paper presented at the Conselho Gestor do Parque Nacional Marinho de Fernando de Noronha, Fernando de Noronha.

CONPARNAMAR-FN. (2008c, Dec 03). *Ata da VI Reunião Ordinária do CONPARNAMAR-FN em 03 de dezembro de 2008*. Paper presented at the Conselho Gestor do Parque Nacional Marinho de Fernando de Noronha, Fernando de Noronha.

CONTUR. (2009, Dec 03). *Ata V Reunião Ordinária do Conselho Noronhense de Turismo de Fernando de Noronha Exercício 2009-2010*. Paper presented at the V Reunião Ordinária do Conselho Noronhense de Turismo de Fernando de Noronha Exercício 2009-2010, Fernando de Noronha.

Corrêa, Fredmar. (1995). *Reserva da Biosfera da Mata Atlântica: Roteiro para o Entendimento de seus Objetivos e seu Sistema de Gestão*. São Paulo: Conselho Nacional da Reserva da Biosfera da Mata Atlântica.

Costa, Gilberto. (2010, Apr 28). Conferências nacionais alteraram modelo de democracia, afirma pesquisadora do Iuperj. *Agência Brasil*. from http://agenciabrasil.ebc.com.br/noticia/2010-03-28/conferencias-nacionais-alteraram-modelo-de-democracia-afirma-pesquisadora-do-iuperj

DAC. (1994). Anuário do Transporte Aéreo: Dados Estatísticos: 1993. Brasília: Departamento de Aviação Civil - Comando da Aeronáutica.

DAC. (1995). Anuário do Transporte Aéreo: Dados Estatísticos: 1994. Brasília: Departamento de Aviação Civil - Comando da Aeronáutica.

DAC. (1996). Anuário do Transporte Aéreo: Dados Estatísticos: 1995. Brasília: Departamento de Aviação Civil - Comando da Aeronáutica.

DAC. (1997). Anuário do Transporte Aéreo: Dados Estatísticos: 1996. Brasília: Departamento de Aviação Civil - Comando da Aeronáutica.

DAC. (1998). Anuário do Transporte Aéreo: Dados Estatísticos: 1997 (pp. 1-114). Brasília: Departamento de Aviação Civil - Comando da Aeronáutica.

DAC. (1999). Anuário do Transporte Aéreo: Dados Estatísticos: 1998 (pp. 1-113). Brasília: Departamento de Aviação Civil - Comando da Aeronáutica.

DAC. (2000). Anuário do Transporte Aéreo: Dados Estatísticos: 1999 (pp. 1-103). Brasília: Departamento de Aviação Civil - Comando da Aeronáutica.

DAC. (2001). Anuário do Transporte Aéreo: Dados Estatísticos: 2000 (pp. 1-101). Brasília: Departamento de Aviação Civil - Comando da Aeronáutica.

DAC. (2002). Anuário do Transporte Aéreo: Dados Estatísticos: 2001 (pp. 1-100). Brasília: Departamento de Aviação Civil - Comando da Aeronáutica.

DAC. (2003). Anuário do Transporte Aéreo: Dados Estatísticos: 2002 (pp. 1-96). Brasília: Departamento de Aviação Civil - Comando da Aeronáutica.

DAC. (2004). Anuário do Transporte Aéreo: Dados Estatísticos: 2003 (pp. 1-92). Brasília: Departamento de Aviação Civil - Comando da Aeronáutica.

DAC. (2005). Anuário do Transporte Aéreo: Dados Estatísticos: 2004 (pp. 1-92). Brasília: Departamento de Aviação Civil - Comando da Aeronáutica.

de Souza Melo, Ana Júlia. (2011). *A Participação do Ilheú na Prestação de Serviços Turísticos de Lazer Aquático em Fernando de Noronha.* (Masters Thesis), Universidade Anhembi Morumbi, São Paulo.

EMBRATUR. (1973). Anuário Estatístico do Turismo - 1973: Ano Base 1972 (Vol. 4, pp. 1-8). Brasília: Empresa Brasileira de Turismo.

EMBRATUR. (1975). Anuário Estatístico do Turismo - 1975: Ano Base 1974 (Vol. 6, pp. 1-6). Brasília: Empresa Brasileira de Turismo.

EMBRATUR. (1977). Anuário Estatístico do Turismo - 1977: Ano Base 1976 (Vol. 8, pp. 1-8). Brasília: Empresa Brasileira de Turismo.

EMBRATUR. (1979). Anuário Estatístico do Turismo - 1979: Ano Base 1978 (Vol. 10, pp. 1-8). Brasília: Empresa Brasileira de Turismo.

EMBRATUR. (1981). Anuário Estatístico do Turismo - 1981: Ano Base 1980 (Vol. 12, pp. 1-7). Brasília: Empresa Brasileira de Turismo.

EMBRATUR. (1983). Anuário Estatístico do Turismo - 1983: Ano Base 1982 (Vol. 14, pp. 1-7). Brasília: Empresa Brasileira de Turismo.

EMBRATUR. (1985). Anuário Estatístico do Turismo - 1985: Ano Base 1984 (Vol. 16, pp. 1-7). Brasília: Empresa Brasileira de Turismo.

EMBRATUR. (1987). Anuário Estatístico do Turismo - 1987: Ano Base 1986 (Vol. 18, pp. 1-9). Brasília: Empresa Brasileira de Turismo.

EMBRATUR. (1989). Anuário Estatístico do Turismo - 1989: Ano Base 1988 (Vol. 20, pp. 1-11). Brasília: Empresa Brasileira de Turismo.

EMBRATUR. (1993). Anuário Estatístico do Turismo - 1992/1993: Anos Base 1991/1992 (Vol. 22, pp. 1-7). Brasília: Instituto Brasileiro de Turismo.

Ferreira da Costa Lima, Maria Lúcia. (2002). *Eco(Turismo) em Áreas Protegidas: Um Olhar sobre Fernando de Noronha.* (Doctoral Thesis), Faculdade de Filosofia, Letras e Ciências Humanas, São Paulo.

Gabeira, Fernando. (2002, May 09). *Transcrição da Audiência Pública da Comissão de Defesa do Consumidor, Meio Ambiente e Minorias para discutir a situação ambiental, imobiliária e política do Arquipélago de Fernando de Noronha.* Paper presented at the Audiência Pública da Comissão de Defesa do Consumidor, Meio Ambiente e Minorias, Brasília.

Gabeira, Fernando (2007, Jun). [Requerimento No de 2001].

Decreto Estadual No 13.281 de 05 de outubro de 1998: Estrutura Provisória de Administração do Arquipélago de Fernando de Noronha (1988).

GPR. (1942a, Mar 09). Decreto-Lei nº 4.102, de 9 de Fevereiro de 1942: Cria o Território Federal de Fernando de Noronha. *www2.camara.gov.br.* from http://www2.camara.gov.br/legin/fed/declei/1940-1949/decreto-lei-4102-9-fevereiro-1942-414714-publicacaooriginal-1-pe.html

GPR. (1942b, Mar 09). Decreto-Lei nº 4.103, de 9 de Fevereiro de 1942: Nova denominação e localização à Colônia Agrícola de Fernando de Noronha. *www2.camara.gov.br.* from http://www2.camara.gov.br/legin/fed/declei/1940-1949/decreto-lei-4103-9-fevereiro-1942-414717-publicacaooriginal-1-pe.html

GPR. (1943, Aug 03). Decreto-Lei nº 5.718, de 3 de Agosto de 1943: Administração do Território Nacional de Fernando de Noronha. *www2.camara.leg.br.* from http://www2.camara.leg.br/legin/fed/declei/1940-1949/decreto-lei-5718-3-agosto-1943-415809-publicacaooriginal-1-pe.html

GPR. (1981a, Dec 17). Decreto nº 86.752, de 17 de Dezembro de 1981: Vinculação do Território Federal de Fernando de Noronha ao Ministério da Aeronáutica. *www2.camara.gov.br.* from

http://www2.camara.gov.br/legin/fed/decret/1980-1987/decreto-86752-17-dezembro-1981-436365-publicacaooriginal-1-pe.html

GPR. (1981b, Dec 14). Lei nº 6.971, de 14 de Dezembro de 1981: Administração do Território Federal de Fernando de Noronha. *www2.camara.gov.br.* from http://www2.camara.gov.br/legin/fed/lei/1980-1987/lei-6971-14-dezembro-1981-356637-publicacaooriginal-1-pl.html

GPR. (1986, Mar 06). Decreto nº 92.370, de 6 de Fevereiro de 1986: Vinculação do Território Federal de Fernando de Noronha ao Estado-Maior das Forças Armadas. *www2.camara.gov.br.* from http://www2.camara.gov.br/legin/fed/decret/1980-1987/decreto-92370-6-fevereiro-1986-442859-publicacaooriginal-1-pe.html

GPR. (1987, Aug 14). Decreto nº 94.780, de 14 de Agosto de 1987: Estrutura básica de administração do Território Federal de Fernando de Noronha. *www2.camara.gov.br.* from http://www2.camara.gov.br/legin/fed/decret/1980-1987/decreto-94780-14-agosto-1987-445325-publicacaooriginal-1-pe.html

Decreto n° 96.693 de 14 de setembro de 1988: Parque Nacional Marinho - PARNAMAR - de Fernando de Noronha (1988a).

GPR. (1988b, May 14). Decreto nº 95.922, de 14 de Abril de 1988: Zoneamento para a Defesa Ecológica do Território Federal de Fernando de Noronha. *www2.camara.gov.br.* from http://www2.camara.gov.br/legin/fed/decret/1988/decreto-95922-14-abril-1988-446466-publicacaooriginal-1-pe.html

Decreto no 96.878, de 29 de Setembro de 1988: Transferência de Bens do TFFN ao Ministério da Aeronáutica (1988c).

Decreto no 96.879, de 29 de Setembro de 1988: Transferência de Bens do TFFN ao IBDF (1988d).

IBAMA. (1991, Feb 18). Portaria No 137 de 11 de janeiro de 1991: Capacidade de Carga Leão, Atalaia e Golfinhos. *Diário Oficial da União*, p. 1343. Retrieved from http://portal.in.gov.br/

IBAMA. (2002a, Feb 08). Portaria No 190 de 31 de dezembro de 2001: Criação do CONPARNAMAR-FN. *Diário Oficial da União*, p. 50.

IBAMA. (2002b, Feb 08). Portaria No 191 de 31 de dezembro de 2001: Criação do CONAPA-FN. *Diário Oficial da União*, p. 50.

IBAMA. (2003a, Feb 07). Portaria No 1 de 3 de janeiro de 2003: Alterações na Composição do CONPARNAMAR-FN. *Diário Oficial da União*, p. 87.

IBAMA. (2003b, Feb 07). Portaria No 2 de 3 de janeiro de 2003: Alterações na Composição do CONAPA-FN. *Diário Oficial da União*, p. 87.

IBAMA, & FUNATURA. (1990). Plano de Manejo: PARNAMAR-FN (pp. 1-253). Fernando de Noronha: Instituto Brasileiro do Meio Ambiente e dos Recursos Naturais Renováveis.

ICMBio, & e labore. (2008). Estudo e Determinação da Capacidade de Suporte e Seus Indicadores de Sustentabilidade com Vistas à Implantação do Plano de Manejo da APA-FN: Produtos 3 e 4 - Relatório Final (pp. 1-316): Instituto Chico Mendes de Conservação da Biodiversidade.

ICMBio, SECTMA-PE, ADEFN, & ecooideia. (2011). Noronha +20: Programa de Sustentabilidade para o Arquipélago de Fernando de Noronha: uma construção participativa (pp. 1-40). Fernando de Noronha: Instituto Chico Mendes de Conservação da Biodiversidade.

ICMBio-MMA, APA-FN, PARNAMAR-FN, CMA, & TAMAR, Centro. (2007). Condicionantes para Operação Turística do Navio M. V. Pacific na

temporada 2007/2008 (pp. 1-5). Fernando de Noronha: Instituto Chico Mendes de Conservação da Biodiversidade.

ICMBio-MMA, APA-FN, PARNAMAR-FN, CMA, & TAMAR, Centro. (2008). Condicionantes para Operação Turística do Navio M. V. Pacific na temporada 2008/2009 (pp. 1-3). Fernando de Noronha: Instituto Chico Mendes de Conservação da Biodiversidade.

IUCN. (1980). *World conservation strategy: living resource conservation for sustainable development*. Gland, Switzerland: International Union for Conservation of Nature and Natural Resources.

IUCN. (2001). World Heritage Nomination - IUCN Technical Evaluation: Fernando de Noronha Archipelago/Rocas Atoll Tropical Insular Complex (Brazil). Gland, Switzerland: International Union for the Conservation of Nature.

JC Online. (2001, Sep 06). Turismo: Profissionalização: Pousadas de Noronha têm nova classificação. *Jornal do Comércio*. from http://www2.uol.com.br/JC/_2001/1009/tu0609_12.htm

MMA. (2005a, May 29). Portaria No 23 de 28 de abril de 2005: Transformação do CONAPA-FN em Consultivo. *Diário Oficial da União*, p. 158. Retrieved from http://portal.in.gov.br/

MMA. (2005b, Jul 06). Portaria No 36 de 3 de julho de 2005: Aprovação do Plano de Manejo da APA-FN. *Diário Oficial da União*, p. 58. Retrieved from http://portal.in.gov.br/

MMA. (2007, Oct 30). Portaria No 20 de 29 de outubro de 2007: Redefinição de Zoneamento da APA-FN - Vacaria. *Diário Oficial da União*, p. 116. Retrieved from http://portal.in.gov.br/

Termo de Ajustamento de Conduta número 004/2002 de 06 de dezembro de 2002 (2002).

MVOP. (1928). Relatório do Ministério da Viação e Obras Públicas 1927 (pp. 335-359). Rio de Janeiro: Ministério da Viação e Obras Públicas.

Pagano, Sandra Maria. (2000). *Crescimento Descontrolado ou Desenvolvimento Sustentável: a encruzilhada do turismo de Fernando de Noronha*. (Masters Thesis), Centro de Filosofia e Ciências Humanas, Recife.

Pereira de Ávila, Ely. (2008). *Fernando de Noronha: da ilha maldita ao paraíso* (3rd ed.). Santa Maria: Edições Cairã.

Pereira Palladino, Iêda Lúcia. (2010). *Crescimento dos Cruzeiros Marítimos no Brasil, na Última Década*. (Masters Thesis), Universidade Federal Fluminense, Rio de Janeiro. Retrieved from http://www.uff.br/rpca/pdg/tccpdg12.pdf

Constituição do Estado de Pernambuco - 5 de outubro de 1989, 102 (1989a).

Decreto nº 13.553, de 07 de Abril de 1989: APA Estadual de Fernando de Noronha (1989b).

Lei Orgânica do Distrito Estadual de Fernando de Noronha, Lei nº 11.304, de 28 de dezembro de 1995 C.F.R. (1995).

Rezende de Souza, Gisela Maria. (2007). *Impactos Socioculturais do Turismo em Comunidades Insulares: Um estudo de caso no arquipélago de Fernando de Noronha - PE*. (Masters Thesis), Centro Universitário UNA, Belo Horizonte.

Tetraplan, Arcadis. (2004). Plano de Manejo da APA-FN-AR-SPSP: Contextualização da Unidade de Conservação (pp. 1-116): Ministério do Meio Ambiente do Governo da República Federativa do Brasil.

UNDP. (2012). Projetos PNUD Brasil: Projeto BRA/00/009: Conservação e Manejo dos Ecossistemas Brasileiros e Gestão do Sistema Federal de Unidades de Conservação. *United Nations Development Program*. from http://www.pnud.org.br/Projetos.aspx?BRANUM=BRA00009

UNESCO. (2001). Certificado de Inscrição das Ilhas Atlânticas Brasileiras: Reservas de Fernando de Noronha e Atol das Rocas na Lista do Patrimônio Mundial. Paris: United Nations Educational, Scientific and Cultural Organisation.

Widmer, Gloria. (2007). *O Titulo de Patrimônio da Humanidade e seus Efeitos sobre o Turismo em Fernando de Noronha.* (Communication Sciences PhD Thesis), Universidade de São Paulo, São Paulo. Retrieved from http://www.teses.usp.br/teses/disponiveis/27/27148/tde-05072009-203038/publico/867713.pdf

Figure 98 | FDN Archipelago Terrestrial and Marine Zoning 1500 – June 1986

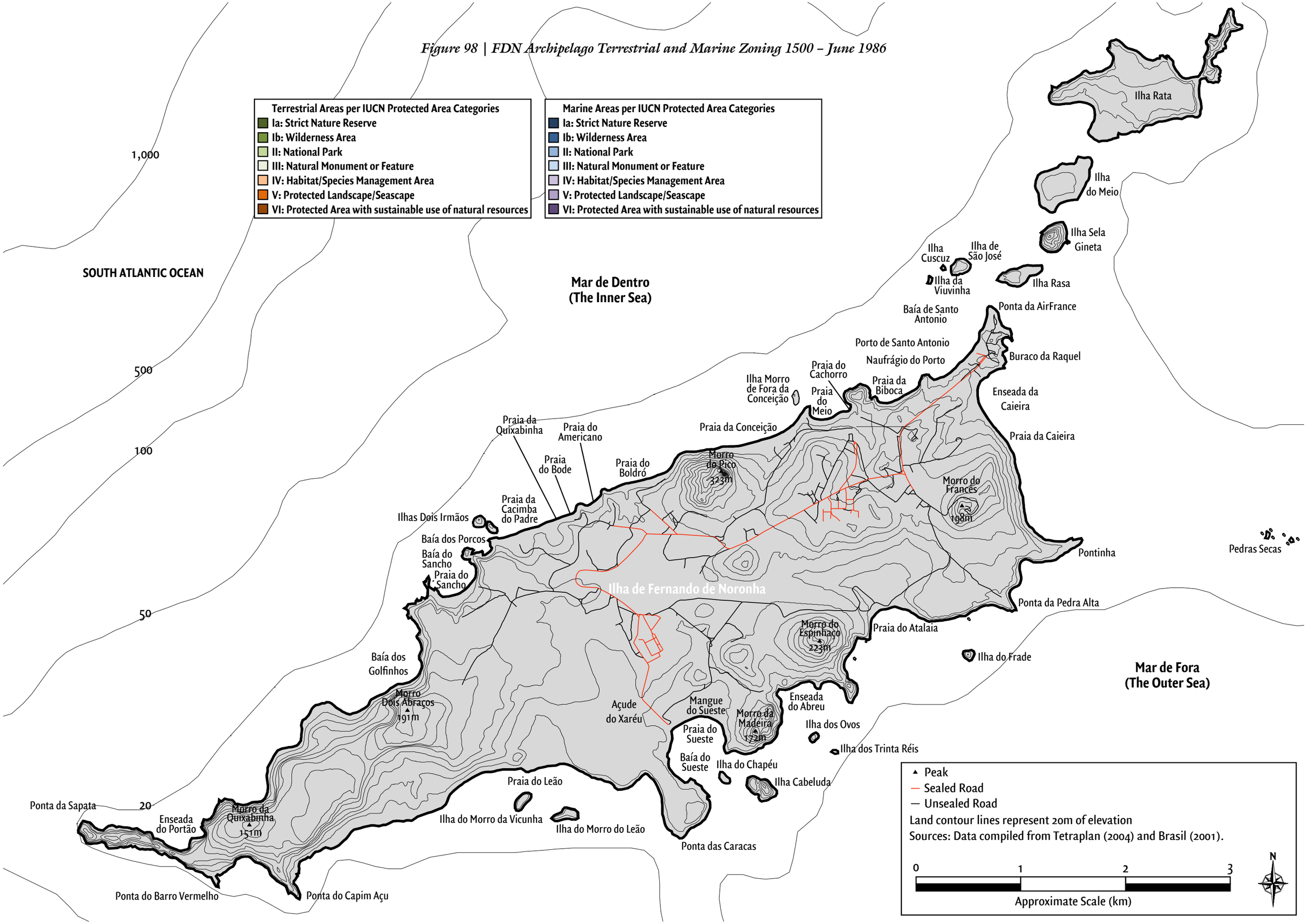


Figure 99 | FDN Archipelago Terrestrial and Marine Zoning June 1986 – April 1988

Terrestrial Areas per IUCN Protected Area Categories
- Ia: Strict Nature Reserve
- Ib: Wilderness Area
- II: National Park
- III: Natural Monument or Feature
- IV: Habitat/Species Management Area
- V: Protected Landscape/Seascape
- VI: Protected Area with sustainable use of natural resources

Marine Areas per IUCN Protected Area Categories
- Ia: Strict Nature Reserve
- Ib: Wilderness Area
- II: National Park
- III: Natural Monument or Feature
- IV: Habitat/Species Management Area
- V: Protected Landscape/Seascape
- VI: Protected Area with sustainable use of natural resources

1,000
500
100
50
20

SOUTH ATLANTIC OCEAN

Mar de Dentro
(The Inner Sea)

APA-FN

Ilha Rata
Ilha do Meio
Ilha Sela Gineta
Ilha Cuscuz
Ilha de São José
Ilha da Viuvinha
Ilha Rasa
Baía de Santo Antonio
Ponta da AirFrance
Porto de Santo Antonio
Naufrágio do Porto
Buraco da Raquel
Praia do Cachorro
Praia da Biboca
Ilha Morro de Fora da Conceição
Praia do Meio
Enseada da Caieira
Praia da Conceição
Praia da Caieira
Praia da Quixabinha
Praia do Americano
Praia do Bode
Praia do Boldró
Morro do Pico 323m
Morro do Francês 198m
Praia da Cacimba do Padre
Ilhas Dois Irmãos
Baía dos Porcos
Baía do Sancho
Praia do Sancho
Pontinha
Pedras Secas
Ilha de Fernando de Noronha
Ponta da Pedra Alta
Morro do Espinhaço 223m
Praia do Atalaia
Ilha do Frade
Baía dos Golfinhos
Morro Dois Abraços 191m
Açude do Xaréu
Mangue do Sueste
Morro da Madeira 172m
Enseada do Abreu
Ilha dos Ovos
Ilha dos Trinta Réis
Praia do Sueste
Baía do Sueste
Ilha do Chapéu
Ilha Cabeluda
Mar de Fora
(The Outer Sea)
Praia do Leão
Ponta da Sapata
Enseada do Portão
Morro da Quixabinha 151m
Ilha do Morro da Vicunha
Ilha do Morro do Leão
Ponta das Caracas
Ponta do Barro Vermelho
Ponta do Capim Açu

- Peak
- Sealed Road
- Unsealed Road

Land contour lines represent 20m of elevation

Sources: Data compiled from Tetraplan (2004) and Brasil (2001).

0 1 2 3

Approximate Scale (km)

N

Figure 100 | FDN Archipelago Terrestrial and Marine Zoning April – September 1988

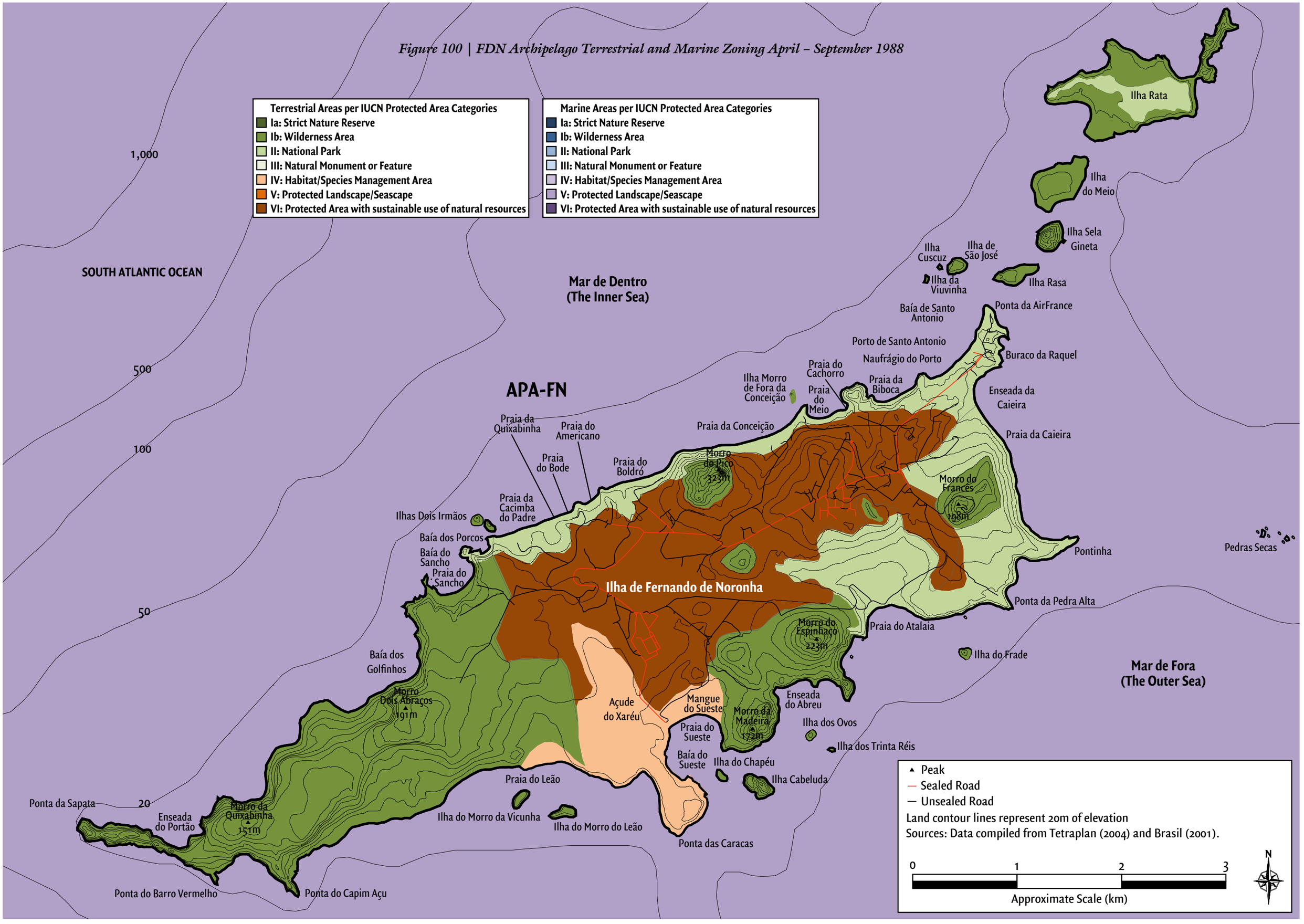


Figure 101 | FDN Archipelago Terrestrial and Marine Zoning September 1988 – October 1990

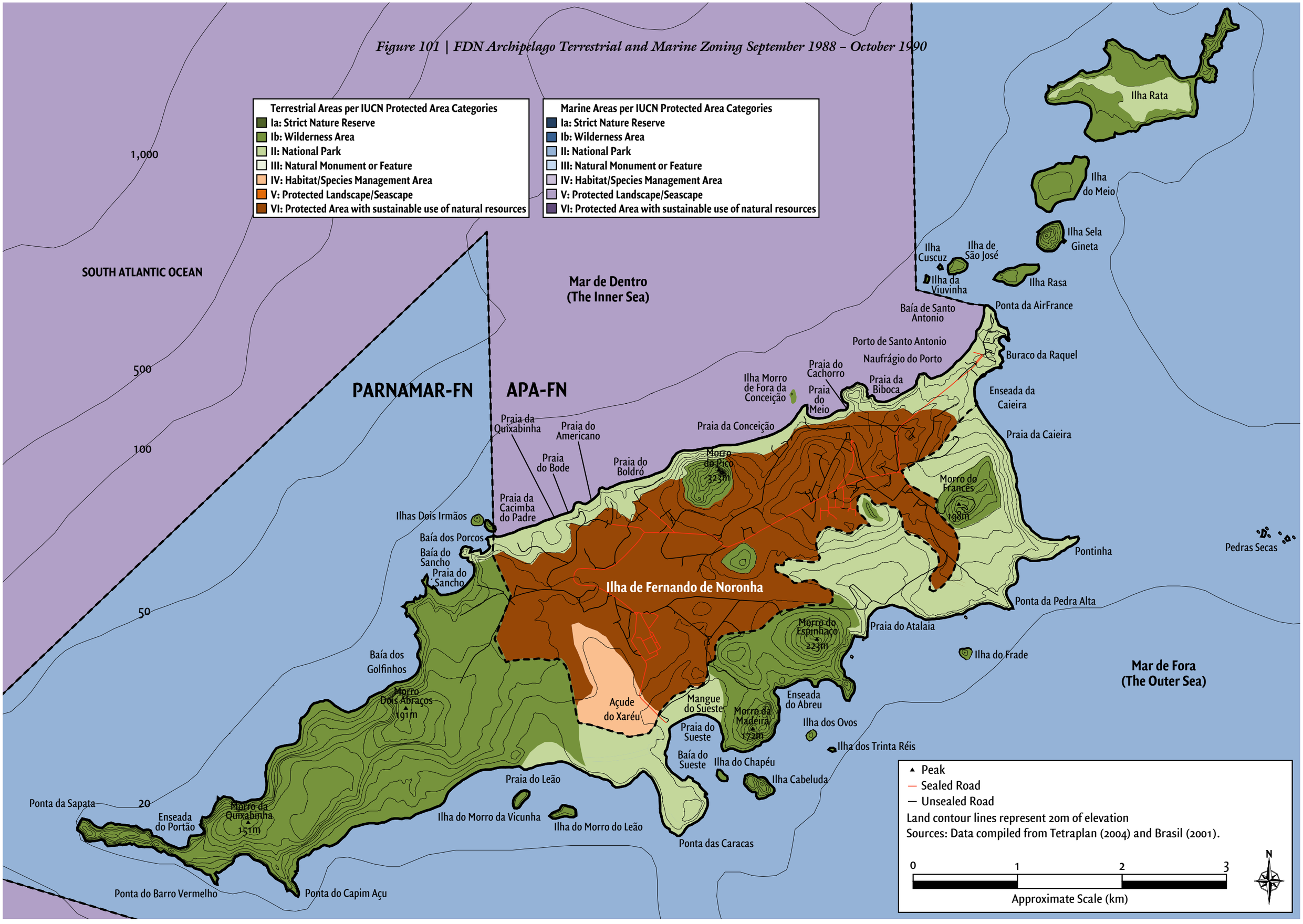


Figure 102 | FDN Archipelago Terrestrial and Marine Zoning October 1990 – October 2002

Terrestrial Areas per IUCN Protected Area Categories
- Ia: Strict Nature Reserve
- Ib: Wilderness Area
- II: National Park
- III: Natural Monument or Feature
- IV: Habitat/Species Management Area
- V: Protected Landscape/Seascape
- VI: Protected Area with sustainable use of natural resources

Marine Areas per IUCN Protected Area Categories
- Ia: Strict Nature Reserve
- Ib: Wilderness Area
- II: National Park
- III: Natural Monument or Feature
- IV: Habitat/Species Management Area
- V: Protected Landscape/Seascape
- VI: Protected Area with sustainable use of natural resources

1,000
500
100
50
20

SOUTH ATLANTIC OCEAN

PARNAMAR-FN

APA-FN

Mar de Dentro
(The Inner Sea)

Mar de Fora
(The Outer Sea)

Ilha Rata
Ilha do Meio
Ilha Sela Gineta
Ilha Cuscuz
Ilha de São José
Ilha da Viuvinha
Ilha Rasa
Ponta da AirFrance
Baía de Santo Antonio
Porto de Santo Antonio
Naufrágio do Porto
Buraco da Raquel
Enseada da Caieira
Praia da Caieira
Praia da Cachorro
Praia da Biboca
Praia do Meio
Ilha Morro de Fora da Conceição
Praia da Conceição
Morro do Pico 323m
Morro do Francês 198m
Pontinha
Pedras Secas
Praia da Quixabinha
Praia do Americano
Praia do Bode
Praia do Boldró
Praia da Cacimba do Padre
Ilhas Dois Irmãos
Baía dos Porcos
Baía do Sancho
Praia do Sancho
Ilha de Fernando de Noronha
Ponta da Pedra Alta
Praia do Atalaia
Morro do Espinhaço 223m
Ilha do Frade
Baía dos Golfinhos
Morro Dois Abraços 191m
Açude do Xaréu
Mangue do Sueste
Praia do Sueste
Baía do Sueste
Morro da Madeira 172m
Enseada do Abreu
Ilha dos Ovos
Ilha dos Trinta Réis
Ilha do Chapéu
Ilha Cabeluda
Praia do Leão
Ilha do Morro da Vicunha
Ilha do Morro do Leão
Ponta das Caracas
Ponta da Sapata
Enseada do Portão
Morro da Quixabinha 151m
Ponta do Barro Vermelho
Ponta do Capim Açu

- Peak
- Sealed Road
- Unsealed Road

Land contour lines represent 20m of elevation

Sources: Data compiled from Tetraplan (2004) and Brasil (2001).

0 1 2 3
Approximate Scale (km)

N

Figure 103 | FDN Archipelago Terrestrial and Marine Zoning October 2002 – June 2005

Terrestrial Areas per IUCN Protected Area Categories
- Ia: Strict Nature Reserve
- Ib: Wilderness Area
- II: National Park
- III: Natural Monument or Feature
- IV: Habitat/Species Management Area
- V: Protected Landscape/Seascape
- VI: Protected Area with sustainable use of natural resources

Marine Areas per IUCN Protected Area Categories
- Ia: Strict Nature Reserve
- Ib: Wilderness Area
- II: National Park
- III: Natural Monument or Feature
- IV: Habitat/Species Management Area
- V: Protected Landscape/Seascape
- VI: Protected Area with sustainable use of natural resources

1,000
500
100
50
20

SOUTH ATLANTIC OCEAN

PARNAMAR-FN

APA-FN

Mar de Dentro
(The Inner Sea)

Mar de Fora
(The Outer Sea)

Ilha de Fernando de Noronha

Ilha Rata
Ilha do Meio
Ilha Sela Gineta
Ilha Cuscuz
Ilha de São José
Ilha da Viuvinha
Ilha Rasa
Ponta da AirFrance
Baía de Santo Antonio
Porto de Santo Antonio
Naufrágio do Porto
Buraco da Raquel
Enseada da Caieira
Praia da Caieira
Praia da Biboca
Praia do Cachorro
Praia do Meio
Ilha Morro de Fora da Conceição
Praia da Conceição
Morro do Pico 323m
Morro do Francês 198m
Pontinha
Pedras Secas
Praia da Quixabinha
Praia do Americano
Praia do Bode
Praia do Boldró
Praia da Cacimba do Padre
Ilhas Dois Irmãos
Baía dos Porcos
Baía do Sancho
Praia do Sancho
Ponta da Pedra Alta
Praia do Atalaia
Morro do Espinhaço 223m
Ilha do Frade
Baía dos Golfinhos
Morro Dois Abraços 191m
Açude do Xaréu
Mangue do Sueste
Praia do Sueste
Baía do Sueste
Morro da Madeira 172m
Enseada do Abreu
Ilha dos Ovos
Ilha dos Trinta Réis
Ilha do Chapéu
Ilha Cabeluda
Praia do Leão
Ilha do Morro da Vicunha
Ilha do Morro do Leão
Ponta das Caracas
Ponta da Sapata
Enseada do Portão
Morro da Quixabinha 151m
Ponta do Barro Vermelho
Ponta do Capim Açu

- Peak
- Sealed Road
- Unsealed Road
- Conflicting Area: urban occupation within PARNAMAR-FN

Land contour lines represent 20m of elevation

Sources: Data compiled from Tetraplan (2004) and Brasil (2001).

0 1 2 3
Approximate Scale (km)

N

Figure 104 | Land Management Responsible Organisations in FDN

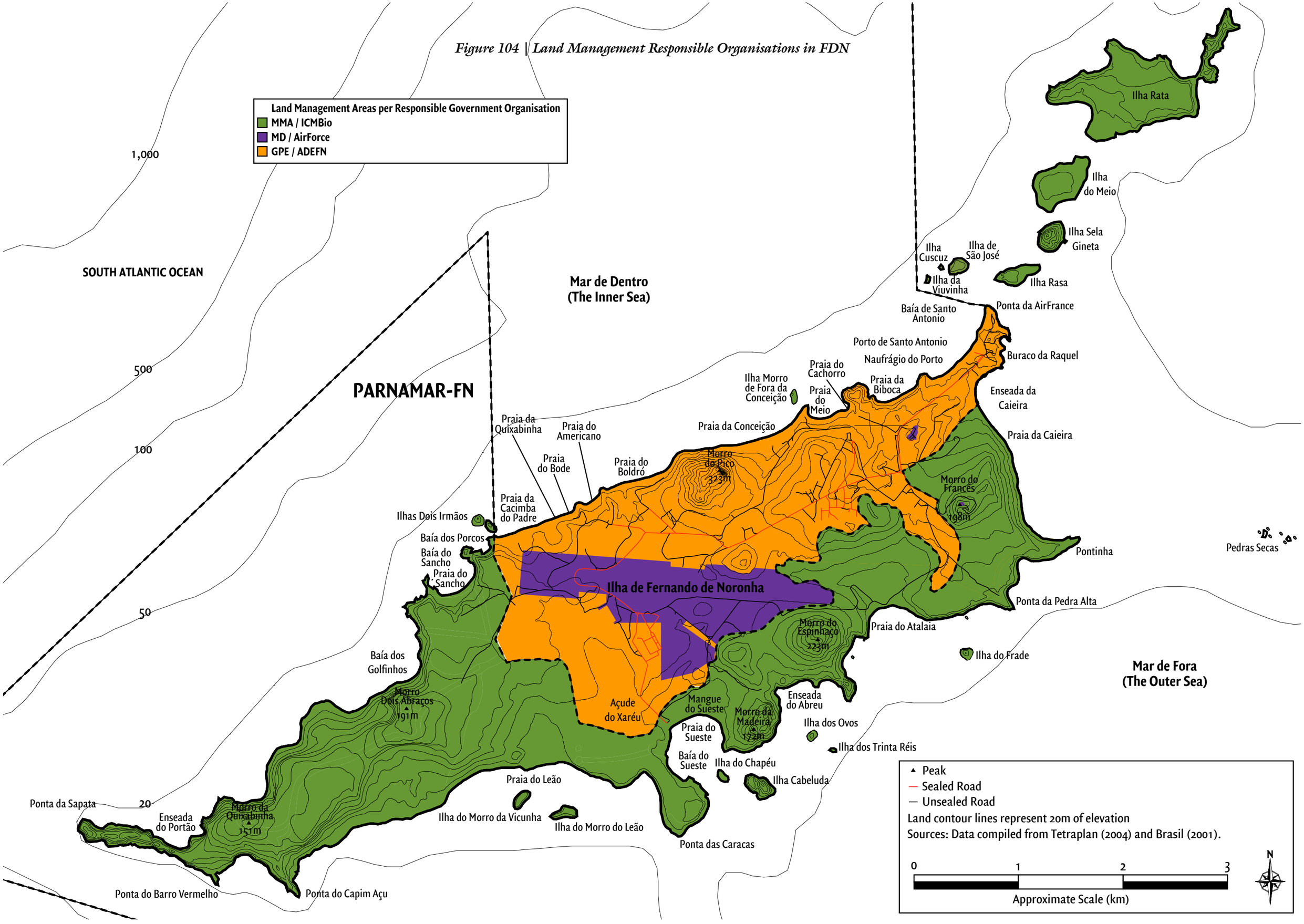


Figure 105 | FDN Archipelago Terrestrial and Marine Zoning June 2005 – October 2007

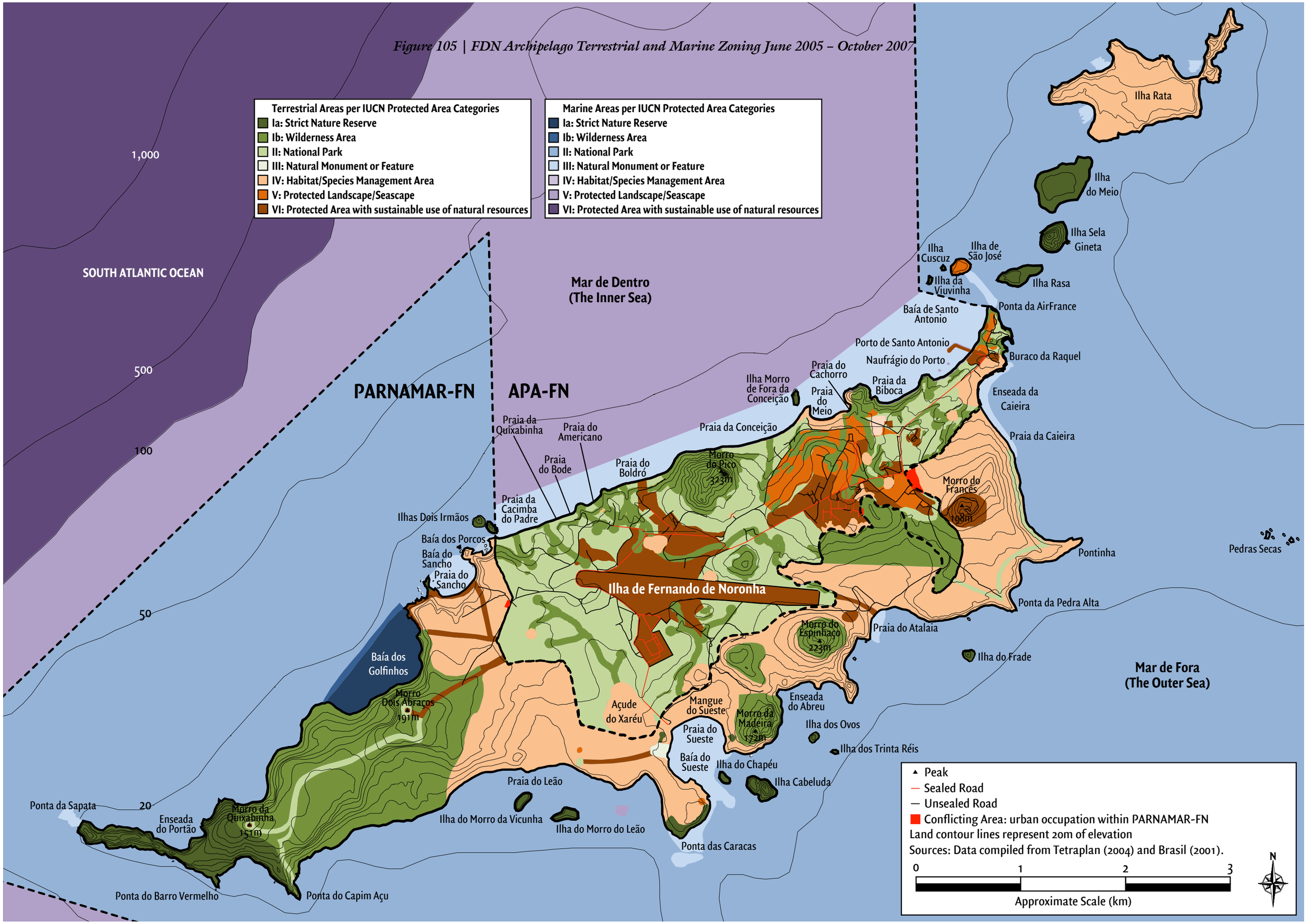


Figure 106| FDN Archipelago Terrestrial and Marine Zoning October 2007 – Now

Terrestrial Areas per IUCN Protected Area Categories
- Ia: Strict Nature Reserve
- Ib: Wilderness Area
- II: National Park
- III: Natural Monument or Feature
- IV: Habitat/Species Management Area
- V: Protected Landscape/Seascape
- VI: Protected Area with sustainable use of natural resources

Marine Areas per IUCN Protected Area Categories
- Ia: Strict Nature Reserve
- Ib: Wilderness Area
- II: National Park
- III: Natural Monument or Feature
- IV: Habitat/Species Management Area
- V: Protected Landscape/Seascape
- VI: Protected Area with sustainable use of natural resources

1,000
500
100
50
20

SOUTH ATLANTIC OCEAN

PARNAMAR-FN

APA-FN

Mar de Dentro
(The Inner Sea)

Mar de Fora
(The Outer Sea)

Ilha Rata
Ilha do Meio
Ilha Sela Gineta
Ilha Cuscuz
Ilha de São José
Ilha da Viuvinha
Ilha Rasa
Ponta da AirFrance
Baía de Santo Antonio
Porto de Santo Antonio
Naufrágio do Porto
Buraco da Raquel
Praia do Cachorro
Praia da Biboca
Ilha Morro de Fora da Conceição
Praia do Meio
Enseada da Caieira
Praia da Caieira
Praia da Conceição
Morro do Pico 323m
Morro do Francês 198m
Praia da Quixabinha
Praia do Americano
Praia do Bode
Praia do Boldró
Praia da Cacimba do Padre
Ilhas Dois Irmãos
Baía dos Porcos
Baía do Sancho
Praia do Sancho
Pontinha
Pedras Secas
Ilha de Fernando de Noronha
Ponta da Pedra Alta
Praia do Atalaia
Morro do Espinhaço 223m
Ilha do Frade
Baía dos Golfinhos
Morro Dois Abraços 191m
Açude do Xaréu
Mangue do Sueste
Praia do Sueste
Baía do Sueste
Morro da Madeira 172m
Enseada do Abreu
Ilha dos Ovos
Ilha dos Trinta Réis
Ilha do Chapéu
Ilha Cabeluda
Praia do Leão
Ilha do Morro da Vicunha
Ilha do Morro do Leão
Ponta das Caracas
Ponta da Sapata
Enseada do Portão
Morro da Quixabinha 151m
Ponta do Barro Vermelho
Ponta do Capim Açu

- Peak
- Sealed Road
- Unsealed Road
- Conflicting Area: urban occupation within PARNAMAR-FN

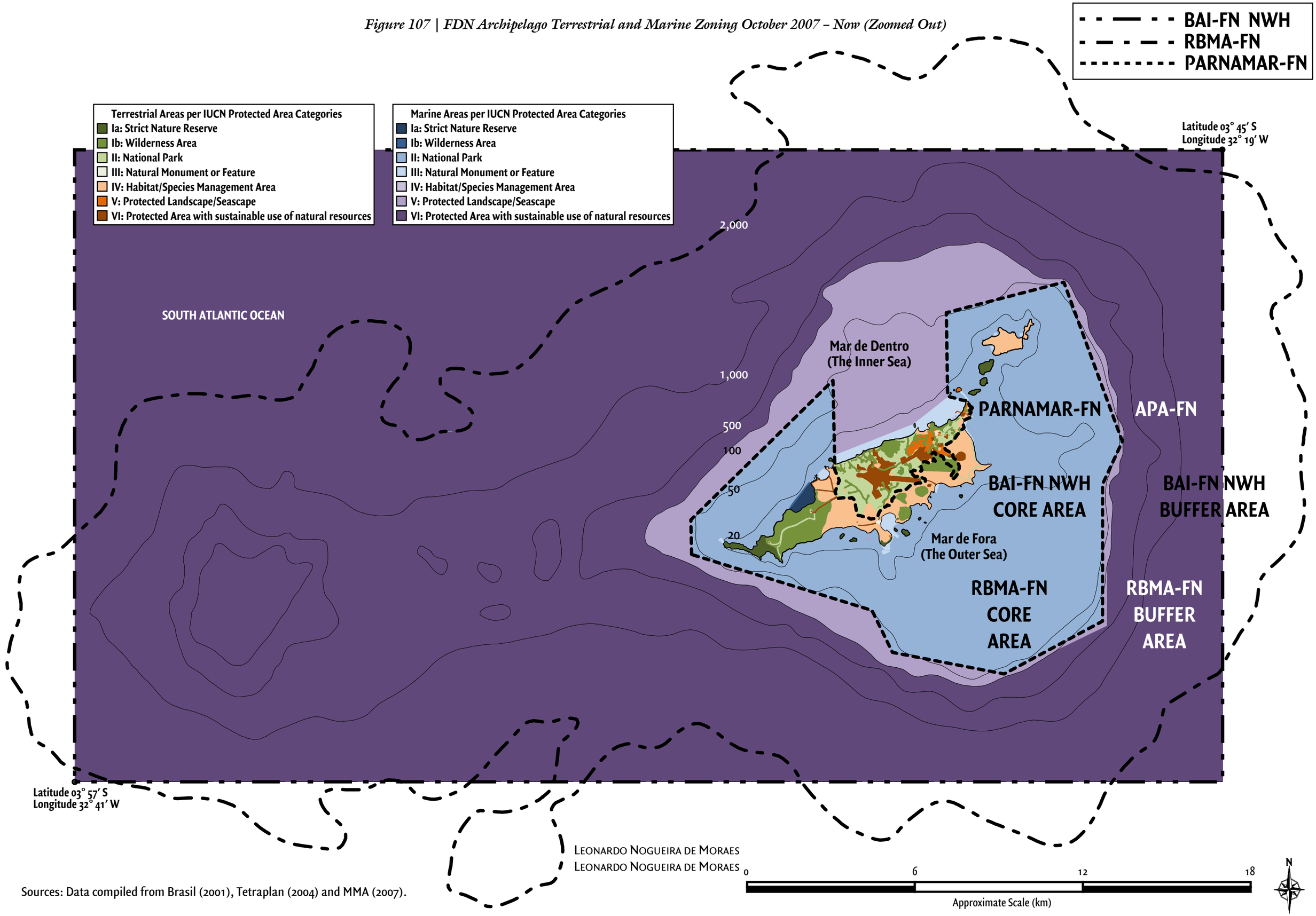
Land contour lines represent 20m of elevation

Sources: Data compiled from Tetraplan (2004), Brasil (2001) and MMA (2007).

0 1 2 3

Approximate Scale (km)

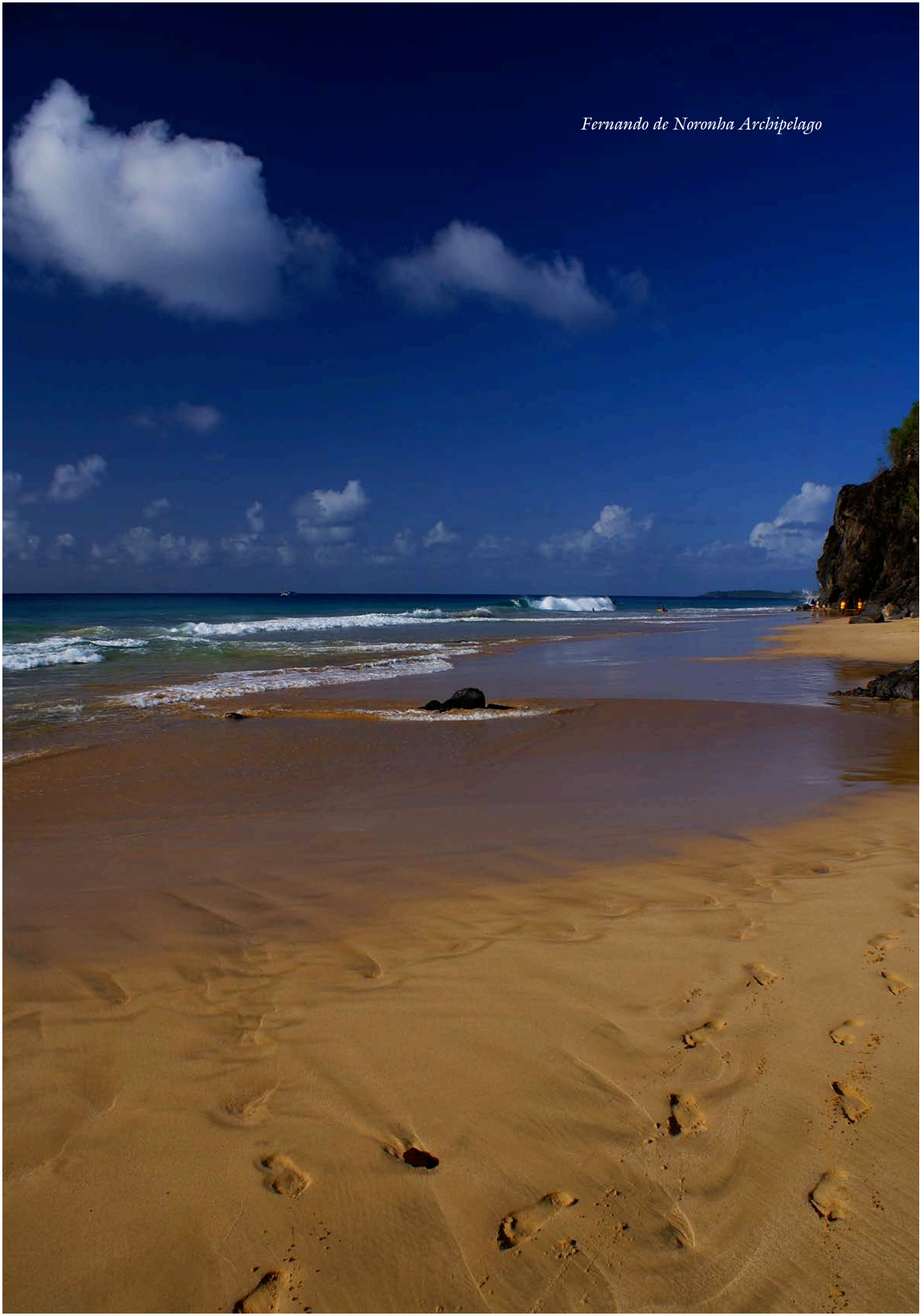
Figure 107 | FDN Archipelago Terrestrial and Marine Zoning October 2007 – Now (Zoomed Out)



Leonardo Nogueira de Moraes

Leonardo Nogueira de Moraes

Sources: Data compiled from Brasil (2001), Tetraplan (2004) and MMA (2007).



Fernando de Noronha Archipelago

Chapter 9 | (Inter)Action Strategies – Lord Howe Island

Tourism Development and the implementation of Protected Areas on Lord Howe Island

> *Oceanic islands are often isolated, and their history, economy, and society is inevitably linked to their degree of contact with the outside world and the manner in which that contact takes place. For isolated communities, transport is a key link with commerce, and civilisation, and Lord Howe Island is a classic case of an island society shaped by changing modes of transport and communication. Unique historical époques are defined by the way in which island men and women transacted their business with the world at large (Foreword by Chris Murray in Phillipps, 2009, p. vii).*

Following the same logic applied to the previous chapter, *Chapter 9* seeks to address the first secondary research question (2.1)[216] for *Lord Howe Island – LHI*, presenting and discussing the history of *Tourism Development – TD* and *Protected Areas – PAs* implementation on *LHI*. It covers a period from discovery in **1788** and early settlement in the **1800s** to current days. It starts by highlighting the role of *LHI*'s strategic location to its early settlement and development and the awake of economic and scientific interest as driving forces to the way authority took place on the island. It follows by showcasing the link between the rise of the *Kentia Palm* industry and how land tenure was dealt with in a different way to Australia's mainland. It then explores the relationship between the resulting land tenure system and the increased transport links with the mainland to the development of tourism. Based on these accounts, an evolutionary perspective on how the public administration of *LHI* evolved over time is presented. Drawing on the evolution of tourism and economic development, transport and administration, an account on the evolution of the conservation movement and PAs proclamation and implementation is then presented for *LHI*.

The conclusion for this chapter seeks to link most relevant topics explored in this chapter whilst also comparing the way *TD* and the implementation of *PAs* took place on *LHI* and *FDN*, allowing for the identification of the main drivers behind these two emerging global-local *(inter)action strategies*. This chapter reinforces the argument that *TD* and *PAs* are emergent properties that are mutually self-reinforcing and self-regulating forces that influence not only one another, but also the way the local and the global *SECAS* interact, therefore significantly influencing the way local independence and resilience can develop and local empowerment can take place.

[216] See page 123.

Strategic Location, Economic and Scientific Interest and Authority

As highlighted in *Chapter 7*, *LHI* is positioned strategically between Sydney and Norfolk Island, serving as a convenient port of call to ships from Australia on their way to the *South Pacific Ocean* and back. In fact, it was accidentally discovered on 17th February **1788** by *Lieutenant Henry Lidgbird Ball* onboard *HMS Supply* on his mission from the British Crown Colony of New South Wales to establish a penal colony on *Norfolk Island*. First landing on *LHI* occurred a month later during *Ball*'s return voyage, when he took possession of the Island for the *British Crown*[217] (Nichols, 2006, pp. 3-11) and accompanying Navigator *David Blackburn* and First Fleet artists *George Raper* and *John Hunter* registered some of the newly discovered species found on the island and its surroundings. As was usual at that time, most official British ships carried naturalists "who collected and sketched material for the purpose of scientific description, analysis and cataloguing" (Hutton, 2008, p. 235).

With its abundance of turtles, land birds and fish, by early **1800s**, the island was already visited frequently by whaling vessels seeking fresh water and food, with pigs being released to breed in the wild (McFadyen, 2006, p. 12). However, no one was to settle on the island until **1834**, 46 years after discovery (Phillipps, 2009, p. vii). Throughout the period from **1834** to **1869**, *LHI* was the target of several government proposals to host a penal colony. However, differently to the case of *Fernando de Noronha – FDN* and *Norfolk Island*, *LHI* never hosted prisoners (Nichols, 2006, pp. 38-43). From **1869** onwards, *LHI* became the subject of quite a few scientific and surveying expeditions[218] that helped raise awareness of the uniqueness of many of the island species among scientists and government officials on *New South Wales – NSW* mainland and in Britain (Hutton, 2008, p. 235).

First settlement on *LHI* took place with the business purpose of supplying whaling ships with fuel, water and provisions, while also exporting mutton-bird feathers for bedding (McFadyen, 2006, p. 13). *LHI* was "[l]ocated in the whaling area known as the 'middle grounds', [where] up to 40 whaling vessels per year called for water and fresh produce" (Phillipps, 2009, p. vii). With the booming of whaling in the waters surrounding *LHI* in the **1840s** and **1850s**, the local economy grew, along with the island's population, going from just 9 in **1834** to 40 in **1869**. In **1851**, about 50-60 ships were calling in to the island per year. However, by the **1870s** whaling had declined – the last American whaling ship arrived in **1887**, and the island became very isolated, with cargo ships calling once every 6 to 12 months (McFadyen, 2006).

[217] In **1855**, through the *New South Wales Constitution Act*, *LHI* becomes part of the self-governing *Colony of New South Wales* (New South Wales Government, 1855, p. 417).
[218] Among which, is the first comprehensive report on *LHI* of **1889** (Etheridge, 1889).

"Long periods between visiting ships meant selling or trading produce for commodities such as tea, sugar, salt, flour and clothing was severely limited" (Nichols, 2006, p. 70). The report of an **1876** visit to *LHI* by Royal Navy Surgeon *Alfred T. Corrie Corrie* stated that its inhabitants were near starvation (Corrie, 1878, p. 142). This triggered the Government's consideration of removing its inhabitants to the mainland and resulted in a visit by surveyor *Fitzgerald* later that same year. His report to the government pointed that despite no local government, politics on *LHI* were simple and satisfactory and that its inhabitants did not wish to be resumed to the mainland and were actively pursuing a way to re-establish the local economy mainly by means of coffee plantations and the introduction of cattle. As a result, in **1877** the *Botanical Gardens* despatched coffee plants to *LHI* and in return was supplied with "a variety of the island's plant and bird life", including palm seed (Nichols, 2006, p. 73-4).

As a result of *Fitzgerald*'s report, *LHI*'s inhabitants were not removed and instead, "[o]wing largely to the visits and reports of [...] respected scientists, the first official conservation measure was taken in **1878** when the island was declared a *Forest Reserve*, and a retired naval captain, *Richard Armstrong*, was appointed *forest ranger* and *resident magistrate*" (Hutton, 2008, p. 236). However, considering the market potential of *Kentia Palms* perceived at the time, the proclamation of the *Forest Reserve* and the decision to establish a local administration representing the interests of the mainland can be understood as also vested in economic interests. After living without authority for 20-30 years, *LHI* residents were struck with the appointment of a resident magistrate in **1879** – *Captain Armstrong*, resulting in the first of

> *"frequent instances where islanders have rebelled against the dictates of mainland authority[,] [t]he problem stem[ming] from the paternalistic attitude that is sometimes adopted by the mainland administration which is resented by the people on the island" (McFadyen, 2006, p. 27).*

As a result, *Armstrong* was dismissed in **1882** (Nichols, 2006, p. 83). Following that, in **1883**, *LHI* was proclaimed a *Botanic Reserve* (Edgecombe, 1977, p. 16).

Land Tenure and the Rise of the Kentia Palm Industry

After *Armstrong*'s dismissal, *LHI* was supervised by different visiting magistrates, including *Frank Farnell*, who was able to obtain "a *Permissive Occupancy* over unoccupied *Crown Lands* for the purpose of extending the seed industry" and organise *LHI*ers into being part of the *Kentia Palm Seed and Plant Cooperative Ltd* in **1906**, in conjunction with a Sydney based seed business, *Horton and Company* (Nichols, 2006, p. 100). The high demand for seeds[219]

[219] The fact seeds were more valuable than timber, led to a relationship between humans and *LHI*'s environment that was more sustainable and aware of the need to conserve the island's natural forests, since their maintenance guaranteed economic

allied to a greater organisation of the process of collection and distribution secured greater outputs of seeds and greater returns to LHIers. However, "arbitrary division of profits created considerable jealousy and mistrust" (ibid, p. 101). That, allied to dissatisfaction of shareholders with lesser allocated shares and islanders with no shares, forced the passing of a special resolution by shareholders in **1910** permitting the issue of new shares "to native-born Lord Howe Islanders who at the age of 21 were *bona fide* residents" (ibid, p. 101).

Despite this change, disquiet over the still disproportionate distribution of shares led to a first *Commission of Inquiry into the control of the Kentia Palm seed trade* in **1911** (ibid) and a second that also included the welfare of the islanders in general in **1912**. As a result, a set of recommendations were set forth and implemented, including the establishment of: the *Lord Howe Island Board of Control* in **1913**, consisting of 3 members appointed by the Government, to whom a permissive occupancy of the whole island was granted and to whom authority was given to collect and export seeds and palms; a local committee comprising a certain number of islanders appointed by the *Board* to supervise the island under its control; and a new *Limited Liability Cooperative Company* (in place of the *Kentia Palm Company*) for the purpose of regulating and controlling the trade in palm seed.

Some of the peculiar conditions of the new *Co-operative* were to influence future land tenure and citizenship directions for *LHI*. Native born were entitled to their own shares at the age of 21 and one would have to forfeit one's shares when leaving the island for lengthy periods, regaining their shares only after completing a residence of two months per every year of absence from the island. Those earning more than a certain amount per year from other sources such as tourism would have a percentage of their shares deducted, since all islanders/shareholders "were expected to help harvest, cart, pack and ship seed under the direction of a three-men local committee appointed by the Board" (Nichols, 2006, pp. 103-4).

As an effect of the *First World War*, *LHI*'s *Kentia Palm* industry was affected because of the disruption of the European Market. In **1918**, with the unintentional introduction of rodents, "a rat plague on the island [...] almost decimated the industry" (Nichols, 2006, p. 104). Measures to combat the rats brought the industry back, but at a smaller scale. With the outbreak of the *Second World War*, the industry temporarily ceased and the share system collapsed. By the end of the war, the market had shrunk and islanders started being paid a fixed amount per bushel collected, all profits from sales retained by the Board to fund *LHI*'s administration. In **1977**, the *Board* started exporting seedlings, with a Board's Palm Nursery being established in **1978** and the export of seeds ceasing in **1981**. In **1995**, the *Nursery* achieved *ISO 9001:2000* quality certification. In the **1980s**, parallel to the *Board*'s

benefits. Differently to the extraction of timber, harvesting seeds does not depend on clearing parts of the forest.

operation, a palm-growers' cooperative comprising 12 *LHI* families was formed and operated until the late **1990s**. In **2004**, an amendment to the *LHI Act* allowed perpetual leaseholders ownership of palms on their leases, raising a financial interest in their cultivation (Nichols, 2006, p. 105).

Land tenure has always been a contentious issue for *LHI*ers.

> *"After the Government granted Captain Armstrong a 100-acre lease in 1878 [...], a small number of short-term leases (permissive occupancies) were then granted to islanders. However, the legality of these leases was in doubt as the provisions of the Crown Lands Act 1875, under which the leases were granted, failed to mention Lord Howe Island" (Nichols, 2006, p. 110).*

It was only in **1953**, with the *Lord Howe Island Act* that *LHI*ers were granted perpetual leases for residential purposes and short-term special leases for pastoral and residential purposes (NSW, 1953). However, differently to freehold titles, perpetual and special leases carry a series of restrictions, including those related to the ability to bequeath leases by will. With the intent to ensure properties remained in Islander ownership, the Act states that only lineal descendants of *LHI*ers are eligible to inherit leases[220]. However, when it comes to the commercial transfer of properties, despite *LHI*ers having first option to buy properties on sale, the *Lord Howe Island Act of* ***1953*** allows sales to outsiders without the requirement of them holding Islander Status at the time of purchase. This situation is the cause of much discontent among many *LHI*ers and has resulted in the following distribution of the 122 lease agreements in **2005**: "83 are occupied by lineal descendants, 25 by other islanders and residents of less than 10 years and 14 by government employees" (Nichols, 2006, pp. 116-7).

Land, Transport Development and The Rise of Tourism

> *"[Until 1953, n]o title [to land] meant that any improvements to the land were a gamble, because occupancies could be resumed without notice. Nevertheless, about the turn of the* ***[20th] century****, Mary Nichols had built some accommodation and began to take in visitors" (McFadyen, 2006, p. 52).*

The business opportunity of offering accommodation to tourists was only made possible when transport between Australian mainland and *LHI* became regular. That happened in **1893** "[w]hen *Burns, Philps & Company* established a steamer trade between *Sydney*, *Lord Howe* and *Norfolk Island* [and] began a passenger service to the latter port to supplement the cargo carrying trade" (Nichols, 2006, p. 124). Passengers disembarking on *LHI* were afforded 9 days until the ship returned from *Norfolk Island* to pick them up on its way to

[220] See Nichols (2006, pp. 115-6) for a series of cases on the application of these restrictions.

Sydney. When the shipping route was extended to include the *New Hebrides* (*Vanuatu*) visitors would stay a minimum of 19 days on *LHI* (ibid, p. 126).

It was the conjunction of three factors that pushed for an increase of the transport link between *LHI* and mainland *NSW*, which, in turn, allowed for tourism development. Firstly, its strategic position as a gateway to the *South Pacific* for ships from *Sydney*, serving as a good port of call to those on their way to *Norfolk Island* and beyond. Secondly, by having developed the *Kentia Palm* industry, *LHI*ers constituted a local market demanding goods and services from the mainland that needed to be transported there while Kentia needed to be exported from the island. Finally, due to its spectacular natural beauty and biodiversity, *LHI* raised the interest of the scientific community and the curiosity of travellers from the mainland that started being transported as passengers to the island.

In **1932**, with the replacement of the steamer *Makambo* by the *Morinda*, there were up to 40 passengers being carried to *LHI* at any one time and demand for accommodation on the island grew. As a result, "[b]y **1933**, Pinetrees[221] comprised seven double and two single rooms", with extra beds and large tents being set up over the Christmas period when it would cater for 75 guests or more (Nichols, 2006, p. 127). The increase of tourist accommodation offered on the island was also the result of the *Kentia Palm* industry decline due to the rat plague unleashed by the running aground of the *Makambo* in **1918**. At that time, some of the families dependent on the *Kentia Palm* industry saw on tourism an economic opportunity for survival (ibid, p. 128).

The first *Tourism Development – TD* period on *LHI* is therefore shaped by the type, capacity and frequency of transport available to the island from the **late 1800s** to **1934** – that based on steamer ships. While it gradually allowed increases in the number of passengers arriving and their length of stay, steamer trade links with the mainland and the *South Pacific* were also greatly impacted by *World Wars*, in turn impacting tourist flows to *LHI*.

> *"With accommodation for ten The Pines offered the only guest lodgings on the Island; until **1909** when Gower and Ada Wilson opened their home to visitors. By **1913**, Ocean View was an established guesthouse catering for seven. However, a year later World War I disrupted the fledging industry" (Nichols, 2006, p. 126).*

Luckily, tourism was not the only economic means for all islanders at that time. Quite the opposite, many were still dedicated to farming, which grew with the greater demand from tourists for fresh produce that was still too costly to be brought by ship. This way, the

[221] The oldest accommodation provider on Lord Howe Island, the Pinetrees were established by Mary Nichols in the early **1900s**.

> *"[...] island remained strongly sufficient in vegetables, meat, fish and dairy produce, proving to be very fortunate when the Second World War arrived and both tourism and the palm trade collapsed over night and the regular steamer service diminished from a near fortnightly to an erratic trickle of a service, that sometimes did not arrive for several months" (Foreword by Chris Murray in Phillipps, 2009, p. viii).*

Interestingly, despite promoting the disruption of regular steamer service, *Second World War* also pushed for the establishment of a regular air service to the island, "when [in **1942**] the *Royal Australian Air Force – RAAF* opened up a lifeline from their flying boat base at Rathmines[,] [a]pproximatelly once a month [...] sen[ding] out Catalina flying boats to bring vital supplies, transport passengers an carry out medical evacuations" (Foreword by Chris Murray in Phillipps, 2009, p. viii).

Before that, in **1931**, *Sir Francis Chichester* was the first – and only – pilot to alight on LHI's lagoon in a single engine floatplane (ibid , p. 1), the calm waters of the crescent-shaped *LHI* lagoon proving to be naturally suited as a landing strip for flying boats.

> *"All this wartime flying activity had not been lost on Lord Howe Islanders who saw the potential of reviving their pre war tourist industry by using a flying boat service from Sydney. [...] However, it did not become a reality until August **1947** when Trans Oceanic Airways – TOA operated the first regular commercial flights in a converted wartime Sunderland flying boat. Qantas Empire Airways – QEA then followed, using Catalinas, in December of the same year" (Foreword by Chris Murray in Phillipps, 2009, p. viii).*

> *"However, the competition on such a small route was unprofitable and QANTAS withdrew in **1951**. Ansett Airways, (later Ansett-ANA) took over Trans Oceanic [Airways] in **1953** and, upon merging with Barrier Reef Airways, formed Ansett Flying Boat Services. In the next nineteen years, the frequency of flights to [LHI] increased from one a fortnight to six or seven per week during the busy periods. On occasions there were two flights per day. Each flight carried up to 42 passengers" (Nichols, 2006, p. 129)*

Subject to weather and natural conditions of the *LHI* lagoon, flying boats servicing *LHI* could not exceed certain sizes and had to attend to maritime tides for landing and alighting. These conditions helped to keep tourist numbers in check until specific regulations could come into force.

> *"As town planning concepts did not develop to any great degree in Australia until the **1960s** and **70s**, Lord Howe was spared the high rise development that engulfed many of Australia's beautiful holiday places, by the simple fact that its transport system simply couldn't deliver more than 250 visitors per week to its shores. By the time the service finished in **1974**, and an airstrip enabled more passengers to travel, a planning scheme had been formulated for the Island to carefully control future growth" (Foreword by Chris Murray in Phillipps, 2009, p. viii).*

Constraints on the frequency of the flying boat services to *LHI* posed by the congested waters of Sydney Harbour on weekends also guaranteed time for *LHI*ers to rest and to socialise among themselves, boosting their community life (Phillipps, 2009, p. 77).

Compared to steamers, flying boats not only made the journey a lot faster, but also constituted an attraction in themselves to tourists on their way to *LHI*. In this sense, "[t]he advertising power of Ansett promoted not only the Island and its natural attractions, but also the unique form of transport by which passengers were taken to the Island" (Phillipps, 2009, p. 70). At that time, Ansett's strategy also involved the development of tourist resorts on the islands it flew to, examples including Hayman Islands and the Whitsundays group (Davidson & Spearritt, 2000, p. 299). A similar approach proved unsuccessful on *LHI* due to great resistance from the local community to the entry of mainland capital in sectors already occupied by islanders.

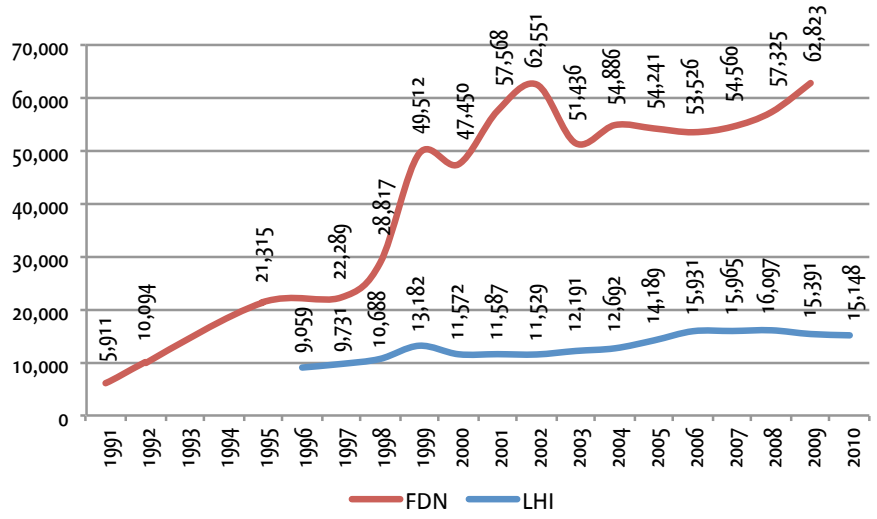
"By the **1970's** the government had [already] begun to subsidise *Ansett Flying Boat Services*, as maintaining **1940's** vintage flying boats as well as their *Rose Bay Base* cost a lot of money" (Phillipps, 2009, p. 78). That, allied to conflicting use of *Sydney Harbour* by flying boats and non-flying vessels, resulted in a 900-metre airstrip being built on *LHI* in **1974**. A great success for 27 years, flying boats were to leave *LHI* for the last time on **10th September 1974**, after making more than 5,000 flights to the island and having brought close to 200,000 tourists to its shores (Phillipps, 2009, p. 79). Two days later, commercial use of the airstrip started. From that moment on, the length of the airstrip and no longer the characteristics of the lagoon posed constraints on the number of passengers being transported, "[a]ll services operat[ing] planes that could carry a maximum of ten passengers until **1989**, when the *Brisbane*-based *Norfolk Airlines* introduced a 36-seat Dash-8 aircraft with short take-off and landing capabilities" (Nichols, 2006, p. 130). Since **1991**, *Eastern Australia* and *Sunstate* (now both *QANTAS Link* – *QANTAS*'s regional airline) operate flights from *Sydney* and *Brisbane* to LHI, using these same Dash-8s. As these planes become older and their maintenance more costly, talks about the need to extend the airstrip over the lagoon become more frequent every time *QANTAS* is to renew its agreement with *LHI*'s local administration[222].

Differently to *FDN*[223], *LHI* has experienced a fairly stable number of tourists over the years (see Figure 108). This is due to transport constraints, but also to clause 21 of **1986** *LHI Regional Environmental Plan* that stated the "*Board* shall not grant consent to the use of land for the public accommodation so as to enable public accommodation in excess of 400 beds to be provided on the island at any one time" (NSW, 1986) and to clause 24 subclause (2) of

[222] For a wider account of the national development of the airline industry in Australia, see page 192.
[223] See Chapter 8.

2005 *LHI Regional Environmental Plan* stating that "consent may be granted for the erection of no more than a total of 25 dwellings during a period of 20 years" – 2005-2025 (NSW, 2005a, p. 19).

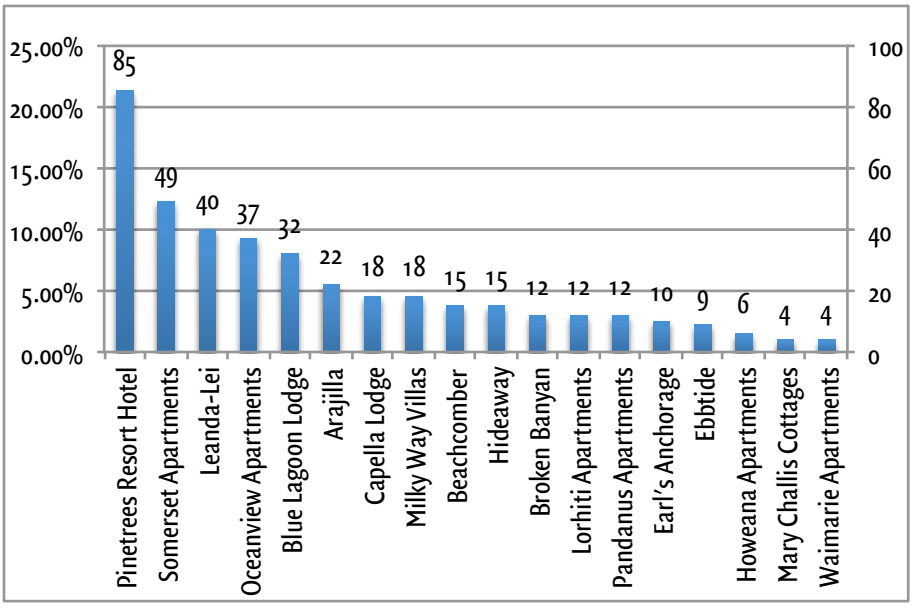
Figure 108 | Yearly Tourist Flows to LHI Vs. FDN



Sources | ADEFN (2005, 2009, 2010), Sinclair (2002, p. 13) and LHIB (2011)

In **2003**, there were 17 lodges on LHI hosting about 11,000 tourists per year. At the time, the population of about 350 residents would also host about 200 guests (family and friends) during summer (Waterways Authority, 2003, p. 7). In **2010**, there were 18 lodges offering 186 rooms and 400 beds, (see their distribution in *Figure 109* and *Table 20*).

Figure 109 | Licensed Beds per Accommodation Provider – LHI



Source | Data compiled from Jenny Rand & Associates (2010, p. 21)

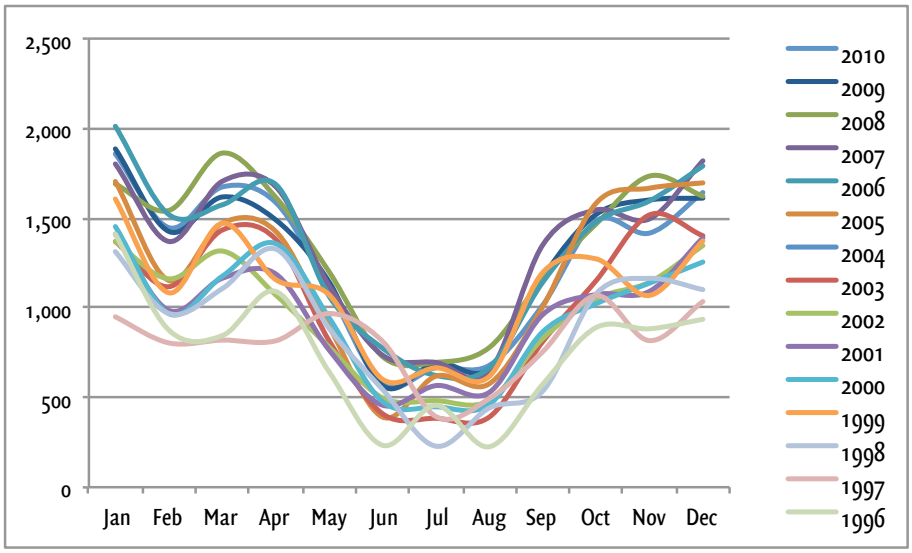
Table 20 | Licensed Beds per Accommodation Provider – LHI

Property	Ratio	Licensed Beds	No Keys	Accommodation Mix
Pinetrees Resort Hotel	21.25%	85	32	7 cottages, 2 x 1 bed suites, 23 rooms
Somerset Apartments	12.25%	49	26	1 studio, 23 x1 bed, 1 x 2 bed, 1 x 3 bed
Leanda-Lei	10.00%	40	19	9 studio, 6 x 1 bed, 4 x 2 bed apartments
Oceanview Apartments	9.25%	37	16	16 apartments
Blue Lagoon Lodge	8.00%	32	15	15 Apartments
Arajilla	5.50%	22	12	12 luxury suites
Capella Lodge	4.50%	18	9	9 suites
Milky Way Villas	4.50%	18	9	9 rooms
Beachcomber	3.75%	15	8	8 units - kitchenettes
Hideaway	3.75%	15	6	Cottage (2 bed), 5 x 1 bed apartments
Broken Banyan	3.00%	12	6	6 self-contained units
Lorhiti Apartments	3.00%	12	7	7 apartments
Pandanus Apartments	3.00%	12	4	2 x 2 bed, 2 x 1 bed apartments
Earl's Anchorage	2.50%	10	6	2 x 2 bed bungalows, 4 x 1 bed units
Ebbtide	2.25%	9	5	5 apartments
Howeana Apartments	1.50%	6	2	2 x 1 bed apartments
Mary Challis Cottages	1.00%	4	2	2 x 1 bed
Waimarie Apartments	1.00%	4	2	2 x 1 bed apartments
18	**100.00%**	**400**	**186**	**Total**

Source | Data compiled from Jenny Rand & Associates (2010, p. 21)

Compared to FDN, LHI presents greater differences in tourist flows between peak and low seasons and these differences seem to be increasing since **1996** as it can be observed in *Figure 110*.

Figure 110 | Average Monthly Tourist Flows to LHI per Year

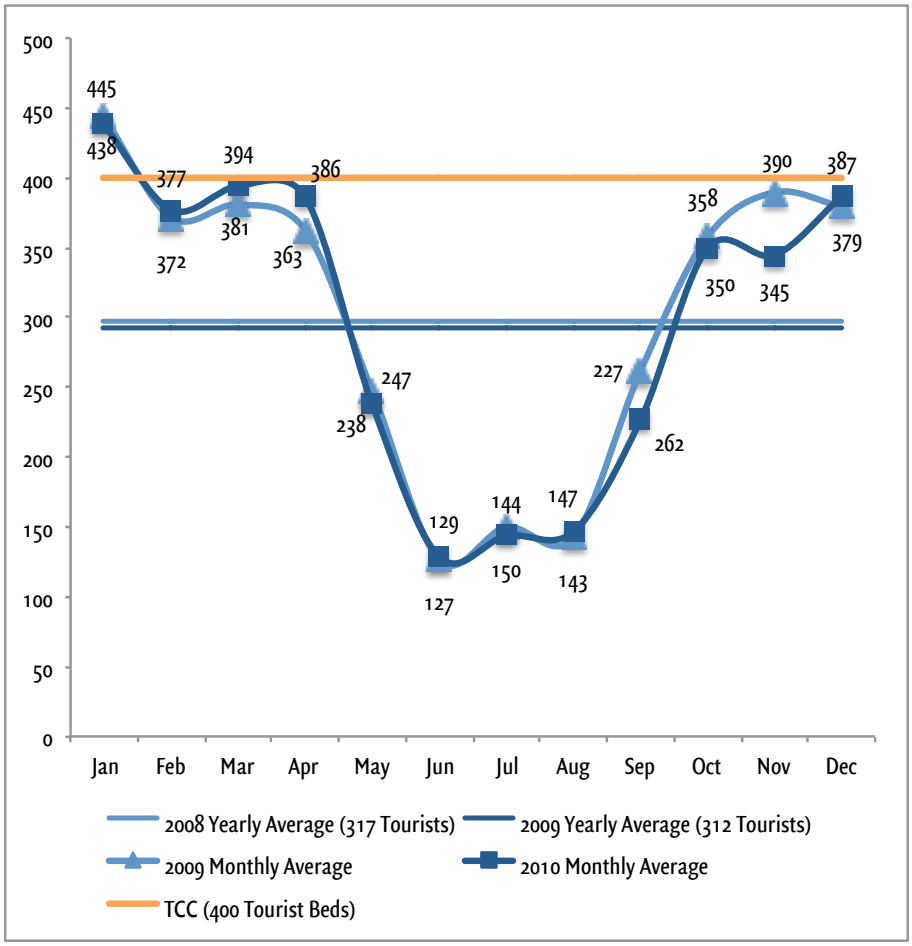


Source | Data compiled from LHIB (2011)

However, despite differences in visitation numbers up to 2.5 times between peak and low seasons, the monthly average number of tourists present on LHI per day only exceeded LHI's *Tourism Carrying Capacity – TCC* in the month

of January, by 45 guests in **2010** (see *Figure 111*). That is likely to be related to all islander family members that come over to visit during the Christmas period, extending their stay into January and being hosted not in lodges, but in their families' homes. When the same calculation is made for the yearly average number of tourists per day, it can be noticed that for **2009-2010** it is about 25% lower than the established 400-tourist bed cap (see *Figure 111*).

Figure 111 | Yearly and Monthly Average Number of Tourists per Day Vs. TCC for LHI[224]



Sources | Data compiled from Jenny Rand & Associates (2010, p. 14-5) and LHIB (2011)

Local Administration

The first formal local administration of *LHI* took place in **1878** with the appointment of *Richard Armstrong* as *Resident Magistrate* and *Ranger* of then just proclaimed *Lord Howe Island Forest Reserve*. LHI continued to be administered by magistrates until **1913**, when, as a result of the establishment of the *Lord*

[224] Numbers calculated based on an average length of stay of 6.7 days for the months from May to September and 7.3 days for all other months. These averages result from the combination of the estimates presented by Jenny Rand & Associates (2010, p. 14-5).

Howe Island Board of Control, a board consisting of 3 *NSW Government* appointed men became responsible for the island administration, while a three-men local *Advisory Committee* appointed by the board became responsible for advising the board and carrying out its decisions locally. To the discontent of its community, from **1940** onwards, *LHI* also hosted resident superintendents appointed by the *Board* based in *Sydney*. Until **1953**, "administration had been based on Government proclamations. However, primarily because of issues relating to land tenure, a specific parliamentary bill was introduced [that same year]; making *Lord Howe Island* the only place in New South Wales to be governed by its own Act of Parliament" – the *Lord Howe Island Act of* ***1953*** (Nichols, 2006, p. 108).

"With the passing of the Act, the *Board of Control* was reconstituted as the *Lord Howe Island Board* and comprised five members instead of three", islanders being allowed to elect one of its members to represent their interests and the "*Advisory Committee* [being] retained and [then] made up of four elected Islanders" (Nichols, 2006, p. 108). In **1982**, an amendment to the *Act* "restructure[d] the *Board* to make it more representative so that the island community would have a greater say in the management of the island". This way, it became a five-member board of which three were elected islanders, the island *Advisory Committee* being abolished (LHIB, 2007, p. 3). Further amendments to the *Act* took place in **2004** increasing the number of board members to 7 (see *Figure 112*), of whom four were to be elected islanders, while the other 3 were not to be islanders and should be appointed by the *NSW Government* to represent the interests of businesses and tourism; of conservation; and of the Government itself (NSW, 2004).

Currently, *LHI* is still managed by the *Lord Howe Island Board – LHIB*, a State of *NSW* statutory authority established under the *LHI Act of* ***1953*** (NSW, 1953), with the *Board* reporting to the *NSW Premier*, through the *Office of Environment and Heritage*, part of the *Department of Premier and Cabinet*. The *Chief Executive Officer* for the *LHIB* is a public servant selected through regular *NSW Government* employment procedures.

Figure 112 | LHIB Current Membership

Source | Data compiled from LHIB (2007, p. 3)

Overall, the local legislative framework for LHI comprises the *LHI Act*, the *LHI Regulations*, *LHI Board Policies and Guidelines*, the *LHI Regional Environmental Plan* and the *LHI Local Environment Plan*. Like the case of ADEFN for FDN, a significant role of LHIB for LHI is to manage land use on the island. That happens through a different land tenure system to that in force in the rest of NSW. All land on the *Lord Howe Island Group* is *Crown Land*, and occupants are holders of either perpetual leases for the purpose of residence, special leases (up to ten years) mostly for agriculture, or permissive occupancies for the provision of public services. According to the Australian Constitution of **1901**, since LHI is part of the State of NSW, all its *Crown Land* is under the jurisdiction of that State, which manages the use and allocation of that land through the LHIB. Despite not having a specific department to deal with tourism, the LHIB is also responsible for managing tourism public infrastructure and for enforcing the limit of 400 simultaneous tourists that can be on the island at any time by managing the permits for number of beds each accommodation provider is entitled to (LHIB, 2013). As for LHI tourism marketing and branding, these are the responsibility of the *Lord Howe Island Tourism Association* – LHITA, which is supported by the State agency *Tourism NSW*, the LHIB's CEO being a member of the LHITA board.

Protected Areas and Development Control

> *The early recognition of the unique outstanding landscape [of LHI] provided the impetus for the preservation of this unique island[,] [...] [with] scientific curiosity lead[ing] to Conservation and World Heritage Listing. [...] By the* ***1860s*** *a scientific community had become established in New South Wales and these scientists joined other colonial government officials in a number of visits to [LHI]. [...] Owing largely to the[ir] visits and reports [...], the first official conservation measure was taken in* ***1878*** *when the island was declared a Forest Reserve (Hutton, 2008, pp. 235-6).*

In **1883**, *LHI* was proclaimed a *Botanic Reserve* (Edgecombe, 1977, p. 16) as a response to the final report (entitled *Lord Howe Island 1882*) of the scientific expedition of **1882**. Later that same decade, *Australian Museum*'s first official expedition to the island in **1887** resulted in the publication of *Memoirs No 2* (Etheridge, 1889) by this same institution in **1889**, "which today is still considered a classic in natural history" (Hutton, 2008, p. 237).

Concerns over the proposal to build an airstrip on *LHI* to replace flying boats in the **1970s** allied to those over the damages caused by feral goats to *LHI*'s vegetation prompted the emergence of the modern environmental conservation movement on *LHI*. This movement led to further scientific expeditions that resulted in a final report known as the *Environmental Survey of Lord Howe Island – or the Recher Report of* **1974**, setting forth

> *"far reaching recommendations on the preservation of the Island's wildlife"[,] [including the proposal] to create a reserve for the protection of flora and fauna, to control the exotic species, to carefully manage and limit residential development, and to base the tourist industry on the Island's existing natural values and wildlife" (Hutton, 2008, p. 239).*

Later that same year, a second report commissioned by the *LHIB* (Ashton Report of **1974**)

> *"concluded that, with careful organisation, the [experienced] annual intake of tourists could be doubled to 8,000 but beyond this limit, the island would be in danger of deteriorating through overuse of the limited space and facilities"[,] [also proposing the proclamation of a] "National Park [on LHI] to include the reserves and buffer areas recommended in the Recher Report, together with a Marine National Park [...]" (Edgecombe, 1977, p. 18).*

Increased interest in the island's unique environment led scientists and the nature conservation movement to seek the protection of those endemic species that were threatened by human development and the introduction of invasive species. "The woodhen, one of the few endemic species to survive all predatory impacts, was still an endangered species and by the late **1970s**, it was estimated that only 37 remained" (Nichols, 2006, p. 121). As a result, "[i]n **1978** the *National Parks and Wildlife Service of NSW* decided to examine more closely the factors limiting the size and the distribution of the [*LHI*

Woodhen] population and devise[d] a program for its rehabilitation" that included the eradication of pigs and a captive propagation program for restocking the island's low land areas. The program was a success in securing the species' survival while also increasing public awareness for the need to conserve *LHI*. As a result, seven years later, "approximately 70 captive-bred birds and their progeny [were] surviving and reproducing at two localities in the low lands" (Miller & Mullette, 1985, pp. 56, 82-3, 89).

Despite increasing pressure from the environmental conservation movement that a *National Park* be proclaimed for significant areas of *Lord Howe Island* as a way to guarantee the protection of the environment and the island's future inscription on the *WH List*[225] (Edgecombe, 1977, p. 18), a *Permanent Park Preserve* (*PPP*) was established on the Island in **1981** through an amendment of the *LHI Act* (NSW, 1953), the *LHIB* retaining jurisdiction over its management. The decision to implement a local *Protected Area – PA* rather than a *National Park* was vested in political motivation, as through this model, locals would retain greater decision-making power in regard to the area, as most decisions could be managed at the Board level and not at the State Level.

> *The PPP is not a national park. It is however similar to a national park in that the primary management emphasis is conservation and preservation of natural values. The main difference between the PPP and national parks is that the management of the preserve allows for the sustainable harvesting of some natural resources (mainly palm seeds) (NSW, 2011, p. 2).*

Despite no *National Park* being proclaimed, on the grounds of *LHI*'s *Natural Universal Values* and the conservation efforts put forth by the proclamation and implementation of the *Lord Howe Island Permanent Park Preserve – LHIPPP*, in **1982**, *LHI* was inscribed on the *World Heritage List* as a *Natural Property* under the name of *Lord Howe Island Group* for attendance to criteria vii and x[226] (WHC, 2014).

In **1997**, the *Lord Howe Island Group - LHIG* was one of the 15 Australian *World Heritage Properties – WHPs* to be included in the *National Heritage List* (Commonwealth of Australia, 2007). Through the *Caring for our Country* program[227], the *Commonwealth Government* funds a *WH Manager* for the *LHI Group* (Australia, 2008). However, under the argument that most island affairs are dealt by the LHIB and that the *Board* is representative of the local community, no local *WH Advisory Committee* has been established for the *LHI*[228]. However, despite offering an opportunity to integrate *WH* issues with Island affairs, the current local system does not seem to provide enough space for debate around *WH* management, since the *LHIB* has a great

[225] Result of the **1972** *World Heritage Convention* of which Australia was a signatory.
[226] See page 173 for a description of each criterion.
[227] See page 206 for a broader understanding of Australia's national context for *WH* management.
[228] Interview data.

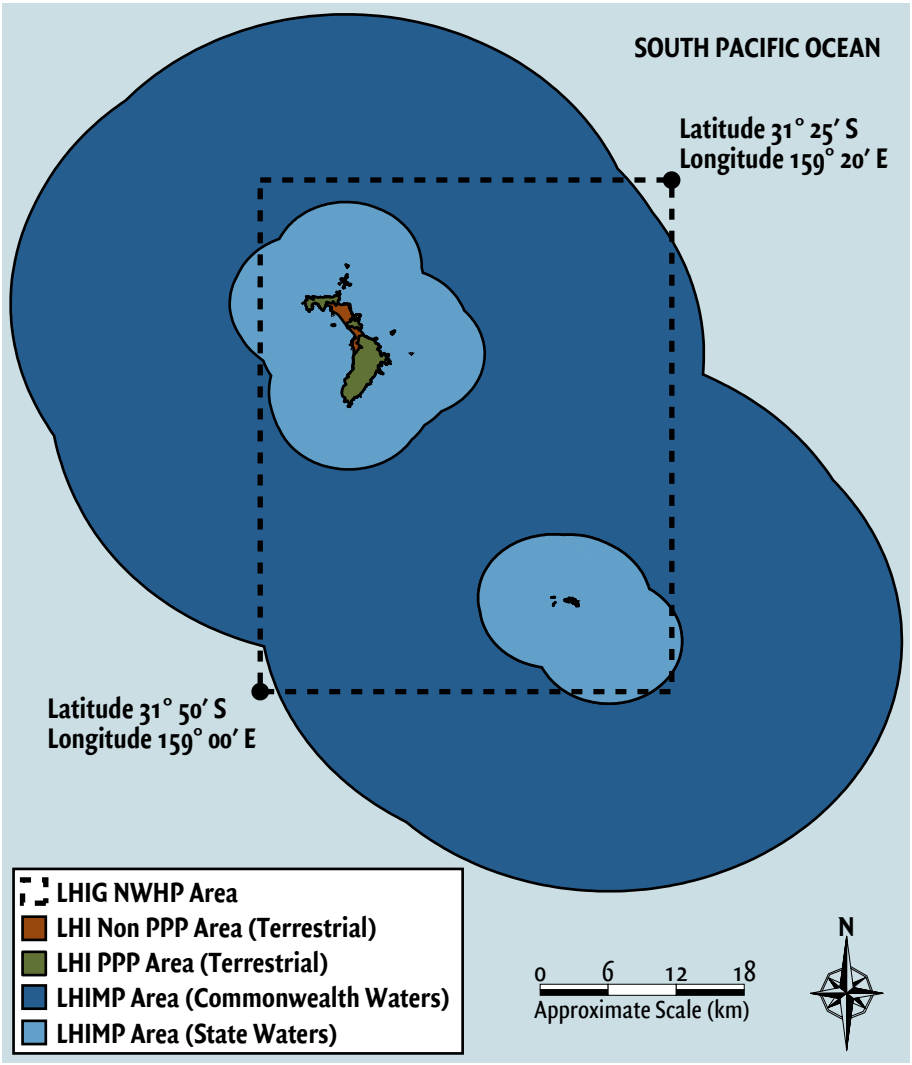
number of issues to be discussed[229]. Planning for the eradication of rodents is perhaps one example of miscommunication leading to a very divided community[230]. This is likely to have its roots in a local system that might have lacked to bring the broader community on board the process of planning and decision-making for *WH* management. The absence of a local *WH Advisory Committee* might have been part of the problem. While the *LHIB* manages the terrestrial area and *NSW Marine Parks* manages the maritime areas of *LHI*, the *LHIG Natural World Heritage Property – NWHP* encompasses both terrestrial and marine areas of the Island Group. A local advisory committee that could focus on *WH* issues related to the whole area comprised by the *WHP* seems an important instrument to increase community participation and awareness, as a well as an integrated view towards *WH Universal Values*, promoting conservation measures that could be aligned to local needs and understandings of the impact of conservation measures to islanders' daily lives.

In spite of raising awareness for the need of conservation, *WHPs* are not *Protected Areas – PAs* per se, but are put to work through proclaimed national, state and local PAs. Considering that the *LHIPPP* only encompassed terrestrial areas, in order to secure the protection of the marine environments comprised by the *WH* property, 25 years after the recommendation set forth by the *Ashton Report*, the *LHI Marine Park – LHIMP (State Waters)* was proclaimed in **1999** and the *LHIMP (Commonwealth Waters)* in **2000**. Through an agreement with the *Commonwealth Department of Sustainability, Environment, Water, Population and Communities*, the *NSW Marine Parks Authority* manages the entire *LHIMP* – both State and Commonwealth Waters.

Despite taking place a year before the listing of *LHI* as a natural *WHP*, the proclamation of the *LHIPPP* is partially motivated by the process of the property's nomination as *WH*. As for the proclamation of the *LHIMP State and Commonwealth Waters*, they are also partly a *consequence* of the listing of *LHI* as *WH*. *Figure 113* portrays all levels of *PAs* in place for *LHI* until **2012**. *Figure 115* presents these same layers in a larger format as well as applicable marine zoning[231]. *Figure 116* portrays both the land and marine zoning categories currently applied to the different *PAs* comprising *LHI*[232]. More than 75% of *LHI*'s lands are part of the *PPP*, currently representing about 13 sq km (NSW, 2011, p. 1).

[229] Direct observation.
[230] Direct observation and interview data.
[231] See page 25.
[232] See page 27.

Figure 113 | LHI Protected Areas: all layers currently valid



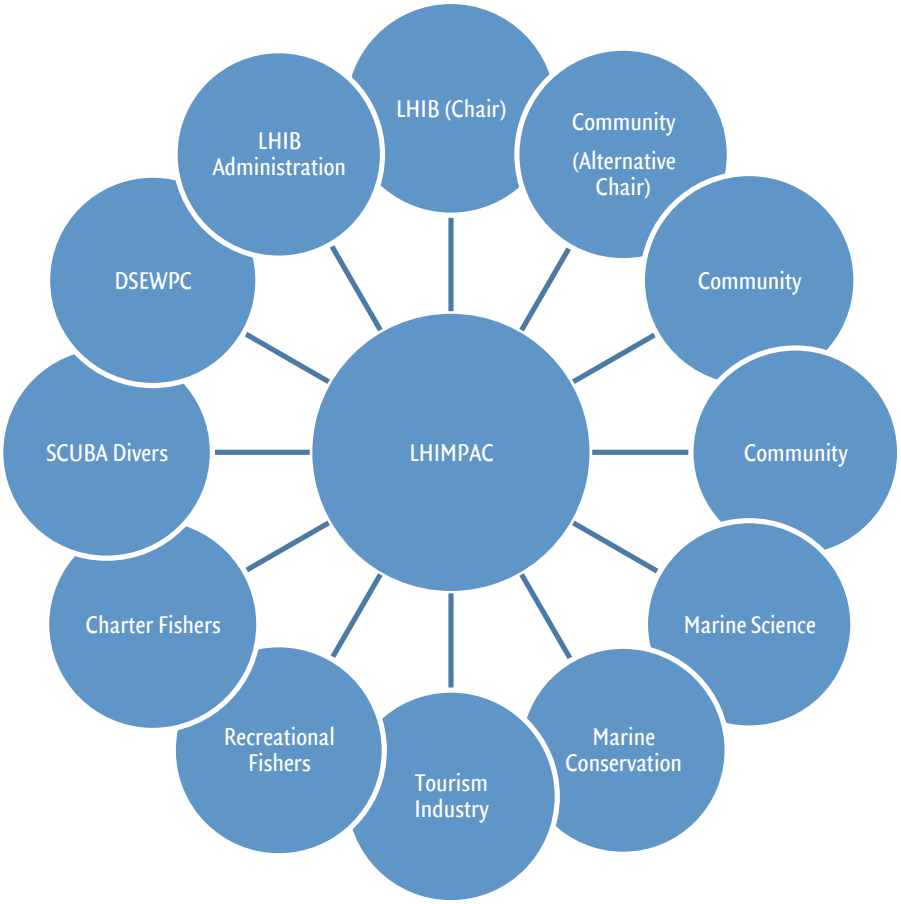
Source | Data compiled from DSEWPC (2013), Environment Australia (2002) and NSW (2011).

Both *PPP* and non-*PPP* terrestrial areas are under the jurisdiction of the *LHIB*. The area in light blue comprises the *State Waters* portion of the *LHIMP*, coinciding with the boundaries of state jurisdiction of marine waters surrounding the islands – 3 nautical miles. The area in dark blue comprises the *Commonwealth Waters*' portion of the *LHIMP*, covering the area from 3 to 12 nautical miles from the islands, a small part of the area surrounding the islands that are under Commonwealth jurisdiction – the total area extends to 200 nautical miles. Finally, the area within the dashed box comprises the *Lord Howe Island Group Natural World Heritage Property – LHIG NWHP*[233] (DSEWPC, 2011) that accounts for a total of 1,463 sq km (Mackay, 2010, p. 5).

[233] *LHI* was listed as *World Heritage* at a time when only core areas were defined, hence the inexistence of a buffer area surrounding the property. It is likely that in the near future, a buffer area for *LHI* will be defined by request of *UNESCO WHC*.

The *Lord Howe Island Marine Park Advisory Committee - LHIMPAC* supports *LHIMP Management*. *LHIMPAC* brings together the views of different groups involved with the park (mainly local) including those of conservation, science, businesses, community and different levels of public administration, informing decision making related to the State of NSW part of the Marine Park. In **2009** and **2010**, *LHIMPAC* played an important role in the revision of the *LHIMP* (*State Waters*) zoning plan[234]. *Figure 114* portrays the different groups represented in the *LHIMPAC*.

Figure 114 | LHIMPAC Membership



Source | Data compiled from MPA NSW (2010)

In **2012**, as a result of the creation of a *National Representative System of Marine Protected Areas* – NRSMPA for Australia, the *Temperate East Commonwealth Marine Reserves Network* was established, encompassing the *Lord Howe Commonwealth Marine Reserve* - LHCMR, including former *LHIMP (Commonwealth Waters)* and *Elizabeth and Middleton Reefs Marine National Nature Reserve* (DSEWPC, 2012b). Currently under transitional arrangements until a management plan comes

[234] Current zoning plan commenced in 2004 and after its first review was published on 27 January 2011, the Minister for Primary Industries of the State Government of New South Wales decided it should be kept as it was and that issues identified in the review report should be addressed by exploring opportunities within the LHIMPAC (MPA, 2014).

into effect, "there are no changes on the water for users of new areas added to the Commonwealth marine reserve estate" (DSEWPC, 2012a) that were engulfed by the newly created *LHCMR*.

Chapter Conclusion

When one looks at the history of *LHI* from a broad perspective, certain events seem to have played particularly significant roles in shaping the way tourism development and the conservation movement gained strength over time. When compared to *FDN*, *LHI* showcased a much earlier development of tourism and proclamation of Protected Areas. While tourism to *LHI* started in the early **1900s**, *FDN* was officially opened to tourism only in the **1960s**. *LHI*'s first protected area was proclaimed in the **1878** when it was declared as a *Forest Reserve*. As for *FDN*, its first *PA* was proclaimed only in **1986** when all its land territory and surrounding waters were declared as an *Environmental Protection Area*. If *FDN*'s location was strategic for defending the Brazilian territory, *LHI*'s location was strategic as an en-route stop to *Norfolk Island* and as a gateway to the *South Pacific*.

This led to two very different kinds of human settlement and development: the establishment of highly subsidised government fortresses and penal colonies in *FDN* and the voluntary establishment of a relatively self-sufficient community on *LHI*. As a result, many of *LHI*'s current residents are part of families that have lived on the island over many generations, some being lineal descendants of early settlers. On the other hand, most *FDN* residents cannot trace their relationship to the island spanning much further back in history, since most previous occupants to the island were there on a temporary basis – either as a prisoner, a government official or in the military.

Subsidies and self-sufficiency have led to different kinds of local empowerment in both places. While *LHI*ers have been part of the local administration since **1913** when the *Advisory Committee* was formed, in *FDN*, the first chance of participation in the local administration occurred only in **1987** when the Community Council was created.

Not having to host a penal colony also allowed *LHI* to develop two waves of economic development that fostered the appearance of a local community and that formed the basis for the early development of locally controlled tourism development. If serving as a port of call for whaling ships induced early settlement and the reaching of a reasonable island population on *LHI*, that same population pushed for the development of the *Kentia Palm* industry when whaling declined, and tourism started emerging in the early **1900s** as the island became more connected to *NSW* mainland through the export of palm seeds. In contrast, tourism development in *FDN* was fostered by the government as a way to help reduce the cost of running the island. That included public investment in the construction of the first major

accommodation provider – *Pousada Esmeralda* in **1974**, as well as a later plan to attract further investment of capital foreign to the island, in order to transform it into a large private tourist resort. On *LHI*, the construction of an *Ansett* tourist resort never became a reality because of reasonable local empowerment and community opposition[235]. In *FDN*, the first government attempt to install large resort complexes did not become a reality in greater extent due to federal-state political disputes rather than local empowerment. When this dispute was resolved later, it was through knowledge and defence of the Brazilian environmental legislation, that the local community of *FDN* became more empowered, and was able to partially contain the widespread growth and control of local tourism businesses by non-islander investors.

In regard to the way the conservation movement emerged on *LHI* and *FDN*, it is important to note the importance of unique land tenure arrangements, as well as the different *contexts* and reasons for proclaiming PAs. Despite scientific support, *LHI*'s *Forest Reserve* was declared mainly as a way to implement a certain land tenure system that could secure the protection of the economic development of the *Kentia Palm* industry. As for the *LHIPPP* and the *LHIMPs*, these have an intrinsic relationship with the listing of *LHIG* as a natural *World Heritage Property* and the conservation movement to protect its endangered species. However, the proclamation of a *Permanent Park Preserve* instead of a *National Park* on *LHI* terrestrial areas occurred despite pressures from the conservation movement as a way to secure greater local decision making in regards to the management of *LHI* protected lands. As for *FDN*, the proclamation of *PA*s has also served different purposes and agendas. Despite fighting for the establishment of a *Marine National Park* in *FDN* to control the widespread growth of mass tourism, the conservation movement could only succeed with the proclamation of an *Environmental Protection Area* by **1986**. However, when political disputes between federal and state levels emerged, political motivation led to the proclamation of *FDN*'s *Marine National Park* in **1988** as a way to secure federal level control over the majority of the archipelago. Considering the order in which the different protection layers were added to the two local sites and the motivation for their declaration, the research has identified that *WHL* is perceived as a prize in the Brazilian case and as a responsibility in the Australian one.

Finally, these two cases show that the emergence of tourism on these remote islands seem to be the result of: a need to sustain local economies and populations that have suffered because of global shifts; the opportunity posed by greater connection brought by the process of globalisation (mainly though the establishment of transport links); and their outstanding beauty and capacity to attract visitors. In parallel, the proclamation of *PA*s in these same places seem to be the result of a mixture of political, economic and conservation forces that invariably help to shape how the control of land and development takes place.

[235] See page 192 in Chapter 6.

References

ADEFN. (2005). Comparativo do Perfil do Visitante de Fernando de Noronha 2001-2004 (pp. 1-13). Fernando de Noronha: Administração do Distrito Estadual de Fernando de Noronha.

ADEFN. (2009). Controle Diário de Visitantes 2008. Fernando de Noronha: Administração do Distrito Estadual de Fernando de Noronha.

ADEFN. (2010). Controle Diário de Visitantes 2009. Fernando de Noronha: Administração do Distrito Estadual de Fernando de Noronha.

Australia. (2008). Caring for our Country: Outcomes 2008-2013 (pp. 1-48). Canberra: Commonwealth of Australia.

Australia, Environment (Cartographer). (2002). Lord Howe Island Marine Park and World Heritage Boundaries Map.

Commonwealth of Australia. (2007). *Gazette Special - S99*. Canberra: Commonwealth of Australia.

Corrie, Alfred T Corrie. (1878). A Visit to Lord Howe Island. *Proceedings of the Royal Geographical Society of London*, *22*(2), 136-143.

Davidson, Jim, & Spearritt, Peter. (2000). Air Travel and the Rise of the Resort. Melbourne: Melbourne University Publishing.

DSEWPC. (2011). Lord Howe Island Marine Park (Commonwealth Waters) Overview. Retrieved 11/02/2011, from http://www.environment.gov.au/coasts/mpa/lordhowe/index.html

DSEWPC. (2012a, Dec 14). Commonwealth Marine Reserves: Temperate East Commonwealth Marine Reserves Network. *Conmmonwealth of Australia Department of Sustainability, Environment, Water, Population and Communities.* from http://www.environment.gov.au/marinereserves/temperate-east/index.html

DSEWPC. (2012b, Dec 14). Commonwealth Marine Reserves: Temperate East Commonwealth Marine Reserves Network: Overview. from http://www.environment.gov.au/marinereserves/temperate-east/overview.html - fs

DSEWPC (Cartographer). (2012c). Lord Howe Island Group: Map of Inscribed Property on the World Heritage List. Retrieved from http://whc.unesco.org/en/list/186/documents/

DSEWPC. (2013, Feb 24). Australian Heritage Database: Lord Howe Island Group. from http://www.environment.gov.au/cgi-bin/ahdb/search.pl?mode=place_detail;place_id=105085

Edgecombe, Jean. (1977, Nov). Saving Lord Howe Island. *Habitat Australia*, *5*, 10-19.

Environment Australia. (2002). Lord Howe Island Marine Park (Commonwealth Waters) Management Plan. Retrieved 11/11/2010, from http://www.environment.gov.au/coasts/mpa/publications/pubs/lordhowe-plan.pdf

Etheridge, R. (1889). Lord Howe Island: its Zoology, Geology and Physical Characters. *Australian Museum Memoir*, *2*.

Hutton, Ian. (2008). *A guide to World Heritage Lord Howe Island*. Lord Howe Island: Ian Hutton.

Jenny Rand & Associates. (2010). Lord Howe Island Regional Tourism Plan 2010.

LHIB. (2007). Plain Language Guide to the Lord Howe Island Act: Information Sheet 1: History of the Lord Howe Island Act 1953.

LHIB. (2011). Tourist Arrivals to Lord Howe Island 1998-2011.

LHIB. (2013). Lord Howe Island Board - Board Members. *Lord Howe Island Board*. from http://www.lhib.nsw.gov.au/index.php?option=com_content&view=category&id=236&Itemid=772

Mackay, Janet. (2010). *Strategic Plan for the Lord Howe Island Group World Heritage Property*. Lord Howe Island: Lord Howe Island Board.

McFadyen, Kerry. (2006). *Pinetrees, Lord Howe Island 1842-1992: a brief history of the Andrews-Nichols-Kirby families*. Lord Howe Island: Pinetrees.

Miller, B, & Mullette, K J. (1985). Rehabilitation of an Endangered Australian Bird: The Lord Howe Island Woodhen Tricholimnas sylvestris (Sclater). *Biological Conservation, 34*, 55-95.

MPA, NSW (Cartographer). (2010a). Lord Howe Island Marine Park Zoning Maps: Balls Pyramid Sanctuary Zone. Retrieved from http://www.mpa.nsw.gov.au/lhimp-balls-pyramid.html

MPA, NSW (Cartographer). (2010b). Lord Howe Island Marine Park Zoning Maps: East Coast and Shelf Sanctuary Zone. Retrieved from http://www.mpa.nsw.gov.au/lhimp-east-coast.html

MPA, NSW (Cartographer). (2010c). Lord Howe Island Marine Park Zoning Maps: Lord Howe Island Lagoon Sanctuary Zone. Retrieved from http://www.mpa.nsw.gov.au/lhimp-lagoon.html

MPA, NSW (Cartographer). (2010d). Lord Howe Island Marine Park Zoning Maps: North Bay Sanctuary Zone and Admiralty Islands & Neds Beach Sanctuary Zone. Retrieved from http://www.mpa.nsw.gov.au/lhimp-north-bay.html

MPA, NSW (Cartographer). (2010e). Lord Howe Island Marine Park Zoning Maps: Observatory Rock Sanctuary Zone. Retrieved from http://www.mpa.nsw.gov.au/lhimp-observatory.html

MPA, NSW. (2014, May 26). Lord Howe Island Marine Park – Zoning Plan Review. *NSW MPA*. from http://www.mpa.nsw.gov.au/lhimp-zoning-plan-review.html

An Act to enable Her Majesty to assent to a Bill, as ammended, of the Legislature of New South Wales, "to confer a Constitution on New South Wales, and to grant a Civil list to Her Majesty", 400-422 (1855).

Nichols, Daphne. (2006). *Lord Howe Island Rising*. Brookvale: BA Printing and Publishing Services.

NSW. (1953). Lord Howe Island Act. Retrieved 20/09/2010, from http://www.austlii.org/au/legis/nsw/consol_act/lhia1953166/

NSW. (1986). *Lord Howe Island Regional Environmental Plan 1986: version for 9 January 1998 to 27 October 2005*. Sydney: New South Wales Government Retrieved from http://www.legislation.nsw.gov.au/maintop/view/repealed/epi+013+1986+cd+0+Y.

Lord Howe Island Act 1953: version for 2 April 2004 to 15 December 2005 (2004).

NSW. (2005a). Lord Howe Island Regional Environmental Plan 2005 Development Control Plan 2005. from http://www.legislation.nsw.gov.au/sessionalview/sessional/epi/2005-693.pdf

NSW (Cartographer). (2005b). Lord Howe Island Regional Environmental Plan: Sheet 2 of 3: Lord Howe Island Settlement Area Zoning [Mercator Projection].

NSW. (2011). Lord Howe Island Permanent Park Preserve Plan of Management (pp. 1-61). Lord Howe Island: NSW Government Department of Environment Climate Change and Water.

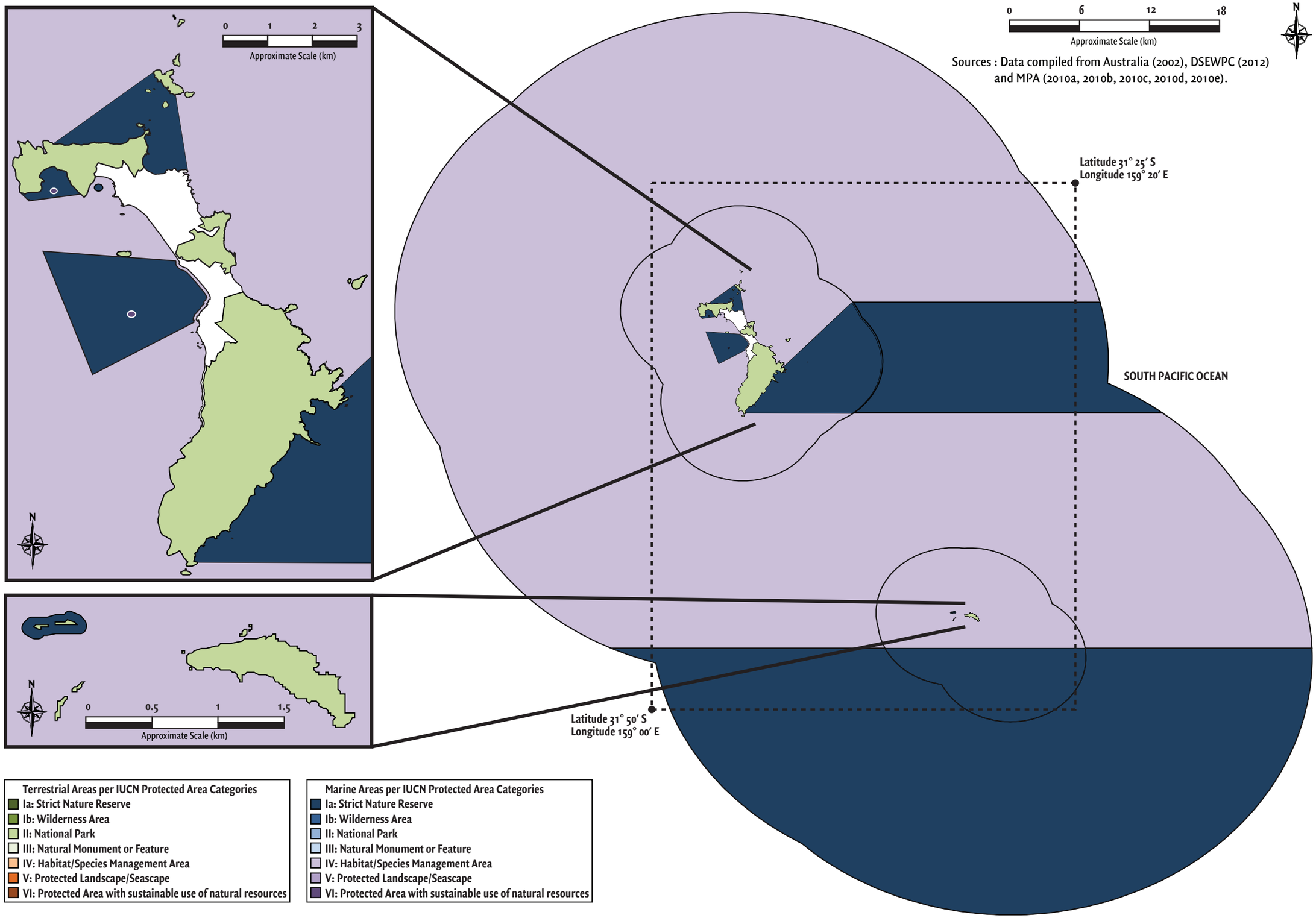
Phillipps, Peter A. R. (2009). *The Flying Boat Days: The Early Aviation History of Lord Howe Island*. West Lakes [SA]: Seaview Press.

Sinclair, John. (2002). A Management Strategy for Lord Howe Island for the Australian Voluntary Conservation Movement: A Paradise in Peril. Retrieved 13/04/2011, from http://www.sinclair.org.au/LHI_Management_Strategy.pdf

Waterways Authority. (2003). Lord Howe Island Marine Oil and Chemical Spill Contingency Plan. Retrieved 11/11/2010, from http://pandora.nla.gov.au/pan/45574/20041028-0000/www.maritime.nsw.gov.au/docs/LHIPlan.pdf

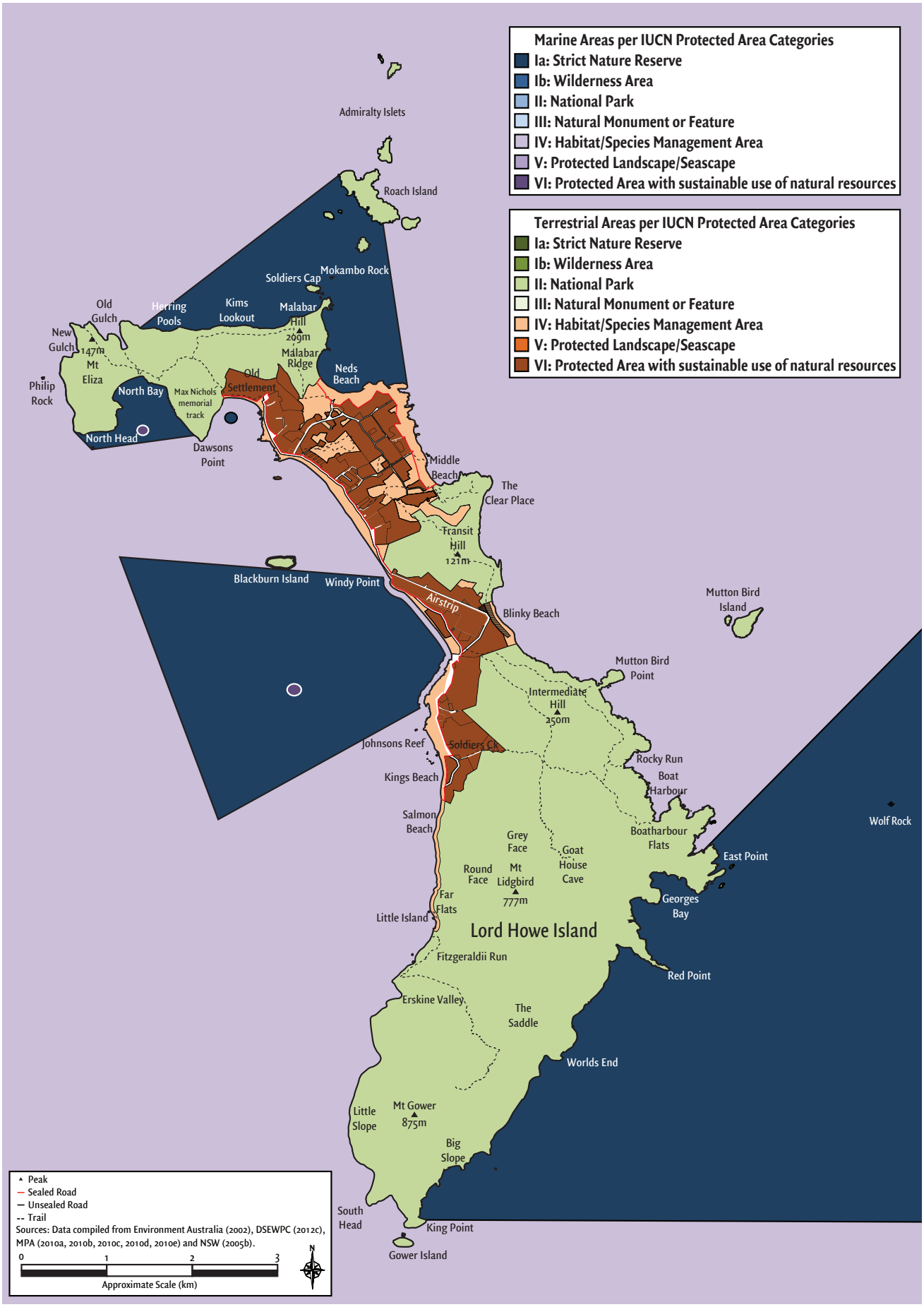
WHC, UNESCO. (2014). Lord Howe Island Group - UNESCO World Heritage Centre. from http://whc.unesco.org/en/list/186/

Figure 115 | LHI Protected Areas Currently Applicable



Leonardo Nogueira de Moraes

Figure 116 | LHI Terrestrial and Marine Zoning Currently Applicable



Fernando de Noronha Archipelago

Chapter 10 | Causal Conditions and Phenomenon

Marking Events and Resulting Competition and Cooperation

Building on the analysis of: the *global* and *national contexts* carried out in *Chapter 5* and *Chapter 6*; the main *intervening conditions* for both islands on *Chapter 7*; and the influence of *Tourism Development – TD* and *Localised Conservation – LC* as *(inter)active strategies* in place in *Fernando de Noronha Archipelago – FDN* in *Chapter 9* and on *Lord Howe Island – LHI* in *Chapter 10*, the current chapter seeks to address the remaining secondary research question (2.2) for this thesis[236] – or the identification of the main *causal conditions* for the specific patterns of competition and cooperation (*phenomenon*) manifesting on these islands. This chapter, therefore, first explores the main historical events, incidents and actions shaping the way competition and cooperation occur in the two case study sites, and then moves into exploring the relationships between the different types of competition and cooperation that were identified on *LHI* and in *FDN*. It also focuses on the way the researched *phenomenon* (self-organisation by means of competition and cooperation) is influenced by *TD*, *LC* and their associated *context*, *intervening* and *causal conditions*.

This chapter argues that in order to understand how local agents compete and cooperate, one must also consider the relationships of competition and cooperation established between local and external agents and among local agents themselves and external agents themselves, as these three types of competition and cooperation tend to be highly interdependent. This way, local historical events are not the only important *causal conditions*, as global, national, state and regional ones are also very influential. Finally, ***Global*** and ***Local Empowerment*** and ***Social Cohesion*** seem to play a great role in these dynamics, both affecting how agents compete and cooperate at all levels, but also being highly affected by their competitive and cooperative behaviour.

[236] See page 123.

Causal Conditions

The first part of *Chapter 10* presents and discusses the main *causal conditions* affecting the way self-organisation by means of competition and cooperation takes place on *FDN* and *LHI*, or the "[e]vents, incidents, happenings that lead to the occurrence or development of a *phenomenon*" (Strauss & Corbin, 1990, p. 96). It starts by analysing the results obtained with semi-structured interviews that focused the identification of these conditions by key island stakeholders. Similarly to the identification of sustainability challenges explored later in this chapter, a preliminary list of *causal conditions* was first compiled based on secondary sources research. These items were tested in each interview and interviewees added new items whenever they found necessary. These new items were included in the list and were tested in the subsequent interviews. Being specific to the history of each island, the list of items for *FDN* and *LHI* greatly differ in number of items and in type of items. Those items perceived as most relevant by the majority of interviewers were explored in greater depth, especially in regard to the way they affect competition and cooperation in *FDN* and *LHI*. In order to compare the two cases and following a grounded theory approach, these very substantive items were reinterpreted into more theoretical categories. Based on the analysis of these categories, this section argues that those affecting local empowerment and social cohesiveness are among the most relevant *causal conditions* for the different types of competition and cooperation that are established in small oceanic island tourist destinations, helping to define their level of dependency on the global *SECAS* and consequently the resilience of their local *SECAS*s.

Identification of Key Causal Conditions for FDN

From a total of 27 semi-structured interviews conducted with 26 interviewees in *FDN*, 7 were contextual interviews and 20 were focused ones. Within the focused interviews, 14 dealt with the identification of the main drivers and inhibitors affecting the way organisations and individuals compete and cooperate in *FDN*. *Table 21* portrays *causal conditions* deriving from secondary sources in dark grey and those deriving from semi-structured interviews in light grey. They have been sorted from most cited to least cited by all interviewees. Results suggest that the ***Reincorporation of FDN to the State of Pernambuco*** is the most relevant event, being cited by 10 out of 14 interviewees. To allow comparison of results obtained for *FDN* and *LHI*, items that were cited by at least 7 interviewees are now presented in greater depth[237] and are marked in bold[238].

[237] The results presented next derive from triangulation of secondary source, direct observation and semi-structured interview data.
[238] *Tourism Development* was also included for being the most cited inductive category.

Table 21 | Stated Ranking of Causal Conditions to FDN Social Structure

Drivers and Inhibitors	FDN
Reincorporation of FDN to the State of Pernambuco	10
Cruiseship Operation on the Islands	8
Signature of TAC	8
Land Use Regulations	8
Local Infra-Structure	7
Establishment of CONAPA-FN	7
Proclamation of APA-FN	7
Proclamation of PARNAMAR-FN	7
Listing of Brazilian Atlantic Islands as Natural World Heritage	7
Nomination for 7 Natural Wonders of the World	6
Tourism Development	6
Built Heritage Protection Regulations	5
Management Structure	4
Establishment of CONPARNAMAR-FN	4
Implementation of FDN Accommodation Classification Matrix	3
Development and Implementation of APA-FN Management Plan and Zoning	3
Supply Structure	2
Implementation of Noronha Terra Project	2
Identification of FDN as a Priority Tourism Destination	2
Marine Regulations	1
Number of Interviews	14

Source | Semi-structured interviews

As presented in *Chapter 8* – setting out the historical background of FDN, the ***Reincorporation of FDN to the State of Pernambuco*** brought about a lot of *consequences* to FDN. This shift of jurisdiction increased competition between federal and state levels over the control of the island, resulting in the ***Proclamation of PARNAMAR-FN*** that reduced the land area to be managed by State Level in about 70% and imprinted distinct and opposing roles for each level of administration: *environmental conservation* for the federal level – ICMBio, and *economic development* for the state level – ADEFN[239].

Despite being historically prior to the ***Reincorporation of FDN to the State of Pernambuco***, the ***Proclamation of APA-FN*** is an event that exacerbates the conflicts between Federal and State levels as it imposes a situation where state management of FDN's non-PARNAMAR-FDN lands must abide to regulations and environmental conservation decisions arising from Federal Level. While the ***Proclamation of PARNAMAR-FDN*** reduced FDN's area under State Level management, the ***Proclamation of APA-FDN*** meant that areas under state management were also partly subjected to federal administration. In a similar way, ***Land Use Regulations*** impose a situation that is even more restrictive. Despite state level gaining political and administrative jurisdiction over the territory of FDN with the reincorporation, all FDN lands remained the property of the Federation because FDN is an oceanic island.

[239] Despite being formally more associated with the State Level, social welfare appears as a secondary objective to the Federal Level too, helping justify environmental conservation and economic development, while also being impacted positively and negatively by both.

Being an isolated oceanic island, FDN's ***Local Infrastructure*** has always been costly to build and maintain, while also extremely necessary, as most public services cannot be sourced regionally (water and energy, for example). Not only has this increased pressure at the state level to pursue an economic development agenda that could bring FDN's balance of payment closer to becoming self-sufficient through tourism, greater economic development brought greater pressures over existing infrastructure. If on one hand this has pushed for greater cooperation between federal and state levels for the financing of ***Local Infrastructure***, on the other, in the cases where offer did not meet demand – *Water Management*, for instance, it generated local competition that impacted negatively on the development of this same ***Local Infrastructure*** and confined it to a self-reinforcing centralised and dependency model where the local community is kept dependent on State Level services that are never sufficient.

Cruiseship Operation in FDN is the result of the economic development agenda pursued by the State Level that clash with environmental conservation efforts pursued by the Federal Level, exacerbating even more the competition and conflicts between the two levels. It also caused conflicts between local representative organisations, which ended up taking the side of either *ICMBio* or *ADEFN* for different reasons. While *AHDFN* (representing the owners of B&Bs) is a keyplayer in the anti-cruiseships group, claiming that cruiseship tourists represent an extra burden upon the island's local infrastructure without utilising accommodation services, *NORTAX* (representing local taxi drivers) does the same for the pro-cruiseships group, claiming that by hiring the tour services of taxi drivers, cruiseship tourists contribute to economic development and social welfare through income distribution.

Being the main economic driver of the state level agenda for FDN, ***Tourism Development*** is perhaps one of the greatest elements influencing relationships of competition and cooperation manifesting on the archipelago. While it initially integrated a large proportion of the local community in the activity, following a development model based on the conversion of houses into *Home* B&B accommodation services, it pushed for ***Cruiseship Operation*** on FDN and it increased the pressure for external capital to enter the local economy. Assuming a reactive position in relation to the problems generated by ***Tourism Development***, State Level management provisions were often late to address the need of control. This position seems to be greatly influenced by the time demanding process of creating a State and Local Regulatory framework that could legitimate state jurisdiction over FDN and allow the necessary actions. In the late **1990s** and early **2000s**, greater influence of PE politicians in the Federal Government led to a period of greater cooperation between state and federal levels. ***Listing of BAI as Natural World Heritage*** is a result of this cooperation. If from the federal side, listing targeted greater environmental conservation for FDN, from the state

side, it meant greater international recognition that could reflect on greater flows of international tourism to FDN and, hopefully, greater average tourist spending.

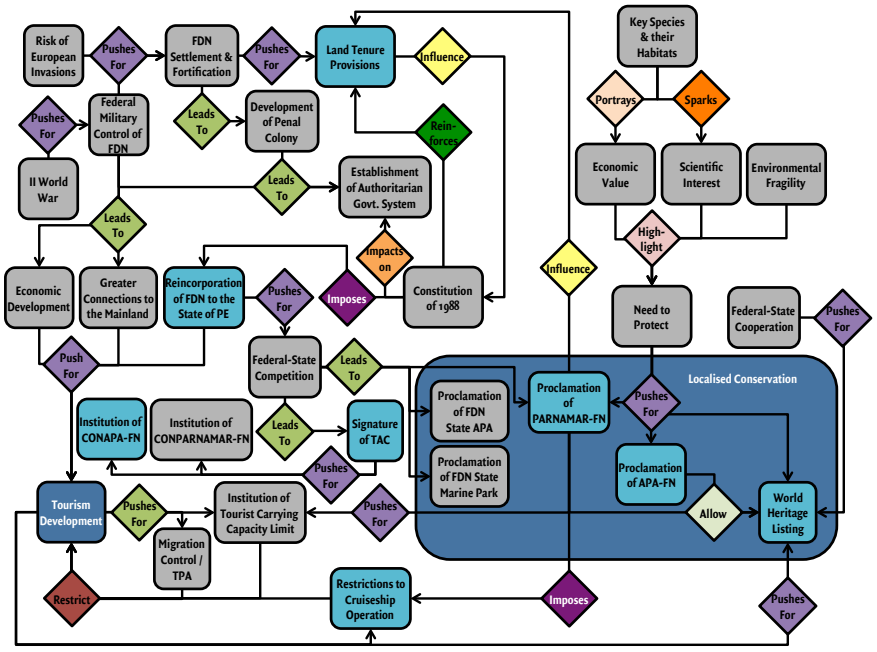
However, without the necessary regulatory control, the quest for ***Tourism Development*** greatly impacted the local social structure in FDN, reconfiguring relationships of competition and cooperation that affected ***social cohesion***, promoted individualism and helped break ***entry barriers*** to globalised capital investment leading to greater external dependency.

Before breaking local ***social cohesion*** by offering individual trade-offs to those in possession of land, the ***entry of external capital*** was firstly perceived as a threat by the majority of locals, pushing them to unite. As a result, a local movement to protect local social welfare finds in the environmental conservation movement, the necessary tools to help protect local dominance of economic development from external competitors. In disagreement with the temporary ***federal-state cooperation*** – through which the federal level diminished its presence as the enforcer of environmental conservation within APA-FDN and allowed the state level to open FDN to greater tourism development based on external investment – the local community actioned the *Public Ministry*, triggering a process that led to the ***Signature of TAC*** by all stakeholders involved with land use and occupation of APA-FDN.

The ***Signature of TAC*** made clearer the environmental conservation responsibilities towards FDN of all major state and federal level stakeholders, helping to define specific roles and ***promoting cooperation*** aiming to achieve the environmental goals prescribed by SNUC. This process also led to greater local empowerment and intra-community cooperation and organisation by requiring the ***Establishment of CONAPA-FN*** and ***COPARNAMAR-FN***, the management boards for both federal level *PAs* in FDN. Due to a regulatory loophole, for quite a few of the first years of CONAPA-FN, this board was recognised as a management board with the power to make decisions over the environmental management of APA-FDN, comprising the inhabited portion of FDN. In the absence of a direct democratic governance system for FDN where locals could elect their representatives to govern and to legislate, CONAPA-FDN offered the opportunity for the local community to be closer to decision-making affecting their livelihoods. This resulted in a unique political system in which representation became clearly (if not solely) sectorial and activity based. Citizen representation is therefore restricted to CDFN. However, because CDFN only had the power to audit the administration of the island, but not to legislate, CONAPA-FDN, backed by the federal level, has in most occasions been able to influence the course of local development in a much greater extent than CDFN.

Figure 117 summarises some relationships among selected *causal conditions* just presented for FDN in a contextualised way.

Figure 117 | Relationships among contextualised selected FDN Causal Conditions



Source | Semi-structured interviews, secondary sources and direct observation

Table 22 portrays some of the main conclusions obtained with the theoretical coding of data for FDN's main *causal conditions* to self-organisation. It suggests that ***Governance*** *causal conditions* were among the most influential, followed by ***Conservation*** and ***Tourism Development*** ones.

Table 22 | Theoretical Coding of Drivers and Inhibitors for FDN

Drivers and Inhibitors	FDN
Reincorporation of FDN to the State of Pernambuco	10
Signature of TAC	8
Establishment of CONAPA-FN	7
Establishment of CONPARNAMAR-FN	4
Management Structure	4
Governance	33
Proclamation of APA-FN	7
Proclamation of PARNAMAR-FN	7
Listing of Brazilian Atlantic Islands as Natural World Heritage	7
Built Heritage Protection Regulations	5
Conservation	26
Cruiseship Operation on the Islands	8
Tourism Development	6
Nomination for 7 Natural Wonders of the World	6
Implementation of FDN Accommodation Classification Matrix	3
Identification of FDN as a Priority Tourism Destination	2
Tourism Development	25
Land Use Regulations	8
Development and Implementation of APA-FN Management Plan and Zoning	3
Access to Land and Immigration	11
Local Infra-Structure	7
Supply Structure	2
Implementation of Noronha Terra Project	2
Local Supply and Infrastructure	11
Total	106

Source | Semi-structured interviews

Identification of Key Causal Conditions for LHI

From a total of 50 semi-structured interviews conducted with 45 interviewees on *LHI*, 21 were contextual interviews and 29 were focused ones. Within the focused interviews, 24 dealt with the identification of the main ***ca****usal conditions* affecting the way organisations and individuals compete and cooperate on *LHI*. *Table 23* portrays *causal conditions* deriving from secondary sources in dark grey and those deriving from semi-structured interviews in light grey. They have been sorted from most cited to least cited by all interviewees. Results suggest that the ***Implementation of LHI Tourist Bed Cap*** and the ***Institution of the 10 Year Residency Island Status Regulation*** along with the ***Assent of Lord Howe Island Act 1953*** are the most relevant events to interviewees, being cited by 18-17 out of 24. To allow comparison of results obtained for *LHI* and *FDN*, items that were cited by at

least 7 interviewees are now presented in greater depth[240] and are marked in bold.

Table 23 | Stated Ranking of Causal Conditions to LHI Social Structure

Drivers and Inhibitors	LHI
Implementation of LHI Tourist Bed Cap	18
Institution of the 10 Year Residency Islander Status Regulation	18
Assent of Lord Howe Island Act 1953	17
Tourism Development	14
Establishment of the Lord Howe Island Board	12
Definition of a LHI Community Development Strategy	11
Listing of Lord Howe Island Group as Natural World Heritage	11
Land Tenure System	10
Local Infra-Structure	7
Kentia Palm Exploration	7
Proclamation of Lord Howe Island Marine Park (State Waters)	7
Establishment of LHIMP Advisory Committee	3
Implementation of LHI Tourist Bed Tax	3
Proclamation of Lord Howe Island Marine Park (Commonwealth Waters)	3
Proclamation of Lord Howe Island Permanent Park Preserve	3
Cruiseship Operation on the Islands	2
Implementation of the First LHIMP Zoning Plan	2
Rodent Erradication Program	1
Business Mindset	1
Cultural & Environmental Mindset of First Settlers	1
Island Mindset	1
Lack of Code of Conduct	1
Lack of Communication	1
Local Environment Plan	1
Assent of Lord Howe Island Ammendment Act	0
Review of LHIMP Zoning Plan	0
Built Heritage Protection Regulations	0
Marine Regulations	0
Number of Interviews	**24**

Source | Semi-structured interviews

As previously presented in *Chapter 9*, the ***Assent of Lord Howe Island Act 1953*** was the instrument that regulated **Land Tenure** on *LHI*, allowing *LHI*ers to be granted perpetual leases for residential purposes and short-term special leases for pastoral and residential purposes. Despite not recognising *LHI*ers' property of land – which remained Crown Land, the *LHI Act* formally recognised and organised the occupation of *LHI* by *LHI*ers, inhibiting the establishment of new migrants. The *Act*, therefore, helped to raise the ***entry barriers*** to independent external capital at a time **Tourism Development** was already taking place. However, in **1982**, an amendment to the *Act* brought the ***Institution of the 10-Year-Residency Islander Status Regulation***, which allowed migrants to acquire *Islander Status* after living on *LHI* for 10 years or more. By lowering the barriers to entry, the amendment brought greater competition among *generational islanders* and foreigners, or *10-year islanders*.

[240] The results presented next derive from triangulation of secondary source, direct observation and semi-structured interview data.

Overall, the establishment of a ***Land Tenure System*** and of ***Protected Areas*** on *LHI* was instigated by ***Kentia Palm Exploration***, when in the late **1870s** *LHI* was declared a *Forest Reserve* and an administrator is sent from the mainland to oversee *NSW Government* interests in regard to the commercial exploration of ***Kentia Palm*** on *LHI*. By **1913**, the need to conciliate mainland government/capital interests in regard to ***Kentia Palm*** and islanders' needs, led to the establishment of the ***Lord Howe Island Board – LHIB***. Playing the role of a local government, the *LHIB* also became responsible for the island's ***Local Infrastructure***. Over time, the *LHIB* suffered a few changes to accommodate inequities between island and mainland empowerment. Due to its current composition – 4 islanders and 3 mainlanders, the *LHIB* can serve as good channel to promote cooperation and support among islanders when contentious issues are defended in opposite ways by mainlander and islander board members. However, when it comes to the allocation of land among islander families, the *LHIB* can become the stage where competition among islanders surfaces. As for ***Kentia Palm exploration***, it has brought about cooperation especially during the years it was run through an island *Co-Operative* comprising all islanders. The legacy of parts of the *Co-Operative* share system implemented at the time can still be seen in the land tenure regulations put forth by the ***LHI Act 1953*** and its amendments.

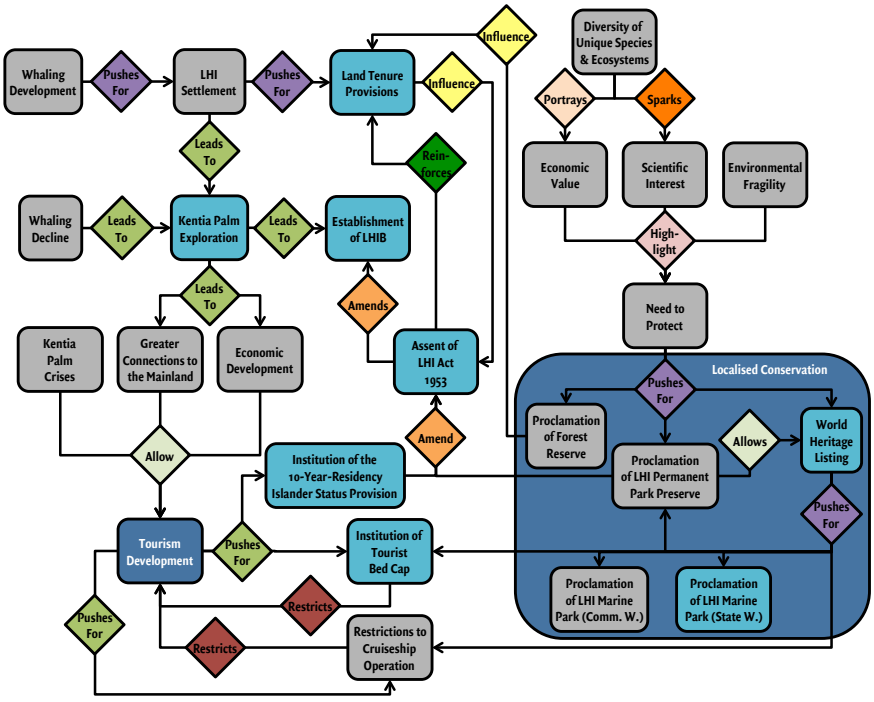
It was through the success and crisis (war and rat-related) of ***Kentia Palm*** exportation coupled with opportunities to enhance transport links with the mainland that ***Tourism Development*** took place on *LHI*. If tourist numbers were initially kept in check because of tourist transport constraints, in **1986**, the ***400-Tourist-Bed Cap*** established by the *LHI Regional Environmental Plan* formalised LHI's official tourist carrying capacity. Awareness of the need to restrict tourist numbers to *LHI* came coupled with the raising interest of the scientific community on LHI's unique environments and species, as well as with the proclamation of quite a few ***Protected Areas***, including the *LHI Permanent Park Preserve* and *Natural World Heritage Property* in **1982**. In order to protect the marine areas of *LHI NWHP*, in **1999**, *LHI Marine Park* (*State Waters*) is proclaimed. The ***400-Tourist-Bed Cap*** affects tourist sectors in different ways. Since a certain number of beds are allocated per accommodation business according to their historical involvement with tourism and not on performance, it actually does not contribute to an increase in the competition among accommodation businesses as each one has clearly defined what is their maximum market share. As for local inbound tourist operators, there being no pre-established limit of businesses or of allocation of tourists per business, the cap increases competition among players. In fact, the only restriction to the entry of new operators is access to land to establish new businesses, as this is highly scarce and controlled by the Board. However, existing businesses potential market share is equal to serving the maximum number of tourists staying on the island every night – up to 400. In that scenario, those businesses that seek to avoid confronting competition try to establish focused and complementary services to those

existing. Nevertheless, innovative successful new business ventures tend to attract the attention of competitors, who then seek to develop similar products. This approach can exacerbate competition and conflict between generational islanders and 10-year islanders, or even between different families of generational islanders, diminishing social cohesion.

In an effort to bring LHI's local community closer to LHIB's decision-making and to promote greater social cohesion, a ***Community Strategy*** for LHI was defined in **2010** through public consultation and debate. By promoting greater communication among islanders, the process to define the ***Community Strategy*** has contributed to greater cooperation on LHI.

Figure 118 summarises some of the main relationships among LHI *causal conditions* just presented (light blue and dark blue), including other *causal conditions* of importance (grey). This diagram was prepared based on data collected through interviews, secondary data and direct observation and reflects in great extent some of the main historical events covered in *Chapter 9*.

Figure 118 | Relationships among contextualised selected LHI Causal Conditions



Source | Semi-structured interviews, secondary sources and direct observation

Table 24 portrays some of the main conclusions obtained with the theoretical coding of data for LHI's main *causal conditions* to self-organisation. It suggests that ***Conservation*** *causal conditions* were among the most influential,

followed by ***Access to Land and Immigration***, ***Governance*** and ***Tourism Development*** ones.

Table 24 | Theoretical Coding of Drivers and Inhibitors for LHI

Drivers and Inhibitors	LHI
Implementation of LHI Tourist Bed Cap	18
Listing of Lord Howe Island Group as Natural World Heritage	11
Proclamation of Lord Howe Island Marine Park (State Waters)	7
Proclamation of Lord Howe Island Marine Park (Commonwealth Waters)	3
Proclamation of Lord Howe Island Permanent Park Preserve	3
Implementation of the First LHIMP Zoning Plan	2
Local Environment Plan	1
Rodent Erradication Program	1
Conservation	46
Institution of the 10 Year Residency Islander Status Regulation	18
Assent of Lord Howe Island Act 1953	17
Land Tenure System	10
Access to Land and Immigration	45
Establishment of the Lord Howe Island Board	12
Definition of a LHI Community Development Strategy	11
Establishment of LHIMP Advisory Committee	3
Governance	26
Tourism Development	14
Implementation of LHI Tourist Bed Tax	3
Cruiseship Operation on the Islands	2
Tourism Development	19
Local Infra-Structure	7
Kentia Palm Exploration	7
Local Supply and Infrastructure	14
Total	150

Source | Semi-structured interviews

Comparison and Contrast of FDN and LHI Main Causal Conditions

When FDN's and LHI's theoretical coding incidents are compared (*Table 25*), they suggest that ***Conservation*** and ***Access to Land and Immigration*** are more influential to the way people compete and cooperate on LHI while ***Governance*** is in FDN.

Table 25 | Comparison of Theoretical Coding of Causal Conditions for FDN and LHI

Drivers and Inhibitors	FDN	LHI	Total
Conservation	26	46	72
Governance	33	26	59
Access to Land and Immigration	11	45	56
Tourism Development	25	19	44
Local Supply and Infrastructure	11	14	25
Total	**106**	**150**	**256**

Source | Semi-structured interviews

A likely explanation for that disparity between cases is that the current local administrative system in place in FDN leads to great imbalance between mainland and island empowerment, causing conflicts among different island and non-island groups at the same time it pushes for cooperation among islanders collectively and between individual islanders and mainlanders seeking to survive all the imposed competition. Another important point for FDN is the competition between Federal and State levels, that greatly affect the governance of FDN. As for LHI, competition between Federal and State levels cannot be perceived at the local level. Such competition does exist when it comes to decision-making in regard to localised conservation in State territories and manifests itself through a stronger system for governance of *World Heritage Properties*, when compared to the Brazilian one. As a result, *World Heritage Listing* is portrayed as being more central in the diagram of *causal conditions* for LHI (*Figure 118*) than it is for FDN (*Figure 117*). The weight of *World Heritage Listing* as one of the main forces driving conservation on LHI and restricting urban development perhaps explains the importance of conservation as a main *causal condition* on LHI. Being a very small community, immigration issues are more evident on LHI and highly associated with the access to land. Differently to the case of FDN, where supposedly one could only have access to land after becoming a permanent resident after having lived on the island for at least 10 years, on LHI, leases can be sold to mainlanders when no generational or 10-year-islanders are interested in buying or have the means to do so. That situation can increase conflicts between generational islanders and migrants in general.

Other differences that can be examined through comparison of *Figure 117* and *Figure 118* are the economic activities that have allowed tourism development to occur and their different impacts on governance systems and on land tenure systems. While FDN was highly militarised for its strategic location and the fact it was a penal colony, leading to an authoritarian government system that still partly remains, ***Whaling*** and ***Kentia Palm Exploration*** have catered for a much more participatory type of local government system on LHI.

Finally, the results suggest that while ***non-endemic key species*** and their habitat (*Marine Turtles* and *Spinner Dolphins*) were the main drivers for conservation in *FDN*, despite the important role played by the *LHI Kentia Palm* and the *LHI Woodhen*, the ***diversity of endemic species*** and their ecosystems were the main drivers for the case of *LHI*.

The next section will now deal with the *phenomenon* of self-organisation by means of competition and cooperation influenced by the *causal conditions* just presented.

Phenomenon

The second part of *Chapter 10* focuses more explicitly on the *phenomenon* being researched.

> *"A phenomenon has the ability to tell what is going on. [...] In looking for phenomena, we are looking for repeated patterns of happenings, events, or actions/interactions that represent what [agents] do or say, alone or together, in response to the problems or situations in which they find themselves" (Strauss & Corbin, 1998, pp. 125 & 130).*

Not only the *phenomenon* of self-organisation by means of competition and cooperation can be identified as repeated patterns of agents' behaviour in *FDN* and on *LHI*, they are also the means for processes that are the basis of *Complex Adaptive Systems – CAS*[241]. They are also the main focus of this thesis, being part of the primary question and of all secondary questions for this research[242]. This section, therefore, seeks to identify the main types of competition and cooperation that are a result of the *causal conditions* identified in the previous sections and that result in the *consequences* listed in the upcoming *Chapter 11*. So as to contextualise these relationships of competition and cooperation with the theory presented in *Chapter 3*, this section starts by analysing the social structures developed in *FDN* and on *LHI* by exploring the interplay between their institutional, relational and embodied structures[243].

While *FDN* had always been subject to powerful formal institutional structures (dictatorship) coming from the mainland and shaping the way the relational structure evolved (social stratification), in the case of *LHI*, periods of abandonment led to relational structures that have highly influenced the institutional structures of the island. Despite the relational structures of both *FDN* and *LHI* being highly influenced by heritage and family grouping, in the case of *FDN*, the society was highly hierarchical with the presence of the military. Specific clubs existed for commanders, sergeants, soldiers and civil citizens, with priority given to higher military classes for the purchasing of goods whenever new supplies arrived from the mainland. The same

[241] See page 83.
[242] See page 119.
[243] See page 102.

would go for whatever was produced or harvested. The very central and authoritarian government in FDN at this period is contrasted with a quite participative local government on LHI.

In the case of FDN, embodied structures were also highly influenced by institutional structures. In an environment that was highly controlled, government was seen as a separate entity to the local population and not the result of community effort. This is likely to have happened not only because of a lack of representation, but also because of the ongoing prevailing weight of the highest levels of governance on island affairs, including Governors first appointed by the military, later by the president and currently administrators appointed by the State Governor. This situation led to a paternalistic view of government where citizens conform to obey, but also expect that the resolution of all their problems should come from their "father" – the authoritarian government. This resulted in a local community that in a reasonable part still lacks understanding of the meaning of citizenship as a process of formalised active participation in community building and development steering.

However, the sense of being subject to the will of an external government, allied with geographical isolation and uncertain environmental conditions dictating the success of fishing and agriculture, led to the development of a rationale that boosted informal community building as a means to guarantee some type of subsistence insurance. According to this rationale, different families would share their production surpluses with others, resulting in a strong social net that could be of assistance whenever their own production processes failed. This was boosted by a lack of access to instruments that could increase the prospects of accumulation. The inexistence of fridges, for example, would "force" families to share beef obtained from a slaughtered cow. By doing so, not only did they guarantee that excess beef would not be wasted, but also invested in some type of social insurance by contributing to the community they were part of. Prior to the introduction of tourism, LHIers developed a similar type of rationale, many traces of which still remain. However, by experiencing a more distant relationship with highest levels of governance, that for many years had left the island fairly abandoned, LHIers' influence on the institutional structures of the island have always been greater and it is only recently that many mainland state-wide regulations have started to be enforced[244].

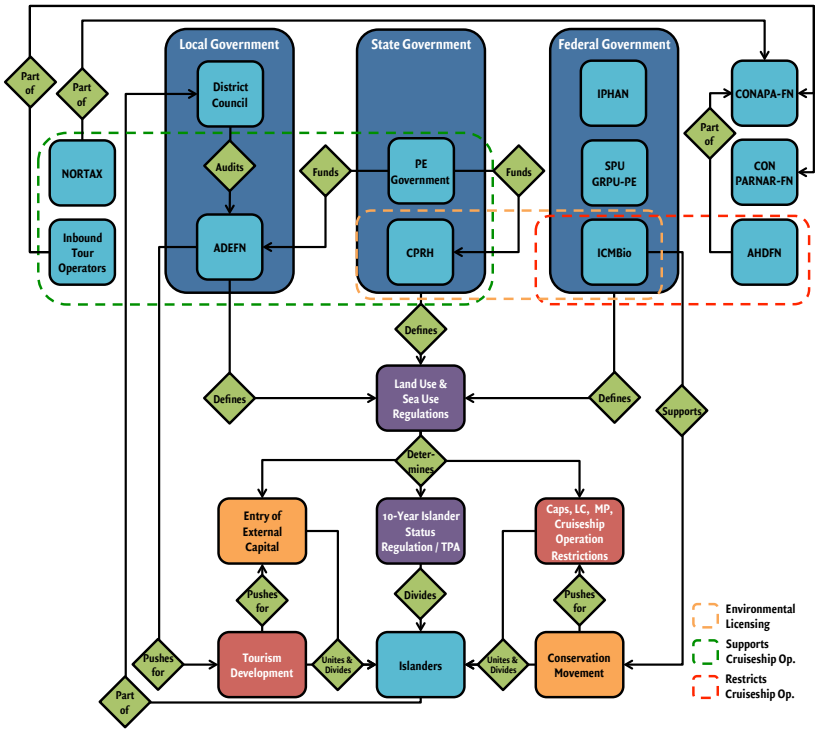
Overall, what can be perceived in both case studies is the great influence of tourism development on their social structures. As tourism starts developing and a greater influx of financial resources is brought by tourists, there is room for accumulation of capital and greater access to consumer products coming from the mainland that allow accumulation of food for longer periods of time. These become more available through the greater world

[244] An example is the recent ban on the selling of raw milk and local meat on LHI by the *NSW Food Authority* (Nichols, 2011, p. 5).

connections brought by tourism and globalisation. As individuals could then stock and more easily convert accumulation into the instant satisfaction of needs, the social insurance scheme previously in place started deteriorating. Now, different families start seeing one another as competitors in a rush for individual accumulation as they dispute tourist dollars. These types of dispute become stronger as conservation measures are put in place aiming at protecting the local environment, mainly through the proclamation of PAs and the establishment of local management plans and limits to growth. Greater restrictions on urban development allied to still fairly great isolation and an economy more and more dependent on the mainland, resulted in high cost of living, which as a *consequence*, translates into greater local competition and less social cohesion. On the other hand, tourism being a complex activity dependent on a variety of services to occur, with its product translating on what is on offer at the destination as a whole, its development also made room for greater cooperation among different local service providers, leading to the creation of industry associations (such as *LHITA* on *LHI*) or peak sector councils (such as *CONTUR* in *FDN*). The same logic applies to the conservation movement. At same time it brings greater restrictions and increases cost of living, it also protects the resources themselves, which are the reason for tourism to occur, thus pushing for greater cooperation among those dependent on tourism to ensure its future prospects. In some instances, conservation measures have also been used as a way to protect local market opportunities from being exploited by foreign capital, increasing entry barriers and local empowerment. The equation is, therefore, not a simple one, as both ***Tourism Development*** and ***Localised Conservation*** can bring very different *consequences* depending on a number of factors.

Figure 119 and *Figure 120* below portray the way some of the different components of *FDN*'s and *LHI*'s social structures influencing self-organisation processes by means of competition and cooperation. In light blue are shown different agents and in dark blue the groups they belong to (both part of the organisational network); in orange, different actions and in red, different *(inter)action strategies* (both part of the agency network); in purple, different rules and regulations (regulatory network); and in light green are shown the different relationships established among the systems units.

Figure 119 | The Interplay between Causal Conditions and (Inter)Action Strategies affecting Self-Organisation for FDN



Source | Semi-structured interviews, secondary sources and direct observation

In the case of FDN, strong ***competition between the Federal and State Levels*** can be exemplified through the historical position of the federal and the state environmental licensing agencies for the archipelago when it comes to ***restricting the operation of cruiseships*** on FDN. Representing the interests of the federal level and assuming an environmental protection position, *ICMBio* has been the main government body to restrict the operation of this type of economic activity on FDN. *ICMBio* is supported by *AHDFN*, the peak representative body for FDN's accommodation providers.

Seeking economic development as a means to increase tax collection to try to meet the island's unique demands for infra-structure, *ADEFN* is part of the pro-cruiseship group, along with *NORTAX* and *Inbound Tourism Operators*, with the support of *CPRH*. All these organisations are part of either *CONAPA-FDN*, *CONPARNAMAR-FDN* or both *PA* Councils, therefore these are the main forums where the cruiseship battle is on every year. On one side, *ICMBio* and environmental protection *NGOs* highlight the environmental threats associated with cruiseship operation. These are supported by *AHDFN* (representing the lodges), that claim cruiseship tourists are a conflicting market with less buying power to that of traditional tourists that spend overnight on the main island and therefore contribute to crowding the island and spoiling the experience of those willing to spend money and time per visit. On the other hand, the state government defends the economic benefits brought by the activity and its capacity to inject money into specific

sectors of the tourism economy, including transport and tours, therefore gaining the support of NORTAX and that of *Inbound Tour Operators*. *Table 26* helps to explain how divided the local economy is when it comes to supporting or not cruiseship operations, with about 40% of employment being generated by lodges.

Table 26 | Tourist Employment in FDN in 2007

Area	Temporary	Permanent	Total
Lodging	252	148	400
F&B	132	115	247
Taxis	-	81	81
Rentals	25	48	73
Inbound Operators	30	25	55
Shops	17	24	41
Diving	31	7	38
Boat Rides	3	18	21
Others	25	26	51
Total	**515**	**492**	**1007**

Source | Data compiled from ICMBio and e labore (2008, p. 162-4)

Along with ***Restrictions to Cruiseship Operation***, ***Caps***, ***Localised Conservation*** and *Local PA*'s ***Management Plans*** can also act as dividers and unifiers of local *SECAS*'s agents. Limitation on the number of permits to accommodation providers, to the number of tourists that can enter the island at any one time as well as specific conservation zoning measures, all play a role helping to define the conditions under which businesses and individuals compete and cooperate on FDN. Sometimes, these promote and are a result of cooperation among existing local businesses to raise the ***entry barriers*** to new players, in other instances, they can help increase the differences between businesses that can or cannot follow most of the regulations in place – those larger businesses, capable to invest greater sums of money into more complex projects are the ones that become more competitive when it comes to adhering to the complex regulatory system in place on FDN.

As for the ***10-Year Islander Status Regulation***, it also promotes competition and cooperation among those related to FDN. By stating who are permanent residents, who are temporary and who are non-residents, it formalises groups for tax purposes and grants specific rights to each category. By doing so, it reinforces some existing divisions, creates new ones, but also promotes greater union among members of the same group or of different groups when these face specific circumstances. Overall, the perception of opportunity and threat seems to bear considerable influence on the way these relationships are developed. When islanders feel threatened by outsiders, they may unite to protect themselves against such threat[245]. When they feel threatened by other islanders, they may join forces with outsiders in order to become more competitive.

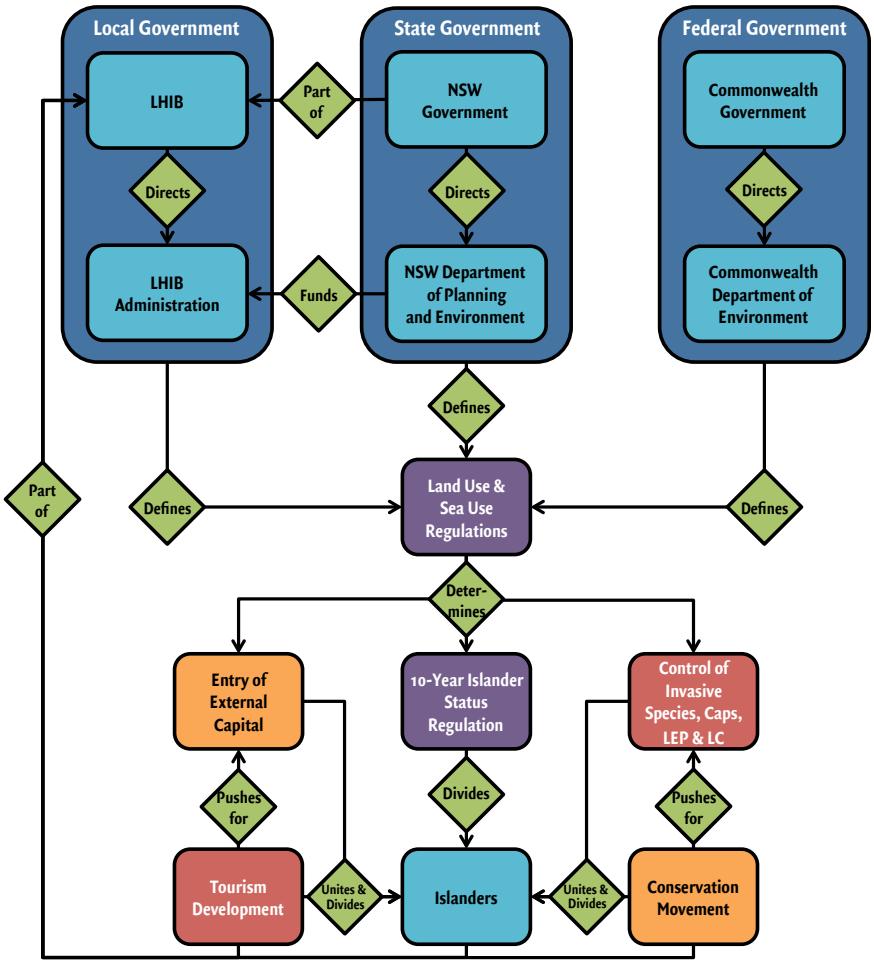
[245] Refer to *Chapter 8*'s section on ***Local Empowerment and the Rise of a New Social Environmental Agenda*** for an illustration of this.

Figure 120 portrays how these relationships are very similar for the Australian case. While ***Restrictions for Cruiseship Operation*** seem to be less divisive on *LHI*, the ***Control of*** some ***Invasive Species*** on the island is the subject of extensive debates and conflicts. Comprising a smaller community, *LHI* seems to carry greater differentiation among business owners that are generational islanders or related to generational islanders and those who are ***10-Year Islanders***. As for the ***Entry of External Capital***, there have been cases when it pushed for greater union among islanders – such as the case when *Ansett Australia* threatened to erect a large resort on *LHI* as part of its three stage tourism program[246], and those cases when the necessary cooperation to maintain control of land in the hands of locals was not great enough. As for the ***Conservation Movement***, this seems to play a greater role in the embodied structures of *LHI*ers than those of *FDN* Islanders. That does not mean it cannot be divisive as well, as it can be noticed from how different *LHI*ers react to the control of some invasive species, but, overall, there seems to be a greater common sense on the need to protect and how closely related that is to the survival of the local population and of tourism on *LHI*.

As for competition between State and Federal Levels, this does not seem to manifest on *LHI*. Quite the opposite, there seems to be ever growing cooperation among the two levels, examples being the agreement between the two levels for *NSW MPA* to take care of both *State* and *Commonwealth Waters* of *LHIMP*, as well as the way the management zoning for the two areas are complementarily designed. The same goes for the conservation of the island's land territories, the Commonwealth Government funding a position of *World Heritage Manager* who works within the *LHIB* structure. Thus, the only way the conflicts between Federal and State Levels experienced in Tasmania in regard to *World Heritage* manifest on *LHI*, is through greater Federal interest on the monitoring of conservation on site, which does receive great support from State and Local governance levels.

[246] See page 190.

Figure 120 | The Interplay between Causal Conditions and (Inter)Action Strategies affecting Self-Organisation for LHI



Source | Semi-structured interviews, secondary sources and direct observation

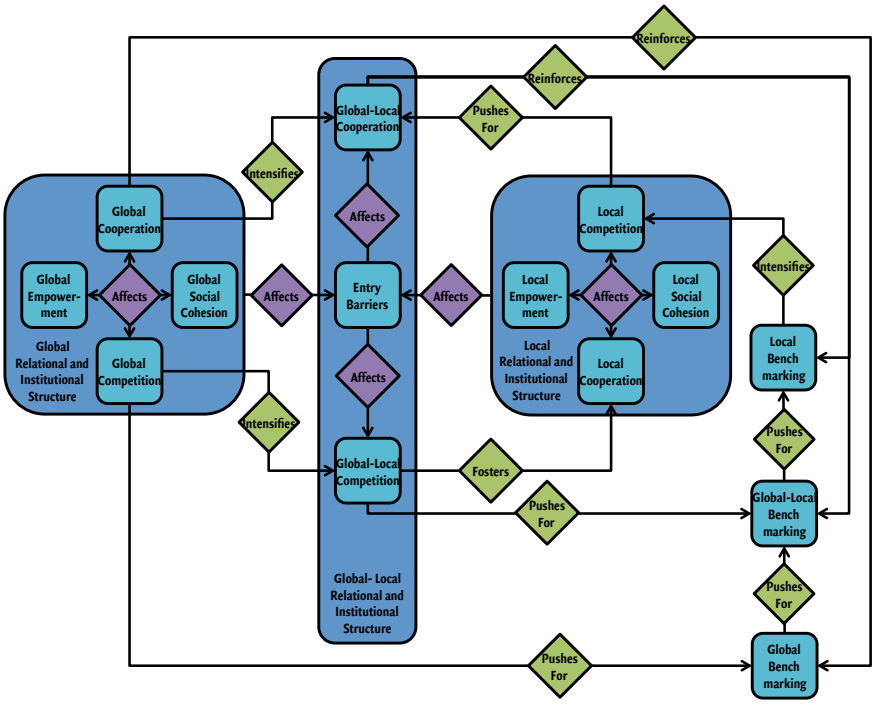
Based on the substantive coding carried out to develop the diagrams presented in this section, selective and theoretical coding[247] was conducted in order to examine the researched *phenomenon* from a more abstract perspective, which could relate to the theories explored in chapters 1, 2 and 3. This process resulted in the development of a theoretical model for the researched *phenomenon*, presented in *Figure 121*. It portrays three types of competition and cooperation identified in the two case study sites, as well as their relationships with some *causal conditions* and *consequences*.

Overall, the three ***types of competition and cooperation*** it portrays are defined by their relationship with different hierarchical SECAS's levels, namely: ***Global***, ***Global-Local*** and ***Local***. It also infers that these different types of competition and cooperation are linked with their specific relational and institutional structures. Since ***Global-Local Structures*** are those capable of linking ***Global Structures*** and ***Local Structures***, they portray certain levels of ***Entry Barriers*** that highly affect how these interactions take place, at the same time these are

[247] See page 138.

affected by the way **Global** and **Local Structures** have developed. Stemming from and influencing competition and cooperation at the three levels is **Benchmarking**, **Empowerment** and **Social Cohesion**.

Figure 121 | Theoretical Model for the Researched Phenomenon



Source | Semi-structured interviews, secondary sources and direct observation

(Inter)action strategies of **Tourism Development** and **Localised Conservation** can be seen as emergent by-products of the relationships between global and local levels, resulting in certain **Entry Barriers**. The regulatory systems resulting from the interplay between **World Heritage Listing** and the proclamation of **Protected Areas** on LHI and in FDN can illustrate these relationships. Different levels of **Local Empowerment** on *LHI* an *FDN* led to the proclamation of different types of land PAs: federally controlled ones in the case of FDN, and a locally controlled one in the case of *LHI*. **World Heritage Listing**, per se, is a global *(inter)action strategy* that stems from greater **Global Social Cohesion** and is pushed by while also reinforces **Global Empowerment** – it is the result of greater global cooperation (aiming at promoting peace) pushed by earlier global competition/conflict (*World Wars I and II*).

Global Competition and **Cooperation** among global tourism businesses such as hotel chains, airlines, tour operators and others can push for a certain global benchmarking when it comes to price and the quality of tourist products on offer. The way these businesses compete and cooperate is greatly affected by how cohesive the global community is when it comes to setting international standards and practices, as well as how empowered the global level is to

make such standards and regulations relevant instruments to those businesses[248].

Higher levels of ***Global Competition*** result in global businesses becoming more competitive when disputing markets with local businesses, therefore intensifying ***Global-Local Competition***. One way local businesses react to greater ***Global-Local Competition*** it through greater ***Local Cooperation*** aiming at increasing ***Entry Barriers***. However, higher levels of ***Global Competition*** can also push for niche specialisation that requires greater cooperation among different complementary businesses that depend on one another to deliver differentiated products to their consumers. This way, increased ***Global Cooperation*** can also intensify ***Global-Local Cooperation*** as global businesses and entrepreneurs partner with local ones so both become more competitive in the global and local arenas. Increased ***Global-Local Competition*** and ***Cooperation*** are likely to also increase ***Global-Local Benchmarking*** – or the new standards for differentiation among global, global-local and local businesses operating locally[249]. As ***Global-Local Benchmarking*** increases, it pushes for greater ***Local Benchmarking***, which is also intensified by greater ***Global-Local Cooperation***. This way, as local businesses start partnering with global businesses and global investors, new standards among local businesses are set. Higher ***Local Benchmarking*** intensify ***Local Competition*** that pushes for greater ***Global-Local Cooperation***, forming a self-reinforcing cycle.

The levels of ***Local Cooperation*** and ***Competition*** seem to affect and be affected by the level of ***Local Empowerment*** and that of ***Local Social Cohesion***, the interplay of these four affecting how high or low the ***Entry Barriers*** are[250].

When these processes are contrasted between *LHI* and *FDN*, it appears that historically greater ***Local Social Cohesion*** and ***Local Empowerment*** on *LHI* led to higher Entry Barriers and the development of a local economy greatly based on the businesses of generational islanders than that of *FDN*, where there has always been less ***Local Social Cohesion*** and ***Local Empowerment***, leading to the introduction of a greater number of businesses that are owned by locals, but run by mainlanders.

As ***Global Empowerment*** increases and international (or mainland) standards, certifications and regulations are introduced in local destinations, local businesses tend to find it harder to comply with them, than global

[248] *Chapter 5* on *Global Context* illustrates how global social cohesion and global empowerment have co-developed along global competition and global cooperation until recent years.

[249] Global Businesses are understood here as those whose owners are non-generational islanders or not related to generational islanders and that are controlled from the mainland. Global-Local Businesses are considered here as those owned by non-generational islanders who live on the island and therefore are part of the local community (10-year islanders). Finally, local businesses are understood as those owned by generational islanders.

[250] Refer to *Chapter 8*'s section on ***Local Empowerment and the Rise of a New Social Environmental Agenda*** for an illustration of the interplay between these elements.

businesses, leading to global businesses increased competitiveness and the lowering of ***Entry Barriers***[251]. In that respect, there seems to be a connection between greater global empowerment and over-regulation.

Chapter Conclusion

This chapter has explored some of the main *causal conditions* for the evolving patterns of competition and cooperation experienced by *Fernando de Noronha* and *Lord Howe Island* over the years and how these patterns are linked with different levels of ***Local Social Cohesion*** and ***Local Empowerment***.

It highlighted that the establishment of different functions and economies for the two islands on their early development stages have catered for different administrative systems. These have reinforced different levels of ***Local Empowerment*** that seem to be intrinsically linked with the patterns of competition and cooperation exercised by local and global agents acting on these islands.

Barriers for global businesses to enter the islands' local economies seem to be greatly affected by the interplay between ***empowerment***, ***social cohesion***, ***competition*** and ***cooperation*** at the global and local levels of the SECASs these islands are part of. In return, these ***entry barriers*** seem to influence the way relationships of competition and cooperation are established between global and local agents.

[251] An example is the banning on sale of local meat and raw milk on *LHI* described earlier in this chapter.

References

ICMBio, & e labore. (2008). Estudo e Determinação da Capacidade de Suporte e Seus Indicadores de Sustentabilidade com Vistas à Implantação do Plano de Manejo da APA-FN: Produtos 3 e 4 - Relatório Final (pp. 1-316): Instituto Chico Mendes de Conservação da Biodiversidade.

Nichols, Barney. (2011, Feb 18). The Lord Howe Island Signal. *The Lord Howe Island Signal*, pp. 1-16.

Strauss, Anselm L., & Corbin, Juliet M. (1990). *Basics of qualitative research: grounded theory procedures and techniques*. Newbury Park, Calif.: Sage Publications.

Strauss, Anselm L., & Corbin, Juliet M. (1998). *Basics of qualitative research: techniques and procedures for developing grounded theory* (2nd ed.). Thousand Oaks: Sage Publications.

Lord Howe Island

Chapter 11 | Consequences

Resulting Sustainability Challenges

Building on the analyses carried out in chapters 5 to 10, *Chapter 11* seeks to address the primary research question (1) for this thesis[252] by exploring the relationship between the different types of competition and cooperation identified and the main sustainability challenges – or *consequences* – faced by *Lord Howe Island – LHI* and *Fernando de Noronha Archipelago – FDN*. Therefore, this chapter focuses on the *consequences* brought about by the researched *phenomenon* (self-organisation by means of competition and cooperation) for the two islands, providing a snapshot of key sustainability challenges that were identified as part of the research process of data collection. It also takes into account the influence of *Tourism Development – TD*, *Localised Conservation – LC* and their associated *context*, *intervening* and *causal conditions*.

Firstly, the chapter details the process of identification of the main *Sustainability Challenges* for each case study. Secondly, it presents the perception of local stakeholders in relation to the way these challenges should be prioritised by planners. Then, through theoretical coding, challenges are grouped in categories and selected challenges are explored in greater detail for both case study sites. Due to their close link with the process of self-organisation by means of competition and cooperation, **Local Social Cohesion** and **Local Empowerment** are the first *Sustainability Challenges* to be presented. For all other selected challenges, an account on how they relate to **Local Social Cohesion** and **Local Empowerment** is presented.

Overall, this chapter argues that **Local Social Cohesion** and **Local Empowerment** are those sustainability challenges that are the most directly linked with the way agents compete and cooperate, posing considerable influence on the remaining sustainability challenges described in this chapter. It also argues that **Tourism Development Management** and **Environmental Impact Management** are also very relevant sustainability challenges due to their intrinsic link with the *(inter)action strategies* of *Tourism Development* and *Localised Conservation* and for their capacity to influence and be influenced by all other challenges, including **Local Social Cohesion** and **Local Empowerment**. Finally, by managing the numbers of tourists that visit the researched destinations, implemented **Tourism Development Management** models' identification and respect of the destination's *Social Carrying Capacity* seem to highly influence different self-reinforcing levels of **Local Social Cohesion** and **Local Empowerment**.

[252] See page 123.

Sustainability Challenges Identified

Based on the concept of tourism development sustainability[253] proposed in *Chapter 2*, the analysis carried out in this section takes into account 3 dimensions of sustainability: sectoral, local and global. Using *UNWTO*'s proposed set of baseline issues that groups indicators of sustainable tourism for specific types of tourist destinations, a preliminary list of sustainability challenges was devised and tested for its relevance – initially through contextual interviews and later on through focused ones. Based on expanded access to printed sources, direct observation and mainly semi-structured interviews carried on-site, the initial list of sustainability challenges received a few additions and adjustments. Building on the concept of *Post-Normal Science* (Ravetz, 1999), the research included the input of locals when determining the main sustainability challenges faced by each tourist destination case study[254].

The initial list drew on baseline issues suggested by *UNWTO* for the following types of tourist destinations: *Small Islands*; *Coastal Zones*; *Beach Destination and Sites*; *Natural and Sensitive Ecological Sites*; *Ecotourism Destinations*; *Parks and Protected Areas*; *Communities within or adjacent to Protected Areas*; *Trails and Routes*; *Small and Traditional Communities*; and *Cruiseships and their Destinations*. Following are the proposed initial list and the final list of relevant sustainability challenges for *FDN* and *LHI*.

[253] See page 69.
[254] See page 32.

Table 27 | Sustainability Challenges Identified

Sustainability Challenges	Code Origin		Critical to	
	Source	Type	FDN	LHI
Access to Destination and Attractions	UNWTO	Printed Source	2	9
Access to Natural Resources	UNWTO	Printed Source	13	3
Benefits Retention	UNWTO	Printed Source	6	6
Climate Change	UNWTO	Printed Source	2	12
Cultural Heritage Protection	UNWTO	Printed Source	7	7
Energy Consumption and Generation	UNWTO	Printed Source	11	15
Environmental Impact Management	UNWTO	Printed Source	13	17
Seasonality and Migration	UNWTO	Printed Source	9	3
Sewage Treatment	UNWTO	Printed Source	12	13
Tourism Development Management	UNWTO	Printed Source	10	14
Tourism Intensity	UNWTO	Printed Source	5	13
Waste Management	UNWTO	Printed Source	17	12
Water Management	UNWTO	Printed Source	13	3
Demographic Density	FDN	Interview	8	12
Education	FDN	Interview	1	4
Housing	FDN	Interview	4	15
Island Supply Management	FDN	Interview	1	10
Local Empowerment	FDN	Interview	3	18
Social Cohesion	FDN	Interview	1	19
Sense of Ownership of Public Spaces	LHI	Interview	N/A	3
Skills Strategy	LHI	Interview	N/A	6
Sum of Observations			138	214
Number of Interviews			19	29
Number of Priorities			7	7
Number of Possible Choices			133	203
Exceeding Choices			5	11

Table 27 portrays in dark grey the initial list of 13 sustainability challenges deriving from *UNWTO* baseline issues, in medium grey the 6 additions deriving from interviews carried out in *FDN*, and in light grey the 2 additions from those conducted in *LHI*. Since fieldwork was conducted first in *FDN*, the 2 challenges added during the fieldwork in *LHI* were neither part of the preliminary list nor were pointed out as critical by *FDN* interviewees. The last two columns present the number of times each challenge was chosen as being critical by interviewees, who were asked to choose the seven most relevant challenges and rank them in terms of their priority level. A total of 19 interviewers carried out this task in *FDN* and 29 on *LHI*, meaning that any challenge could not have been chosen more than 19 times for *FDN* and 29 for *LHI*. This means that in the case of *FDN*, ***Waste Management*** was cited as critical by almost everyone (17 out of 19). However, there were cases when interviewers chose more than seven challenges, by considering that some of them were intrinsically related and could not be treated as separate. Due to this, the number of possible choices (number of priorities times number of interviews) was exceeded by the sum of observations (or the sum of the number of times each challenge was cited as critical) as detailed in the last five lines of the table. To facilitate visualisation of the data, a colour code

was applied to the results according to their proximity to the minimum (green), medium (yellow) or maximum (red) possible values.

The colour code suggests that within the challenges deriving from UNWTO's baseline issues, the greatest differences of perception are recorded for: ***Access to Natural Resources***, ***Seasonality and Migration***, and ***Water Management*** as being more critical to FDN; and ***Climate Change***, ***Access to the Destination and Attractions***, and ***Tourism Intensity*** as being more critical to LHI. As for those challenges added through interviews in FDN, it can be noted that some of them seemed rather relevant to interviewees from LHI; ***Social Cohesion***, ***Local Empowerment*** and ***Housing*** being respectively the first, second and fourth most cited challenges among all challenges in the full list. Despite lower numbers having been recorded for those 3 challenges for FDN, many interviewees referred to them in other parts of the interviews. Perhaps, if those challenges had been part of the full list of challenges from the very first interview conducted in FDN, interviewees might have chosen them more often. The same might have been true for **Skills Strategy**. These differences can be visualised in *Table 28:*

Table 28 | Sustainability Challenges Ranking for FDN and LHI

Sustainability Challenges	FDN
Waste Management	17
Access to Natural Resources	13
Environmental Impact Management	13
Water Management	13
Sewage Treatment	12
Energy Consumption and Generation	11
Tourism Development Management	10
Seasonality and Migration	9
Demographic Density	8
Cultural Heritage Protection	7
Benefits Retention	6
Tourism Intensity	5
Housing	4
Local Empowerment	3
Access to Destination and Attractions	2
Climate Change	2
Education	1
Island Supply Management	1
Social Cohesion	1
Sense of Ownership of Public Spaces	N/A
Skills Strategy	N/A
Total Observations	19

Sustainability Challenges	LHI
Social Cohesion	19
Local Empowerment	18
Environmental Impact Management	17
Energy Consumption and Generation	15
Housing	15
Tourism Development Management	14
Sewage Treatment	13
Tourism Intensity	13
Climate Change	12
Waste Management	12
Demographic Density	12
Island Supply Management	10
Access to Destination and Attractions	9
Cultural Heritage Protection	7
Benefits Retention	6
Skills Strategy	6
Education	4
Access to Natural Resources	3
Seasonality and Migration	3
Water Management	3
Sense of Ownership of Public Spaces	3
Total Observations	29

The number of times each challenge was cited for each position in the 7 highest priority ranking is presented for FDN on *Table 29* and for LHI on *Table 30*.

Table 29 | Sustainability Priority Challenges for FDN

FDN	Priority Challenge							Total
	1	2	3	4	5	6	7	
Access to Destination and Attractions	0	0	0	0	0	0	2	2
Access to Natural Resources	0	0	3	1	2	4	3	13
Benefits Retention	0	1	1	1	1	2	0	6
Climate Change	0	1	0	0	0	0	1	2
Cultural Heritage Protection	1	1	1	0	1	0	3	7
Energy Consumption and Generation	0	0	2	4	3	1	1	11
Environmental Impact Management	5	2	1	2	1	2	0	13
Seasonality and Migration	1	1	0	2	1	2	2	9
Sewage Treatment	0	5	2	3	2	0	0	12
Tourism Development Management	0	0	1	1	4	3	1	10
Tourism Intensity	0	0	2	0	1	0	2	5
Waste Management	1	3	4	4	1	2	2	17
Water Management	4	0	2	1	2	3	1	13
Demographic Density	5	2	1	0	0	0	0	8
Education	0	1	0	0	0	0	0	1
Housing	2	1	0	1	0	0	0	4
Island Supply Management	0	0	0	1	0	0	0	1
Local Empowerment	0	1	0	0	0	0	2	3
Social Cohesion	1	0	0	0	0	0	0	1
Sense of Ownership of Public Spaces	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Skills Strategy	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total Observations	**20**	**19**	**20**	**21**	**19**	**19**	**20**	**19**

Table 29 suggests that, despite being a challenge that is frequently cited by most interviewees, ***Waste Management*** is not the most critical one. Instead, ***Water Management***, ***Environmental Impact Management***, ***Demographic Density*** and ***Water Management*** seem the most critical ones for FDN. They are followed by ***Sewage Treatment***, ***Waste Management*** and ***Energy Consumption and Generation***. ***Tourism Development Management*** appears more consistently only in the 5th rank, while ***Access to Natural Resources*** seems fairly well distributed between the 3rd and 7th positions and ***Seasonality and Migration*** seems very scattered through all positions, but still very representative being cited by almost half of respondents.

Table 30 | Sustainability Priority Challenges for LHI

LHI	Priority Challenge							Total
	1	2	3	4	5	6	7	
Access to Destination and Attractions	6	1	1	0	0	0	1	9
Access to Natural Resources	0	0	0	0	2	0	1	3
Benefits Retention	1	1	3	1	0	0	0	6
Climate Change	3	0	5	2	0	1	1	12
Cultural Heritage Protection	1	2	0	1	0	1	2	7
Energy Consumption and Generation	0	4	3	2	3	1	2	15
Environmental Impact Management	3	1	2	4	5	0	2	17
Seasonality and Migration	0	0	0	1	0	0	2	3
Sewage Treatment	1	4	1	1	1	4	1	13
Tourism Development Management	2	3	2	3	0	3	1	14
Tourism Intensity	2	1	3	2	2	1	2	13
Waste Management	2	1	1	0	2	3	3	12
Water Management	0	2	0	0	0	0	1	3
Demographic Density	1	4	0	3	0	2	2	12
Education	0	0	1	0	2	1	0	4
Housing	3	2	2	3	1	1	3	15
Island Supply Management	3	1	2	0	2	1	1	10
Local Empowerment	1	3	2	2	3	6	1	18
Social Cohesion	3	1	3	4	3	3	2	19
Sense of Ownership of Public Spaces	0	0	1	0	1	0	1	3
Skills Strategy	0	0	0	1	3	2	0	6
Total Observations	32	31	32	30	30	30	29	29

In the case of LHI, ***Access to Destination*** seems the most critical challenge, followed by ***Sewage Treatment*** and ***Demographic Density***, ***Climate Change***, ***Housing*** and ***Social Cohesion***. As for ***Local Empowerment***, despite being the second most recurrent, it has been placed on most positions fairly evenly, with a concentration on the 6th place. The same happens with ***Environmental Impact Management***, the third most recurrent challenge, with a concentration on the 4th and 5th places.

Sustainability Challenges Categories

As pointed out by some of the interviewees who chose to associate some of the challenges and treat them as one, most challenges can be analysed from a wider perspective when looked at as groups. *Table 31* attempts to group these challenges following the SECAS approach employed by this research and ranking them according to a compound analysis of results for each case and global ones. ***Material and Energy Flows*** are perceived as being the most critical, both individually and globally and it includes most challenges related to the employment of technology and logistics driving inputs, throughputs and outputs of energy and matter in the system. ***Environment and Conservation*** is perceived as the second most critical group, encompassing the relationships between development and environment and the goal of the conservation movement strategy. Following is the ***Community*** category comprising global-local, collective-individual and emancipation-integration issues. The ***Tourism*** category comes next, concerned with the

strategy for ***Tourism Development***, including the management of the activity, its impacts and tourist flows. Right after, the ***Population*** category refers to the contingent of people on each island, the way it varies, its concentration, dispersal and needs in light of the islands carrying capacity, including that of ***Housing***. Finally, the ***Information and Knowledge*** category concerns the relationships between needs and capacity to perform, thus involving learning, retention and application of knowledge and technology to deal with the other challenges.

Table 31 | Categorisation of Sustainability Challenges

Sustainability Challenges	FDN	LHI	Total
Waste Management	17	12	29
Energy Consumption and Generation	11	15	26
Sewage Treatment	12	13	25
Water Management	13	3	16
Island Supply Management	1	10	11
Material and Energy Flows	54	53	107
Environmental Impact Management	13	17	30
Access to Natural Resources	13	3	16
Climate Change	2	12	14
Environment and Conservation	28	32	60
Local Empowerment	3	18	21
Social Cohesion	1	19	20
Benefits Retention	6	6	12
Sense of Ownership of Public Spaces	N/A	3	3
Community	10	46	56
Tourism Development Management	10	14	24
Tourism Intensity	5	13	18
Access to Destination and Attractions	2	9	11
Tourism	17	36	53
Demographic Density	8	12	20
Housing	4	15	19
Seasonality and Migration	9	3	12
Population	21	30	51
Cultural Heritage Protection	7	7	14
Skills Strategy	N/A	6	6
Education	1	4	5
Information and Knowledge	8	17	25
Total	138	214	352

Following the grouping logic of *Table 31*, qualitative results obtained from the interviews, printed sources and direct observation for selected sustainability challenges are now discussed by group.

Community

For their close relationship to competition and cooperation[255] and also for being the most cited challenges by LHIers[256], ***Local Empowerment*** and ***Social Cohesion*** have been selected from the ***Community Group***.

Local Empowerment is understood here as how much part of the decision-making that affects local livelihood the local community is. As for ***(Local) Social Cohesion***, it is regarded here as the degree of union (or division) within a certain (local) population. The more socially cohesive the population is, the more it can be identified as a single community. The more socially divisive, the more distinct communities can be observed. Extreme social divisions can be observed in those populations whose stronger communities can be defined by family bloodlines or clans, the concept of identity and how it relates to different groups being key to the understanding of social cohesion. This way, social cohesion is understood here to be greater when the identity of the more encompassing groups forming the local population is stronger than those of smaller groups.

Both on *LHI* and in *FDN*, the local resident population can be categorised into many groups, the most encompassing being that of *Islander Residents*. Below that group, one can perceive the existence of two other groups: that of *Islander Temporary Residents* and *Island Permanent Residents* (those with islander status). Within temporary residents are *Government Officials* and those *Workers Employed by Local Businesses*. Within *Permanent Residents*, there are those that are *10-Year Islanders* and *Generational Islanders* (or that have married *Generational Islanders*). Finally, within these two groups, there can be identified specific family groups that may portray more or less generations of presence on these islands[257].

Results suggest that ***Local Cooperation*** seems to directly lead to greater ***Local Social Cohesion*** and ***Local Empowerment***, the same way it is reinforced by the two. Complementarily, ***Local Competition*** tends to directly inhibit ***Local Social Cohesion*** and ***Local Empowerment***, also being reinforced by their lack. However, when ***Local Competition*** pushes for specialisation[258], it pushes for ***Local Cooperation*** and indirectly to ***Local Social Cohesion*** and ***Local Empowerment***.

When *LHI* and *FDN* are contrasted for their ***Local Empowerment***, it can be seen that this has either grown from a temporary lack of ***Global Empowerment*** (in the case of *LHI* during the time it was abandoned) or from the existence of ***Global Competition*** among different levels of national government (Federal and State) and ***Global-Local Competition*** that pushed for ***Local Cooperation***. In

[255] See the section on *Phenomenon* in *Chapter 10*.
[256] They might have been more cited in *FDN* in case they had been part of the list of challenges from the very beginning.
[257] For an account of all groups identified on *LHI* and *FDN*, refer to *Figure 79* on page 258.
[258] This reaffirms Petrosillo, Zurlini, Grato, and Zaccarelli (2006) claim that connectedness is linked with specialization in *Social-Ecological Systems* – see page 64.

the case of *LHI* ***Local Empowerment*** initially filled a void, while in the case of *FDN* it took benefit of existing legislation opportunities – *SNUC* and *TAC* – to try to defend some autonomy[259]. Also pushing ***Local Empowerment*** in these two places was ***Local Social Cohesion*** and the way ***Local Cooperation*** was being promoted by the existence of ***External Threats*** when there was still considerable isolation. At a time when tourism was still in its early stages, despite families beholding considerable individual identification importance, being part of the island community beared an extremely important place in most of their population self-identification as individuals[260]. This way, ***Local Cooperation*** to guarantee strong local social networks aiming at the obtaining of informal social insurance, led to and was fuelled by greater ***Local Social Cohesion***. As ***Tourism Development*** starts to occur and greater ***Local Competition*** and ***Global-Local Cooperation*** start to take place, ***Local Social Cohesion*** and consequently ***Local Empowerment*** is affected[261].

On *LHI*, ***Local Empowerment*** is mostly exercised through active formal participation of elected islanders on *LHI*'s peak decision-making body – the *LHIB*. That structure not only allows greater participation and empowerment, but is also a reflection of the processes of local empowerment that took place on the island over the years.

As for *FDN*, ***Local Empowerment*** seems to be mostly exercised in a more sectorial way, through social structures based on specific economic activities and special (and many time individual) interests that are represented in the two peak forums for the two *PA*s encompassing the whole island terrestrial and maritime territories – *CONAPA-FN* and *CONPARNAMAR-FN*. The creation of these two councils are in great part the result of temporary greater social cohesion among islanders, promoted by greater cooperation against the threat posed by the entry of foreign capital to the island around the time of *World Heritage Listing*. *FDN* locals also tend to seek benefit from the existing competition between *Federal* and *State Levels* on the archipelago in order to obtain what they need. This way, depending on the topic, islanders may support the Federal or the State Level, also seeking support from one or the other, whenever necessary.

Overall, the results suggest that there is currently greater ***Local Empowerment*** and ***Local Social Cohesion*** on *LHI* than there is in *FDN*. Despite there being still a considerable divide between generational islanders and 10-year islanders in these two places, in the case of *LHI*, generational islanders are the great majority of the population, whereas in *FDN*, the number of 10-year islanders

[259] See section on ***Local Empowerment and the Rise of a New Social-Environmental Agenda*** in *Chapter 8*.
[260] See account on the influence of ***Tourism Development*** to ***Local Cooperation*** and ***Local Social Cohesion*** in the section on ***Phenomenon*** in *Chapter 10*.
[261] Refer to ICMBio and ecooideia (2008, pp. 182-4) for detailed information on the transformation of solidary social relations into mercantile social relations as a result of tourism development in *FDN*.

has considerably increased in the past 2 decades[262]. This way, despite portraying a greater divide between generational and 10-year islanders, *LHI*'s greater ***Local Social Cohesion*** arises from the fact that the size of the generational islander community caters for the great majority of the population, leading to a more conforming position of its 10-year islanders. Also, there is much less ***Global-Local Cooperation*** and more ***Local Cooperation*** among *LHI*'s *SECAS* than on *FDN*'s. Results also show that while, in general, *LHI*ers work with tourism as a means to guarantee their capacity to live on *LHI*, it is common for many *FDN* islanders to relate to *FDN* mostly as their workplace only. It is, therefore, usual for *FDN* islanders to invest their tourism earnings on the mainland instead of in *FDN*. This is strongly associated with the complex set of restrictions and enforcement in place, as well as with a common disbelief in the capacity of the current system to guarantee their presence and land use on the island. Overall, investment in FDN seems to be much more business than quality of life oriented. In other words, for many, *FDN* is where one makes money, to live well on the mainland. This situation is also linked with the lack of identity observed for *FDN*'s population. Due to the nature of *FDN*'s settlement, very few families extended their presence on the island for many generations and the amount of newcomers makes a considerable part of the current local population, many of them, attracted to *FDN* in a similar way to those driven to specific regions of the globe in times of gold rushes.

The upcoming sustainability challenges will be discussed in light of the analysis of ***Local Empowerment*** and ***Local Social Cohesion*** just carried out.

Material and Energy Flows

Within the category of ***Material and Energy Flows***, ***Island Supply Management***, ***Water Management*** and ***Energy Generation and Consumption*** have been selected as the most relevant challenges.

In regard to ***Island Supply Management***, despite what previously was the case, currently both *FDN* and *LHI* almost exclusively rely on imported produce. While having access to external produce can guarantee a broader diversity of available types of food to islanders and cater for situations in which local produce and local stock reach levels below demand, replacing great part of locally produced food by imported one can be a threat to food security in cases where external supply is interrupted. Due to *FDN*'s and *LHI*'s high capacity to attract tourists, shifting from traditional economic activities such as fishing, agriculture and livestock to tourism operation seemed a very attractive option to most islanders; it offered better and more concentrated pay and at least initially, did not require much training, mainly the adaptation of existing infra-structure (commercial boats, private vehicles and residences into tour boats, tourist vehicles and hotels, restaurants and shops) or just the purchase of extra equipment (in the case of tour guiding).

[262] See *Figure 76* and *Figure 77* on pages 243 and 244.

This situation of uneven competition between different economic activities is leveraged by greater restrictions to land use imposed by ***Localised Conservation*** through different layers of ***Protected Areas – PAs*** (including ***World Heritage Listing***), by the improvement of connections with the mainland brought about by ***Tourism Development*** (mainly air services) and by the greater incorporation of mainland regulations devised for larger economies (mainly infra-structural requirements that cannot be afforded by small scale operations) that started to be put in place partly because of the higher expectations of tourists.

On *LHI*, enforcement of *NSW* ***sanitary regulations*** banned the commercialisation of raw milk and local meat requiring producers to abide to regulations that proved too costly and unfeasible for small scale producers (Nichols, 2011a, p. 5). As a result, an increase of external sourcing of food from large-scale producers has been unavoidable, contributing to lesser food security from supply and livestock aspects, greater carbon emissions through transport, while also affecting the island's traditional lifestyle of consumption of local fresh produce (Nichols, 2011a, p. 1), despite possibly reducing health risks (which could also be contested considering food sourced externally is not as fresh and may contain preservatives).

In *FDN*, a similar situation has recently taken place, but mainly as a result of environmental ***conservation measures***. Despite the existence of very specially adapted breeds of *Bujh* cattle resulting in crossings of different foreign breeds that were brought to the archipelago when it was used as quarantine (Borges Lins e Silva, 2007a, p. 276), there have been successive attempts by the *Brazilian Ministry for the Environment* in **2008** and **2009** to remove the 180 oxen and 340 goats then being raised on the island[263] (Américo, 2014). The initiative encountered resistance from part of their owners. The case was taken to the *Federal Court*, which denied that their removal should occur (de Almeida Filho, 2009).

Overall, considering that the costs of transport of inputs are high, when relying on external sources, islanders may resort to buying directly from large scale businesses so that the final price of delivered products is not overly expensive. This contributes to the growth of big businesses in spite of small island ones, resulting in loss of economic diversity. When considering the resilience perspective discussed in *Chapter 3*, one concludes that the overdependence on external sources of input can be a risky strategy towards future changes in the current conditions. By adhering to a model of ***Tourism Development*** that relies on the importation of most inputs and the exportation of outputs, these destinations increase their contribution to carbon

[263] The decline of animal raising in *FDN* since tourism development started overcoming traditional economic activities can be more clearly understood through the decrease on the number of oxen (390 to 200), pigs (205 to 10), chicken (2100 to 200) and goats (300 to 40) being raised in *FDN* from 1990 to 2006 (elabore & IBAMA, 2007, pp. 87-8), when its official human resident population increased from approximately 1712 in **1993** to 2321 in **2006** (IBGE, 1993, 2006).

emissions that affect the planet as a whole. It is, therefore, a concern that such ***Localised Conservation*** strategies can have contradictory impacts at the local level by making communities less resilient in some aspects and at the global level, by contributing to a more uncertain future in regards to climate change[264].

However, despite the above issues, the *Lord Howe Island Co-Op* is an interesting initiative to help contain waste generation, decrease costs through bulk buying, diminish carbon emissions with transport and distribute locally produced food. Operated and managed by volunteers, the *Co-Op* has an important role in the process of tourism clustering of *LHI*. Working closely with tourism accommodation businesses, the *Co-Op* seeks to buy products that are largely used by these establishments (cleaning products and grains, for example) in bulk and packaged in large industrial containers so as to sell them locally in the exact quantities required by businesses, which bring their on refillable smaller containers. The *LHI Co-Op* is, therefore, both a product and a pusher for greater ***Local Cooperation*** on *LHI*.

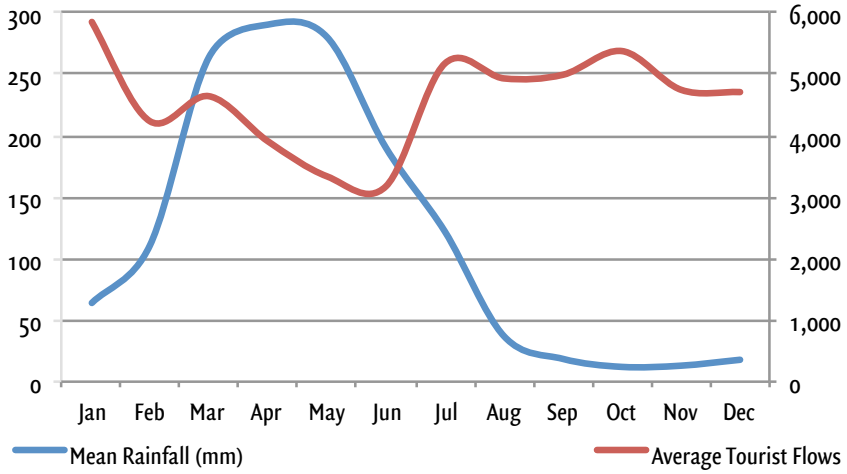
In fact, the more locals unite and buy in bulk, the greater their purchasing power when dealing with mainland businesses. Also, the more food is produced and distributed locally, the more cohesive, empowered and cooperative the local community seems to become. Finally, striking a balance between locally produced food and reliable access to food produced on the mainland seems to cater for the greatest food security and therefore, to a more resilient local *SECAS*.

Water Management on small oceanic islands is usually a critical issue, considering: their size – which usually does not result in the presence of large rivers or streams; their isolation – rendering it virtually impossible to tap into regional water resources for large-scale consumption; and their proximity to the ocean – meaning that most underground water from a certain depth tends to be highly saline. Depending on their average rainfall regime, access to locally sourced drinking water on these islands can become an even greater challenge. The seasonality of tourism development brings another layer of pressure over this local resource as water consumption tends to grow not only on an absolute basis because of the increment of temporary local population with tourist flows, but also on a per capita basis as the average direct and indirect water consumption per tourist

[264] Due to *FDN*'s current energy generation matrix being heavily dependent on fossil fuels and its high dependency on export produce, according to ICMBio and ecooideia (2008, p. 218), *FDN*'s ***ecological footprint*** in **2006** was equal to 135 times the area of the archipelago. In that same year, the ecological average was 2.23ha per capita worldwide, 2.1ha per capita in Brazil and 2.54ha per capita in *FDN*. When taken into account that the average global biocapacity is of 1,78 ha per capita and that *FDN*'s own biocapacity is of 0.12 ha per capita, not only is *FDN*'s *ecological footprint* larger than the global biocapacity, but also, its ecological balance in **2006** was highly negative (-2.42 ha per capita). Refer to page 19 for further information on the concept of *ecological footprint*.

tends to be higher than that of host communities[265] (Essex, Kent, & Newnham, 2004, p. 7). *Figure 122* and *Figure 123* portray the comparison between rainfall regimes and increment of population through tourism for *FDN* and *LHI* respectively. While in *FDN* water supply varies considerably annually (nearly zero to almost 300 mm) and is at its lowest when demand is at its highest, on *LHI* this relationship seems to be more balanced, with average rainfall keeping between 120 and 180 mm throughout the year. This situation partially explains why ***Water Management*** was cited as a ***Priority Sustainability Challenge*** by 13 out of 19 interviewees in *FDN* and only by 3 out of 29 on *LHI*.

Figure 122 | Average Rainfall Vs. Average Tourist Flows to FDN[266]

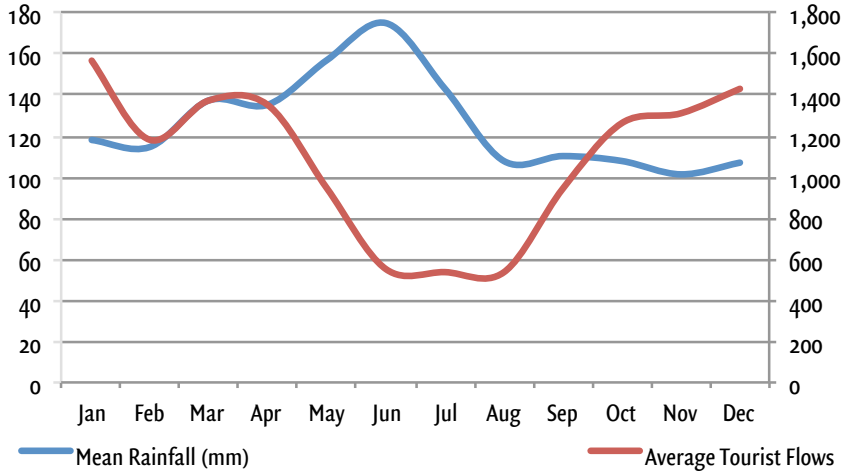


Sources | Data compiled from UN (2012) and ADEFN (2005, 2009, 2010)

[265] "In the first semester of 2004, 37.3% of *FDN* lodges consumed almost the same amount of water (15.764 m^3) as 100% of other trading businesses (16.911 m^3), approximately double what was spent by public services (5.726 m^3) and manufacturing (3.031 m^3) together. It is evident, therefore, the great dependence of tourism on water, as well as the considerable pressure it exerts on its availability [FDN's] local community" (Leite, 2007, p. 108).

[266] *Average Rainfall* calculated based on data for 1961-1990 and *Average Tourist Flows* calculated based on data for 1999-2009.

Figure 123 | Average Rainfall Vs. Average Tourist Flows to LHI[267]



Source | Data from BOM (2012), Sinclair (2002, p. 13) and LHIB (2011)

The ***Water Management*** models in place for FDN and LHI seem to be strongly connected to two main drivers: scale and cultural aspects. FDN relies on centralized sourcing, treatment and distribution systems connecting most communities, while LHI relies on individual systems and centralized back ups that are not connected through any permanent water grid. While differences in population sizes may have justified the implementation of centralised infrastructure in FDN[268] but not on LHI, cultural aspects influencing the governance of the two areas seem to play a significant role. The dictatorship in place in FDN for most of its history established a paternalistic culture through which locals obeyed the state, but in return, the state was responsible for catering to the needs of locals in a centralised way. This system of dependence is not exclusive to FDN, but can also be observed in Brazil as a whole in different degrees. Despite currently being under a democratic governance system, Brazilians still carry high expectations that governments should be the providers, perpetuating a dependence system. As for LHI, considering its still very recent history of partial abandonment by the state, locals tend to be more naturally independent, independence being perceived as an important strategy for survival. These distinct systems seem to bring considerably different social and environmental *consequences*.

The current system in place in LHI facilitates a much more resilient local community in the sense that it makes it more aware of its responsibilities towards water usage control, empowering self-sufficiency while also catering for unexpected shortages by building common stock. FDN's case

[267] *Average Rainfall* calculated based on data for **1988-2012** and *Average Tourist Flows* calculated based on data for **1996-2010**.
[268] In **2004**, out of 480 residences, 460 were connected to the water distribution grid in FDN, whereas in **2006**, this number increased to 608 (elabore & IBAMA, 2007, pp. 142-3).

goes the opposite way, by creating a relationship of dependence that stimulates dispute over the resource while preventing individual stocking and harvesting. Since water is rationed and usually available around twice to three times a week for each FDN village, whenever residents have access to water, they tend to overspend and try to stock, further increasing competition for, and pressure on, the resource.

Concerns with the social impacts of higher water consumption brought about by ***Tourism Development*** in FDN were already raised in CONAMA meetings in **1990** (CONAMA, 1990) and Federal investments from the Department of Social Welfare – MDS[269] took place two years later (MDS, 1992). In **2000** a desalinator was installed in FDN, with its capacity being increased in **2004** and in **2006** (Borges Lins e Silva, 2007b, p. 17). The system currently in place is based on centralised systems that harvest rainwater through dams and desalinates marine water that is sourced from *Boldró Beach*. However, geographical and environmental constraints allied to demographic pressure have resulted in a system that is unable to cater for the needs of everyone.

Not only do FDN residents face water rationing, they also have to deal with several constraints to building their own rainwater collection systems, arising from a very bureaucratic and ineffective development control system. The existence of a centralised system in which limits to distribution could not be controlled on an individual level led ADFEN to issue a decree in early **2003** prohibiting, for 90 days, the entry of water tanks over 2000 litres and the installation of water tanks over 5,000 litres on the island (ADEFN, 2003a). By the end of **2003**, a second decree was issued, requiring authorisation from ADEFN for transport into FDN of construction materials, including water tanks to enter the island (ADEFN, 2003b). This control system was implemented in the absence of a building code for the district and it makes it harder for residents to construct their own water harvesting systems. Despite all the challenges associated with importing construction material to FDN, the will to reuse water in FDN is evident as many businesses have been able to develop home-made solutions to water reuse. In **2007**, about 35.95% of all lodges somehow reused grey water, with only one having its own water treatment system. When added bars, restaurants and other food and beverage places as well as the only hotel on FDN, the average number of businesses that reuse grey water drops slightly, to 32.65% (ICMBio & e labore, 2008). As well as quantity problems, FDN islanders also face water quality problems. Most of the water that enters the grid comes from the desalination plant and is consumed as drinking water by those islanders who cannot afford bottled water. According to FDN's local hospital this situation explains the number of patients with high blood pressure in FDN (labore, 2007, p. 143).

[269] *Ministério da Ação Social*, currently *Ministério do Desenvolvimento Social*.

On *LHI*, there is no centralised system for water collection, each dwelling being responsible for the harvesting of rainwater independently. However, public buildings are equipped with large water tanks that collect rainwater from their roofs and stock it as a backup that can be used by the population through payment of a fee. Despite collection, storage and treatment being the responsibility of individuals, *LHIB* is responsible for testing the water quality of each dwelling on a yearly basis. Since rainwater is collected on an individual basis, there are no restrictions on the size and number of tanks that can be brought and installed on the island. Development control on *LHI* is carried out through site inspections and the process of approval of development projects by the *LHIB* according to the guidelines set forth in the *Lord Howe Island Control Plan 2005* and the *Building Code of Australia*. The *LHIB* is also responsible for testing the water quality of all tanks on the island.

The two systems can be compared in terms of rational use of resources, competition for common pool resources / democratic access to resources and resilience through capacity to stock and to maintain the quality of the stock. In terms of rational use of resources it appears that systems that require individual investment for expansion tend to result in more rational use of resources than those that require public investment – when costs are not transferred to users proportionally to how much they use. By concentrating expectations of investment on water collection and treatment on a single organisation, centralised systems can be democratic in the sense that all those within the distribution grid should have the same access to this common pool resource, however, in cases where the system's delivery capacity is below demand, forcing rationing/frequent interruption of the service, competition for the resource takes place on the basis of those who can stock the most, whenever the resource is available. Individual rainwater harvesting systems appear to be more democratic when it comes to accessing the resource, but may be considered by some as less democratic in regard to everyone's capacities to store water as it depends on their capacity to invest in their own storage systems – some type of Government subsidy might correct potential financial discrepancies among individuals. Finally, despite requiring a more complex water testing system that can tap into everyone's water stock, individual systems appear to be more resilient as the lack of connection between units can help avoid spreading potential water contamination, for instance. Also, by resulting in private and public backups, there seems to be greater redundancy in this type of system that, despite compromising efficiency, can guarantee greater stock and therefore lesser risks of shortage. Overall, by promoting individual independence, individual systems can contribute to greater local individual empowerment on one hand and greater social cohesion on the other, as individuals may tend to want to fortify social relations that can act as social insurance in times where individual systems may fail.

Overall, the self-reinforcing relationship between ***Global Empowerment / Local Social Divisiveness*** and ***Centralised Water Management*** systems and that between ***Local Empowerment / Social Cohesion*** and ***Decentralised Water Management*** systems seems quite evident when the two case studies are contrasted and compared.

As for ***Energy Generation***, both *FDN* and *LHI* still mostly rely on centralised systems that burn fossil fuel that is brought from the mainland. This results in a model of energy generation that releases carbon to the atmosphere, not only through the burning of fuel to generate the energy that is used on both islands, but also through the transport of the fuel that is made by sea freight.

In *FDN*, the water desalination plant increases energy consumption considerably. In 2005, an average of 50.33 tons of CO_2 per capita was released in *FDN*, against 20.14 in the *USA*, 19.24 in Canada and 1.94 in Brazil (ICMBio & e labore, 2008, p. 69). However, the introduction of renewable sources of energy in *FDN* dates back to **1992**, when the first wind turbine (75kW) was installed to supply, at that time, about 10% of the energy demanded in the archipelago. In May **2000**, the *Brazilian Centre for Wind Energy – CBEE*[270] implemented a second wind turbine of 225kW aiming to increase to 25% the participation of wind energy in the total energy generation for *FDN* (da Silva Barros, 2002, p. 38). With that increase of wind energy sourcing, savings with diesel went from an average of 1,000 litres per month to 11,000 (da Silva Barros, 2002, p. 71).

In early **2007**, the *Environmental Strategic Plan for the State of Pernambuco* delineated that *FDN* had to change its energy generation matrix so as to prioritise the use of renewable sources (Duarte de Araújo, 2009b, p. 5). On 12th of June **2007**, *FDN*'s *Thermoelectric Plant* caught fire. With the support of the *AirForce*, emergency generators were brought into *FDN* until a new and more modern *Thermoelectric Plant* replaced the old one. In **2008**, the Governor of PE established a *Working Group – WG*[271] to study and debate technological alternatives for energy generation for *FDN*. In April **2009**, the *WG* published a report with their main conclusions, proposals and goals, including the establishment of various partnerships with different state and national energy stakeholders to increase the use of renewable energy sources to 20% in 2 years, 45% in 6 years and 100% in 20 years. However, despite a project to install solar freezers in the *FDN Fishermen's Association – ANPESCA*[272], and solar panels to replace electric water heaters in *Bed and Breakfast Providers – B&Bs*, all the proposals focused either on the implementation of centralised renewable energy generation systems or the increase of efficiency, but not on individual self-sufficiency through incentives for the installation of solar panels in residences, for instance.

[270] *Centro Brasileiro de Energia Eólica.*
[271] *Grupo de Trabalho – GT.*
[272] *Associação Noronhense de Pescadores.*

At the time the report was published, out of the two wind turbines, only the 225kW one was still operating, generating about 6% of the energy consumed in FDN (Duarte de Araújo, 2009a, p. 119). In that same year, that wind turbine ceased operating after a lightning bolt struck its structure during a thunderstorm. In mid 2012, news broadcasted that *FDN* would soon receive two solar energy plants, 13 small wind turbines (at a cost of R$ 975,000) and a wave energy plant (at a cost of R$ 25 mi) to replace the *Thermoelectric Plant* (Lins, 2012), which would then serve only as back up, and that *Itaipu Binacional* had been developing in partnership with European businesses a system of batteries made from sodium chlorate that would be implemented in *FDN* to store the energy generated by the wind turbines and the solar panels during the day, so that it could power the energy grid at night (Loureiro, 2012a, 2012b).

In July **2014**, the first solar energy plant started operating with a capacity of 600kW, generating 4% of total island energy consumption. The second solar power plant is expected to start operating in the first semester of **2015** with a capacity of 500kW. A *Smart Grid* is also being implemented by *CELPE* in *FDN* and should be completed within 3 years (Jornal da Energia, 2014), which could allow the use of privately owned renewable energy sources to feed into the grid. Once the two solar powerplants are running, an accumulation system of ion-lithium batteries is planned to be implemented in order to minimize the use of diesel generators during peak times and save about 235,000 litres of diesel per year (Ambiente Energia, 2013).

On *LHI*, the central diesel powerplant was also damaged by fire on 13th November **2009** and later reconstructed (Besseling & DAmore, 2010). In **2010**, LHI's 3 diesel generators (and 1 backup) produced 19,500 tonnes of carbon dioxide emission. In that same year, the island's maximum load was about 480 kW (6:30pm – 7:30pm) and its minimum about 120 kW (4:00am to 5:00am), with an average daytime load of 360kW and minimum daytime load of 190 kW. Two engines were necessary to produce 480kW with one dropping down automatically when the load drops below 190 kW. In terms of renewable sources of energy, *LHI*'s airport has installed a solar photovoltaic array on its roof generating enough electricity to power two houses per year and saving an average of 2,700 litres of diesel per year from **1998** to **2009** (Nichols, 2011a, p. 3). In **2011**, the *LHIB* set a target of reaching 20% of *LHI*'s energy generation through renewable sources by **2015**.

Following that, a *Sustainable Energy Working Group – SEWG* was formed to "act as a community-based steering committee in the pursuing of this target" (Nichols, 2010, p. 4). One of the issues dealt by *SEWG* involved the consideration of private renewable energy systems at a time of considerable financial incentives were being offered by the Australian Government. After conducting preliminary studies on the topic, *SEWG* presented the main restrictions to the connection of private systems to the existing grid considering *LHI* is a small closed local energy system that is off-grid. Under

then current infrastructure, it was concluded that a total of 100kW of energy could be generated privately in households connected to the grid, without affecting the diesel generators that were part of the central energy generation system in place. Subsequent *LHIB* meetings would decide how to share the initial overall limit of 100kW of potential private system generation (enough to power about 20 households) among those interested residents and businesses, in a fair manner (Nichols, 2011a, p. 3; 2011b, p. 4).

In August **2011**, the study for the definition of a *Renewable Energy Supply Roadmap for LHI* commissioned by *LHIB* was released by *Powercorp*, with the recommendation that the island pursued a hybrid system composed of 200kW of private and 200kW of community owned solar *Photo-Voltaic – PV* panels as well as an 825kW wind farm and a 400kW storage system that could provide *LHI* with up to 70% of renewable energy (Powercorp, 2011). Further adjustments were made and a proposal featuring 450kW of solar *PV*, 550kW of wind turbines and 400kW of battery storage to guarantee 70% of renewable energy to *LHI* was submitted to the *Australian Renewable Energy Agency – ARENA*, which on 17th July **2014** agreed to fund AU$ 4.5 million of the total project estimated to cost AU$ 11.6 million (ARENA, 2014).

In order to address the condition set forth by *ARENA* to finance part of the project, in early 2014, *SEWG* conducted a community survey "to assess wind turbine acceptance and support for a community funded solar *PV* program". Covering 74% of *LHI* dwellings, the survey found that: 93% of respondents supported the proposed hybrid solution, including wind turbines; 37% were interested in installing private solar *PV* totalling 183kW; 51% would buy shares in a community solar scheme; and based on these numbers, there was a total potential private investment to be made by the community of around AU$ 717,000.00 (Logan & Holloway, 2014, p. 2).

When the two case studies are compared in terms of their energy generation systems, both seem to be moving towards renewable energy sources as a means to diminish environmental impact, but mainly to decrease the cost of energy generation to governments and private suppliers. The fact that both islands are in the process of implementing smart grids means that individuals feeding excess produced energy into the common island grids could be compensated by their individual energy generation investments. This could cater for much more resilient systems since they become more diversified and decentralised. However, while *LHI*'s project formally incorporates residents' individual energy generation needs, *FDN*'s does not mention that possibility. The lack of formal and clear institutional support to individual energy generation systems in *FND* may mean that *FDN* ends up with a fairly centralised energy generation system, despite more encompassing (aiming at 100% renewables) and reliant on more diverse sources (also including wave generated energy as well as solar *PV* panels and wind turbines) than *LHI* (70% renewables from wind and solar *PV* panels only). When these choices are analysed from a ***Local Empowerment***

perspective, it can be noticed that there is direct self-reinforcing relationship between the two. Greater local community empowerment on LHI leads to a more decentralised system at the same time it is reinforced by it. ***Local Social Cohesion*** seems to work the same way as *Local Empowerment*, illustrated by the number of LHI residents that are willing to buy shares of a community solar PV system.

Environment and Conservation

In regard to the ***Environment and Conservation*** category, ***Environmental Impact Management*** was the selected *Sustainability Challenge* to be discussed in more detail, being cited by more than half of respondents from LHI and FDN as one of the 7 most relevant challenges.

As described in chapters 7, 8 and 9, there have been quite a few ***Environmental Impact Management*** measures being applied to both FDN and LHI. They include mainly the protection of key species and their habitats, the implementation of localised conservation through the proclamation of *Protected Areas* and their listing as *World Heritage*, as well as efforts on the eradication of invasive species and containment of spread human development on the two case study sites. It is interesting, however, to point out how ***Local Social Cohesion*** and ***Local Empowerment*** are related to how these measures took place.

When it comes to the protection of key species, it is interesting to note that the stimulus has come from the *Global SECAS* for both LHI and FDN. In some cases, such as with FDN *Spinner Dolphins* and *Marine Turtles* and LHI *Woodhens*, these species played an important role in promoting the proclamation of PAs. In others, such as the case of FDN *Yellow and Purple Land Crab*, the proclamation of PAs provided the impetus for protecting this key species. There were also cases, such as with LHI's seabirds, when *Tourism Development* played an important role in promoting protection – in this case, both because *birdwatching* became a relevant tourism activity as well as because excessive tourism could impact LHI's bird population. By offering a range of community educational and skill development programs, the protection schemes associated with *Spinner Dolphins* and *Marine Turtles* in FDN have helped increase ***Local Empowerment*** and ***Local Social Cohesion***. They do that by promoting the insertion of locals in tourism related jobs and small businesses while also developing the creation of local social networks for the protection of these species. PARNAMAR-FDN management undertook a similar approach in regard to *FDN Yellow and Purple Land Crab*.

In relation to the proclamation of PAs, it is interesting to note that due to greater *Local Empowerment* and *Local Social Cohesion*, the proclamation of a terrestrial PA on LHI was not undertaken in the format pursued by the *Global Conservation Movement* – a *State-Managed National Park*, but actually in the more appropriate for LHIers – a locally managed *Permanent Park Preserve*. In

contrast, all relevant PAs proclaimed for FDN were the sole decision of the *Brazilian Federal Government* without the necessary input of locals[273].

On the other hand, both *CONPARNAMAR-FDN* and *CONAPA-FDN* have been implemented through *Local Social Cohesion* and *Local Empowerment*, while also reinforce them. These two forums have served to improve communication among FDN stakeholders in regard to the sustainability of tourism development and environmental conservation, facilitating more democratic decision-making. A similar role is played by *LHIMPAC* on LHI's Marine Park affairs. However, it is important to note that no specific advisory committee has been established for LHI's *PPP/WHP* affairs, which are currently only dealt within the *LHIB*.

This lack of a specific communication channel for terrestrial environmental conservation management on *LHI* is likely to have resulted in the strong opposition of part of the local community in relation to *LHI*'s *Rodent Eradication Plan*. In fact, the eradication of invasive species on both islands can be the subject of great disagreement. Sometimes it stems from different views on the methods of eradication (in the case of rodents), other times from different views on the importance of some species for the islands' daily livelihood (in the case of farm animals, mostly). This way, while some defend eradication, others choose control. A similar debate also applies to plant species, as many were introduced purposefully by early settlers and have become source of ingredients for dishes that are now part of the ***Local Identity***[274].

Overall, it is interesting to note that while there is still a divide between environmental protection and human development agendas in these two islands, this division has been slowly diminishing with the development of better *Symbolic* and *Values Networks* within both islands *Institutional Structures*, as well as through improvements to their *Communication Networks*, part of their *Relational Structures*[275]. In other words, by promoting greater *Local Social Cohesion* and *Local Empowerment*, instruments like *CONPARNAMAR-FDN*, *CONAPA-FDN* and *LHIMPAC* help construct a more agreeing vision for the environmental and social agendas, contributing positively to the sustainability of tourism development in those islands, as well as to a better balance between *Global Conservation Goals* and *Local Social Needs*.

Population and Tourism

Finally, within the **Population** and the **Tourism** categories, ***Tourism Development Management***, ***Tourism Intensity*** and ***Demographic Density*** have been selected as

[273] As pointed in *Chapter 8*, despite pressures of the *Global Conservation Movement* for the creation of a *National Marine Park* in FDN, the proclamation of PARNAMAR-FDN only happened when it was pushed by political dispute between Federal and State levels over control of the archipelago.
[274] An example is the *Cherry Guava* on LHI.
[275] Refer to page 102 for an explanation of what these networks and structures mean for the effect of this thesis.

the most relevant *Sustainability Challenges*. This was due because of their close relationship with one another and the fact they have been considerably cited by at least half of respondents in average for *LHI* and *FDN*. The data collected for these 3 challenges have been presented in chapters 7, 8 and 9, so following is a summary that can be used to discuss the way these sustainability challenges relate to one another, as well as to those previously presented in this chapter.

Tourism Development Management is a central challenge for this research because it translates into certain implemented tourism development models[276]. These models can be analysed from quantitative and qualitative perspectives and refer to the type of tourism taking place in a certain destination. When *LHI* and *FDN* models are contrasted, some differences are worth highlighting. *LHI* is very restrictive to cruiseship tourism, only allowing very small vessels (carrying up to 20 passengers) to call in educational missions, whereas *FDN* is more permissive, allowing larger vessels (carrying up to 700 passengers) to call in leisure (mostly sun and beach tourism) visits.

LHI is more restrictive on the number of tourists that can remain on the island per night, which is controlled by the total number of 400 licensed beds for all accommodation providers. Despite setting a *Tourist Carrying Capacity – TCC* figure of 450, *FDN*'s mechanism for controlling tourist flows fails by setting a limit of 130 tourists that can arrive on the island by plane per day, regardless of their length of stay. Although licenses for accommodation providers are required, issued and controlled by *ADEFN*, there is practically no enforcement over those informal providers who add to the islands bed count. Considering that *ADEFN* is entitled to raise the *TCC* limit by 50% during peak time, it can be concluded that there is currently no effective control over the number of tourists staying overnight in *FDN*.

This situation leads to very different levels of ***Tourism Intensity***. While in **2009** almost 63,000 tourists visited *FDN*, only a little more than 15,000 had visited *LHI*. While numbers on *LHI* have been maintained fairly stable since **2005** with small variations of about 1,000, in *FDN* there has been a substantial growth of more than 8,000 tourists in the same period, or the equivalent of half of the total number of tourists *LHI* receives per year. Considering the accelerated growth experienced since **2007**, it is likely tourism will continue to grow in *FDN*. When out of control, ***Tourism Intensity*** can foster rapid resident population growth, contributing to greater ***Demographic Density***. While the resident population of *LHI* has been maintained around 350 inhabitants from **2005** to **2009**, that of *FDN* has grown considerably over the same period of time (from 2,280 to 3,108), following a similar trend to that verified for tourist flows. The larger the overall population comprising residents and tourists, the larger the pressure over ***Water Management***, ***Energy***

[276] Refer to *Footnote 13* on page 49 for a definition of implemented tourism development model.

Generation and ***Island Supply Management***, just to name a few sustainability challenges already presented here[277].

On one hand, the lack of tourism/population growth control seems to stem from low ***Local Social Cohesion*** and low ***Local Empowerment***. In fact, the increase of the local population seems to be facilitated by locals themselves, though relationships of ***Global-Local Cooperation***, promoted by ***Local Competition*** and ***Global-Local Competition***. As locals establish business partnerships with mainlanders and these become responsible for the administration of local businesses, they tend to hire mainlanders as their employees, partly because of training, partly because the lack of interest to work under mainland conditions by many *FDN* islanders. On the other hand, limited supply of water, energy, food, housing and land further increases ***Local Competition*** and ***Global-Local Competition*** for resources, creating this self-reinforcing cycle.

Overall, the results seem to suggest that by overshooting *FDN*'s *Social Carrying Capacity*, tourism development mismanagement has greatly contributed to the deterioration of already fragile ***Local Social Cohesion*** and ***Local Empowerment***, highly impacting all the *Sustainability Challenges* analysed in this chapter. On the opposite, the way tourism is managed on *LHI* has helped to reinforce already strong patterns of ***Local Social Cohesion*** and ***Local Empowerment*** as well as to control ***Tourism Intensity*** and ***Demographic Density***.

Chapter Conclusion

This current chapter explored some of the main sustainability challenges associated to the researched *phenomenon* of self-organisation by means of ***Competition*** and ***Cooperation***. In doing that, it highlighted the importance of two challenges that are intrinsically linked with the observed patterns of competition and cooperation operating on *LHI* and in *FDN*, namely ***Local Social Cohesion*** and ***Local Empowerment***. Being directly associated with the *(inter)action strategies* of ***Tourism Development*** and ***Localised Conservation***, the *Sustainability Challenges* of ***Tourism Development Management*** and ***Environmental Impact Management*** were also found to stand out and to highly influence all other sustainability challenges, including ***Local Social Cohesion*** and ***Local Empowerment***. This way, certain implemented models of ***Tourism Development Management*** and ***Environmental Impact Management*** seem to stem from certain levels of ***Local Social Cohesion*** and ***Local Empowerment*** at the same time they reinforce these same levels.

When *LHI* and *FDN* are compared and contrasted for these dynamics, there seems to be a close relationship between large scale/commoditisation of the tourist destination and lower levels of ***Local Social Cohesion*** / ***Local***

[277] In a sense, these results corroborate with Ehrlich's (1968) *Population Bomb* metaphor. Refer to page 17.

Empowerment and also one between small scale / differentiation[278] of the tourist destination and higher levels of ***Local Social Cohesion*** / ***Local Empowerment***. The scale dimension leads to the conclusion that the consideration of *Social Carrying Capacity* as part of the definition of a destination's *Tourism Carrying Capacity*[279] is an important tool for planners, so as to implement tourism development management models that can reinforce ***Local Social Cohesion*** and ***Local Empowerment*** and, therefore, the *sustainability of tourism development* in these destinations[280].

Finally, the dynamics associated with scale and differentiation seem to play a relevant role on locals identity and attachment to these destinations. Large-scale tourism that overshoots the *Social Carrying Capacity* of the local population seems to lead to the commoditisation of the destination and its transformation into the "place of work"[281], rather than the "place of choice to live", mostly the case of *FDN*. An opposite relationship seems to exist, with small-scale tourism that is kept within the limits of *Social Carrying Capacity* enhancing ***Local Identity*** and ***Attachment to Place*** and reinforcing ***Local Social Cohesion*** and ***Local Empowerment***, such as in the case of *LHI*.

[278] Refer to page 92 for an account on tourist products as commodities and as experiences.
[279] Refer to page 63 for an account on *TCC*.
[280] This argument resonates with the principles of tourist destination clustering processes presented on page 91.
[281] This contributes to reaching the stages of *annoyance* and *antagonism* proposed by Doxey (1975) – refer to page 62.

References

Decreto Distrital No 008/2003: Regulamenta a Extração de Água em Fernando de Noronha.doc (2003a).

Decreto Distrital No 013/2003: Disciplina a Entrada de Materiais de Construção em Fernando de Noronha (2003b).

ADEFN. (2005). Comparativo do Perfil do Visitante de Fernando de Noronha 2001-2004 (pp. 1-13). Fernando de Noronha: Administração do Distrito Estadual de Fernando de Noronha.

ADEFN. (2009). Controle Diário de Visitantes 2008. Fernando de Noronha: Administração do Distrito Estadual de Fernando de Noronha.

ADEFN. (2010). Controle Diário de Visitantes 2009. Fernando de Noronha: Administração do Distrito Estadual de Fernando de Noronha.

Ambiente Energia. (2013, Jun 26). Usina solar em Fernando de Noronha » Ambiente Energia. *Ambiente Energia*. from https://http://www.ambienteenergia.com.br/index.php/2013/05/usina-solar-em-fernando-de-noronha/22892

Américo, Carlos. (2014, Sep 19). MMA e Ibama recorrerão de liminar que suspende saída de animais de Noronha. *mma.gov.br*.

ARENA. (2014, Jul 24). Lord Howe Island Hybrid Renewable Energy System. *Australian Renewable Energy Agency*. from http://arena.gov.au/project/lord-howe-island-hybrid-renewable-energy-system/

Besseling, Peter, & DAmore, Angela. (2010, Nov 23). Lord Howe Island Powerhouse. *Parliament of New South Wales*.

BOM. (2012, Dec 12). Climate statistics for Australian locations: Monthly Climate Statistics: Lord Howe Island Aero. *Australian Government Bureau of Meteorology*. from http://www.bom.gov.au/climate/averages/tables/cw_200839.shtml

Borges Lins e Silva, Marieta. (2007a). *Fernando de Noronha: Cinco Séculos de História* Vol. 1. *Cadernos Noronhenses*

Borges Lins e Silva, Marieta. (2007b). *Fernando de Noronha: Cinco Séculos de História* Vol. 2. *Cadernos Noronhenses* (pp. 1-308).

CONAMA (1990, Dec 06). [Resolução CONAMA No 016 de 06 de dezembro de 1990].

da Silva Barros, Renato Wagner. (2002). *Implantação, Operação e Instrumentação de Sistema Híbrido Eólico/Diesel no TFFN*. (Masters Thesis), UFP, Recife.

de Almeida Filho, José Baptista. (2009, May 06). TRF-5 - Embargos de Declaração emSuspensão de Liminar : SL 4000 PE 00901541020084050000002, Civil Case. *Diário da Justiça*, p. 140. Retrieved from http://trf-5.jusbrasil.com.br/jurisprudencia/8311284/embargos-de-declaracao-em-suspensao-de-liminar-sl-4000-pe-00901541020084050000002-trf5

Doxey, George V. (1975). *A Causation Theory of Visitor-Resident Irritants: Methodology and Research Inference*. Paper presented at the The Travel Research Association Conference no 6 - TTRA, San Diego, California. Article retrieved from

Duarte de Araújo, Gustavo Antônio. (2009a). Grupo de Trabalho para Mudança da Matriz Energética do Arquipélago de Fernando de Noronha (pp. 1-120). Recife: Governo do Estado de Pernambuco.

Duarte de Araújo, Gustavo Antônio. (2009b). Grupo de Trabalho para Mudança da Matriz Energética do Arquipélago de Fernando de Noronha: Resumo Executivo (pp. 1-33). Recife: Governo do Estado de Pernambuco.

Ehrlich, Paul R. (1968). *The population bomb*. New York: Ballantine Books.

elabore, & IBAMA. (2007). Estudo e Determinação da Capacidade de Suporte e Seus Indicadores de Sustentabilidade com Vistas à Implantação do Plano de Manejo da APA-FN: Produto 2 (pp. 1-191): Instituto Brasileiro do Meio Ambiente e dos Recursos Naturais Renováveis.

Essex, Stephen, Kent, Martin, & Newnham, Rewi. (2004). Tourism Development in Mallorca: Is Water Supply a Constraint? *Journal of Sustainable Tourism*, 12(1), 4-28. doi: 10.1080/09669580408667222

IBGE. (1993, Aug 30). Resolução No 20 de 23 de agosto de 1993: Estimativa Populacional. *Diário Oficial da União*, pp. 12827-12852. Retrieved from http://portal.in.gov.br/

IBGE. (2006, Aug 31). Resolução No 2 de 28 de agosto de 2006: Estimativa Populacional. *Diário Oficial da União*, pp. 137-159. Retrieved from http://portal.in.gov.br/

ICMBio, & e labore. (2008). Estudo e Determinação da Capacidade de Suporte e Seus Indicadores de Sustentabilidade com Vistas à Implantação do Plano de Manejo da APA-FN: Produtos 3 e 4 - Relatório Final (pp. 1-316): Instituto Chico Mendes de Conservação da Biodiversidade.

ICMBio, & ecooideia. (2008). Estudo e Determinação da Capacidade de Suporte e Seus Indicadores de Sustentabilidade com Vistas à Implantação do Plano de Manejo da APA-FN: Produtos 3 e 4 - Relatório Final (pp. 1-316): Instituto Chico Mendes de Conservação da Biodiversidade.

Jornal da Energia. (2014, Jul 18). Neoenergia inaugura primeira usina solarem Fernando de Noronha - Empreendimento vai contribuir para reduzir o consumo de óleo diesel no arquipélago. *Jornal da Energia*. from http://jornaldaenergia.com.br/ler_noticia.php?id_noticia=17388&id_seca0=8

labore, e (Cartographer). (2007). Espacialização de Pressões Geradas pelos Atrativos Turísticos sobre Fernando de Noronha/PE.

LHIB. (2011). Tourist Arrivals to Lord Howe Island 1998-2011.

Lins, Rodrigo. (2012, Jul 28). Petrolina receberá usina heliotérmica / Diversificação da matriz energética de Fernando de Noronha, Article. *Folha de Pernambuco*, p. 1. Retrieved from http://www.ufpe.br/agencia/index.php?option=com_content&view=article&id=43888:pesquisa--petrolina-recebera-usina-heliotermica&catid=9&Itemid=73

Logan, Andrew, & Holloway, Penny. (2014). Lord Howe Island Board - Busines Paper - Renewable Energy Program (Vol. 12, pp. 1-3): LHIB.

Loureiro, Marcelo. (2012a, Jul 21). Itaipu Desenvolve Energia Limpa para Ferenando de Noronha. *Blog do Marcelo Loureiro.*

Loureiro, Marcelo. (2012b, Jul 21). Termelétrica de Noronha será aposentada. *blogdenoronha.wordpress.com*. from http://blogdenoronha.wordpress.com/

MDS. (1992, Apr). Dotação Orçamentária do Ministério da Ação Social: Recursos para Abastecimento de Água em Fernando de Noronha. *Diário Oficial da União*, p. 367. Retrieved from http://portal.in.gov.br/

Nichols, Barney. (2010, Nov 19). The Lord Howe Island Signal. *The Lord Howe Island Signal*, pp. 1-16.

Nichols, Barney. (2011a, Feb 18). The Lord Howe Island Signal. *The Lord Howe Island Signal*, pp. 1-16.

Nichols, Barney. (2011b, Mar 04). The Lord Howe Island Signal. *The Lord Howe Island Signal*, pp. 1-16.

Petrosillo, I, Zurlini, G, Grato, E, & Zaccarelli, N. (2006). Indicating fragility of socio-ecological tourism-based systems. *Ecological Indicators, 6*(1), 104-113. doi: 10.1016/j.ecolind.2005.08.008

Powercorp. (2011). Lord Howe Island Renewable Operations: Energy Supply Road-Map. Darwin: Lord Howe Island Board.

Ravetz, Jerome R. (1999). What is Post-Normal Science. *Futures, 31*(7), 647-653.

Sinclair, John. (2002). A Management Strategy for Lord Howe Island for the Australian Voluntary Conservation Movement: A Paradise in Peril. Retrieved 13/04/2011, from http://www.sinclair.org.au/LHI_Management_Strategy.pdf

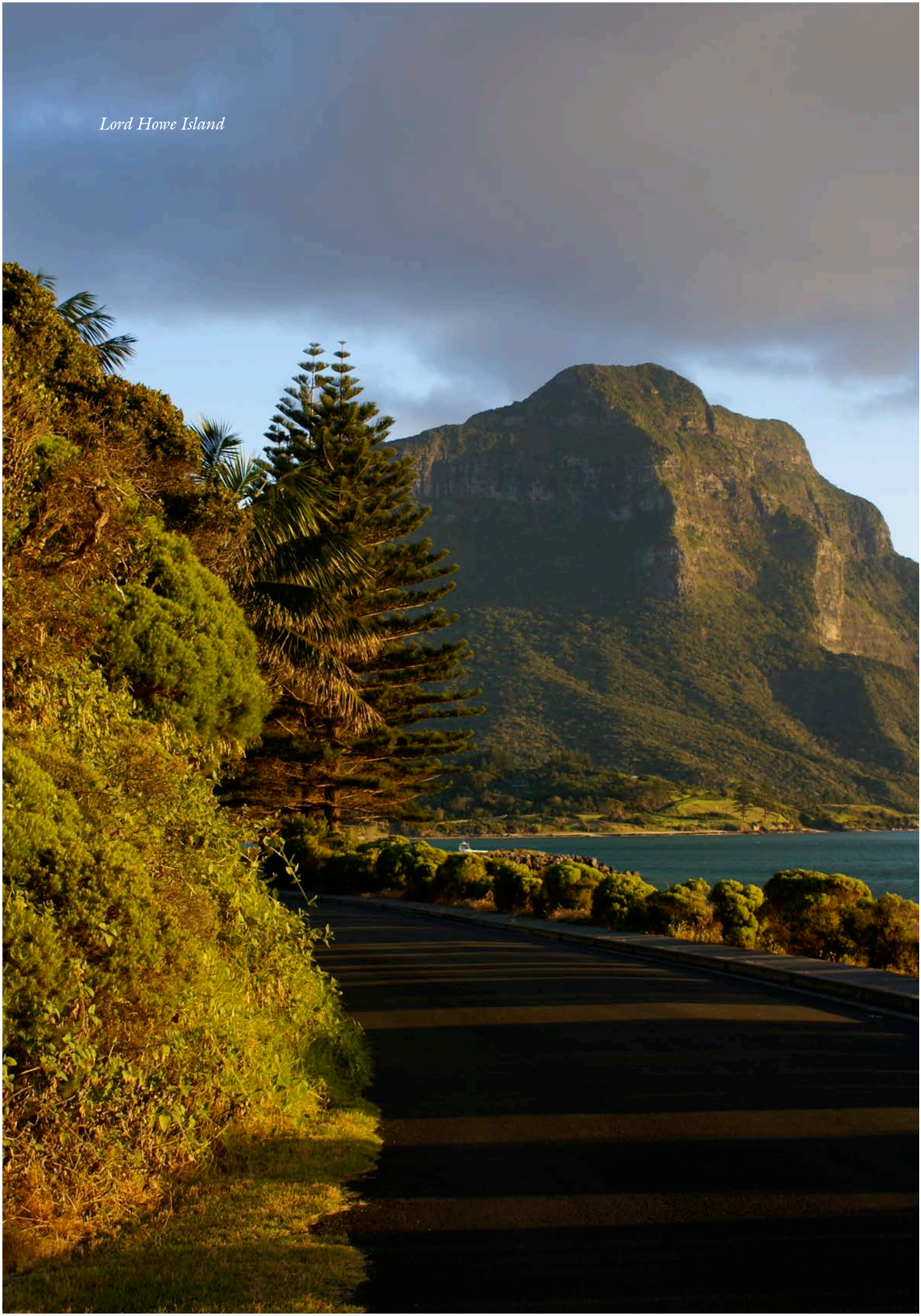
UN. (2012, Dec 12). UNdata: World Meteorological Organisation Standard Normals. *United Nations.* from http://data.un.org/Explorer.aspx?d=CLINO

Fernando de Noronha Archipelago

Part 3 | The Whole Picture

Conclusion and Final Remarks

Part 3 comprises a single chapter that addresses the research questions proposed in *Chapter 4*, as well as other final remarks on the research process, the relevance of findings to tourism planning, acknowledged research limitations, as well as future research opportunities. It builds on the literature review and the development of the theoretical framework carried out in the four chapters contained in *Part 1* and the integrated presentation of results and discussion carried out in the seven chapters that comprise *Part 2*.



Lord Howe Island

Chapter 12 | Beneath Sustainability

Addressing the Research Questions and Final Remarks

In a world marked by increasing globalisation and tourism development, by growing human population and widespread environmental impact and by the emergence of a worldwide nature conservation movement, the search for sustainability has become a central issue within human development studies and practices. However, establishing and reaching sustainability goals can be challenging as there is still no consensus on an operational definition of sustainability, and the background dynamics for it to occur are not well understood yet. Aiming to contribute to the body of knowledge on the dynamics of sustainability transitions within tourism development in tourist destinations, in *Chapter 4*, this research has defined one primary question and four secondary questions that are now addressed in detail.

This chapter starts by arguing that ***Competition*** and ***Cooperation*** influence the sustainability of tourism development by affecting how autonomous or dependent ***Local Social-Ecological Complex Adaptive Systems – SECASs*** become to the ***Global SECAS***. It follows by asserting that by fostering ***Localised Conservation – LC*** through the proclamation of ***Protected Areas – PAs*** that reconfigure land ownership and control, ***World Heritage Listing – WHL*** can strongly influence the types of competition and cooperation in place, affecting sustainability both positively and negatively. By creating islands of conservation, some ***PAs*** can contribute to the exportation of human development impacts and dependence on the ***Global SECAS*** and broader bioregions. In that sense, they can be similar to cities (by being connected through tourism and the sourcing of external supplies and having an ecological footprint that extends beyond their boundaries), while also the opposite (by promoting internal conservation rather than development). The chapter then argues that by increasing the connection between these islands and the mainland and by being dependent on destinations being unique, in order to be more succesful in attracting tourists, ***Tourism Development – TD*** can promote both greater ***Globalisation*** and ***Localisation*** of ***Tourist Destinations***. The chapter then explores the roles of ***context***, ***intervening conditions*** and ***causal conditions*** on the way ***LC*** and **TD** can influence competition and cooperation and consequently the sustainability of local **SECAS**s. It argues that a potential positive influence of ***LC*** and **TD** strategies on the sustainability of ***Local SECASs*** is dependent on *context*, *intervening conditions* and *causal conditions* that can foster ***Local Empowerment*** and ***Local Social Cohesion***, so as to promote ***Local Identity*** and ***Attachment to Place***, which are understood here as foundations for the ***Sustainability*** of ***Local SECASs***. The chapter then moves to cross-cutting conclusions linking areas explored by the different research questions that are part of this thesis. It then explores some of the research's main contributions to knowledge, by identifying challenges and strategies when researching ***SECASs***, as well as future research opportunities.

Competition, Cooperation and Sustainability

The research's primary question was dealt with mainly in *Chapter 10* and *Chapter 11* and sought to understand how different types of interpersonal and interorganisational relationships of competition and cooperation (researched *phenomenon*) among tourism stakeholders of small oceanic islands listed as natural *World Heritage* influence the sustainability of their tourism development.

To answer this primary research question, firstly the types of competition and cooperation in place for the two case study sites were identified. This was done through the application of a fundamental property of ***Complex Adaptive Systems***, namely their hierarchical structure. This way, two groups of agents were identified: ***Global Agents*** and ***Local Agents***. As a result, three types of ***Competition*** and ***Cooperation*** were defined: ***Global*** (or that among ***Global Agents***); ***Global-Local*** (or that between ***Global Agents*** and ***Local Agents***); and ***Local*** (or that among ***Local Agents***).

Results suggest that certain combinations of relationships of ***Competition*** and ***Cooperation*** can lead to better or worse sustainability outcomes through the way these relationships influence key ***Sustainability Challenges*** of ***Local Social Cohesion*** and ***Local Empowerment***, while also being influenced by these two.

While strong ***Local Competition*** and weak ***Local Cooperation*** coupled with strong ***Global-Local Cooperation*** seems to push for a decrease in ***Local Social Cohesion*** and ***Local Empowerment***, the combination of strong ***Global-Local Competition*** with strong ***Local Cooperation*** and weak ***Local Competition*** seems to push for an increase in ***Local Social Cohesion*** and ***Local Empowerment***.

Stronger ***Global-Local Cooperation*** can lead to improved access to ***Global Stocks*** but also increase a situation of dependence to factors that are outside of local control, leading to greater uncertainty and lower ***Local Empowerment***.

Along with ***Local Competition*** and ***Local Cooperation***, ***Local Social Cohesion*** and ***Local Empowerment*** seem to affect how ***Entry Barriers*** mediate the interplay between ***Global Social Structures*** and ***Local Social Structures***. A product of the 3 types of ***Competition*** and ***Cooperation***, ***Benchmarking*** seems to intensify ***Local Competition***.

By inferring that ***Local Empowerment*** and ***Local Social Cohesion*** are important to the ***Sustainability*** of ***Local*** and ***Global SECASs***, by no means does this thesis suggest that ***Local SECASs*** should seek total independence from the ***Global SECAS***, as the hierarchical structure linking the two is an intrinsic property of ***Complex Adaptive Systems***. What is suggested here is that:

Globalisation *is an emergent process that needs to interplay with stronger levels of* ***Localisation*** *for the overall* ***Global-Local SECAS*** *to become more resilient.*

It is also suggested here that ***Localisation*** is linked with how these island stakeholders relate to these islands as places and how much those places are part of their identity. By recognising that their home extends beyond the boundaries of their houses, to encompass those of the island, some of these stakeholders become islanders and can see themselves as part of a community, therefore contributing to greater ***Local Social Cohesion*** and ***Local Empowerment***.

In summary, by strongly influencing the level of dependence on the ***Global SECAS*** experienced by small oceanic islands, the struggle between ***Global*** and ***Local Empowerment*** and associated level of ***Local Social Cohesion*** that arise from (and self-moderate and self-reinforce) ***Global-Local*** and ***Local*** relationships of ***Competition*** and ***Cooperation*** is key to understanding how competition and cooperation affect the sustainability of tourism development of these small oceanic islands.

The Influence of Localised Conservation and Tourism Development

This research's first secondary question (2.1) targets how the *(inter)action strategies* of ***Tourism Development – TD*** and ***Localised Conservation – LC*** through the implementation of ***Protected Areas – PAs*** in the *context* of ***World Heritage Listing – WHL*** influence competition and cooperation among stakeholders of ***World Heritage*** listed small oceanic island tourist destinations. To contextualize the answer to this research question, *Chapter 5* and *Chapter 6* explore how ***Tourism Development*** and the ***Conservation Movement*** evolved at the Global and National levels. This was followed by an investigation of the main local environmental and demographic features at play on the two case study sites in *Chapter 7*. A history of the process of implementation of ***PAs***, ***WHL*** and ***TD*** was developed in *Chapter 8* for ***Fernando de Noronha Archipelago – FDN*** and in *Chapter 9* for ***Lord Howe Island – LHI***. Finally, *Chapter 10* highlighted the importance of different historical events, including the proclamation of ***PAs***, ***WHL*** and ***TD***, on the way agents compete and cooperate on ***LHI*** and in ***FDN***.

In regard to ***LC***, its influence on ***Competition*** and ***Cooperation*** is twofold:

Firstly, by pushing for the control of local development, ***LC*** has limited the use of local natural resources that were already scarce, while also sought the establishment of caps to the number of tourists that could visit the island. Depending on how these limitations were put forward, ***LC*** has affected ***Local Competition*** and ***Local Cooperation*** in different ways. By limiting the number of beds licensed to each accommodation provider according to their historical involvement with tourism, *LHI* experiences little competition among accommodation providers, but higher competition among local inbound tour operators. In other words, the market share of each accommodation provider is pre-set, while the market share of each inbound tour operator is

de-regulated and, therefore, depends on their ability to perform better than their local competitors, in a pie that never grows and that could be potentially shared with a greater number of operators. With little enforcement in place in *FDN*, there is great competition between formal and informal accommodation providers and within formal providers themselves, the same thing happening with operators. Tourist numbers are also not as controlled in *FDN*, which pushes for the establishment of new tourism businesses on the island. Overall, what helps to contain greater tourism development and the creation of new business on both islands is the limited access to land and the unique land tenure systems they have in place. In regard to cooperation, ***LC*** in *FDN* is pushing for greater ***Global-Local Cooperation***, mainly due to its imposing of a great number of regulations on a population with an overall limited educational background that has difficulty in dealing with the way the global world operates. The same situation is less of a problem on *LHI* due to the overall considerably higher educational level of its residents, who are better capable to tap into global resources and opportunities to enhance their local businesses.

Secondly, by affecting land use through regulations, it has, in many cases, privileged activities for which local impact was less direct and obvious, such as the case of tourism when compared to agriculture. This reinforced the uneven ***competition*** between tourism and agriculture, leading to less food security on both islands. This is sometimes coupled with over-regulation of small-scale activities (especially sanitary regulations on food production) brought about by mainland mindset that is not always appropriate to small tourist destinations such as *LHI* and *FDN*, resulting in uneven ***competition*** between small local business owners and large scale business corporations based on the mainland. As a global strategy for the ***LC*** of natural areas carrying elements of *Outstanding Universal Value – OUV*, *Natural World Heritage Listing* can influence the way individuals and organisations compete and cooperate in small oceanic islands and consequently the levels of global and local empowerment and local social cohesion experienced by these places. It does that by reconfiguring the local community's relationship with their land (reconfiguring land tenure and control) and their environment by promoting the proclamation and enforcement of Protected Areas and the institution of regulatory frameworks aiming to safeguard the listed property's elements of Outstanding Universal Value. Competition and dispute over the control of development and environmental conservation between different levels of government and within different departments/divisions of government can cater for situations with different environmental outcomes. However, as observed through the two cases, the engagement of local communities in the process of development of regulatory and management structures to conserve the environment seems to cater for more positive outcomes.

In regard to **TD**, its influence on competition and cooperation has led to a decrease in community values and increase in individuality for both *LHI* and *FDN* in different degrees. By promoting greater connection to the mainland, **TD** has brought greater ***Global-Local Cooperation*** while also pushed for greater Local Competition between residents seeking financial gains from limited numbers of tourists. The degree of **TD**'s influence on these types of ***Competition*** and ***Cooperation*** seems to have stemmed from the levels of ***Local Empowerment*** and ***Local Social Cohesion*** experienced by *FDN* and *LHI* prior to the introduction of **TD**. While *FDN* presented lower levels of ***Local Social Cohesion*** and ***Local Empowerment*** than *LHI*, these levels became lower and lower with the introduction of non-controlled tourism. As for *LHI*, it was able to still secure fairly high levels of ***Local Empowerment*** and ***Local Social Cohesion*** after the introduction of tourism, due to its ability to control tourist flows and the increase of ***Global-Local Cooperation*** and ***Local Competition*** through reasonable levels of initial ***Local Social Cohesion*** and ***Local Empowerment***.

Differences also stem from the way tourism was introduced in each destination. In *FDN* tourism sought to replace the source of income that left the island along with the *Federal Administration* of the island, whereas, on *LHI*, tourism development took place along with the continuance of the *Kentia Palm* industry. In fact, this scenario catered for two very different patterns of tourism development in the two places: contained growth and development in the case of *LHI*; and a *tourism boom* in the case of *FDN*. The *context* in which tourism was developed was also very different for both cases. *FDN* was already highly dependent on the mainland for its subsistence, what allowed an artificial situation where a greater population could inhabit the island. From that perspective, islands that are highly dependent on the mainland, like *FDN*, can be compared to cities. The same way the growth of cities is supported by bioregions that greatly extend out of their borders, *FDN*'s current status quo could only be made possible by the dependence on bioregions that are located very far from the island. For an island that sells itself as a mecca for ecotourism, the unsustainability of its processes seems rather contradictory. In that regard, the current system of *Protected Areas* in place in *FDN* not only promotes this situation by offering an opportunity for the increase of tourism, but also by inhibiting opportunities for self-sufficiency in terms of food production and harvesting.

The Role of History

The second secondary research question (2.2) sought to identify the main historical events affecting the way *FDN*'s and *LHI*'s stakeholders compete and cooperate and how. In other words, it explored the different *causal conditions* affecting the researched *phenomenon*. *Chapter 1* was the first to present an historical account, focusing on the way the *Symbolic Network* of concepts surrounding *Sustainability* evolved over time. *Chapter 5* and *Chapter 6*, explored

the evolution of the *Values Network* and *Regulatory Network* associated with the *Concept Network*[282] explored in *Chapter 1*, thus complementing the view on the *Institutional Structure* associated *Sustainability* and the *Conservation Movement*. *Chapter 8* and *Chapter 9* presented chronologies of historical events associated with the implementation of **TD** and **LC** in *FDN* and on *LHI*. While the chapters referred to above have significantly contributed to building the background to answering research question 2.2, *Chapter 10* specifically focuses on the identification of the main *causal conditions* at play for *LHI* and *FDN*. Analysis of the results obtained through the interviews have pointed that *Conservation*, *Access to Land and Immigration*, *Governance* and *Tourism* were the main *causal conditions* behind the way agents compete and cooperate in *FDN* and on *LHI*. The establishment of different functions and economies for the two islands in their early development stages have catered for different administrative systems that have reinforced different levels of local empowerment. These seem to be intrinsically linked with the patterns of competition and cooperation exercised by local and global agents acting on these islands. Overall, the results suggest that history plays an extremely relevant role in setting paths of dependence leading to more or less sustainable outcomes, hence the title of this thesis: Inheriting Sustainability. This way, the argument put forward here is one that supports the idea of *transitioning to sustainability*[283] as opposed to simply trying to shift to it. It is understood here that achieving more sustainable and resilient *SECASs* requires structural changes that are processual and pass through the reaccommodating of different types of relationships of competition and cooperation among local and global agents.

The Role of Local Environment and Local Human Population

The third secondary research question (2.3) sought to understand how intrinsic environmental and demographic characteristics of *LHI* and *FDN* affect the way *competition* and *cooperation* take place on those islands. In other words, it explored the different *intervening conditions* affecting the researched *phenomenon*. *Chapter 7* presented the main environmental characteristics of both islands as well as their main demographic features. It highlighted that isolation and scale played important roles in promoting differentiation, based on the existence of endemic species and unique ecosystems and social systems / local cultures, arguing that geographical and social isolation can serve as barriers and facilitators to the process of globalisation, promoting and being promoted by the implementation of **LC** and **TD**. It also suggested that ***Local Social Cohesion*** and ***Local Empowerment*** on *LHI* and in *FDN* are largely impacted by regulations that help define and acknowledge the rights of different social groups sharing these islands.

[282] Refer to page 102 for a definition of *Symbolic*, *Values* and *Regulatory Networks*.
[283] Refer to page 35 for the corroborating theory on *Multi-Level Perspective on (Sustainability) Transitions*.

Despite not being the cause of *competition* and *cooperation*, *intervening conditions* seem to set the ground rules for them to take place. Comprising the characteristics of those who compete and cooperate as well as of the object of *competition* and *cooperation*, *intervening conditions*, when coupled with *context*, can explain the premises behind *causal conditions*. Also, environmental and demographic characteristics help define how much is on offer in terms of resources and how much is being demanded by these island populations (including locals and tourists). The interplay between offer and demand seems to directly affect the patterns of *competition* and *cooperation* on these islands, leading to different *sustainability challenges* that can reinforce or attenuate certain trends. *Chapter 11* explores how ***tourism intensity***, ***demographic density*** and ***environmental impact management*** are related to existing *competition* and *cooperation* on those islands, as well as to other *sustainability challenges* identified through the research. Overall, it points out that not only must planners take the *ecological carrying capacity* of these islands into account, but also their *social carrying capacity*, as overshooting the later will greatly affect ***Local Social Cohesion*** and ***Local Empowerment***. This reinforces the need to study these islands as coupled ***Social-Ecological Complex Adaptive Systems*** and not only as ecological or social systems in isolation, as ***Local Empowerment***, ***Local Social Cohesion***, ***Attachment to Place*** and ***Local Identity*** seem to have a direct impact on the *sustainability* of human development in those places.

The Role of Global and National Contexts

The fourth and last secondary research question (2.4) sought to understand how the global and national *contexts* affecting *LHI* and *FDN* interfered with how competition and cooperation manifests in these tourist destinations. In other words, it explored the *contextual conditions* affecting the researched *phenomenon*. *Chapter 5* starts addressing this research question by presenting the *global meta-context* in which tourism and socio-ecological systems have evolved, highlighting the relevance of technological revolutions to the way humankind interacts with the environment and by illustrating how interdependent countries can be within the *World System*[284], helping to explain different paths of development culminating in different human interactions with the environment. It suggested that a fundamental development difference between Australia and Brazil originates in the implemented colonial models for the two countries: settlement and exploitation, respectively. *Chapter 5* follows setting the foundations the argument that **TD** and ***LC*** are a product of globalisation, while also being promoters of this system-wide *phenomenon*, affecting how dependent *Local SECASs* are to the *Global SECAS*. *Chapter 8* and *Chapter 9* complement this argument, portraying how **TD** and ***LC*** have been implemented on ***LHI*** and **FDN**, while *Chapter 11* explores the *consequences* to sustainability that can be brought about by different implemented models of ***LC*** and **TD**.

[284] Refer to page 25 for the concept of *World System*.

Overall, chapters 5, 6, 8 and 9 portray the self-reinforcing relationships between ***global*** and ***national levels*** and between ***national*** and ***local levels*** steering processes of ***globalisation***. They suggest that understanding of regulatory, socio-economic and cultural *contexts* can help shed light on the reasons behind *local agency* and therefore the patterns of *competition* and *cooperation* that are established. *Context* seems to help shape local mindset, or *embodied structures* as well as *relational* and *institutional structures* either by opposition or compliance. The ***global*** and ***national contexts*** of nature conservation movements, protected area schemes and global tourism appear to be greatly responsible for the implementation of *(inter)action strategies* of **TD** and the implementation of **LC** on both case study sites.

Crosscutting Conclusions

This section now deals with cross-cutting conclusions that have emerged from analysis of data and that may relate to more than one of the areas explored in each research question discussed earlier in this chapter.

In regard to the relationship between localisation, environmental protection and well-being/collectivism, and to the relationship between globalisation, environmental degradation and materialism/individualism, it is relevant to point that this research's results corroborate with those obtained by Hurst et al. (2013) on materialism, the environment and value systems. The link between the results of these two researches seem to lay on the role of identity and attachment to place on processes of localisation, that are linked with the development of a *Values Network* oriented towards the importance of community, collective ownership of public spaces and a sense that individuals are part of systems[285].

In relation to the struggle between *structure* and *agency* discussed in *Chapter 3*, it is relevant to point that the results of this research seem to confirm the self-reinforcing and self-moderating relationship established between the two. However, findings also brought a new layer to the complexity of *structure* and *agency* interaction when these are analysed from a ***Global/Local Empowerment*** and ***Global/Local Cohesion*** perspective. This new layer is directly linked with the understanding of SECASs as hierarchical systems. While ***Local Empowerment*** seems to be linked with *local agency*, ***Local Cohesion*** seems to be supported by *local structure*, the two – *local structure* and *local agency* – self-reinforcing one another. However, when one looks at structure from a global perspective, there seems to be a tendency for *global structure* to moderate *local agency*. This way, the extent to which *local agency* becomes collective through the support of ***Local Cohesion*** (linked with *local structure*) is what seems to determine how balanced the relationship between *local agency* and *global structure* is. In the two case studies, this was achieved when those islanders in possession of leadership skills had also had access to *global*

[285] In an attempt to oppose the values portrayed in *Figure 6* on page 38.

knowledge and therefore could navigate well through the *global structure* while being promoters of ***Local Social Cohesion*** and ***Local Empowerment***.

This way, in regard to local agents' capacity to compete with global agents, both case studies suggest that cohesive communities seem to be supported by greater access to education by locals, empowering them to become better able to compete with outsiders, and leading to opportunities for them to exercise their citizenship and build identities attached to the their island and their community. Those on both islands that had temporarily resided on the mainland for educational purposes were the ones leading processes of ***Local Empowerment*** and community organisation, thus contributing to the resilience of *Local* SECASs. Therefore, the resilience of *Local* SECASs seems related to their capacity to remain reasonably autonomous and self-sufficient whilst also maintaining relationships of competition and cooperation with the agents of the *Global* SECAS that can keep in check the internal relationships of competition and cooperation fostering ***Local Social Cohesion*** and competitiveness and inhibiting individualism and corporatism. In that scenario, entry barriers appear to be essential when in the right amount and the right type. A cohesive society seems to cater not only for entry barriers, but is also dependent on these barriers.

If a *Local* SECAS can become more resilient by being able to tap into resources, agents, energy and information available through greater interaction with the *Global* SECAS, that same interaction can also make the *Local* SECAS less autonomous and likely to be impacted by crises affecting the *Global* SECAS. In that regard, it seems that the most resilient systems are those being able to cope with internal and external crises by establishing back up processes internally and externally and not being exclusively dependent on neither. Being a global *phenomenon*, not only is tourism highly impacted by the status of the *Global* SECAS, but it can also foster greater connectivity and local dependence of the *Local* SECAS on the *Global* SECAS. *Competition* and *cooperation* between *local agents*, *global and local agents* and *global agents* seem highly interactive and capable to shift regimes from locally dependent to globally dependent and vice-versa. By doing so, they interfere with the *Local* SECAS's resilience and consequently with the *sustainability* of ***Tourism Development***.

Increased connections with originating regions make it easier for tourism to became the major, if not the only, economic sector for isolated small tourism destinations. By doing that, tourism actually decreases local economic diversity leading to loss of resilience. Through the globalisation of local areas, tourism can help modify their consumption behaviour patterns, highly influencing the way supply chains are articulated to serve the needs of tourist destination areas. Supply chains structured heavily around importation can result in models of tourism development that could be easily labelled as neo-colonialism, where originating areas are not only

providers of tourists to destinations, but also of products, services and specialised labour, resulting in a logic of exploitation of local resources and communities by foreign capital. Tourism flows can be heavily impacted by natural disasters, political instability, economic downturns, civil unrest and epidemics and due to the ever-growing global connectedness, these problems can many times easily reach global levels of impact. Relying on models of tourism that hardly develop complementary sectors of the local economy of tourist destinations (offering uneven competition to them by providing better and more concentrated pay to those willing to switch to it) can be a high risk strategy that can considerably decrease the resilience of local communities to global and local threats.

There is still a great divide between economic development and environmental conservation that the concept of *sustainable development* is yet to address. This seems to derive from a view that *human systems* are separate to *environmental systems*. The concept of invasive species is an interesting one to shed light in this issue as both islands have only very recently been discovered and settled (*FDN* in the **1500s** and *LHI* in the **1700s**). Therefore, if in the pursuit of safeguarding *World Heritage - WH* natural universal values one is to fully restore the original ecosystems of the two islands and proceed with the total eradication of invasive species, one would have to get rid of humans too!... In that respect, the incorporation of local communities in the debate of *WH Listing* has recently started to become a reality and *IUCN* now requires public consultation to be carried out prior to nomination applications being submitted. These conclusions reaffirm the need to look at environmental conservation and development through an approach that considers coupled *Social-Ecological (Complex Adaptive) Systems*.

The second great divide still to be addressed is the relationship between local and global, both in terms of governance structures as well as management of impacts so that they are not simply exported from areas proclaimed as protected. In regard to governance structure, the *WH* strategy could gain by pursuing the development of global, national, regional and local management networks that could provide the strategy with momentum and could open up opportunities for integration of different types of protected areas. This is exemplified by the Brazilian case of *Biosphere Reserves*. As for the exportation of impacts, locally established *PA*s that are subject to *TD* must be able to incorporate means of local production of essential items within an environmental conservation approach instead of simply outsourcing them. This is an extremely important exercise with outcomes that will be perceived by both tourists and locals. This would shift the paradigm from protected areas as those that successfully conserve their environmental assets to areas that successfully integrate local human ecological processes in a way that is sustainable both locally and globally.

Finally, it is important to note that within this new paradigm, special attention must be paid to: the kind of tourism model being developed so that

it is not one where tourism is a competitor, but actually a promoter of other economic activities; and the dangers of over-regulation brought about by a mainland mindset and, many times, excessive layers of environmental and social protection that can culminate with the decrease of resilience of local SECASs. Overall, these are the main research findings of relevance to tourism planners:

- Different schemes of land tenure will impact on the local community's attachment to their islands, influencing their local identity and the resilience of *Local* SECASs;
- Building codes and restrictions on the importation of building materials are complementary to land tenure as means of development control, but these must be carefully orchestrated so as not to result in decreased *Local* SECAS resilience;
- Tourism can be a great tool for economic development and environmental conservation, but it can also easily lead to the development of economic relations of new-colonialism, leading to loss of resilience of local communities and consequently of local environments in the long run;
- ***Localised Conservation*** through the implementation of ***Protected Areas*** must conciliate human development with ecological cycles rather than simply impose restrictions that end up leading to unsustainable outcomes at the global level and loss of social-ecological resilience at the local level;
- If planners are to implement changes in the model of ***Tourism Development*** in place for a certain destination, they first need to understand what are the self-moderating and self-reinforcing processes that will facilitate or make harder the planned transition;
- Proclamation of ***Protected Areas*** reconfigures land ownership and control (highly political tool) and can result in dispute between different levels of government and within different departments/divisions of government leading to different environmental outcomes;
- Engagement of local communities in the development of regulatory and management structures to conserve the environment seems to cater for more positive outcomes.

Research's Contribution to Knowledge

As presented in *Chapter* 4, this thesis aimed to contribute to the body of knowledge on the dynamics of sustainability transitions within tourism development in tourist destinations. It does so by:

- Providing an overview on the evolution of the multiple concepts of *sustainability* as well as proposing a working definition;

- Carrying out a discussion on **Tourism Development** in the *context* of sustainability and developing a conceptual working model and definition of *tourism development sustainability*;
- Developing and applying a conceptual working model for researching the dynamics beneath the resilience of *Social-Ecological Complex Adaptive Systems*;
- Bridging different areas of knowledge and applying *Grounded Theory* methods to the research of *Social-Ecological Complex Adaptive Systems*;
- Developing a *transdisciplinary* research approach to *sustainability*[286];
- Concluding that **Local Empowerment**, **Local Social Cohesion**, **Attachment to Place** and **Local Identity** are fundamental to the resilience of *Local Social Ecological Complex Adaptive Systems* and therefore to the *sustainability* of **Tourism Development**;
- Concluding that, when analysed from a *Social-Ecological Complex Adaptive System* approach, **Localised Conservation** can serve both to increase and decrease the resilience of global and local social-ecological systems; and
- Concluding that by promoting greater global connectivity, **Tourism Development** in itself is a globalising force manifesting at the local level that can promote both **Global** and **Local Empowerment**.

The greatest challenge experienced by the researcher when exploring *Social-Ecological Complex Adaptive Systems* was to identify relationships of cause and *consequence* as a fundamental property of these systems is that they are non-linear. The *Axial Paradigm* proposed by *Strauss* as part of the *Grounded Theory* method of qualitative inquiry proved an effective way to deal with this challenge. Organising the research around *phenomenon*, *causal conditions*, *(inter)action strategies*, *contextual conditions*, *intervening conditions* and *consequences* allowed the researcher to identify emergent properties of the researched *SECAS* on a macro-level. In a complementary way, the acknowledgment of a hierarchical structure operating beneath *SECASs* (namely *Global* and *Local*), helped to support the identification of the different *Axial Paradigm* categories for the research. Finally, the use of a qualitative approach proved a successful way to deal with a subject that is so broad and encompassing such as *sustainability* through the lens of *SECAS* theory and that requires the development of transdisciplinary models that can advance *sustainability* as a cross-cutting area of inquiry.

Future Research Opportunities

The results and conclusions presented in this thesis reflect the particular situations of two oceanic island tourist destinations that have been listed as *World Heritage* by *UNESCO*, namely *Fernando de Noronha Archipelago* and *Lord Howe Island*. By being a comparative case study, it was possible to describe

[286] See page 31 of *Chapter 1* for a definition of *transdisciplinarity*.

phenomena that were common to both islands. When these two were contrasted, it was also possible to highlight differing dynamics between them. Despite coding being taken to a theoretical level, it is important to make clear that the theories emerging from data for this thesis do not fully cover the broad range of relationships of competition and cooperation that can manifest in *Social-Ecological Complex Adaptive Systems*. In fact, they reflect the specific *contextual*, *causal* and *intervening conditions* at play in those islands. This way, while the models developed here can serve as a platform for the design of future research, by no means they should be taken as directly transferable to other objects of study. Adjustments to these models must be carried out when dealing with different scales, economic activities and different global strategies, as well as with different types of places. However, it is likely that many of the conclusions reached here will serve for other places too. In fact, islands were chosen as the object of this research for their capacity to amplify conditions and situations that are also part of the situations faced by mainland places.

This way, beyond the scope of this research, there is the opportunity to investigate other places that portray different combinations of ***Global***, ***Local*** and ***Global-Local*** relationships of ***Competition*** and ***Cooperation*** that could complement and further adjust the models developed here. Important, however, is to assure that these relationships are not dealt with in isolation, as isolated results could be misleading and incapable to contribute to the advancement of knowledge in *Social-Ecological Complex Adaptive Systems*, which have as a fundamental premise portraying a hierarchical structure. Future research can also investigate possible negative effects of extreme levels of ***Local Empowerment*** to the resilience of local SECASs, *Norfolk Island* being a potential research case study for that purpose.

References

Commonwealth of Australia Constitution Act, 1-60 (1900).

World Heritage Properties Conservation Act 1983, 1-26 (1983).

Environment Protection and Biodiversity Conservation Act 1999, Act Compilation - C2011C00014 C.F.R. (1999a).

Environmental Reform (Consequential Provisions) Act 1999, 1-85 (1999b).

Environment Protection and Biodiversity Conservation Regulations 2000, Legislative Instrument Compilation - F2010C00413 C.F.R. (2000).

Australia. (2008). Caring for our Country: Outcomes 2008-2013 (pp. 1-48). Canberra: Commonwealth of Australia.

Decreto Legislativo nº 74, de 1977: Aprovação da Convenção Relativa à Proteção do Patrimônio Mundial, Cultural e Natural (1977a).

Decreto nº 80.978, de 12 de Dezembro de 1977: Promulgação da Convenção do Patrimônio Mundial da UNESCO (1977b).

de Roo, Gert, & Silva, Elisabete A. (2010). *A planner's encounter with complexity*: Ashgate Pub Co.

Klöpffer, Walter. (2003). Life-Cycle based methods for sustainable product development. *The International Journal of Life Cycle Assessment*, 8(3), 157-159.

Koestler, Arthur. (1967). *The ghost in the machine*. London: Hutchinson.

UNDP. (2011). COMPACT: engaging local communities in stewardship of globally significant protected areas. Retrieved 21/03/2011, from http://sgp.undp.org/img/file/Compact%20Booklet-1.pdf

UNESCO. (2010, Jul). World Heritage in Brazil. *World Heritage Review*, 1-92.

Widmer, Gloria. (2007). *O Titulo de Patrimônio da Humanidade e seus Efeitos sobre o Turismo em Fernando de Noronha.* (Communication Sciences PhD Thesis), Universidade de São Paulo, São Paulo. Retrieved from http://www.teses.usp.br/teses/disponiveis/27/27148/tde-05072009-203038/publico/867713.pdf

Full Bibliographic List

A consolidated list of all sources used in this thesis

1983. Commonwealth v Tasmania ("Tasmanian Dam case"). *Commonwealth of Australia.* Canberra: High Court of Australia.

ABAV. 2003. *Sobre a ABAV: Breve Histórico* [Online]. São Paulo. Available: http://www.abav.com.br/texto.aspx?id=3&id_area=1.

ABAV 2013. *Associação Brasileira de Agências de Viagens - ABAV: 1953-2003: 50 anos de História, Lutas e Vitórias*, São Paulo, Associação Brasileira de Agências de Viagens.

ABIH. 2011. *Associação Brasileira da Indústria de Hotéis - ABIH: Quem Somos: História* [Online]. São Paulo. Available: http://www.abih.com.br/quem_somos.php.

ABS 1970. Overseas Arrivals and Departures: Part 2: Total and Short-Term Movement: December Quarter 1969. Canberra: Australian Bureau of Statistics.

ABS 1971. Australian Overseas Arrivals and Departures: December 1970. Canberra: Australian Bureau of Statistics.

ABS 1972. Australian Overseas Arrivals and Departures: December 1971. Canberra: Australian Bureau of Statistics.

ABS 1974. Australian Overseas Arrivals and Departures: December 1973. Canberra: Australian Bureau of Statistics.

ABS 1976. Australian Overseas Arrivals and Departures: November and December 1975. Canberra: Australian Bureau of Statistics.

ABS. 1997. *1996 Census Data: Lord Howe Island* [Online]. Canberra. Available: http://www.abs.gov.au/ausstats/abs@.nsf/DetailsPage/96bcp12510858591996?OpenDocument&tabname=Details&prodno=96bcp12510858&issue=1996&num=&view=&%23Basic Community Profile.

ABS. 2002. *2001 Census Community Profile Series: Lord Howe Island* [Online]. Canberra. Available: http://www.censusdata.abs.gov.au/ABSNavigation/prenav/ViewData?&action=404&documentproductno=UCL148840&documenttype=Details&tabname=Details&areacode=UCL148840&issue=2001&producttype=Community Profiles&&producttype=Community Profiles&javascript=true&textversion=false&navmapdisplayed=true&breadcrumb=PLD&%23Basic Community Profile.

ABS. 2007. *2006 Census QuickStats: Lord Howe Island* [Online]. Canberra. Available: http://www.censusdata.abs.gov.au/ABSNavigation/prenav/ViewData?action=402&documentproductno=12510859&documenttype=Main Features&order=1&tabname=Summary&areacode=12510859&issue=2006&producttype=QuickStats&javascript=true&textversion=false&navmapdisplayed=true&breadcrumb=PLD&&collection=census&period=2006&producttype=QuickStats&method=Place of Usual Residence& .

ABS. 2012. *2011 Census QuickStats: Lord Howe Island* [Online]. Canberra. Available: http://www.censusdata.abs.gov.au/census_services/getproduct/census/2011/quickstat/SSC11408?opendocument&navpos=220.

ABS. 2013a. *3401.0 Overseas Arrivals and Departures: Australia: December 2012* [Online]. Canberra. Available: http://www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/3401.0Dec 2012?OpenDocument.

ABS. 2013b. *Australian Population clock* [Online]. Canberra. Available: http://www.abs.gov.au/ausstats/abs@.nsf/0/1647509ef7e25faaca2568a900154b63?OpenDocument.

ABS. 2014. *Australian Population Clock* [Online]. Canberra. Available: http://www.abs.gov.au/ausstats/abs%40.nsf/94713ad445ff1425ca25682000192af2/1647509ef7e25faaca2568a900154b63?OpenDocument.

ACCESS ECONOMICS 2009. Vulnerabilities study: regions with a high dependency on tourism. Canberra: Department of Resources, Energy and Tourism.

ACTU. 2012. *Unions Australia: Achievements by Australia Unions* [Online]. Canberra. Available: http://www.unionsaustralia.com.au/about.aspx?AspxAutoDetectCookieSupport=1.

ADEFN 1996. Instrução Normativa No 002 de 14 de junho de 1996. *In:* ADEFN (ed.).

ADEFN 2000. Instrução Normativa No 01/2000: Disciplina o Fluxo de Turistas no Arquipélago de Fernando de Noronha. *In:* ADEFN (ed.). 01/2000.

ADEFN 2003a. Decreto Distrital No 008/2003: Regulamenta a Extração de Água em Fernando de Noronha.doc. *In:* ADEFN (ed.).

ADEFN 2003b. Decreto Distrital No 013/2003: Disciplina a Entrada de Materiais de Construção em Fernando de Noronha. *In:* ADEFN (ed.).

ADEFN 2004. Decreto Distrital No 018/2004: Disciplina Não Incidência da TPA. *In:* ADEFN (ed.). DOE 06/02/2004.

ADEFN 2005a. Comparativo do Perfil do Visitante de Fernando de Noronha 2001-2004. Fernando de Noronha: Administração do Distrito Estadual de Fernando de Noronha.

ADEFN 2005b. Decreto Distrital nº 025, de maio de 2005: Matriz de Classificação das Pousadas Domiciliares do Distrito Estadual de Fernando de Noronha. *In:* ADEFN (ed.).

ADEFN 2006. Decreto Distrital nº 031, de 27 de setembro de 2006: Conselho Noronhense de Turismo - CONTUR *In:* ADEFN (ed.).

ADEFN 2007a. Decreto Distrital nº 037, de 25 de junho de 2007: Regimento Interno do Conselho Noronhense de Turismo - CONTUR. *In:* ADEFN (ed.).

ADEFN 2007b. Instrução Normativa DEFN No 002/2007: . *In:* ADEFN (ed.).

ADEFN 2009. Controle Diário de Visitantes 2008. Fernando de Noronha: Administração do Distrito Estadual de Fernando de Noronha.

ADEFN 2010. Controle Diário de Visitantes 2009. Fernando de Noronha: Administração do Distrito Estadual de Fernando de Noronha.

ADEFN 2012. Decreto Distrital No 063/2012: Classificação das hospedarias domiciliares do Distrito Estadual de Fernando de Noronha. *In:* ADEFN (ed.) *Administração do Distrito Estadual de Fernando de Noronha.* Fernando de Noronha.

ADM&TEC 2000. Plano de Gestão do Arquipélago de Fernando de Noronha, Ecoturismo e Desenvolvimento Sustentável – Fase 1 (Capacidade de Suporte): Relatório Final. Recife: Instituto de Administração e Tecnologia.

AFTA. 2013. *About AFTA* [Online]. Sydney. Available: http://www.afta.com.au/About.

AGÊNCIA BRASIL. 2012. *Portal Brasil: Crescimento populacional do Brasil é o menor já registrado - Portal Brasil* [Online]. Brasília. Available: http://www.brasil.gov.br/noticias/arquivos/2011/10/26/crescimento-populacional-do-brasil-e-o-menor-ja-registrado.

ALLIANCE, R. 2001. Request for Proposal: Feasibility Study, Organizational Blueprint and Implementation Plan for a Global Sustainable Tourism Stewardship Council (STSC): An Accreditation Body for Sustainable Tourism Certifiers. New York City: Rainforest Alliance.

AMARAL, R. 2002. *Cruzeiros Marítimos*, Barueri, Manole.

AMBIENTE ENERGIA. 2013. *Usina solar em Fernando de Noronha » Ambiente Energia* [Online]. Available: https://http://www.ambienteenergia.com.br/index.php/2013/05/usina-solar-em-fernando-de-noronha/22892.

AMÉRICO, C. 2014. *MMA e Ibama recorrerão de liminar que suspende saída de animais de Noronha* [Online]. Brasília.

ANAC 2006. Anuário do Transporte Aéreo: Dados Estatísticos: 2005. Brasília: Agência Nacional de Aviação Civil.

ANAC 2007. Anuário do Transporte Aéreo: Dados Estatísticos: 2006. Brasília: Agência Nacional de Aviação Civil.

ANAC 2008. Anuário do Transporte Aéreo: Dados Estatísticos: 2007. Brasília: Agência Nacional de Aviação Civil.

ANAC 2009. Anuário do Transporte Aéreo: Dados Estatísticos: 2008. Brasília: Agência Nacional de Aviação Civil.

ANAC 2010. Anuário do Transporte Aéreo: Dados Estatísticos: 2009. 2nd ed. Brasília: Agência Nacional de Aviação Civil.

ANAC 2011. Anuário do Transporte Aéreo: Dados Estatísticos: 2010. Brasília: Agência Nacional de Aviação Civil.

APN 1989. Regimento Interno da Assembléia Popular Noronhense. Superseded ed.

ARENA. 2014. *Lord Howe Island Hybrid Renewable Energy System* [Online]. Available: http://arena.gov.au/project/lord-howe-island-hybrid-renewable-energy-system/.

ARRUDA DE CARVALHO, L. F. 1999. *Impactos do turismo no arquipélago de Fernando de Noronha: um estudo no caminho do desenvolvimento sustentável.* Bachelor of Tourism, Universidade de São Paulo.

ATEC. 2013. *ATEC's History and Honours List* [Online]. Sydney. Available: http://www.atec.net.au/subpage-05a.html.

ATTARD, B. 2010. *The Economic History of Australia from 1788: An Introduction* [Online]. Chichester. Available: http://eh.net/encyclopedia/article/attard.australia.

AUSTRALIA 1900. Commonwealth of Australia Constitution Act. Australia.

AUSTRALIA 1975. National Parks and Wildlife Conservation Act 1975. Superseded ed.

AUSTRALIA 1983. World Heritage Properties Conservation Act 1983. Superseded ed.

AUSTRALIA 1992. Intergovernmental Agreement on the Environment (IGAE). *In:* COMMONWEALTH OF AUSTRALIA (ed.) *Australian Government DSEWPC.*

AUSTRALIA. 1997. *Heads of agreement on Commonwealth and State roles and responsibilities for the Environment* [Online]. Canberra: Council of Australian Governments. Available: http://www.environment.gov.au/epbc/publications/coag-agreement/index.html [Accessed 13/04/2011.

AUSTRALIA 1999a. Environment Protection and Biodiversity Conservation Act 1999. *In:* COMMONWEALTH OF AUSTRALIA (ed.). Canberra: Office of Legislative Drafting and Publishing, Attorney General's Department.

AUSTRALIA 1999b. Environmental Reform (Consequential Provisions) Act 1999.

AUSTRALIA 2000. Environment Protection and Biodiversity Conservation Regulations 2000. *In:* COMMONWEALTH OF AUSTRALIA (ed.). Canberra: Office of Legislative Drafting and Publishing, Attorney General's Department.

AUSTRALIA 2004. Tourism Australia Act 2004. Attorney-General's Department.

AUSTRALIA. 2008a. *Australian Government: Early Australian aviation* [Online]. Canberra. Available: http://australia.gov.au/about-australia/australian-story/early-austn-aviation.

AUSTRALIA 2008b. Caring for our Country: Outcomes 2008-2013. Canberra: Commonwealth of Australia.

AUSTRALIA, E. 2002. *Lord Howe Island Marine Park and World Heritage Boundaries Map*. Canberra: Commonwealth of Australia.

AWHAC 2010. The Australian World Heritage Advisory Committee (AWHAC) Terms of Reference. *In:* ENVIRONMENT, D. O. T. (ed.).

BALDACCHINO, G. 2006. Islands, Island Studies, Island Studies Journal. *Island Studies Journal,* 1, pp. 3-18.

BALDACCHINO, G. 2007. *A world of Islands: an island studies reader*, Charlottetown [Canada], Institute of Island Studies.

BALDACCHINO, G. 2008. Studying Islands: On Whose Terms? Some Epistemological and Methodological Challenges to the Pursuit of Island Studies. *Island Studies Journal*, 3, pp. 37-56.

BANK, T. W. 2013. *Land Area Country Ranking* [Online]. Washington. Available: http://data.worldbank.org/indicator/AG.LND.TOTL.K2?order=wbapi_data_value_2010+wbapi_data_value+wbapi_data_value-last&sort=desc.

BARNES, J. A. 1954. Class and Committees in a Norwegian Island Parish. *Human Relations*, 7, 39-58.

BATISSE, M. 1980. The Relevance of MAB. *Environmental Conservation*, 7, 179-184.

BATISSE, M. 1982. The Biosphere Reserve: A Tool for Environmental Conservation and Management. *Environmental Conservation*, 9, 101-111.

BAUM, T. 1998. Taking the Exit Route: Extending the Tourism Area Life Cycle Model. *Current Issues in Tourism*, 1, 167 - 175.

BEAUMONT, N. & DREDGE, D. 2010. Local tourism governance: a comparison of three network approaches. *Journal of Sustainable Tourism*, 18, 7 - 28.

BECCARIO, C. 2014a. Snapshot of Earth: an animated map of global wind and weather: South Atlantic Ocean.

BECCARIO, C. 2014b. Snapshot of Earth: an animated map of global wind and weather: SouthWest Pacific Ocean

BENI, M. C. 2001. *Análise Estrutural do Turismo*, São Paulo, SENAC.

BENI, M. C. (ed.) 2012. *Turismo: planejamento estratégico e capacidade de gestão - Desenvolvimento regional, rede de produção e clusters*, Barueri: Manole.

BENTRUPPERBAÜMER, J. M., DAY, T. J. & RESER, J. P. 2006. Uses, Meanings, and Understandings of Values in the Environmental and Protected Area Arena: A Consideration of 'World Heritage' Values. *Society & Natural Resources: An International Journal*, 19, 723 - 741.

BERITELLI, P. 2011. Cooperation among prominent actors in a tourist destination. *Annals of Tourism Research*, 38, 607-629.

BERTALANFFY, L. V. 1950. An Outline of General System Theory. *British Journal for the Philosophy of Science*, I, 134-165.

BESSELING, P. & DAMORE, A. 2010. *Lord Howe Island Powerhouse* [Online]. Sydney.

BFN & IUCN 2009. Workshop Proceedings. *In:* ENGELS, B., OHNESORGE, B. & BURMESTER, A. (eds.) *Nominations and Management of Serial Natural World Heritage Properties: Present Situation, Challenges and Opportunities.* Isle of Vilm: BfN.

BHATIA, A. K. 2002. *Tourism Development: Principles and Practice*, Berkshire, UK, Sterling Publishers.

BOARI, C., ODORICI, V. & ZAMARIAN, M. 2003. Clusters and rivalry: does localization really matter? *Scandinavian Journal of Management*, 19, 467-489.

BÖHM, A. 2004. Theoretical Coding: text analysis in Grounded Theory. *In:* FLICK, U., VON KARDORFF, E. & STEINKE, I. (eds.) *A Companion to Qualitative Research.* London: Sage.

BOISSEVAIN, J. 1974. *Friends of friends: networks, manipulators and coalitions*, Oxford, Blackwell.

BOM. 2012. *Climate statistics for Australian locations: Monthly Climate Statistics: Lord Howe Island Aero* [Online]. Canberra. Available: http://www.bom.gov.au/climate/averages/tables/cw_200839.shtml.

BORGES LINS E SILVA, M. 2007a. Fernando de Noronha: Cinco Séculos de História. *Cadernos Noronhenses.* Recife: CELPE.

BORGES LINS E SILVA, M. 2007b. Fernando de Noronha: Cinco Séculos de História. *Cadernos Noronhenses.* Recife: CELPE.

BOULDING, K. E., JARRETT, H. & RESOURCES FOR THE FUTURE (U.S.) 1966. *Environmental quality in a growing economy: essays from the Sixth RFF Forum*, Baltimore, Published for Resources for the Future by the Johns Hopkins Press.

BRAMWELL, B., HENRY, I., JACKSON, G., PRAT, A. G., RICHARDS, G. & VAN DER STRAATEN, J. 1998. *Sustainable tourism management: principles and practice*, Tilburg University Press.

BRANDENBURGER, A. & NALEBUFF, B. 1996. *Co-opetition*, New York, Doubleday.

BRASIL 1934. Decreto nº 23.793, de 23 de janeiro de 1934: Código Florestal. *In:* BRASIL (ed.).

BRASIL 1958. Decreto nº 44.863, de 21 de Novembro de 1958: COMBRATUR. Affirmed ed. Brasília.

BRASIL 1961. Lei No 4.048 de 29 de dezembro de 1961. Affirmed ed.

BRASIL 1965. Lei nº 4.771, de 15 de Setembro de 1965: novo Código Florestal.

BRASIL 1977a. Decreto Legislativo nº 74, de 1977: Aprovação da Convenção Relativa à Proteção do Patrimônio Mundial, Cultural e Natural.

BRASIL 1977b. Decreto nº 80.978, de 12 de Dezembro de 1977: Promulgação da Convenção do Patrimônio Mundial da UNESCO. *In:* BRASIL (ed.).

BRASIL 1986. Decreto nº 92.755, de 5 de junho de 1986: APA de Fernando de Noronha, Rocas e São Pedro e São Paulo. *In:* BRASIL (ed.).

BRASIL 1999. Decreto de 21 de setembro de 1999: Comissão Brasileira para o Programa "O Homem e a Biosfera" - COBRAMAB. *In:* BRASIL (ed.).

BRASIL 2000. Lei nº 9.985, de 18 de julho de 2000: Sistema Nacional de Unidades de Conservação - SNUC.

BRASIL. 2001a. *Brazilian Atlantic Islands: Fernando de Noronha Natural World Heritage Area*.

BRASIL 2001b. Fernando de Noronha Archipelago / Rocas Atoll Tropical Insular Complex: Nomination for Inclusion as an Unesco World Heritage Natural Site. *Ministry of the Environment.* Brasília: Ministry of the Environment.

BRASIL 2002a. Contrato de Cessão de Uso em Condições Especiais. *In:* UNIÃO, S. D. P. D. (ed.). Recife: Ministério do Planejamento, Orçamento e Gestão - Secretaria do Patrimônio da União - Gerência Regional do Patrimônio da União em Pernambuco.

BRASIL 2002b. Termo de Ajustamento de Conduta número 004/2002 de 06 de dezembro de 2002. *In:* PROCURADORIA DA REPÚBLICA EM PERNAMBUCO (ed.). Recife: Ministério Público Federal.

BRASIL 2012. Constituição da República Federativa do Brasil - 1988: Texto consolidado até a Emenda Constitucional nº 68 de 21 de dezembro de 2011. Brasil.

BRUNDTLAND, G. H. & WORLD COMMISSION ON ENVIRONMENT AND DEVELOPMENT 1987. *Our common future*, Oxford; New York, Oxford University Press.

BRYANT, A. & CHARMAZ, K. 2007. *The SAGE handbook of grounded theory*, London, SAGE.

BURKART, A. J. & MEDLIK, S. 1981. *Tourism: past, present and future*, London, Heinemann.

BURT, R. S. 1992. *Structural Holes: The Social Structure of Competition*, Cambridge, MA, USA, Harvard University Press.

BUTLER, R. W. 1980. The Concept of a Tourist Area Life Cycle of Evolution: implication for management of resources. *The Canadian Geographer*, 24, 5-12.

BUTLER, R. W. 1999. Sustainable tourism: A state-of-the-art review. *Tourism Geographies*, 1, 7 - 25.

BUTLER, R. W. 2009. Tourism in the future: Cycles, waves or wheels? *Futures*, 41, 346-352.

CAMPBELL, J. 1993. *The Hero with a Thousand Faces*, London, Fontana Press.

CAPRA, F. 1983. *The turning point: science, society, and the rising culture*, London, Fontana.

CARSON, R. 1963. *Silent spring*, London, Hamish Hamilton.

CAVALCANTI DA ROCHA LIMA, J. 2000. *Nas Águas do Arquipélago de Fernando de Noronha.* PhD in Anthropology PhD Thesis, Pontifícia Universidade Católica de São Paulo.

CBD. 2013. *Liason Group of Biodiversity-Related Conventions* [Online]. Paris. Available: http://www.cbd.int/blg/.

CHARMAZ, K. 2006. *Constructing grounded theory: a practical guide through qualitative analysis*, London, SAGE.

CHU, D., STRAND, R. & FJELLAND, R. 2003. Theories of complexity: common denominators of complex systems. *Complexity*, 8, 19-30.

CI. 1998. *Megadiversity: The 17 Biodiversity Superstars* [Online]. Arlington. Available: http://www.conservation.org/documentaries/Pages/megadiversity.aspx.

CILLIERS, P. 1998. *Complexity and Postmodernism: Understanding Complex Systems*, Routledge.

CLARK, R. N. & STANKEY, G. H. 1979. The recreation opportunity spectrum: a framework for planning, management and research. *USDA Forest Service*. US Department of Agriculture - Forest Service.

CLARKE, J. 1997. A Framework of Approaches to Sustainable Tourism. *Journal of Sustainable Tourism*, 5, 224 - 233.

CLAUSET, A. Networks. web.cecs.pdx.edu, Jun 24 2011 Albuquerque.

CMA-ICMBIO. 2013. *CMA-ICMBio: Histórico* [Online]. Itamaracá. Available: http://www4.icmbio.gov.br/cma/index.php?id_menu=21.

CNUC 2012a. CNUC: Tabela Consolidada das Unidades de Conservação. Brasília: Ministério do Meio Ambiente - Cadastro Nacional de Unidades de Conservação.

CNUC 2012b. CNUC: Unidades de Conservação por Bioma. Brasília: Ministério do Meio Ambiente - Cadastro Nacional de Unidades de Conservação.

COCCOSSIS, H. & MEXA, A. 2004. *The challenge of tourism carrying capacity assessment: theory and practice*, Hants, Ashgate.

COMMONWEALTH OF AUSTRALIA 2007. Gazette Special - S99. *In:* RESOURCES, D. O. T. E. A. W. (ed.). Canberra: Commonwealth of Australia.

CONAMA. Dec 06 1990. *RE: Resolução CONAMA No 016 de 06 de dezembro de 1990.*

CONAMA. 2001a. Moção No 19 de 21 de agosto de 2001: Moção de Apoio ao Arquipélago de Fernando de Noronha. *Diário Oficial da União*, Aug 30, p.167-E.

CONAMA 2001b. Moção No 022 de 12 de julho de 2001: Planos de Manejo e Conselhos da APA-FN e do PARNAMAR-FN, CONDIMA, TAC, Lei de Uso e Ocupação do Solo e Plano de Gestão. *In:* CONAMA (ed.).

CONAPA-FN. Ata da I Reunião Ordinária de 2003 do CONAPA-FN em 17 de fevereiro de 2003. Conselho Gestor da Área de Proteção Ambiental de Fernando de Noronha - Rocas - São Pedro e São Paulo, Mar 17 2003 Fernando de Noronha. 1-2.

CONAPA-FN. Ata da II Reunião Ordinária de 2004 do CONAPA-FN em 15 de abril de 2004. Conselho Gestor da Área de Proteção Ambiental de Fernando de Noronha - Rocas - São Pedro e São Paulo, May 15 2004a Fernando de Noronha. 1-3.

CONAPA-FN. Ata da IV Reunião Ordinária de 2004 do CONAPA-FN em 12 de agosto de 2004. Conselho Gestor da Área de Proteção Ambiental de Fernando de Noronha - Rocas - São Pedro e São Paulo, Aug 12 2004b Fernando de Noronha. 1-5.

CONAPA-FN. Ata da V Reunião Ordinária de 2004 do CONAPA-FN em 14 de outubro de 2004. Conselho Gestor da Área de Proteção Ambiental de Fernando de Noronha - Rocas - São Pedro e São Paulo, Oct 14 2004c Fernando de Noronha. 1-3.

CONAPA-FN. Ata da I Reunião Ordinária de 2005 do CONAPA-FN em 18 de Janeiro. Conselho Gestor da Área de Proteção Ambiental de Fernando de Noronha - Rocas - São Pedro e São Paulo, Feb 18 2005a Fernando de Noronha. 1-14.

CONAPA-FN. Ata da III Reunião Ordinária de 2005 do CONAPA-FN em 17 de maio de 2005. Conselho Gestor da Área de Proteção Ambiental de Fernando de Noronha - Rocas - São Pedro e São Paulo, Jun 17 2005b Fernando de Noronha. 1-9.

CONAPA-FN. Ata da I Reunião Ordinária de 2006 do CONAPA-FN em 07 de Fevereiro de 2006. Conselho Gestor da Área de Proteção Ambiental de Fernando de Noronha - Rocas - São Pedro e São Paulo, Mar 07 2006 Fernando de Noronha. 1-5.

CONAPA-FN. Ata da III Reunião Ordinária de 2009 do CONAPA-FN em 17 de junho de 2009. Conselho Gestor da Área de Proteção Ambiental de Fernando de Noronha - Rocas - São Pedro e São Paulo, Jul 17 2009 Fernando de Noronha. 1-4.

CONAPA-FN, BCR, ADEFN, NORTAX, ABATUR, ACITUR, AHDFN, FPT, CGR, APA-FN, PARNAMAR-FN & IBAMA 2005. Homologação de Acordo. *In:* CONAPA-FN, BCR, ADEFN, NORTAX, ABATUR, ACITUR, AHDFN, FPT, CGR, APA-FN, PARNAMAR-FN & IBAMA (eds.). Fernando de Noronha: Conselho Gestor da Área de Proteção Ambiental de Fernando de Noronha - Rocas - São Pedro e São Paulo.

CONNELL, J. & LOWE, A. 1997. Generating grounded theory from qualitative data: the application of inductive methods in tourism and hospitality management research. *Progress in Tourism and Hospitality Research,* 3**,** 165-173.

CONPARNAMAR-FN. Ata da III Reunião Ordinária do CONPARNAMAR-FN em 02 de julho de 2008. Conselho Gestor do Parque Nacional Marinho de Fernando de Noronha, Jul 02 2008a Fernando de Noronha. 1-2.

CONPARNAMAR-FN. Ata da IV Reunião Ordinária do CONPARNAMAR-FN em 20 de agosto de 2008. Conselho Gestor do Parque Nacional Marinho de Fernando de Noronha, Aug 20 2008b Fernando de Noronha. 1-7.

CONPARNAMAR-FN. Ata da VI Reunião Ordinária do CONPARNAMAR-FN em 03 de dezembro de 2008. Conselho Gestor do Parque Nacional Marinho de Fernando de Noronha, Dec 03 2008c Fernando de Noronha. 1-7.

CONTUR. Ata V Reunião Ordinária do Conselho Noronhense de Turismo de Fernando de Noronha Exercício 2009-2010. V Reunião Ordinária do Conselho Noronhense de Turismo de Fernando de Noronha Exercício 2009-2010, Dec 03 2009 Fernando de Noronha. Conselho Noronhense de Turismo, 1-3.

COOPER, C. P. 1998. *Tourism: principles and practice*, Harlow, England, Longman.

CORBIN, J. M. & STRAUSS, A. L. 2008. *Basics of qualitative research: techniques and procedures for developing grounded theory*, Los Angeles, SAGE Publications.

CORRÊA, F. 1995. *Reserva da Biosfera da Mata Atlântica: Roteiro para o Entendimento de seus Objetivos e seu Sistema de Gestão*, São Paulo, Conselho Nacional da Reserva da Biosfera da Mata Atlântica.

CORRIE, A. T. C. 1878. A Visit to Lord Howe Island. *Proceedings of the Royal Geographical Society of London,* 22**,** 136-143.

COSTA, G. 2010. *Conferências nacionais alteraram modelo de democracia, afirma pesquisadora do Iuperj* [Online]. Brasília. Available: http://agenciabrasil.ebc.com.br/noticia/2010-03-28/conferencias-nacionais-alteraram-modelo-de-democracia-afirma-pesquisadora-do-iuperj.

CRC. 2013. *Cooperative Research Centres (CRC) website home page* [Online]. Canberra. Available: https://http://www.crc.gov.au/Information/default.aspx.

CRUTZEN, P. & STOERMER, E. F. 2000. Have we entered the "Anthropocene"? *Global Change Newsletter.* International Geosphere-Biospehere Programme (IGBP).

CVC. 2012. *História da maior operadora de turismo da América Latina | CVC Viagens* [Online]. São Paulo. Available: http://www.cvc.com.br/institucional/nossa-historia.aspx.

DA SILVA BARROS, R. W. 2002. *Implantação, Operação e Instrumentação de Sistema Híbrido Eolico/Diesel no TFFN.* Masters Thesis, UFP.

DAC 1994. Anuário do Transporte Aéreo: Dados Estatísticos: 1993. Brasília: Departamento de Aviação Civil - Comando da Aeronáutica.

DAC 1995. Anuário do Transporte Aéreo: Dados Estatísticos: 1994. Brasília: Departamento de Aviação Civil - Comando da Aeronáutica.

DAC 1996. Anuário do Transporte Aéreo: Dados Estatísticos: 1995. Brasília: Departamento de Aviação Civil - Comando da Aeronáutica.

DAC 1997. Anuário do Transporte Aéreo: Dados Estatísticos: 1996. Brasília: Departamento de Aviação Civil - Comando da Aeronáutica.

DAC 1998. Anuário do Transporte Aéreo: Dados Estatísticos: 1997. Brasília: Departamento de Aviação Civil - Comando da Aeronáutica.

DAC 1999. Anuário do Transporte Aéreo: Dados Estatísticos: 1998. Brasília: Departamento de Aviação Civil - Comando da Aeronáutica.

DAC 2000. Anuário do Transporte Aéreo: Dados Estatísticos: 1999. Brasília: Departamento de Aviação Civil - Comando da Aeronáutica.

DAC 2001. Anuário do Transporte Aéreo: Dados Estatísticos: 2000. Brasília: Departamento de Aviação Civil - Comando da Aeronáutica.

DAC 2002. Anuário do Transporte Aéreo: Dados Estatísticos: 2001. Brasília: Departamento de Aviação Civil - Comando da Aeronáutica.

DAC 2003. Anuário do Transporte Aéreo: Dados Estatísticos: 2002. Brasília: Departamento de Aviação Civil - Comando da Aeronáutica.

DAC 2004. Anuário do Transporte Aéreo: Dados Estatísticos: 2003. Brasília: Departamento de Aviação Civil - Comando da Aeronáutica.

DAC 2005. Anuário do Transporte Aéreo: Dados Estatísticos: 2004. Brasília: Departamento de Aviação Civil - Comando da Aeronáutica.

DANTAS AMOR GARRIDO, I. M. 2001. *Modelos Multiorganizacionais no Turismo: Cadeias, Clusters e Redes.* Masters Thesis, Escola de Administração.

DARNELL-SMITH, G. P. 1929. The Kentia Palm Seed Industry, Lord Howe Island. *Bulletin of Miscellaneous Information (Royal Gardens, Kew)*, 1929**,** 1-4.

DAVIDSON, J. & SPEARRITT, P. 2000a. Air Travel and the Rise of the Resort. Melbourne: Melbourne University Publishing.

DAVIDSON, J. & SPEARRITT, P. 2000b. The Rise and Fall of the Tourist Bureau. Melbourne: Melbourne University Publishing.

DE ALMEIDA FILHO, J. B. 2009. TRF-5 - Embargos de Declaração emSuspensão de Liminar : SL 4000 PE 00901541020084050000002. *Diário da Justiça*, May 06, p.65.

DE OLIVEIRA SANTOS, G. E. 2007. Modelos Teóricos Aplicados ao Turismo. *Estudios y Perspectivas en Turismo*, 16**,** 96-110.

DE ROO, G. & SILVA, E. A. 2010. *A planner's encounter with complexity*, Ashgate Pub Co.

DE SOUZA MELO, A. J. 2011. *A Participação do Ilhéu na Prestação de Serviços Turísticos de Lazer Aquático em Fernando de Noronha.* Masters Thesis, Universidade Anhembi Morumbi.

DECROP, A. & SNELDERS, D. 2005. A grounded typology of vacation decision-making. *Tourism Management*, 26**,** 121-132.

DEPARTMENT OF THE ENVIRONMENT. 2013. *Australian World Heritage Advisory Committee* [Online]. Canberra. Available: http://www.environment.gov.au/topics/heritage/heritage-organisations/australian-world-heritage-advisory-committee.

DIAMOND, J. M. 2005. *Collapse: how societies choose to fail or succeed*, New York, Viking.

DICASTRI, F. 1995. The chair of sustainable development. *Nature & Resources*, 31**,** 2-7.

DICKE, K. P., GOELDNER, C. R. & LANDON, E. L. 1975. Highlights of the Sixth Annual TTRA Conference San Diego, California, September 8-11. *Journal of Travel Research*, 14**,** 1-8.

DOUGLAS, N. & DOUGLAS, N. 2006. Paradise and other Ports of Call: Cruising in the Pacific Islands. Oxfordshire: CAB International.

DOXEY, G. V. 1975. A Causation Theory of Visitor-Resident Irritants: Methodology and Research Inference. *The Travel Research Association Conference no 6 - TTRA*. San Diego, California.

DSEWPC 2005. Heard Island and McDonald Islands Marine Reserve: Management Plan. Kingston: Conmmonwealth of Australia Department of Sustainability, Environment, Water, Population and Communities - Australian Antarctic Division.

DSEWPC. 2011. *Lord Howe Island Marine Park (Commonwealth Waters) Overview* [Online]. Canberra: Department of Sustainability, Environment, Water, Population and Communities. Available: http://www.environment.gov.au/coasts/mpa/lordhowe/index.html [Accessed 11/02/2011.

DSEWPC. 2012a. *Australia's Network of Commonwealth Marine Reserves*. Canberra.

DSEWPC. 2012b. *The Australian National Reserve System (NRS) - Collaborative Australian Protected Area Database (CAPAD) 2010* [Online]. Canberra: Parks Australia. Available: http://www.environment.gov.au/parks/nrs/science/capad/2010/index.html.

DSEWPC. 2012c. *Collaborative Australian Protected Areas Database: National Reserve System per IUCN Reserve Types*. Australia.

DSEWPC. 2012d. *Commonwealth Marine Reserves: Coral Sea Commonwealth Marine Reserve: Overview* [Online]. Canberra. Available: http://www.environment.gov.au/marinereserves/coralsea/overview.html.

DSEWPC. 2012e. *Commonwealth Marine Reserves: North Commonwealth Marine Reserves Network: Overview* [Online]. Canberra. Available: http://www.environment.gov.au/marinereserves/north/overview.html.

DSEWPC. 2012f. *Commonwealth Marine Reserves: North-west Commonwealth Marine Reserves Network: Overview* [Online]. Canberra. Available: http://www.environment.gov.au/marinereserves/north-west/overview.html.

DSEWPC. 2012g. *Commonwealth Marine Reserves: South-west Commonwealth Marine Reserves Network: Overview* [Online]. Canberra. Available: http://www.environment.gov.au/marinereserves/south-west/overview.html.

DSEWPC. 2012h. *Commonwealth Marine Reserves: Temperate East Commonwealth Marine Reserves Network* [Online]. Canberra. Available: http://www.environment.gov.au/marinereserves/temperate-east/index.html.

DSEWPC. 2012i. *Commonwealth Marine Reserves: Temperate East Commonwealth Marine Reserves Network: Overview* [Online]. Canberra. Available: http://www.environment.gov.au/marinereserves/temperate-east/overview.html - fs.

DSEWPC 2012j. Draft South-east Commonwealth Marine Reserves Network Management Plan 2012-22. Draft ed. Canberra: Conmmonwealth of Australia Department of Sustainability, Environment, Water, Population and Communities.

DSEWPC. 2012k. *Lord Howe Island Group: Map of Inscribed Property on the World Heritage List*. Lord Howe Island.

DSEWPC. 2012l. *Threatened species under the Environment Protection and Biodiversity Conservation Act 1999* [Online]. Canberra. Available: http://www.environment.gov.au/biodiversity/threatened/species.html.

DSEWPC. 2013a. *Australian Heritage Database: Lord Howe Island Group* [Online]. Canberra. Available: http://www.environment.gov.au/cgi-bin/ahdb/search.pl?mode=place_detail;place_id=105085.

DSEWPC. 2013b. *Commonwealth Marine Reserves* [Online]. Canberra. Available: http://www.environment.gov.au/marinereserves/index.html.

DSEWPC. 2013c. *Commonwealth Marine Reserves: Public Consultation* [Online]. Canberra. Available: http://www.environment.gov.au/marinereserves/consultation/index.html.

DUARTE DE ARAÚJO, G. A. 2009a. Grupo de Trabalho para Mudança da Matriz Energética do Arquipélago de Fernando de Noronha. Recife: Governo do Estado de Pernambuco.

DUARTE DE ARAÚJO, G. A. 2009b. Grupo de Trabalho para Mudança da Matriz Energética do Arquipélago de Fernando de Noronha: Resumo Executivo. Recife: Governo do Estado de Pernambuco.

DUBOS, R. J. 1968. *So human an animal*, New York, Scribner.

EAGLES, P. F. J., MCCOOL, S. F. & HAYNES, C. D. 2002. *Sustainable tourism in protected areas: Guidelines for planning and management*, Gland, World Commission on Protected Areas (WCPA) International Union for Conservation of Nature (IUCN).

ECOTOURISM AUSTRALIA. 2012a. *About Ecotourism Australia* [Online]. Bowen Hills. Available: http://www.ecotourism.org.au/aboutea.asp.

ECOTOURISM AUSTRALIA. 2012b. *Ecotourism Australia Tourism Partnership Programme: UNESCO World Heritage Centre and Ecotourism Australia's Memorandum of Co-operation on the Development of a World Heritage Tourism Partnership Programme and Fund* [Online]. Bowen Hills. Available: http://www.ecotourism.org.au/unesco.asp.

EDGECOMBE, J. 1977. Saving Lord Howe Island. *Habitat Australia*. Melbourne.

EHRLICH, P. R. 1968. *The population bomb*, New York, Ballantine Books.

ELABORE & IBAMA 2007. Estudo e Determinação da Capacidade de Suporte e Seus Indicadores de Sustentabilidade com Vistas à Implantação do Plano de Manejo da APA-FN: Produto 2. Instituto Brasileiro do Meio Ambiente e dos Recursos Naturais Renováveis.

ELKINGTON, J. 1997. *Cannibals with forks: the triple bottom line of 21st Century business*, Oxford, Capstone.

EMBRATUR 1971. Anuário Estatístico do Turismo - 1971: Ano Base 1970. Brasília: Empresa Brasileira de Turismo.

EMBRATUR 1973. Anuário Estatístico do Turismo - 1973: Ano Base 1972. Brasília: Empresa Brasileira de Turismo.

EMBRATUR 1975. Anuário Estatístico do Turismo - 1975: Ano Base 1974. Brasília: Empresa Brasileira de Turismo.

EMBRATUR 1977. Anuário Estatístico do Turismo - 1977: Ano Base 1976. Brasília: Empresa Brasileira de Turismo.

EMBRATUR 1979. Anuário Estatístico do Turismo - 1979: Ano Base 1978. Brasília: Empresa Brasileira de Turismo.

EMBRATUR 1981. Anuário Estatístico do Turismo - 1981: Ano Base 1980. Brasília: Empresa Brasileira de Turismo.

EMBRATUR 1982. Anuário Estatístico do Turismo - 1982: Ano Base 1981. Brasília: Empresa Brasileira de Turismo.

EMBRATUR 1983. Anuário Estatístico do Turismo - 1983: Ano Base 1982. Brasília: Empresa Brasileira de Turismo.

EMBRATUR 1985. Anuário Estatístico do Turismo - 1985: Ano Base 1984. Brasília: Empresa Brasileira de Turismo.

EMBRATUR 1987. Anuário Estatístico do Turismo - 1987: Ano Base 1986. Brasília: Empresa Brasileira de Turismo.

EMBRATUR 1989. Anuário Estatístico do Turismo - 1989: Ano Base 1988. Brasília: Empresa Brasileira de Turismo.

EMBRATUR 1993. Anuário Estatístico do Turismo - 1992/1993: Anos Base 1991/1992. Brasília: Instituto Brasileiro de Turismo.

EMBRATUR 2004. Anuário Estatístico do Turismo - 2004: Ano Base 2003. Brasília: Instituto Brasileiro de Turismo.

EMIRBAYER, M. & MISCHE, A. 1998. What Is Agency? *American Journal of Sociology*, 103, 962-1023.

ENVIRONMENT AUSTRALIA. 2002. *Lord Howe Island Marine Park (Commonwealth Waters) Management Plan* [Online]. Canberra: Commonwealth of Australia. Available: http://www.environment.gov.au/coasts/mpa/publications/pubs/lordhowe-plan.pdf [Accessed 11/11/2010.

ESSEX, S., KENT, M. & NEWNHAM, R. 2004. Tourism Development in Mallorca: Is Water Supply a Constraint? *Journal of Sustainable Tourism*, 12**,** 4-28.

ETHERIDGE, R. 1889. Lord Howe Island: its Zoology, Geology and Physical Characters. *Australian Museum Memoir*, 2.

FARRELL, B. H. & TWINING-WARD, L. 2004. Reconceptualizing Tourism. *Annals of Tourism Research*, 31**,** 274-295.

FARRELL, T. A. & MARION, J. L. 2002. The protected area visitor impact management (PAVIM) framework: A simplified process for making management decisions. *Journal of Sustainable Tourism*, 10**,** 31-51.

FASULO, L. 2009. *An Insider's Guide to the UN*, New Haven, Yale University Press.

FERREIRA DA COSTA LIMA, M. L. 2002. *Eco(Turismo) em Áreas Protegidas: Um Olhar sobre Fernando de Noronha.* Doctoral Thesis, Faculdade de Filosofia, Letras e Ciências Humanas.

FISCHER KOWALSKI, M. & HABERL, H. 1998. Sustainable development: socio-economic metabolism and colonization of nature. *International Social Science Journal*, 50**,** 573-587.

FISCHER-KOWALSKI, M. 1998. Society's Metabolism: The Intellectual HIstory of Materials Flow Analysis, Part I, 1860-1970. *Journal of Industrial Ecology*, 2**,** 61-78.

FISCHER-KOWALSKI, M. & HÜTTLER, W. 1999. Society's Metabolism: The Intellectual History of Materials Flow Analysis, Part II, 1970-1998. *Journal of Industrial Ecology*, 2**,** 107-136.

FOLKE, C. 2006. Resilience: The emergence of a perspective for social-ecological systems analyses. *Global Environmental Change*, 16**,** 253-267.

FOTOPOULOS, T. 2011. Is degrowth compatible with a market economy? *The International Journal of Inclusive Democracy*, 3**,** 1-19.

FULLER, R. B. & SNYDER, J. 2008. *Operating manual for spaceship earth*, Baden, Switzerland, Lars Müller.

G20. 2013. *What is the G20* [Online]. Moscow. Available: http://www.g20.org/docs/about/about_G20.html.

GABEIRA, F. Transcrição da Audiência Pública da Comissão de Defesa do Consumidor, Meio Ambiente e Minorias para discutir a situação ambiental, imobiliária e política do Arquipélago de Fernando de Noronha. *In:* PIZZATTO, L., ed. Audiência Pública da Comissão de Defesa do Consumidor, Meio Ambiente e Minorias, May 09 2002 Brasília. 1-96.

GABEIRA, F. Jun 2007. *RE: Requerimento No de 2001.*

GARNAUT, R. 2011a. Garnaut Climate Change Review - Update 2011: Australia in the Global Response to Climate Change: Summary. Canberra: Cambridge University Press.

GARNAUT, R. 2011b. *The Garnaut Review 2011: Australia in the Global Response to Climate Change*, Melbourne, Cambridge University Press.

GEELS, F. W. 2002. Technological transitions as evolutionary reconfiguration processes: a multi-level perspective and a case-study. *Research Policy*, 31**,** 1257-1274.

GEELS, F. W. 2011. The multi-level perspective on sustainability transitions: Responses to seven criticisms. *Environmental Innovation and Societal Transitions*, 1**,** 24-40.

GEELS, F. W. & SCHOT, J. 2007. Typology of sociotechnical transition pathways. *Research Policy*, 36**,** 399-417.

GEF. 2011. *What is the GEF: Global Environment Facility* [Online]. Washington. Available: http://www.thegef.org/gef/whatisgef.

GEOSCIENCE AUSTRALIA. 2010. *Area of Australia: States and Territories* [Online]. Canberra. Available: http://www.ga.gov.au/education/geoscience-basics/dimensions/area-of-australia-states-and-territories.html.

GETZ, D. 1983. Capacity to absorb tourism: Concepts and implications for strategic planning. *Annals of Tourism Research*, 10, 239-263.

GETZ, D. 1986. Models in tourism planning: Towards integration of theory and practice. *Tourism Management*, 7, 21-32.

GIDDENS, A. 1984. *The constitution of society: outline of the theory of structuration*, Cambridge, Polity.

GIDDENS, A. 1993. *New Rules of Sociological Method*, Cambridge, Polity Press.

GLASER, B. G. 1978. *Theoretical sensitivity: advances in the methodology of grounded theory*, Mill Valley, Calif., Sociology Press.

GLASER, B. G. & STRAUSS, A. L. 1967. *The discovery of grounded theory: strategies for qualitative research*, Chicago, Aldine Pub. Co.

GOBI. 2013. *About GOBI - Global Ocean Biodiversity Initiative* [Online]. Gland. Available: http://gobi.org/About.

GOLDMAN, M. & SCHURMAN, R. A. 2000. Closing the "Great Divide": New social theory on society and nature. *Annual Review of Sociology*, 26, 563-584.

GOLDSMITH, E., ALLEN, R., ALLABY, M., DAVOLL, J. & LAWRENCE, S. 1972. A Blueprint for Survival. *The Ecologist*, 2, 1-44.

GOOGLE IMAGERY & DIGITALGLOBE GEOEYE 2011. Fernando de Noronha Satellitte Image. Google Maps.

GOOGLE IMAGERY & NASA 2011. Earth Satellite Image. Google Maps.

GPR. 1942a. *Decreto-Lei nº 4.102, de 9 de Fevereiro de 1942: Cria o Território Federal de Fernando de Noronha* [Online]. Brasília. Available: http://www2.camara.gov.br/legin/fed/declei/1940-1949/decreto-lei-4102-9-fevereiro-1942-414714-publicacaooriginal-1-pe.html.

GPR. 1942b. *Decreto-Lei nº 4.103, de 9 de Fevereiro de 1942: Nova denominação e localização à Colônia Agrícola de Fernando de Noronha* [Online]. Brasília. Available: http://www2.camara.gov.br/legin/fed/declei/1940-1949/decreto-lei-4103-9-fevereiro-1942-414717-publicacaooriginal-1-pe.html.

GPR. 1943. *Decreto-Lei nº 5.718, de 3 de Agosto de 1943: Administração do Território Nacional de Fernando de Noronha* [Online]. Brasília. Available: http://www2.camara.leg.br/legin/fed/declei/1940-1949/decreto-lei-5718-3-agosto-1943-415809-publicacaooriginal-1-pe.html.

GPR. 1979. *Decreto nº 84.017, de 21 de Setembro de 1979: Regulamento dos Parques Nacionais Brasileiros* [Online]. Brasília. Available: http://www2.camara.gov.br/legin/fed/decret/1970-1979/decreto-84017-21-setembro-1979-433347-publicacaooriginal-1-pe.html.

GPR. 1981a. *Decreto nº 86.752, de 17 de Dezembro de 1981: Vinculação do Território Federal de Fernando de Noronha ao Ministério da Aeronáutica* [Online]. Brasília. Available: http://www2.camara.gov.br/legin/fed/decret/1980-1987/decreto-86752-17-dezembro-1981-436365-publicacaooriginal-1-pe.html.

GPR. 1981b. *Lei nº 6.971, de 14 de Dezembro de 1981: Administração do Território Federal de Fernando de Noronha* [Online]. Brasília. Available: http://www2.camara.gov.br/legin/fed/lei/1980-1987/lei-6971-14-dezembro-1981-356637-publicacaooriginal-1-pl.html.

GPR. 1986. *Decreto nº 92.370, de 6 de Fevereiro de 1986: Vinculação do Território Federal de Fernando de Noronha ao Estado-Maior das Forças Armadas* [Online]. Brasília. Available: http://www2.camara.gov.br/legin/fed/decret/1980-1987/decreto-92370-6-fevereiro-1986-442859-publicacaooriginal-1-pe.html.

GPR. 1987. *Decreto nº 94.780, de 14 de Agosto de 1987: Estrutura básica de administração do Território Federal de Fernando de Noronha* [Online]. Brasília. Available: http://www2.camara.gov.br/legin/fed/decret/1980-1987/decreto-94780-14-agosto-1987-445325-publicacaooriginal-1-pe.html.

GPR 1988a. Decreto n° 96.693 de 14 de setembro de 1988: Parque Nacional Marinho - PARNAMAR - de Fernando de Noronha. *In:* BRASIL (ed.).

GPR. 1988b. *Decreto nº 95.922, de 14 de Abril de 1988: Zoneamento para a Defesa Ecológica do Território Federal de Fernando de Noronha* [Online]. Brasília. Available: http://www2.camara.gov.br/legin/fed/decret/1988/decreto-95922-14-abril-1988-446466-publicacaooriginal-1-pe.html.

GPR 1988c. Decreto no 96.878, de 29 de Setembro de 1988: Transferência de Bens do TFFN ao Ministério da Aeronáutica. *In:* GPR (ed.).

GPR 1988d. Decreto no 96.879, de 29 de Setembro de 1988: Transferência de Bens do TFFN ao IBDF. *In:* GPR (ed.).

GPST. 2013a. *Global Partnership for Sustainable Tourism: 7 Priority Themes* [Online]. Paris. Available: http://www.globalsustainabletourism.com/About-us/30-7-Priority-Themes.html.

GPST. 2013b. *Global Partnership for Sustainable Tourism: About the Global Partnership* [Online]. Paris. Available: http://www.globalsustainabletourism.com/About-us/29-About-the-Global-Partnership.html.

GRANGSJO, Y. V. & GUMMESSON, E. 2006. Hotel networks and social capital in destination marketing. *International Journal of Service Industry Management,* 17**,** 58-75.

GRID-ARENDAL, U. 2013. *UNEP GRID Arendal Linking Tourism & Conservation Initiative* [Online]. Arendal. Available: http://www.grida.no/tourism/product-service-detail.aspx?id=5088.

GRIFFITH, D. A. & ALBANESE, P. J. 1996. An Examination of Plog's Psychographic Travel Model within a Student Population. *Journal of Travel Research,* 34**,** 47-51.

GUNDERSON, L. H. & HOLLING, C. S. 2002. *Panarchy: understanding transformations in human and natural systems,* Washington, DC, Island Press.

GUNNINGHAM, N., GRABOSKY, P. N. & SINCLAIR, D. 1998. *Smart regulation: designing environmental policy / Neil Gunningham, Peter Grabosky, with Darren Sinclair,* Clarendon Press ; New York : Oxford University Press.

GYR, U. 2010. *The History of Tourism: Structures on the Path to Modernity* [Online]. Mainz. Available: http://www.ieg-ego.eu/en/threads/europe-on-the-road/the-history-of-tourism.

HABERL, H., FISCHER-KOWALSKI, M., KRAUSMANN, F., MARTINEZ-ALIER, J. & WINIWARTER, V. 2009. A socio-metabolic transition towards sustainability? Challenges for another Great Transformation. *Sustainable Development,* 19**,** 1-14.

HALL, C. M. 1994. *Tourism and politics: policy, power, and place,* Chichester; New York, Wiley & Sons.

HALL, C. M. 2002. *Introduction to Tourism: Development, Dimensions and Issues,* South Melbourne, Adison Wesley.

HALL, C. M., JENKINS, J. M. & KEARSELY, G. 1997. *Tourism planning and policy in Australia and New Zealand: cases, issues and practice,* Sydney, Irwin.

HAN, D. & STOFFEL, K. 2011. Ontology based qualitative case studies for sustainability research. *Proceedings of the AI for an Intelligent Planet.* New York, NY, USA.

HANDY, C. 1994. *The Age of Paradox,* Boston, Harvard Business School Press.

HARDIN, G. 1968. The Tragedy of the Commons. *Science,* 162**,** 1243-1248.

HARRILL, R. 2004. Residents' Attitudes toward Tourism Development: a Literature Review with Implications for Tourism Planning. *Journal of Planning Literature,* 18**,** 251-266.

HOLLING, C. S. 1973. Resilience and stability of ecological systems. *Annual review of ecology and systematics,* 4**,** 1-23.

HOPWOOD, B., MELLOR, M. & O'BRIEN, G. 2005. Sustainable development: mapping different approaches. *Sustainable Development,* 13**,** 38-52.

HORNBORG, A. 1998. Towards an ecological theory of unequal exchange: articulating world system theory and ecological economics. *Ecological Economics*, 25, 127-136.

HOTÉIS, R. 2009. *Tropical Hotels & Resorts - completa 50 anos de história e conquistas* [Online]. Available: http://www.revistahoteis.com.br/materias/2-Administracao/2862-Tropical-Hotels-Resorts-completa50-anos-de-historia-e-conquistas [Accessed 80.

HUNT, T. L. 2006. Rethinking the Fall of Easter Island. *American Scientist*, 94, 412-419.

HURST, M., DITTMAR, H., BOND, R. & KASSER, T. 2013. The relationship between materialistic values and environmental attitudes and behaviors: A meta-analysis. *Journal of Environmental Psychology*, 36, 257-269.

HUTTON, I. 2008. *A guide to World Heritage Lord Howe Island*, Lord Howe Island, Ian Hutton.

HUTTON, I. 2010a. *A fieldguide to the birds of Lord Howe Island*, Lord Howe Island, Ian Hutton.

HUTTON, I. 2010b. *A fieldguide to the plants of Lord Howe Island*, Lord Howe Island, Ian Hutton.

IATA. 2012. *History: The Founding of IATA* [Online]. Available: http://www.iata.org/about/Pages/history.aspx.

IBAMA. 1991. Portaria No 137 de 11 de janeiro de 1991: Capacidade de Carga Leão, Atalaia e Golfinhos. *Diário Oficial da União*, Feb 18.

IBAMA. 2002a. Portaria No 190 de 31 de dezembro de 2001: Criação do CONPARNAMAR-FN. *Diário Oficial da União*, Feb 08, p.5.

IBAMA. 2002b. Portaria No 191 de 31 de dezembro de 2001: Criação do CONAPA-FN. *Diário Oficial da União*, Feb 08, p.5.

IBAMA. 2003a. Portaria No 1 de 3 de janeiro de 2003: Alterações na Composição do CONPARNAMAR-FN. *Diário Oficial da União*, Feb 07, p.5.

IBAMA. 2003b. Portaria No 2 de 3 de janeiro de 2003: Alterações na Composição do CONAPA-FN. *Diário Oficial da União*, Feb 07, p.5.

IBAMA. 2012. *IBAMA-MMA: Histórico* [Online]. Brasília. Available: http://www.ibama.gov.br/acesso-a-informacao/historico.

IBAMA & FUNATURA 1990. Plano de Manejo: PARNAMAR-FN. Fernando de Noronha: Instituto Brasileiro do Meio Ambiente e dos Recursos Naturais Renováveis.

IBGE. 1993. Resolução No 20 de 23 de agosto de 1993: Estimativa Populacional. *Diário Oficial da União*, Aug 30, p.165.

IBGE. 1994. Resolução No 5 de 19 de janeiro de 1994: Áreas Municipais. *Diário Oficial da União*, Feb 21, p.15.

IBGE. 1995. Resolução No 38 de 25 de agosto de 1995: Estimativa Populacional. *Diário Oficial da União*, Aug 30.

IBGE. 1996. Resolução No 27 de 27 de agosto de 1996: Estimativa Populacional. *Diário Oficial da União*, Aug 30, p.169.

IBGE. 1997. Resolução No 24 de 25 de julho de 1997: Áreas Municipais. *Diário Oficial da União*, Aug 26, p.163.

IBGE. 1998. Resolução No 28 de 25 de agosto de 1998: Estimativa Populacional. *Diário Oficial da União*, Aug 27, p.164.

IBGE. 1999. Resolução No 5 de 25 de agosto de 1999: Estimativa Populacional. *Diário Oficial da União*, Aug 30, p.166.

IBGE. 2000. Resolução No 9 de 8 de agosto de 2000: Estimativa Populacional. *Diário Oficial da União*, Aug 29, p.167.

IBGE. 2001. Resolução No 7 de 15 de agosto de 2001: Estimativa Populacional. *Diário Oficial da União*, Aug 29, p.166.

IBGE. 2002. Resolução No 4 de 21 de agosto de 2002: Estimativa Populacional. *Diário Oficial da União*, Aug 30, p.168.

IBGE. 2003. Resolução No 2 de 25 de agosto de 2003: Estimativa Populacional. *Diário Oficial da União*, Aug 30, p.167-A.

IBGE 2004. Vocabulário Básico de Recursos Naturais e Meio Ambiente. Brasília: Instituto Brasileiro de Geografia e Estatística.

IBGE. 2005. Resolução No 5 de 30 de agosto de 2005: Estimativa Populacional. *Diário Oficial da União*, Aug 31, p.168.

IBGE. 2006. Resolução No 2 de 28 de agosto de 2006: Estimativa Populacional. *Diário Oficial da União*, Aug 31, p.168.

IBGE. 2007. Resolução No 7 de 4 de outubro de 2007: Estimativa Populacional. *Diário Oficial da União*, Oct 05, p.193.

IBGE. 2008. Resolução No 8 de 27 de agosto de 2008: Estimativa Populacional. *Diário Oficial da União*, Aug 29, p.167.

IBGE. 2009. Resolução No 7 de 11 de agosto de 2009: Estimativa Populacional. *Diário Oficial da União*, Aug 14, p.155.

IBGE. 2010. *IBGE Censo 2010* [Online]. Brasília. Available: http://www.censo2010.ibge.gov.br/sinopse/index.php?dados=27&uf=26.

IBGE. 2011. Resolução No 06 de 30 de agosto de 2011: Estimativa Populacional. *Diário Oficial da União*, Aug 31, p.168.

IBGE. 2012. Resolução No 07 de 30 de agosto de 2012: Estimativa Populacional. *Diário Oficial da União*, Aug 31, p.170.

IBGE. 2013. *Países@* [Online]. Brasília: Instituto Brasileiro de Geografia e Estatística - Ministério do Planejamento - Governo Federal da República Federativa do Brasil. Available: http://www.ibge.gov.br/paisesat/ [Accessed 24/01/2013.

IBGE. 2014. *Projeção da População Brasileira: Popclock* [Online]. Brasília. Available: http://www.ibge.gov.br/home/popclock_home/iframe_popclock_p_home.html.

ICAO. 2012. *Foundation of the International Civil Aviation Organization* [Online]. Montreal, Quebec, Canada. Available: http://www.icao.int/pages/foundation-of-icao.aspx.

ICMBIO & E LABORE 2008. Estudo e Determinação da Capacidade de Suporte e Seus Indicadores de Sustentabilidade com Vistas à Implantação do Plano de Manejo da APA-FN: Produtos 3 e 4 - Relatório Final. Instituto Chico Mendes de Conservação da Biodiversidade.

ICMBIO & ECOOIDEIA 2008. Estudo e Determinação da Capacidade de Suporte e Seus Indicadores de Sustentabilidade com Vistas à Implantação do Plano de Manejo da APA-FN: Produtos 3 e 4 - Relatório Final. Instituto Chico Mendes de Conservação da Biodiversidade.

ICMBIO, SECTMA-PE, ADEFN & ECOOIDEIA 2011. Noronha +20: Programa de Sustentabilidade para o Arquipélago de Fernando de Noronha: uma construção participativa. Fernando de Noronha: Instituto Chico Mendes de Conservação da Biodiversidade.

ICMBIO-MMA. 2012a. *ICMBio-MMA: O Instituto* [Online]. Brasília. Available: http://www.icmbio.gov.br/portal/quem-somos/o-instituto.html.

ICMBIO-MMA. 2012b. *Livro Vermelho da Fauna Brasileira Ameaçada de Extinção: Caranguejo - Gecarcinus lagostoma* [Online]. Brasília. Available: http://www.icmbio.gov.br/portal/biodiversidade/fauna-brasileira/lista-especies/1230-caranguejo-gecarcinus-lagostoma.html.

ICMBIO-MMA. 2012c. *Unidades de Conservação Federais, RPPNs, Centros Especializados e Coordenações Regionais.* Brasil.

ICMBIO-MMA, APA-FN, PARNAMAR-FN, CMA & TAMAR, C. 2007. Condicionantes para Operação Turística do Navio M. V. Pacific na temporada 2007/2008. Fernando de Noronha: Instituto Chico Mendes de Conservação da Biodiversidade.

ICMBIO-MMA, APA-FN, PARNAMAR-FN, CMA & TAMAR, C. 2008. Condicionantes para Operação Turística do Navio M. V. Pacific na temporada 2008/2009. Fernando de Noronha: Instituto Chico Mendes de Conservação da Biodiversidade.

INSTITUTE FOR POLICY STUDIES 2001. Mohonk Agreement: Proposal for an International Certification Program for Sustainable Tourism and Ecotourism. *In:* STUDIES, I. F. P. (ed.). New Paltz.

INSTITUTO CULTURAL DA RAE DE MACAO. 2005. *Macao World Heritage Information Kit: The Historic Centre of Macao* [Online]. Macao. Available: http://edocs.icm.gov.mo/Heritage/MWHE.pdf.

INSTITUTO HÓRUS & THE NATURE CONSERVANCY. 2005a. *Kerodon rupestris* [Online]. Florianópolis. Available: http://www.institutohorus.org.br/index.php?modulo=inf_ficha_kerodon_rupestris.

INSTITUTO HÓRUS & THE NATURE CONSERVANCY. 2005b. *Tupinambis merianae* [Online]. Florianópolis. Available: http://www.institutohorus.org.br/index.php?modulo=inf_ficha_tupinambis_merianae.

IPCC 2008. Climate Change 2007: Synthesis Report. International Panel on Climate Change.

ISLAND RESEARCH AND EDUCATION INITIATIVE. 2009. *About IREI* [Online]. Palikir [Federated States of Micronesia]. Available: http://www.islandresearch.org/1-a.html [Accessed 04/01/2010 2010].

ITR. 2003. *Tourism White Paper: a medium to long-term strategy for tourism* [Online]. Canberra: Australian Government.

IUCN. 1948. *International Union for the Protection of Nature* [Online]. Brussels. Available: http://data.iucn.org/dbtw-wpd/edocs/1948-001.pdf.

IUCN 1980. *World conservation strategy: living resource conservation for sustainable development*, Gland, Switzerland, International Union for Conservation of Nature and Natural Resources.

IUCN 1982. World Heritage Nomination - IUCN Technical Evaluation: Lord Howe Island Group (Australia). Gland, Switzerland: International Union for the Conservation of Nature.

IUCN 2001. World Heritage Nomination - IUCN Technical Evaluation: Fernando de Noronha Archipelago/Rocas Atoll Tropical Insular Complex (Brazil). Gland, Switzerland: International Union for the Conservation of Nature.

IUCN 2010. 50 Years of Working for Protected Areas: a brief history of IUCN World Commission on Protected Areas. Gland: International Union for Conservation of Nature.

IUCN. 2011. *IUCN: What is natural heritage* [Online]. Gland. Available: http://www.iucn.org/about/work/programmes/wcpa_worldheritage/about_world_heritage/what_is_natural_heritage/.

IUCN. 2012a. *The IUCN Red List of Threatened Species: Caretta caretta (Loggerhead Turtle)* [Online]. Gland. Available: http://www.iucnredlist.org/details/full/3897/0.

IUCN. 2012b. *The IUCN Red List of Threatened Species: Chelonia mydas* [Online]. Gland. Available: http://www.iucnredlist.org/details/4615/0.

IUCN. 2012c. *The IUCN Red List of Threatened Species: Christinus guentheri* [Online]. Gland. Available: http://www.iucnredlist.org/details/4801/0.

IUCN. 2012d. *THe IUCN Red List of Threatened Species: Dermochelys coriacea (Leatherback Turtle)* [Online]. Gland. Available: http://www.iucnredlist.org/details/full/6494/0.

IUCN. 2012e. *The IUCN Red List of Threatened Species: Elaenia ridleyana (Noronha Elaenia)* [Online]. Gland. Available: http://www.iucnredlist.org/details/full/106004140/0.

IUCN. 2012f. *The IUCN Red List of Threatened Species: Eretmochelys imbricata* [Online]. Gland. Available: http://www.iucnredlist.org/details/summary/8005/0.

IUCN. 2012g. *The IUCN Red List of Threatened Species: Gallirallus sylvestris* [Online]. Available: http://www.iucnredlist.org/details/full/106002850/0.

IUCN. 2012h. *The IUCN Red List of Threatened Species: Oligosoma lichenigera (Lord Howe Island Skink)* [Online]. Gland. Available: http://www.iucnredlist.org/details/full/40796/0.

IUCN. 2012i. *The IUCN Red List of Threatened Species: Pterodroma solandri (Providence Petrel)* [Online]. Gland. Available: http://www.iucnredlist.org/details/106003902/0.

IUCN. 2012j. *The IUCN Red List of Threatened Species: Vireo gracilirostris (Noronha Vireo)* [Online]. Gland. Available: http://www.iucnredlist.org/details/full/106005586/0.

IUCN 2012k. Shaping the Future with Business: Global Business and Biodiversity Programme: Report 2011-2012. Gland: International Union for Conservation of Nature.

IUCN. 2013a. *IUCN Global Business and Biodiversity Programme: Who we are* [Online]. Gland. Available: http://www.iucn.org/about/work/programmes/business/bbp_aboutus/.

IUCN. 2013b. *The IUCN Red List* [Online]. Gland. Available: http://www.iucn.org/about/work/programmes/species/our_work/the_iucn_red_list/.

IUCN, BORGES, M. A., CARBONE, G., BUSHELL, R. & JAEGER, T. 2011. Sustainable Tourism and Natural World Heritage: Priorities for Action. Gland: International Union for Conservation of Nature.

IUCN & DUDLEY, N. 2008. Guidelines for Applying Protected Area Management Categories. 2008 ed. Gland: International Union for Conservation of Nature.

IUCN, UNEP & WWF 1991. *Caring for the earth: a strategy for sustainable living*, Gland, Switzerland, International Union for Conservation of Nature and Natural Resources; United Nations Environment Programme; World Wide Fund for Nature.

IUCN & UNEP-WCMC 2012. The World Database on Protected Areas (WDPA). Cambridge, UK: UNEP-WCMC.

JACQUES, J. C. 2004. Protected Areas and Tourism: A Mutual Benefit Beyond their Borders. Barcelona.

JAFARI, J. 1989. Sociocultural Dimensions in Tourism: an English Language Literature Review. *In:* BYSTRZANOWSKI, J. (ed.) *Tourism as a factor of change: a sociocultural study.* Vienna: European Coordination Centre for Research and Documentation in Social Sciences.

JAFARI, J. (ed.) 2000. *Encyclopedia of Tourism*, New York: Routledge.

JAMAL, T. B. & GETZ, D. 1995. Collaboration Theory and Community Tourism Planning. *Annals of Tourism Research*, 22, 186-204.

JÄNICKE, M. 2008. Ecological modernisation: new perspectives. *Journal of Cleaner Production*, 16, 557-565.

JC ONLINE. 2001. *Turismo: Profissionalização: Pousadas de Noronha têm nova classificação* [Online]. Recife. Available: http://www2.uol.com.br/JC/_2001/1009/tu0609_12.htm.

JENNY RAND & ASSOCIATES. 2010. *Lord Howe Island Regional Tourism Plan 2010* [Online]. Lord Howe Island: Lord Howe Island Tourism Association.

JERNECK, A., OLSSON, L., NESS, B., ANDERBERG, S., BAIER, M., CLARK, E., HICKLER, T., HORNBORG, A., KRONSELL, A., LÖVBRAND, E. & PERSSON, J. 2010. Structuring sustainability science. *Sustainability Science*, 6, 69-82.

JETSTAR. 2013. *Jetstar: Our Company* [Online]. Sunshine. Available: http://www.jetstar.com/au/en/about-us/our-company.

JORNAL DA ENERGIA. 2014. *Neoenergia inaugura primeira usina solarem Fernando de Noronha - Empreendimento vai contribuir para reduzir o consumo de óleo diesel no arquipélago* [Online]. Available: http://jornaldaenergia.com.br/ler_noticia.php?id_noticia=17388&id_secao=8.

KELLE, U. 2007. The Development of Categories: different approaches in Grounded Theory. *In:* BRYANT, A. & CHARMAZ, K. (eds.) *The SAGE handbook of grounded theory.* London: SAGE.

KIDD, C. 1992. The evolution of sustainability. *Journal of Agricultural and Environmental Ethics*, 5, 1-26.

KIM, W. C. & MAUBORGNE, R. 2005. *Blue ocean strategy: how to create uncontested market space and make the competition irrelevant*, Boston, MA, USA, Harvard Business School Press.

KIM, Y. G., EVES, A. & SCARLES, C. 2009. Building a model of local food consumption on trips and holidays: A grounded theory approach. *International Journal of Hospitality Management*, 28, 423-431.

KLÖPFFER, W. 2003. Life-Cycle based methods for sustainable product development. *The International Journal of Life Cycle Assessment*, 8, 157-159.

KOESTLER, A. 1967. *The ghost in the machine*, London, Hutchinson.

KRAUSMANN, F., FISCHER-KOWALSKI, M., SCHANDL, H. & EISENMENGER, N. 2008. The Global Sociometabolic Transition: Past and Present Metabolic Profiles and Their Future Trajectories. *Journal of Industrial Ecology*, 12, 637-656.

LABORE, E. 2007. *Espacialização de Pressões Geradas pelos Atrativos Turísticos sobre Fernando de Noronha/PE*. Fernando de Noronha.

LACITIGNOLA, D., PETROSILLO, I., CATALDI, M. & ZURLINI, G. 2007. Modelling socio-ecological tourism-based systems for sustainability. *Ecological Modelling*, 206, 191-204.

LANSING, J. S. 2003. Complex Adaptive Systems. *Annual Review of Anthropology*, 32, 183-204.

LATOUCHE, S. 2011. De-growth: an electoral stake? *The International Journal of Inclusive Democracy*, 3, 1-6.

LAZZERETTI, L. & PETRILLO, C. S. E. 2006. *Tourism local systems and networking*, Oxford, Elsevier.

LEIPER, N. 1979. The framework of tourism: Towards a definition of tourism, tourist, and the tourist industry. *Annals of Tourism Research*, 6, 390-407.

LEIPER, N. 1990. *Tourism systems: an interdisciplinary perspective*, Palmerston North, N.Z, Department of Management Systems, Business Studies Faculty, Massey University.

LEVI-FAUR, D. 2005. The Global Diffusion of Regulatory Capitalism. *The ANNALS of the American Academy of Political and Social Science*, 598, 12-32.

LHIB. 2007a. *Plain Language Guide to the Lord Howe Island Act: Information Sheet 1: History of the Lord Howe Island Act 1953* [Online]. Lord Howe Island: Lord Howe Island Board.

LHIB. 2007b. *Plain Language Guide to the Lord Howe Island Act: Information Sheet 4: Who is a Lord Howe Islander?* [Online]. Lord Howe Island: Lord Howe Island Board.

LHIB. 2011. *Tourist Arrivals to Lord Howe Island 1998-2011* [Online]. Lord Howe Island: Lord Howe Island Board.

LHIB. 2013. *Lord Howe Island Board - Board Members* [Online]. Lord Howe Island. Available: http://www.lhib.nsw.gov.au/index.php?option=com_content&view=category&id=236&Itemid=772.

LINS, R. 2012. Petrolina receberá usina heliotérmica / Diversificação da matriz energética de Fernando de Noronha. *Folha de Pernambuco*, Jul 28.

LITVIN, S. W. 2006. Revisiting Plog's model of allocentricity and psychocentricity ... one more time.(Stanley Plog). *Cornell Hotel & Restaurant Administration Quarterly*, 47, 245(9).

LOGAN, A. & HOLLOWAY, P. 2014. Lord Howe Island Board - Busines Paper - Renewable Energy Program. LHIB.

LÓPEZ, J. & SCOTT, J. 2000. *Social Structure*, Buckingham, Philadelphia, Open University Press.

LOUREIRO, M. 2012a. *Itaipu Desenvolve Energia Limpa para Ferenando de Noronha* [Online]. Fernando de Noronha.

LOUREIRO, M. 2012b. *Termelétrica de Noronha será aposentada* [Online]. Fernando de Noronha. Available: http://blogdenoronha.wordpress.com/.

LUCAS, P. B. 2002. Tourism and World Heritage. Tokyo: Asian Productivity Organisation.

MACKAY, J. 2010. Strategic Plan for the Lord Howe Island Group World Heritage Property. Lord Howe Island: Lord Howe Island Board.

MALTHUS, T. R., WINCH, D. & JAMES, P. 1992. *An essay on the principle of population, or, A view of its past and present effects on human happiness: with an inquiry into our prospects respecting the future removal or mitigation of the evils which it occasions*, Cambridge, England ; New York, NY, USA, Cambridge University Press.

MANIDIS CONSULTANTS 1996. *Developing a Tourism Optimisation Management Model (TOMM): A Model to Monitor and Manage Tourism on Kangaroo Island, South Australia: Draft Consultation Report.*

MANSFELD, Y. 2006. Evaluating the Socio-Cultural Carrying Capacity of Rural Tourism Communities: a Value Stretch approach. *Tijdschrift voor economische en sociale ...*, 97, 583-601.

MARSHALL, J. D. & TOFFEL, M. W. 2005. Framing the Elusive Concept of Sustainability: A Sustainability Hierarchy. *Environmental Science & Technology*, 39, 673-682.

MASLOW, A. H. 1943. A theory of human motivation. *Psychological review*, 50, 370-396.

MAX-NEEF, M. A. 2005. Foundations of transdisciplinarity. *Ecological Economics*, 53, 5-16.

MCCALL, G. 1994. Nissology: A Proposal for Consideration. *Journal of the Pacific Society*, 17, pp. 93-106.

MCFADYEN, K. 2006. *Pinetrees, Lord Howe Island 1842-1992: a brief history of the Andrews-Nichols-Kirby families*, Lord Howe Island, Pinetrees.

MDS. 1992. Dotação Orçamentária do Ministério da Ação Social: Recursos para Abastecimento de Água em Fernando de Noronha. *Diário Oficial da União*, Apr.

MEADOWS, D. H., CLUB OF ROME & POTOMAC ASSOCIATES 1974. *The Limits to growth: a report for the Club of Rome's Project on the Predicament of Mankind*, New York, Universe Books.

MEDEIROS, R. 2006. Evolução das Tipologias e Categorias de Áreas Protegidas no Brasil. *Ambiente & Sociedade* IX, 1-25.

MERTON, R. K. 1968. *Social Theory and Social Structure*, New York, The Free Press.

MESAROVIC, M. D., PESTEL, E. & CLUB OF ROME 1974. *Mankind at the turning point: the second report to the Club of Rome*, New York, Dutton.

MICHAEL, E. J. 2007. *Micro-clusters and networks: the growth of tourism*, Oxford, Elsevier.

MILLER, B. & MULLETTE, K. J. 1985. Rehabilitation of an Endangered Australian Bird: The Lord Howe Island Woodhen Tricholimnas sylvestris (Sclater). *Biological Conservation*, 34, 55-95.

MILLER, G. & TWINING-WARD, L. 2005. *Monitoring for a sustainable tourism transition: the challenge of developing and using indicators*, Wallingford, UK; Cambridge, MA, CABI Publishing.

MITCHELL, M. 2009. *Complexity: A Guided Tour*, Oxford, Oxford University Press.

MLECZKO, R., SAGAR, S., SPINOCCIA, M. & BROOKE, B. 2010. The Creation of High Resolution Bathymetry Grids for the Lord Howe Island Region. Canberra: Geoscience Australia.

MMA. 2005a. Portaria No 23 de 28 de abril de 2005: Transformação do CONAPA-FN em Consultivo. *Diário Oficial da União*, May 29, p.81.

MMA. 2005b. Portaria No 36 de 3 de julho de 2005: Aprovação do Plano de Manejo da APA-FN. *Diário Oficial da União*, Jul 06, p.106.

MMA. 2007. Portaria No 20 de 29 de outubro de 2007: Redefinição de Zoneamento da APA-FN - Vacaria. *Diário Oficial da União*, Oct 30, p.209.

MMA. 2008. *Espécies Ameaçadas de Extinção: Nota de esclarecimento do Ministro de Estado do Meio Ambiente, Carlos Minc* [Online]. Brasília. Available: http://www.mma.gov.br/biodiversidade/esp%C3%A9cies-amea%C3%A7adas-de-extin%C3%A7%C3%A3o/nota-de-esclarecimento.

MMA, D. S. 2011. *Mapa Ilustrativo do Sistema Nacional de Unidades de Conservação da Natureza*. Brasil.

MOROWITZ, H. J. & SINGER, J. L. 1995. *The mind, the brain, and complex adaptive systems*, Reading, Massachusetts, Addison-Wesley Pub. Co.

MPA, N. 2010a. *Lord Howe Island Marine Park Zoning Maps: Balls Pyramid Sanctuary Zone*. Sydney: Marine Parks Authority New South Wales.

MPA, N. 2010b. *Lord Howe Island Marine Park Zoning Maps: East Coast and Shelf Sanctuary Zone*. Sydney: Marine Parks Authority New South Wales.

MPA, N. 2010c. *Lord Howe Island Marine Park Zoning Maps: Lord Howe Island Lagoon Sanctuary Zone*. Sydney: Marine Parks Authority New South Wales.

MPA, N. 2010d. *Lord Howe Island Marine Park Zoning Maps: North Bay Sanctuary Zone and Admiralty Islands & Neds Beach Sanctuary Zone*. Sydney: Marine Parks Authority New South Wales.

MPA, N. 2010e. *Lord Howe Island Marine Park Zoning Maps: Observatory Rock Sanctuary Zone*. Sydney: Marine Parks Authority New South Wales.

MPA, N. 2014. *Lord Howe Island Marine Park – Zoning Plan Review* [Online]. Sydney. Available: http://www.mpa.nsw.gov.au/lhimp-zoning-plan-review.html.

MPA NSW. 2010a. *Lord Howe Island Marine Park: Summary of Social, Cultural and Economic Uses* [Online]. Sydney: Marine Parks Authority New South Wales. Available: http://mpa.nsw.gov.au/pdf/Summary-Cultural-Social.pdf [Accessed 11/11/2010.

MPA NSW. 2010b. *Natural Values of Lord Howe Marine Park* [Online]. Hurstville NSW: Marine Parks Authority New South Wales. Available: http://mpa.nsw.gov.au/pdf/Natural-Values.pdf [Accessed 10/11/2010.

MPA NSW & AUSTRALIAN GOVERNMENT DSEWPC 2009. *Lord Howe Island Marine Park and Elizabeth and Middleton Reef Marine National Nature Reserves: Compliance and Enforcement Plan 2009-2011*, Lord Howe Island, Marine Parks Authority New South Wales; Australian Government Department of Sustainability, Environment, Water, Population and Communities.

MPF 2002. Termo de Ajustamento de Conduta número 004/2002 de 06 de dezembro de 2002. *In:* BRASIL (ed.). Recife: Ministério Público Federal.

MTUR 2005. Anuário Estatístico do Turismo - 2005: Ano Base 2004. Brasília: Ministério do Turismo.

MTUR 2012. Anuário Estatístico do Turismo - 2012: Ano Base 2011. Brasília: Ministério do Turismo.

MURPHY, N. C. & STOEGER, W. R. 2007. *Evolution and emergence: systems, organisms, persons*, Oxford; New York, Oxford University Press.

MUSEUM, L. H. I. 2014. *Magpie lark (Grallina cyanoleuca)* [Online]. Lord Howe Island. Available: http://www.lhimuseum.com/species/view/123.

MVOP 1927. Relatório do Ministério da Viação e Obras Públicas 1926. Rio de Janeiro: Ministério da Viação e Obras Públicas.

MVOP 1928. Relatório do Ministério da Viação e Obras Públicas 1927. Rio de Janeiro: Ministério da Viação e Obras Públicas.

NAESS, A. 1973. The shallow and the deep, long-range ecology movement: a summary. *Inquiry*, 16, 95 - 100.

NASA 2010. The Earth seen from Apollo 17. *upload.wikimedia.org*. Wikimedia Commons.

NASH, D. 1996. Tourism as Acculturation or Development. *Anthropology of Tourism*. Oxford: Pergamon.

NEW SOUTH WALES GOVERNMENT 1855. An Act to enable Her Majesty to assent to a Bill, as ammended, of the Legislature of New South Wales, "to confer a Constitution on New South Wales, and to grant a Civil list to Her Majesty".

NEWMAN, M. 2010. *Networks: An Introduction*, Oxford, England, Oxford University Press.

NEWS, A. 2011. *Lord Howe Island coral reef recovers from 'bleaching'* [Online]. Available: http://www.abc.net.au/news/2011-03-03/lord-howe-island-coral-reef-recovers-from-bleaching/1964610.

NEWSOME, D., MOORE, S. A. & DOWLING, R. K. 2002. *Natural Area Tourism: Ecology, Impacts and Management*, Clevedon, UK, Channel View Publications.

NICHOLS, B. 2010. The Lord Howe Island Signal. *The Lord Howe Island Signal*, Nov 19, p.119.

NICHOLS, B. 2011a. The Lord Howe Island Signal. *The Lord Howe Island Signal*, Feb 18, p.125.

NICHOLS, B. 2011b. The Lord Howe Island Signal. *The Lord Howe Island Signal*, Mar 04, p.126.

NICHOLS, D. 2006. *Lord Howe Island Rising*, Brookvale, BA Printing and Publishing Services.

NICKERSON, N. P. & ELLIS, G. D. 1991. Traveler Types And Activation Theory: A Comparison Of Two Models. *Journal of Travel Research*, 29, 26-31.

NOGUEIRA DE MORAES, L. 2003. *Sistema Nacional de Turismo: gestão, organização e planejamento do turismo: o modelo australiano de gestão aplicado ao caso brasileiro.* Bachelor of Tourism Honours Thesis, Universidade de São Paulo.

NOGUEIRA DE MORAES, L. 2004. *Sustentabilidade Mercadológica do Produto Turístico: Uma discussão sobre o alcance da vantagem competitiva sustentável de destinações turísticas através da análise do caso australiano de regionalização.* Master by Coursework in Hospitality and Tourism Marketing Management Minor Thesis, Universidade de São Paulo.

NOGUEIRA DE MORAES, L. 2009. Sustentabilidade no Contexto do Desenvolvimento Turístico: Conceitos e Modelos a partir de uma Abordagem Sistêmica. *In:* DIAS PAIXÃO, D. L. & GONÇALVES GÂNDARA, J. M. (eds.) *XI Seminário Internacional de Turismo.* Curitiba, Brazil: OBSTUR/UFPR; UNIVERSIDADE POSITIVO.

NOGUEIRA DE MORAES, L. 2012a. Dimensão mercadológica de sustentabilidade do desenvolvimento turístico. *In:* BENI, M. C. (ed.) *Turismo: planejamento estratégico e capacidade de gestão - Desenvolvimento regional, rede de produção e clusters.* Barueri: Manole.

NOGUEIRA DE MORAES, L. 2012b. Natural World Heritage listing and the governance for sustainability in small islands: a comparative case study of Fernando de Noronha Archipelago (Brazil) and Lord Howe Island (Australia). *In:* AMOÊDA, R., LIRA, S. & PINHEIRO, C. (eds.) *3rd International Conference on Heritage and Sustainable Development.* O Porto.

NORBERG, J. & CUMMING, G. S. 2008. *Complexity theory for a sustainable future*, New York, Columbia University Press.

NRC 1999. *Our Common Journey: A Transition Toward Sustainability*, Washington, DC, National Research Council and National Academies Press.

NSW. 1953. *Lord Howe Island Act* [Online]. Sydney: New South Wales Government. Available: http://www.austlii.org/au/legis/nsw/consol_act/lhia1953166/ [Accessed 20/09/2010.

NSW 1986. Lord Howe Island Regional Environmental Plan 1986: version for 9 January 1998 to 27 October 2005. *In:* NSW (ed.). Sydney: New South Wales Government.

NSW 2004. Lord Howe Island Act 1953: version for 2 April 2004 to 15 December 2005. *In:* PARLIAMENT, N. (ed.).

NSW. 2005a. *Lord Howe Island Regional Environmental Plan 2005 Development Control Plan 2005* [Online]. Sydney: New South Wales Government. Available: http://www.legislation.nsw.gov.au/sessionalview/sessional/epi/2005-693.pdf.

NSW. 2005b. *Lord Howe Island Regional Environmental Plan: Sheet 2 of 3: Lord Howe Island Settlement Area Zoning.* Lord Howe Island.

NSW. 2010. *Lord Howe Island Local Environment Plan 2010* [Online]. Sydney: New South Wales Government. Available: http://www.legislation.nsw.gov.au/sessionalview/sessional/epi/2010-88.pdf.

NSW 2011. Lord Howe Island Permanent Park Preserve Plan of Management. Lord Howe Island: NSW Government Department of Environment Climate Change and Water.

NSW DECC. 2007. *Lord Howe Island Biodiversity Management Plan* [Online]. Sydney NSW: New South Wales Department of Environment and Climate Change. Available: http://www.environment.nsw.gov.au/parkmanagement/lordhowebiodiversitymgmtplandraft.htm [Accessed 10/11/2010.

NSW DEPARTMENT OF LANDS 1879. Supplement to the New South Wales Government Gazette: National Park. *In:* NSW DEPARTMENT OF LANDS (ed.). Sydney: New South Wales Government.

NSW MPA & ENVIRONMENT AUSTRALIA 2001. Lord Howe Island Marine Park Issues Paper: a Planning Issues Paper for the Lord Howe Island Marine Park (State and Commonwealth Waters). Sydney: New South Wales Marine Parks Authority.

NSW-SES 2013. Lord Howe Island Tsunami Safe. Sydney: New South Wales State Emergency Services.

NUNN, P. D. 1994. *Oceanic islands*, Oxford [UK]

Cambridge, Mass., [USA], Blackwell.

OEA 1978. Estratégia de Desenvolvimento Turístico do Equador. *Série Informações e Estudos.* Washington: Organização dos Estados Americanos.

OPPERMANN, M. 2000. Triangulation - a methodological discussion. *International Journal of Tourism Research,* 2, 141-145.

OZCAN, P. & EISENHARDT, K. M. 2009. Origin of Alliance Portfolios: Entrepreneurs, Network Strategies, and Firm Performance. *Academy of Management Journal* [Online], 2. Available: https://ezp.lib.unimelb.edu.au/login?url=http://search.ebscohost.com/login.aspx?direct=true&db=buh&AN=37308021&site=ehost-live.

PAGANO, S. M. 2000. *Crescimento Descontrolado ou Desenvolvimento Sustentável: a encruzilhada do turismo de Fernando de Noronha.* Masters Thesis, Centro de Filosofia e Ciências Humanas.

PAGE, S. J. 2011. Tourism: Its origins, growth and future. *Tourism Management: an Introduction.* 4th edition ed. Oxford: Elsevier.

PALHARES, G. L. 2001. *Transporte Aéreo e Turismo: gerando desenvolvimento socioeconômico*, São Paulo, Editora Aleph.

PALHARES, G. L. 2006. *Transportes Turísticos*, São Paulo, Editora Aleph.

PANOSSO NETTO, A. 2005. *Filosofia do Turismo: Teoria e Epistemologia,* São Paulo, Editora Aleph.

PARK, R. E. & BURGESS, E. W. 1921. Introduction to the Science of Sociology. Chicago: The University of Chicago Press.

PATTON, M. Q. 2002. *Qualitative research and evaluation methods*, Thousand Oaks, California, Sage Publications.

PEARCE, D. W., MARKANDYA, A., BARBIER, E. & GREAT BRITAIN DEPARTMENT OF THE ENVIRONMENT 1989. *Blueprint for a green economy*, London, Earthscan.

PEREIRA DE ÁVILA, E. 2008. *Fernando de Noronha: da ilha maldita ao paraíso,* Santa Maria, Edições Cairã.

PEREIRA PALLADINO, I. L. 2010. *Crescimento dos Cruzeiros Marítimos no Brasil, na Última Década.* Masters Thesis, Universidade Federal Fluminense.

PERNAMBUCO 1989a. Constituição do Estado de Pernambuco - 5 de outubro de 1989. Recife.

PERNAMBUCO 1989b. Decreto nº 13.553, de 07 de Abril de 1989: APA Estadual de Fernando de Noronha. *In:* PERNAMBUCO (ed.).

PERNAMBUCO 1989c. Lei nº 10.403, de 29 de Dezembro de 1989: Lei Tributária do Distrito Estadual de Fernando de Noronha. Recife.

PERNAMBUCO 1995. Lei Orgânica do Distrito Estadual de Fernando de Noronha. Governo do Estado de Pernambuco.

PETROSILLO, I., ZURLINI, G., GRATO, E. & ZACCARELLI, N. 2006. Indicating fragility of socio-ecological tourism-based systems. *Ecological Indicators,* 6, 104-113.

PHILLIPPS, P. A. R. 2009. *The Flying Boat Days: The Early Aviation History of Lord Howe Island,* West Lakes [SA], Seaview Press.

PINE, B. J. & GILMORE, J. H. 1999. *The experience economy: work is theatre & every business a stage*, Boston, Harvard Business School Press.

PLOG, S. 2001. Why Destination Areas Rise and Fall in Popularity: An Update of a Cornell Quarterly Classic. *Cornell Hotel and Restaurant Administration Quarterly*, 42, 13-24.

PORTER, M. E. 1998a. Clusters and the New Economics of Competition. *Harvard Business Review*, 76, 77-90.

PORTER, M. E. 1998b. *On competition*, Boston, MA, Harvard Businesss School Publishing.

PORTER, M. E. 2004. *Competitive strategy: techniques for analyzing industries and competitors*, New York ; London, Free.

POWERCORP 2011. Lord Howe Island Renewable Operations: Energy Supply Road-Map. Darwin: Lord Howe Island Board.

QANTAS. 2013a. *QANTAS: History: Small Begininngs* [Online]. Melbourne. Available: http://www.qantas.com.au/travel/airlines/history-beginning/global/en.

QANTAS. 2013b. *QANTAS: History: Venturing Overseas* [Online]. Melbourne. Available: http://www.qantas.com.au/travel/airlines/history-flying-overseas/global/en.

RAINFOREST ALLIANCE. Sep 10 2009. *RE: Partnership for Global Sustainable Tourism Criteria and Sustainable Tourism Stewardship Council Announce Merge to Form Tourism Sustainability Council.*

RAVETZ, J. R. 1999. What is Post-Normal Science. *Futures*, 31, 647-653.

RBMA. 2004a. *MaB - O Programa Homem e Biosfera: COBRAMAB - Comissão Brasileira do Programa Homem e Biosfera* [Online]. São Paulo. Available: http://www.rbma.org.br/mab/unesco_02_cobramab.asp.

RBMA. 2004b. *MaB - O Programa Homem e Biosfera: Rede Brasileira de Reservas da Biosfera* [Online]. São Paulo. Available: http://www.rbma.org.br/mab/unesco_02_rbrb.asp.

REEF CHECK BRAZIL. 2011. *Reef Check News: A New Phase for Coral Reef Monitoring in Brazilian Federal MPAs* [Online]. Available: http://www.reefcheck.org/news/news_detail.php?id=714.

REES, W. E. 1992. Ecological footprints and appropriated carrying capacity: what urban economics leaves out. *Environment and Urbanization*, 4, 121-130.

REJOWSKI, M. (ed.) 2002. *Turismo no Percurso do Tempo*, São Paulo: Editora Aleph.

REMA BRASIL 2007. Estratégias de Conservação da Biodiversidade no Brasil. Rede Marinho-Costeira e Hídrica do Brasil.

RESER, J. P. & BENTRUPPERBÄUMER, J. M. 2005. What and where are environmental values? Assessing the impacts of current diversity of use of 'environmental' and 'World Heritage' values. *Journal of Environmental Psychology*, 25, 125-146.

RET. 2013. *Department of Resources, Energy and Tourism Website* [Online]. Canberra. Available: http://www.ret.gov.au/Pages/default.aspx.

REZENDE DE SOUZA, G. M. 2007. *Impactos Socioculturais do Turismo em Comunidades Insulares: Um estudo de caso no arquipélago de Fernando de Noronha - PE.* Masters Thesis, Centro Universitário UNA.

RFB 2010. Comprovante de Inscrição e Situação Cadastral: Centro Golfinho Rotador. Brasília: Receita Federal do Brasil.

RIBEIRO, D. 1997. *O Processo Civilizatório*, São Paulo, Companhia das Letras.

RICHARDS, L. 2009. *Handling qualitative data: a practical guide*, London, SAGE.

RICHARDSON, J. I. 1999. The world: how travel and tourism developed. Elsternwick: Hospitality Press Pty Ltd.

ROCKSTRÖM, J., STEFFEN, W., NOONE, K., PERSSON, Å., CHAPIN III, F. S., LAMBIN, E., LENTON, T. M., SCHEFFER, M., FOLKE, C. & SCHELLNHUBER, H. 2009. Planetary boundaries: exploring the safe operating space for humanity. *Ecology and Society*, 14, 32.

RONSTRÖM, O. 2009. Island Words, Island Worlds: The Origins and Meanings of Words for 'Islands' in North-West Europe. *Island Studies Journal*, 4, pp. 163-182.

SAVERIADES, A. 2000. Establishing the social tourism carrying capacity for the tourist resorts of the east coast of the Republic of Cyprus. *Tourism Management*, 21, 147-156.

SAYRE, N. F. 2008. The Genesis, History, and Limits of Carrying Capacity. *Annals of the Association of American Geographers*, 98, 120-134.

SCARPETA MATHEUS, F. 2003. *Capacidade de Carga e Manejo de Visitantes.* Undergraduate, Escola de Comunicações e Artes.

SCBD. 2013a. *Convention on Biological Diversity: Introduction* [Online]. Montreal. Available: http://www.cbd.int/intro/.

SCBD. 2013b. *Convention on Biological Diversity: List of Parties* [Online]. Montreal. Available: http://www.cbd.int/convention/parties/list/.

SCHNORE, L. F. 1958. Social Morphology and Human Ecology. *American Journal of Sociology*, 63, 620-634.

SCHUMACHER, E. F. 1973. *Small is beautiful: a study of economics as if people mattered*, London,, Blond and Briggs.

SCOTT, N., COOPER, C. & BAGGIO, R. 2008. Destination Networks: Four Australian Cases. *Annals of Tourism Research*, 35, 169-188.

SCS-TST. 2011. *Férias: Direito ao descanso reúne costume, lei e jurisprudência* [Online]. Brasília.

SERAFINI, T. Z., DE FRANÇA, G. B. & ANDRIGUETTO-FILHO, J. M. 2010. Brazilian oceanic islands: known biodiversity and its relation to the history of human use and occupation. *Journal of Integrated Coastal Zone Management*, 10, 281-301.

SERVENTY, V. 1985. *Australia's World Heritage Sites*, South Melbourne, Macmillan.

SHARPLEY, R. & STONE, P. 2011. *Tourist Experience: Contemporary Perspectives*, New York, Routledge.

SHEPARD, P. 1982. *Nature and Madness*, San Francisco, Sierra Club Books.

SIEFERLE, R. P. 2011. Cultural Evolution and Social Metabolism. *Geografiska Annaler: Series B, Human Geography*, 93, 315-324.

SINCLAIR, J. 2002. *A Management Strategy for Lord Howe Island for the Australian Voluntary Conservation Movement: A Paradise in Peril* [Online]. Gladesville, NSW: Go Bush Safaris. Available: http://www.sinclair.org.au/LHI_Management_Strategy.pdf [Accessed 13/04/2011.

SKINNER, E., FONT, X. & SANABRIA, R. 2004. Does Stewardship Travel Well? Benchmarking Accreditation and Certification. 121-132.

SLATYER, R. O. 1983. The origin and evolution of the World Heritage Convention. *Ambio*, 138-140.

SMITH, S. L. J. 1990. A Test Of Plog's Allocentric/Psychocentric Model: Evidence From Seven Nations. *Journal of Travel Research*, 28, 40-43.

SOUTHERN CROSS UNIVERSITY. 2010. *Rising sea temperatures stress corals at Lord Howe Island* [Online]. Available: http://www.scu.edu.au/news/media.php?item_id=1504&action=show_item.

SPENCELEY, A. Tourism and Protected Areas Specialist Group - TAPAS. May 2011 Geneva. 16.

STANKEY, G. H., COLE, D. N., LUCAS, R. C., PETERSEN, M. E. & FRISSELL, S. S. 1985. The limits of acceptable change (LAC) system for wilderness planning. *United States Department of Agriculture - Forest Service*. Ogden, UT.

STCRC. 2010a. *Partners of Sustainable Tourism Cooperative Research Centre* [Online]. Gold Coast. Available: http://www.crctourism.com.au/Page/About+Us/Partners.aspx.

STCRC. 2010b. *Sustainable Tourism CRC - About Sustainable Tourism Cooperative Research Centre* [Online]. Gold Coast. Available: http://www.crctourism.com.au//Page/About+Us/Who+we+are.aspx.

STERN, N. H. 2007. The Stern Review: the economics of climate change. London: Cambridge University Press.

STEVENSON, N., AIREY, D. & MILLER, G. 2008. Tourism Policy Making: The Policymakers' Perspectives. *Annals of Tourism Research*, 35, 732-750.

STONES, R. 2007. Structure and Agency. *Blackwell Encyclopedia of Sociology*. Blackwell Publishing.

STRAUSS, A. L. & CORBIN, J. M. 1990. *Basics of qualitative research: grounded theory procedures and techniques*, Newbury Park, Calif., Sage Publications.

STRAUSS, A. L. & CORBIN, J. M. 1998. *Basics of qualitative research: techniques and procedures for developing grounded theory*, Thousand Oaks, Sage Publications.

STRONG, M. 2001. *Where on Earth are We Going?*, Toronto, Vintage Canada.

TAMAR, P. 2011a. *Projeto TAMAR: Fernando de Noronha - PE* [Online]. Available: http://www.tamar.org.br/centros_visitantes.php?cod=7.

TAMAR, P. 2011b. *Projeto TAMAR: História* [Online]. Available: http://www.tamar.org.br/interna.php?cod=64.

TAMAR, P. 2011c. *Projeto TAMAR: O Que é* [Online]. Available: http://www.tamar.org.br/interna.php?cod=63.

TETRAPLAN, A. 2004. Plano de Manejo da APA-FN-AR-SPSP: Contextualização da Unidade de Conservação. Ministério do Meio Ambiente do Governo da República Federativa do Brasil.

THOMAS, W. L. 1956. *Man's role in changing the face of the earth*, Chicago, Published for the Wenner-Gren Foundation for Anthropological Research and the National Science Foundation by the University of Chicago Press.

TIES 2007. Fact Sheet: Global Ecotourism. Washington, DC: The International Ecotourism Society.

TIGER AIRWAYS. 2013. *Tiger Airways* [Online]. Melbourne. Available: http://www.tigerairways.com/au/en/about_us.php [Accessed 03/05/2012.

TOI. 2011. *Tour Operators Initiative for Sustainable Development: History* [Online]. Madrid. Available: http://www.toinitiative.org/index.php?id=47.

TOURISM AUSTRALIA. 2013. *Tourism Australia Website* [Online]. Sydney. Available: http://www.tourism.australia.com/.

TOWNER, J. 1995. What is tourism's history? *Tourism Management*, 16, 339-343.

TRETHEWAY, M. W. Air Transportation: Why the Competition Agenda Will Still be Active In Australia. Oct 20 2007 Barossa Valley. 1-13.

TRIGO, L. G. G. (ed.) 2005. *Análises Regionais e Globais do Turismo Brasileiro*, São Paulo: Rocca.

TTF. 2013. *Tourism & Transport Forum: History* [Online]. Sydney. Available: http://www.ttf.org.au/Content/history.aspx.

TURNER, R. K. 1993. *Sustainable environmental economics and management: principles and practice*, London; New York, Belhaven Press; Co-published in the Americas by Halsted Press.

TURNER, T. 2009. *Earth Island Institute: About Us: Our Story* [Online]. Berkeley, CA, USA. Available: http://www.earthisland.org/index.php/aboutUs/story/.

UN. 1972. *Declaration of the United Nations Conference on the Human Environment* [Online]. Stockholm: United Nations. Available: http://www.un-documents.net/unchedec.htm [Accessed 20/04/2009 2009].

UN 1982. United Nations Convention on the Law of the Sea. *In:* NATIONS, U. (ed.). Montego Bay.

UN. 1992a. *Agenda 21* [Online]. Rio de Janeiro: United Nations. Available: http://www.un.org/esa/sustdev/documents/agenda21/english/Agenda21.pdf [Accessed 24/09/2009 2009].

UN. 1992b. *Rio Declaration on the Environment and Development* [Online]. Rio de Janeiro: United Nations. Available: http://www.un.org/documents/ga/conf151/aconf15126-1annex1.htm [Accessed 20/07/2009 2009].

UN 1998. *Kyoto Protocol to the United Nations Framework Convention on Climate Change*, Kyoto, United Nations.

UN 2000. United Nations Millenium Declaration. *United Nations Organisation*. United Nations.

UN. 2002a. *Johannesburg Declaration on Sustainable Development* [Online]. Johannesburg, South Africa: United Nations. Available: http://www.un-documents.net/jburgdec.htm [Accessed 09/04/2009 2009].

UN. 2002b. *Plan of Implementation of the World Summit on Sustainable Development* [Online]. Johannesburg, South Africa: United Nations. Available: http://www.un-documents.net/jburgpln.htm [Accessed 09/04/2009 2009].

UN 2003. United Nations Division for Sustainable Development - WSSD - Johannesburg Plan of Implementation - Chapter 4. New York City: United Nations.

UN. 2012a. *UNdata: World Meteorological Organisation Standard Normals* [Online]. New York. Available: http://data.un.org/Explorer.aspx?d=CLINO.

UN 2012b. United Nations Statistics: World GDP Ranking. New York: United Nations.

UN. 2013. *United Nations Millennium Development Goals* [Online]. New York: United Nations. Available: http://www.un.org/millenniumgoals/environ.shtml.

UN & ÉCOLE PRATIQUE DES HAUTES ÉTUDES - VIE SECTION 1972. *Development and environment: report and working papers of a panel of experts convened by the Secretary-General of the United Nations Conference on the Human Environment (Founex, Switzerland, June 4-12, 1971)*, United Nations, Geneva and École Pratique des Hautes Études, Paris.

UN FOUNDATION. Sep 05 2008. *RE: World Heritage Alliance for Sustainable Tourism Factsheet.*

UN FOUNDATION. 2012. *United Nations Foundation: What we do: Promoting Sustainable Tourism* [Online]. Washington. Available: http://www.unfoundation.org/what-we-do/legacy-of-impact/sustainable-development/promoting-sustainable-tourism.html.

UNCSD 2012. Rio +20 Outcome of the Conference: The future we want. Original ed. Rio de Janeiro: United Nations Conference on Sustainable Development.

UNDP. 2011. *COMPACT: engaging local communities in stewardship of globally significant protected areas* [Online]. New York: United Nations Development Programme. Available: http://sgp.undp.org/img/file/Compact Booklet-1.pdf [Accessed 21/03/2011.

UNDP. 2012. *Projetos PNUD Brasil: Projeto BRA/00/009: Conservação e Manejo dos Ecossistemas Brasileiros e Gestão do Sistema Federal de Unidades de Conservação* [Online]. Brasília. Available: http://www.pnud.org.br/Projetos.aspx?BRANUM=BRA00009.

UNEP 2009a. *Frequently asked questions: the Marrakech process: towards a 10-year framework of programmes on sustainable consumption and production*, Paris, United Nations Environment Programme - Sustainable Consumption and Production Branch.

UNEP 2009b. A Three-Year Journey for Sustainable Tourism. *uneptie.org*. Paris: UNEP.

UNEP-WCMC 2010. Biodiversity Indicators Partnership 2010: Indicator Factsheet 1.3.1: Coverage of Protected Areas. Cambridge, UK: United Nations Environment Program - World Centre for Conservation Monitoring.

UNEP-WCMC. 2013. *UNEP-WCMC: What We Do* [Online]. Cambridge. Available: http://www.unep-wcmc.org/about-us_17.html.

UNESCO 1946. UNESCO Constitution. *portal.unesco.org*. London.

UNESCO. 1948. *Conference for the Establishment of the International Union for the Protection of Nature* [Online]. Paris. Available: http://unesdoc.unesco.org/images/0015/001547/154739eb.pdf.

UNESCO 1970. Use and conservation of the biosphere: Proceedings of the intergovernmental conference of experts on the scientific basis for rational use and conservation of the resources of the biosphere, Paris, 4-13 September 1968. Paris: United Nations Educational, Scientific and Cultural Organisation.

UNESCO 1972. Convention Concerning the Protection of the World Cultural and Natural Heritage. *In:* NATIONS, U. (ed.). Paris: UNESCO.

UNESCO 1993. The Biosphere Conference, 25 years later. Paris: United Nations Educational, Scientific and Cultural Organisation.

UNESCO 2001. Certificado de Inscrição das Ilhas Atlânticas Brasileiras: Reservas de Fernando de Noronha e Atol das Rocas na Lista do Patrimônio Mundial. Paris: United Nations Educational, Scientific and Cultural Organisation.

UNESCO 2010. World Heritage in Brazil. *In:* APRILE, H., DOUBLEDAY, G. & GIBSON, M. (eds.) *World Heritage Review*. Paris.

UNESCO. 2012a. *History: United Nations Educational, Scientific and Cultural Organization* [Online]. Paris. Available: http://www.unesco.org/new/en/unesco/about-us/who-we-are/history/.

UNESCO. 2012b. *UNESCO: Ecological Sciences for Sustainable Development: Australian Biosphere Reserves* [Online]. Paris. Available: http://www.unesco.org/new/en/natural-sciences/environment/ecological-sciences/biosphere-reserves/asia-and-the-pacific/australia/.

UNESCO. 2013a. *UNESCO: Australian National Commission for UNESCO* [Online]. Paris. Available: http://www.unesco.org/nac/geoportal.php?country=AU&language=E.

UNESCO. 2013b. *UNESCO: Ecological Sciences for Sustainable Development: Man and the Biosphere Program* [Online]. Paris. Available: http://www.unesco.org/new/en/natural-sciences/environment/ecological-sciences/man-and-biosphere-programme/.

UNESCO & UN FOUNDATION 2010. International Task Force on Sustainable Tourism Development: World Heritage Alliance for Sustainable Tourism: Mainstreaming Sustainability into Tourism for the Protection of The World Heritage. Paris: United Nations Environment Programme - Sustainable Consumption and Production Branch.

UNESCO WORLD HERITAGE CENTRE. 2008. *World Heritage Information Kit* [Online]. Paris: UNESCO World Heritage Centre. Available: http://whc.unesco.org/en/activities/567/activity-567-1.pdf.

UNIVERSITY OF BRITISH COLUMBIA. 2013. *Sea Around Us Project - Fisheries, Ecosystems and Biodiversity: Exclusive Economic Zones (EEZ)* [Online]. Vancouver. Available: http://www.seaaroundus.org/eez/.

UNOP. 2011. *United Nations Office for Partnerships: Environment Programme* [Online]. New York: United Nations Office for Partnerships. Available: http://www.un.org/partnerships/environment.html [Accessed 21/03/2011.

UNWTO 1998. *Guide for Local Authorities on Developing Sustainable Tourism (English version)*, Madrid, UNWTO.

UNWTO 2002. The Tourism Satellite Account (TSA) within a Historical Perspective: The Contribution of the World Tourism Organisation (WTO). Madrid: United Nations World Tourism Organisation.

UNWTO 2004. *Indicators of sustainable development for tourism destinations: a guidebook*, Madrid, Spain, United Nations World Tourism Organization.

UNWTO. 2011a. *History: World Tourism Organization UNWTO* [Online]. Madrid. Available: http://www2.unwto.org/en/content/history-0.

UNWTO. 2011b. Sustainable Development of Tourism. *SDT Bulletin*, Mar, p.19.

UNWTO. 2012a. *T20 Initiative: Committed to Tourism, Travel and the Millennium Development Goals* [Online]. Madrid. Available: http://t20.unwto.org/en.

UNWTO. 2012b. *UN Steering Committee on Tourism for Development (SCTD): Institutional and Corporate Relations UNWTO* [Online]. Madrid. Available: http://icr.unwto.org/en/sctd.

UNWTO. 2012c. *UNWTO Global Observatory on Sustainable Tourism (GOST)* [Online]. Madrid. Available: http://sdt.unwto.org/en/content/global-observatory-sustainable-tourism-gost.

UNWTO. 2013. *World Tourism Organization - UNWTO: Member States* [Online]. Madrid. Available: http://www2.unwto.org/en/members/states.

UNWTO & UNESCO 2008. Sustainable Tourism Management at World Heritage Sites International Conference: Enhancing Inter-Agency and Stakeholder Coordination for Joint Actions: 24-27 March 2008. Huangshan, China.

US DEPARTMENT OF INTERIOR. 1997. *The Visitor Experience and Resource Protection (VERP) framework: a handbook for planners and managers* [Online]. Denver: National Park Service. Available: http://catalogue.nla.gov.au/Record/3849348 [Accessed 30/08/2010.

VEJLGAARD, H. 2008. *Anatomy of a trend*, New York, McGraw-Hill.

VIRGIN AUSTRALIA. 2013. *Virgin Australia: History* [Online]. Bowen Hills. Available: http://www.virginaustralia.com/au/en/about-us/company-overview/virgin-australia-history/.

WALDROP, M. M. 1992. *Complexity: the emerging science at the edge of order and chaos*, New York, Simon & Schuster.

WALL, G. 1982. Cycles and capacity: Incipient theory or conceptual contradiction? *Tourism Management*, 3, 188-192.

WALLERSTEIN, I. 1974. *The Modern World-System*, New York, Academic Press.

WALLERSTEIN, I. 1976. A World-System Perspective on the Social Sciences. *The British Journal of Sociology*, 27, 343-352.

WARD, B. 1966. *Spaceship earth*, New York, Columbia University Press.

WARD, B. & DUBOS, R. J. 1972. *Only one earth: the care and maintenance of a small planet: an unofficial report commissioned by the Secretary-General of the United Nations Conference on the Human Environment*, London, Deutsch.

WATERWAYS AUTHORITY. 2003. *Lord Howe Island Marine Oil and Chemical Spill Contingency Plan* [Online]. Sydney: Waterways Authority. Available: http://pandora.nla.gov.au/pan/45574/20041028-0000/www.maritime.nsw.gov.au/docs/LHIPlan.pdf [Accessed 11/11/2010.

WCMC, U. 2011. UNEP WCMC World Heritage Information Sheets: Brazilian Atlantic Islands: Fernando de Noronha Archipelago & Atol das Rocas Reserves. Cambridge: United Nations Environment Programme World Conservation Monitoring Centre.

WEARING, S. & NEIL, J. 1999. *Ecotourism: impacts, potentials, and possibilities*, Oxford ; Boston, Butterworth-Heinemann.

WEARING, S. L., WEARING, M. & MCDONALD, M. 2010. Understanding local power and interactional processes in sustainable tourism: exploring village-tour operator relations on the Kokoda Track, Papua New Guinea. *Journal of Sustainable Tourism*, 18, 61 - 76.

WEAVER, D. B. 2000. The exploratory war-distorted destination life cycle. *International Journal of Tourism Research*, 2, 151-161.

WEISZ, H. & CLARK, E. 2011. Society–Nature Coevolution: Interdisciplinary Concept for Sustainability. *Geografiska Annaler: Series B, Human Geography*, 93.

WHC, U. 2005. *World Heritage Centre: Linking Biodiversity Conservation and Sustainable Tourism at World Heritage Sites* [Online]. Paris. Available: http://whc.unesco.org/en/activities/66/.

WHC, U. 2012. *World Heritage Centre: World Heritage and Sustainable Tourism Programme* [Online]. Paris. Available: http://whc.unesco.org/en/tourism/.

WHC, U. 2013a. *UNESCO World Heritage Centre: The Criteria for Selection* [Online]. Paris. Available: http://whc.unesco.org/en/criteria/.

WHC, U. 2013b. *UNESCO World Heritage Centre: World Heritage Marine Biodiversity Workshop: Filling Critical Gaps and Promoting Multi-Site Approaches to New Nominations of Tropical Coastal, Marine and Small Island Ecosystems* [Online]. Paris. Available: http://whc.unesco.org/en/events/501.

WHC, U. 2013c. *World Heritage Marine Programme* [Online]. Paris. Available: http://whc.unesco.org/en/activities/13/.

WHC, U. 2014. *Lord Howe Island Group - UNESCO World Heritage Centre* [Online]. Available: http://whc.unesco.org/en/list/186/.

WHC, U., IUCN, FOUNDATION, U. & COMMERCE, N. U. D. O. 2003. Proceedings of the World Heritage Marine Biodiversity Workshop. *In:* HILLARY, A., KOKKONEN, M. & MAX, L. (eds.) *World Heritage Papers.* Hanoi: United Nations Educational, Scientific and Cultural Organisation World Heritage Centre.

WIDMER, G. 2007. *O Titulo de Patrimônio da Humanidade e seus Efeitos sobre o Turismo em Fernando de Noronha.* Communication Sciences PhD Thesis, Universidade de São Paulo.

WIDMER, G. M. & DE SOUZA MELO, A. J. 2009. A Influência do Título de Patrimônio da Humanidade sobre Aspectos Quantitativos e Qualitativos da Visitação Turística em Fernando de Noronha. *In:* DIAS PAIXÃO, D. L. & GONÇALVES GÂNDARA, J. M. (eds.) *XI Seminário Internacional de Turismo.* Curitiba, Brazil: OBSTUR/UFPR; UNIVERSIDADE POSITIVO.

WIGHT, P. 2007. Ecotourism, CSR, and the fourth dimension of sustainability. *Critical issues in ecotourism: understanding a complex tourism phenomenon.* Oxford: Elsevier.

WILDNER, W., VALENÇA FERREIRA, R. & SCHOBBENHAUS, C. 2011. *Geoparque Fernando de Noronha - PE (Proposta): Descrição Geral do GeoParque* [Online]. Brasília. Available: http://www.cprm.gov.br/geoecoturismo/geoparques/noronha/index.php?GEOPARQUE=5.

WILLIAMS, K. 2005. The Meanings and Effectiveness of World Heritage Designation in the USA. *In:* HARRISON, D. & HITCHCOCK, M. (eds.) *The politics of world heritage: negotiating tourism and conservation.* 1st ed. ed. Clevedon [UK]; Tonawanda, NY [USA]; North York, Ontario [Canada]: Channel View Publications.

WINDFINDER. 2012a. *Wind & weather statistic Fernando de Noronha* [Online]. Available: http://www.windfinder.com/windstats/windstatistic_ilha_noronha.htm.

WINDFINDER. 2012b. *Wind & weather statistic Lord Howe Island* [Online]. Available: http://www.windfinder.com/windstats/windstatistic_lord_howe_island.htm.

WORSTER, D. 1977. *Nature's economy: the roots of ecology*, San Francisco, Sierra Club Books.

WTTC. 2012a. *A History of the World Travel & Tourism Council* [Online]. London. Available: http://wttc.org/site_media/uploads/downloads/WTTC_History_1.pdf.

WTTC 2012b. Travel & Tourism Economic Impact 2012: World. London: World Travel and Tourism Council.

WTTC 2012c. WTTC Progress & Priorities: our annual report 2011-2012. London: World Travel & Tourism Council.

WWF INTERNATIONAL 1961. Morges Manifesto: We Must Save the World's Wild Life: An International Declaration. Morges: World Wildlife Fund.

WWF INTERNATIONAL. 2006. *WWF from 1961 to 2006: WWF's approach to conservation from its inception to 2006* [Online]. Gland. Available: http://wwf.panda.org/who_we_are/history/wwf_conservation_1961_2006/.

WWF INTERNATIONAL. 2008. *A Roadmap for a Living Planet* [Online]. Gland. Available: http://assets.panda.org/downloads/roadmap_sign_off_fin.pdf.

WWF INTERNATIONAL. 2012. *WWF in the 60's* [Online]. Gland. Available: http://wwf.panda.org/who_we_are/history/sixties/.

WWF-GERMANY 2007. *Coastal Conservation and Tourism: WWF's Global Marine Programme*, WWF Germany.

XIAO, H. & SMITH, S. L. J. 2006. Case studies in tourism research: A state-of-the-art analysis. *Tourism Management*, 27, 738-749.

YAW, F. 2005. Cleaner technologies for sustainable tourism: Caribbean case studies. *Journal of Cleaner Production*, 13, 117-134.

YIN, R. K. 2009. *Case study research: design and methods*, Thousand Oaks, Calif., SAGE.

ZSL INSTITUTE OF ZOOLOGY. 2007. *IUCN Red List Index (Sampled Approach)* [Online]. London. Available: http://www.zsl.org/science/research-projects/ia-iucn-redlist,1161,AR.html.

List of Appendices

Appendix 1 | IUCN Categories Conversion Table 433
Appendix 2 | Plain Language Statement – Fernando de Noronha Archipelago 434
Appendix 3 | Plain Language Statement – Lord Howe Island 435
Appendix 4 | Plain Language Statement – Global Organisations 436
Appendix 5 | Consent Form – Fernando de Noronha Archipelago 437
Appendix 6 | Consent Form – Lord Howe Island 438
Appendix 7 | Consent Form – Global Organisations 439

Appendix 1 | IUCN Categories Conversion Table

IUCN Category	Description	LHIMP Commonwealth Waters	LHIMP State Waters	LHI-REP	PARNAMAR-FDN	APA-FDN	Zoneamento para a Defesa Ecológica de FDN	Termo de Ajustamento de Conduta - TAC FDN
Ia	Strict Nature Reserve	Sanctuary Zone	Sanctuary Zone		Zona Intangível			
Ib	Wilderness Area				Zona Primitiva	Zona de Proteção da Vida Silvestre	Áreas de Preservação Ecológica - APT	Zona de Conservação da Vida Silvestre
II	National Park			Zone 8 - PPP	Zona de Uso Extensivo	Zona de Conservação	Áreas de Conservação Ecológica - ACS	Zona Paisagística e Ecoturística
III	Natural Monument or Feature				Zona de Uso Intensivo	Zona de Recreação Marinha		
IV	Habitat/Species Management Area	Habitat Protection Zone	Habitat Protection Zone	Zone 7	Zona de Recuperação	Zona de Recuperação	Áreas de Restauração Ecológica - ART	Zona de Restauração Ecológica
V	Protected Landscape/Seascape				Zona Histórico-Cultural	Zona Histórico-Cultural, Zona Exclusiva de Pesca Artesanal		Setores de Preservação Cultural, Setores Encravados na Zona de Conservação da Vida Silvestre e Setores Encravados na Zona Paisagística e Ecoturística
VI	Protected Area with sustainable use of natural resources		Special Purpose Zone	Zones 1-6	Zona de Uso Especial	Zona de Uso Especial, Zona de Pesca, Zona Agropecuária, Zona Urbana	Áreas de Uso e Ocupação - AUO	Zona Urbana e Zona Agropecuária

Appendix 2 | Plain Language Statement – Fernando de Noronha Archipelago

Declaração sobre a Pesquisa

The University of Melbourne
Faculty of Architecture, Building and Planning
Melbourne School of Design

THE UNIVERSITY OF MELBOURNE

Pesquisa de Doutorado

Título do Projeto de Pesquisa: Sustentabilidade como Herança: Listagem do Patrimônio da Humanidade, Sistemas Adaptativos Complexos e o Desenvolvimento Turístico de Destinos Insulares Oceânicos de Pequeno Porte

Pesquisador: Sr. Leonardo Nogueira de Moraes (leonardo.moraes@unimelb.edu.au)

Orientador: Prof. Dr. Raymond James Green (rjgreen@unimelb.edu.au)

Convidamo-os a participar da pesquisa listada acima que é conduzida pelo aluno de mestrado Leonardo Nogueira de Moraes sob a orientação do Prof. Dr. Ray Green da Melbourne School of Design da Universidade de Melbourne, Austrália. Este projeto conta com aprovação do Comitê de Ética em Pesquisa com Seres Humanos da Faculdade de Arquitetura, Construção e Planejamento da Universidade de Melbourne, Austrália.

O propósito do presente projeto de pesquisa é melhor compreender como níveis mais altos de sustentabilidade podem ser implementados em destinos insulares oceânicos de pequeno porte. Neste sentido, a pesquisa busca entender como diferentes formas de cooperação e competição podem atuar tanto como propulsores e inibidores à sustentabilidade do desenvolvimento turístico de ilhas oceânicas de pequeno porte. De maneira complementar, busca-se identificar a influência da Listagem do Patrimônio da Humanidade da UNESCO nesses propulsores e inibidores no contexto de países desenvolvidos e em desenvolvimento.

Seu envolvimento com este projeto dependerá de uma entrevista de aproximadamente 45 minutos (que será gravada, com sua permissão) que versará sobre os padrões e conseqüências de diferentes formas de cooperação e competição locais entre aqueles envolvidos com o desenvolvimento turístico de Fernando de Noronha.

De modo a proteger o seu anonimato e a confidencialidade das informações prestadas, o seu nome e contatos pessoais serão mantidos separados das informações que nos fornecer, em um arquivo digital protegido por senha. Desta forma, apenas o pesquisador responsável pela pesquisa terá acesso às informações capazes de relacionar o entrevistado com as informações prestadas. No relatório final, será utilizado um pseudônimo quando feitas referências as suas respostas. Quaisquer informações capazes de relacioná-lo com as informações prestadas serão omitidas.

Uma vez finalizada, a tese decorrente da presente pesquisa será publicada no sistema de arquivamento digital de público acesso da Universidade de Melbourne, através do qual será possível acessar seus resultados. Também é possível que os resultados obtidos através desta pesquisa sejam publicados em artigos acadêmicos em revistas científicas ou congressos. Os dados coletados através desta pesquisa serão mantidos em segurança na Melbourne School of Design da Universidade de Melbourne por um período mínimo de 5 anos, após os quais, serão destruídos.

É importante ressaltar que a participação nesta pesquisa é voluntária. Caso acredite que sua participação na presente pesquisa não seja pertinente, é possível solicitar a sua exclusão em qualquer momento anterior ao processamento dos dados, sem qualquer prejuízo a sua pessoa.

Caso apresente qualquer dúvida ou preocupação relativa à presente pesquisa, favor contatar o responsável pelo escritório do Comitê de Ética em Pesquisa com Seres Humanos da Universidade de Melbourne nos números: tel.: +61 (3) 8344-2073 ou fax +61 (3) 9347-6739.

Project HREC Number: 0932441.1
01/10/2010
Version: 02

Appendix 3 | Plain Language Statement – Lord Howe Island

Plain Language Statement

The University of Melbourne
Faculty of Architecture, Building and Planning
Melbourne School of Design

PhD Research

Research Project Title: Inheriting Sustainability: World Heritage Enlistment, Complex Adaptive Systems and the Design of Tourism Development in Small Oceanic Islands

Researcher: Mr. Leonardo Nogueira de Moraes (leonardo.moraes@unimelb.edu.au)

Supervisor: Dr. Alan March CPP PIA (alanpm@unimelb.edu.au)

You are invited to participate in the above research project, which is being conducted by Mr Leonardo Nogueira de Moraes (research higher degree student) under the supervision of Dr. Alan March of the Melbourne School of Design at the University of Melbourne. This project has received clearance by the HREC (Human Research Ethics Committee) of the Faculty of Architecture, Building and Planning – The University of Melbourne, Australia.

The purpose of this research project is to better understand how higher levels of sustainability can be implemented in small oceanic island tourist destinations. In that sense, the research seeks to understand how different forms of cooperation and competition can act both as drivers and inhibitors to the sustainability of tourism development in small oceanic islands. Conversely, it also seeks to identify the influence of World Heritage Enlistment on such drivers and inhibitors within the contexts of developed and developing countries.

Involvement in this project will require an interview of approximately 45 minutes on the subject of patterns and consequences of local competition and cooperation amongst those involved with tourism development in the Lord Howe Islands (Australia) which is to be digitally audio recorded with your permission.

We intend to protect your anonymity and the confidentiality of your responses to the fullest possible extent, within the limits of the law. Your name and contact details will be kept in a separate, password-protected computer file from any data that you supply. This will only be able to be linked to your responses by the researchers, for example, in order to know where to send your interview transcript for checking. In the final report, you will be referred to by a pseudonym. We will remove any references to personal information that might allow someone to guess your identity.

Once the thesis arising from this research has been completed, a digital copy of it will be submitted to the University of Melbourne Digital Repository where it will be available for public consultation. It is also possible that the results will be presented at academic conferences. The data will be kept securely in the Melbourne School of Design for five years from the date of publication, before being destroyed.

Please be advised that your participation in this study is completely voluntary. Should you wish to withdraw at any stage, or to withdraw any unprocessed data you have supplied, you are free to do so without prejudice.

In case you have any concerns about the conduct of this research project, the Executive Officer of Human Research Ethics of The University of Melbourne can be contacted on: ph: +61 (3) 8344-2073; fax +61 (3) 9347-6739.

Project HREC Number: 0932441.1
08/11/2010
Version: 03

Appendix 4 | Plain Language Statement – Global Organisations

Plain Language Statement

The University of Melbourne
Faculty of Architecture, Building and Planning
Melbourne School of Design

PhD Research

Research Project Title: Inheriting Sustainability: World Heritage Enlistment, Complex Adaptive Systems and the Design of Tourism Development in Small Oceanic Islands

Researcher: Mr. Leonardo Nogueira de Moraes (leonardo.moraes@unimelb.edu.au)

Supervisor: Dr. Alan March CPP PIA (alanpm@unimelb.edu.au)

You are invited to participate in the above research project, which is being conducted by Mr Leonardo Nogueira de Moraes (research higher degree student) under the supervision of Dr. Alan March of the Melbourne School of Design at the University of Melbourne. This project has received clearance by the HREC (Human Research Ethics Committee) of the Faculty of Architecture, Building and Planning – The University of Melbourne, Australia.

The purpose of this research project is to better understand how higher levels of sustainability can be implemented in small oceanic island tourist destinations. In that sense, the research seeks to understand how different forms of cooperation and competition can act both as drivers and inhibitors to the sustainability of tourism development in small oceanic islands. Conversely, it also seeks to identify the influence of World Heritage Enlistment and other Global Conservation Strategies on such drivers and inhibitors within the contexts of developed and developing countries.

Involvement in this project will require an interview of approximately 45 minutes on the subject of global strategies for the conservation of nature within the context of tourism development.

We intend to protect your anonymity and the confidentiality of your responses to the fullest possible extent, within the limits of the law. Your name and contact details will be kept in a separate, password-protected computer file from any data that you supply. This will only be able to be linked to your responses by the researcher. In the final report, you will be referred to by a pseudonym. We will remove any references to personal information that might allow someone to guess your identity.

Once the thesis arising from this research has been completed, a digital copy of it will be submitted to the University of Melbourne Digital Repository where it will be available for public consultation. It is also possible that the results will be presented at academic conferences. The data will be kept securely in the Melbourne School of Design for five years from the date of publication, before being destroyed.

Please be advised that your participation in this study is completely voluntary. Should you wish to withdraw at any stage, or to withdraw any unprocessed data you have supplied, you are free to do so without prejudice.

In case you have any concerns about the conduct of this research project, the Executive Officer of Human Research Ethics of The University of Melbourne can be contacted on: ph: +61 (3) 8344-2073; fax +61 (3) 9347-6739.

Project HREC Number: 0932441.1
11/04/2011
Version: 04

Appendix 5 | Consent Form – Fernando de Noronha Archipelago

Autorização para Participação em Projeto de Pesquisa

The University of Melbourne
Faculty of Architecture, Building and Planning
Melbourne School of Design

Pesquisa de Doutorado

Título do Projeto de Pesquisa: Inheriting Sustainability: World Heritage Enlistment, Complex Adaptive Systems and the Design of Tourism Development in Small Oceanic Islands

Pesquisador: Leonardo Nogueira de Moraes (leonardo.moraes@unimelb.edu.au)

Orientador: A/P Ray Green, PhD. (rjgreen@unimelb.edu.au)

Nome do participante:

Nome do pesquisdor: Leonardo Nogueira de Moraes

1. Concordo em participar da pesquisa parte deste projeto, cujos detalhes me foram explicados e são contantes no documento entitulado **declaração sobre a pesquisa** cuja cópia recebi para arquivo próprio.
2. Entendo que após minha assinatura, a presente autorização será arquivada pelo pesquisador.
3. Entendo que a minha participação envolverá uma entrevista e concordo que o pesquisador utilize os resultados provenientes da mesma, conforme detalhado na declaração sobre a pesquisa que recebi.
4. Reconheço que:

   (a) Fui informado que sou livre para solicitar a minha exclusão do projeto a qualquer tempo, sem necessidade de me justificar e sem prejuízo a minha pessoa, assim como solicitar a exclusão de qualquer dado não processado que tenha fornecido;

   (b) que o presente projeto tem como propósito o avanço da pesquisa científica;

   (c) fui informado que a confidencialidade das informações fornecidas serão salvagardadas dentro das limitações da legislação vigente;

   (d) fui informado que com a minha permissão, a entrevista será áudio-gravada e compreendo que as gravações serão armazenadas na Universidade de Melbourne e serão destruídas após 5 anos;

   (e) meu nome será substituido por um pseudônimo em quaisquer publicações derivadas deste projeto de pesquisa.

Eu autorizo a áudio-gravação desta entrevista ☐ **sim** ☐ **não** (favor assinalar)

Assinatura do participante: Data:

Project HREC Number: 0932441.1
19/01/2010
Version: 02

Appendix 6 | Consent Form – Lord Howe Island

Consent form for persons participating in a research project

The University of Melbourne
Faculty of Architecture, Building and Planning
Melbourne School of Design

PhD Research

Research Project Title: Inheriting Sustainability: World Heritage Enlistment, Complex Adaptive Systems and the Design of Tourism Development in Small Oceanic Islands

Researcher: Mr. Leonardo Nogueira de Moraes (leonardo.moraes@unimelb.edu.au)

Supervisor: Dr. Alan March CPP PIA (alanpm@unimelb.edu.au)

Name of participant:

Name of investigator(s): Mr. Leonardo Nogueira de Moraes

1. I consent to participate in this project, the details of which have been explained to me, and I have been provided with a written plain language statement to keep.
2. I understand that after I sign and return this consent form it will be retained by the researcher.
3. I understand that my participation will involve an interview and I agree that the researcher may use the results as described in the plain language statement.
4. I acknowledge that:

   (a) I have been informed that I am free to withdraw from the project at any time without explanation or prejudice and to withdraw any unprocessed data I have provided;

   (b) the project is for the purpose of research;

   (c) I have been informed that the confidentiality of the information I provide will be safeguarded subject to any legal requirements;

   (d) I have been informed that with my consent the interview will be audio-recorded and I understand that the recordings will be stored at University of Melbourne and will be destroyed after five years;

   (e) my name will be referred to by a pseudonym in any publications arising from the research;

I consent to this interview being audio-taped ☐ **yes** ☐ **no**
(please tick)

Participant signature: Date:

Project HREC Number: 0932441.1
08/11/2010
Version: 03

Appendix 7 | Consent Form – Global Organisations

Consent form for persons participating in a research project

The University of Melbourne
Faculty of Architecture, Building and Planning
Melbourne School of Design

PhD Research

Research Project Title: Inheriting Sustainability: World Heritage Enlistment, Complex Adaptive Systems and the Design of Tourism Development in Small Oceanic Islands

Researcher: Mr. Leonardo Nogueira de Moraes (leonardo.moraes@unimelb.edu.au)

Supervisor: Dr. Alan March CPP PIA (alanpm@unimelb.edu.au)

Name of participant:

Name of investigator(s): Mr. Leonardo Nogueira de Moraes

1. I consent to participate in this project, the details of which have been explained to me, and I have been provided with a written plain language statement to keep.
2. I understand that after I sign and return this consent form it will be retained by the researcher.
3. I understand that my participation will involve an interview and I agree that the researcher may use the results as described in the plain language statement.
4. I acknowledge that:

   (a) I have been informed that I am free to withdraw from the project at any time without explanation or prejudice and to withdraw any unprocessed data I have provided;

   (b) the project is for the purpose of research;

   (c) I have been informed that the confidentiality of the information I provide will be safeguarded subject to any legal requirements;

   (d) my name will be referred to by a pseudonym in any publications arising from the research;

Participant signature: Date:

Project HREC Number: 0932441.1
11/04/2011
Version: 04

List of Attachments

Attachment 1 | IUCN Protected Area Categories 443
Attachment 2 | UNESCO World Heritage Criteria 444
Attachment 3 | Ten Principles to Guide Management of Tourism in World Heritage Properties 445
Attachment 4 | Extract from Johannesburg Plan of Implementation action on Sustainable Tourism 446

Attachment 1 | IUCN Protected Area Categories

Category Ia – Strict Nature Reserves: *are strictly protected areas set aside to protect biodiversity and also possibly geological/geomorphological features, where human visitation, use and impacts are strictly controlled and limited to ensure protection of the conservation values. Such protected areas can serve as indispensable reference areas for scientific research and monitoring.*

Category Ib – Wilderness Areas: *protected areas are usually large unmodified or slightly modified areas, retaining their natural character and influence, without permanent or significant human habitation, which are protected and managed so as to preserve their natural condition.*

Category II – National Parks: *protected areas are large natural or near natural areas set aside to protect large-scale ecological processes, along with the complement of species and ecosystems characteristic of the area, which also provide a foundation for environmentally and culturally compatible spiritual, scientific, educational, recreational and visitor opportunities.*

Category III – Natural Monuments or Features: *protected areas are set aside to protect a specific natural monument, which can be a landform, sea mount, submarine cavern, geological feature such as a cave or even a living feature such as an ancient grove. They are generally quite small protected areas and often have high visitor value.*

Category IV – Habitat/Species Management Areas: *protected areas aim to protect particular species or habitats and management reflects this priority. Many category IV protected areas will need regular, active interventions to address the requirements of particular species or to maintain habitats, but this is not a requirement of the category.*

Category V – Protected Landscape/Seascape: *protected areas where the interaction of people and nature over time has produced an area of distinct character with significant ecological, biological, cultural and scenic value: and where safeguarding the integrity of this interaction is vital to protecting and sustaining the area and its associated nature conservation and other values.*

Category VI – Protected Areas with Sustainable Use of Natural Resources: *protected areas conserve ecosystems and habitats, together with associated cultural values and traditional natural resource management systems. They are generally large, with most of the area in a natural condition, where a proportion is under sustainable natural resource management and where low-level non-industrial use of natural resources compatible with nature conservation is seen as one of the main aims of the area.*

IUCN, & Dudley, N. 2008. *Guidelines for Applying Protected Area Management Categories* (pp. 13-23), Gland, International Union for Conservation of Nature.

Attachment 2 | UNESCO World Heritage Criteria

To be included on the World Heritage List, sites must be of outstanding universal value and meet at least one out of ten selection criteria. These criteria are explained in the Operational Guidelines for the Implementation of the World Heritage Convention, which, besides the text of the Convention, is the main working tool on World Heritage. The criteria are regularly revised by the Committee to reflect the evolution of the World Heritage concept itself. Until the end of 2004, World Heritage sites were selected on the basis of six cultural and four natural criteria. With the adoption of the revised Operational Guidelines for the Implementation of the World Heritage Convention, only one set of ten criteria exists.

Operational Guidelines	**Cultural criteria**						**Natural criteria**			
2002	(i)	(ii)	(iii)	(iv)	(v)	(vi)	(i)	(ii)	(iii)	(iv)
2005	(i)	(ii)	(iii)	(iv)	(v)	(vi)	(viii)	(ix)	(vii)	(x)

Selection criteria:

i. to represent a masterpiece of human creative genius;
ii. to exhibit an important interchange of human values, over a span of time or within a cultural area of the world, on developments in architecture or technology, monumental arts, town-planning or landscape design;
iii. to bear a unique or at least exceptional testimony to a cultural tradition or to a civilization which is living or which has disappeared;
iv. to be an outstanding example of a type of building, architectural or technological ensemble or landscape which illustrates (a) significant stage(s) in human history;
v. to be an outstanding example of a traditional human settlement, land-use, or sea-use which is representative of a culture (or cultures), or human interaction with the environment especially when it has become vulnerable under the impact of irreversible change;
vi. to be directly or tangibly associated with events or living traditions, with ideas, or with beliefs, with artistic and literary works of outstanding universal significance. (The Committee considers that this criterion should preferably be used in conjunction with other criteria);
vii. to contain superlative natural *phenomena* or areas of exceptional natural beauty and aesthetic importance;
viii. to be outstanding examples representing major stages of earth's history, including the record of life, significant on-going geological processes in the development of landforms, or significant geomorphic or physiographic features;
ix. to be outstanding examples representing significant on-going ecological and biological processes in the evolution and development of terrestrial, fresh water, coastal and marine ecosystems and communities of plants and animals;
x. to contain the most important and significant natural habitats for in-situ conservation of biological diversity, including those containing threatened species of outstanding universal value from the point of view of science or conservation.

The protection, management, authenticity and integrity of properties are also important considerations. Since 1992 significant interactions between people and the natural environment have been recognized as cultural landscapes.

UNESCO WHC. 2014. *UNESCO World Heritage Centre - The Criteria for Selection*. Paris. Retrieved October 21, 2014, from http://whc.unesco.org/en/criteria/

Attachment 3 | Ten Principles to Guide Management of Tourism in World Heritage Properties

(i) that tourism respects ecological and socio-cultural values and World Heritage status;

(ii) that management plans be regularly updated and address the regional context and the tourism component;

(iii) that environmental assessments precede any approvals for recreational and commercial facilities;

(iv) that monitoring programs with indicators are taken into account in decision making;

(v) that local people are involved so that they take pride in their heritage and benefit from tourism;

(vi) that cooperation with tourism interests is sought and promotion of the site is coordinated;

(vii) that all site staff are aware of World Heritage values and are adequately trained in visitor management;

(viii) that information and education programs ensure visitors and local people understand and respect the site;

(ix) that a substantial proportion of income from any entrance fee is allocated to site management; and

(x) that the site helps promote the World Heritage concept.

UNESCO WHC & UNEP. 1993. Cited by Lucas, P.B. 2002. Tourism and World Heritage. In *Linking Green Productivity to Ecotourism* (p. 21), Tokyo, Asian Productivity Organisation.

Attachment 4 | Extract from Johannesburg Plan of Implementation action on Sustainable Tourism

Chapter IV Protecting and managing the natural resource base of economic and social development

Paragraph 43. Promote sustainable tourism development, including non-consumptive and eco-tourism, taking into account the spirit of the International Year of Eco-tourism 2002, the United Nations Year for Cultural Heritage in 2002, the World Eco-tourism Summit 2002 and its Quebec Declaration, and the Global Code of Ethics for Tourism as adopted by the World Tourism Organization in order to increase the benefits from tourism resources for the population in host communities while maintaining the cultural and environmental integrity of the host communities and enhancing the protection of ecologically sensitive areas and natural heritages. Promote sustainable tourism development and capacity-building in order to contribute to the strengthening of rural and local communities. This would include actions at all levels to:

(a) Enhance international cooperation, foreign direct investment and partnerships with both private and public sectors, at all levels;

(b) Develop programmes, including education and training programmes, that encourage people to participate in eco-tourism, enable indigenous and local communities to develop and benefit from eco-tourism, and enhance stakeholder cooperation in tourism development and heritage preservation, in order to improve the protection of the environment, natural resources and cultural heritage;

(c) Provide technical assistance to developing countries and countries with economies in transition to support sustainable tourism business development and investment and tourism awareness programmes, to improve domestic tourism, and to stimulate entrepreneurial development;

(d) Assist host communities in managing visits to their tourism attractions for their maximum benefit, while ensuring the least negative impacts on and risks for their traditions, culture and environment, with the support of the World Tourism Organization and other relevant organizations;

(e) Promote the diversification of economic activities, including through the facilitation of access to markets and commercial information, and participation of emerging local enterprises, especially small and medium-sized enterprises.

UN. 2003. Chapter 4: Protecting and Managing the Natural Resource Base of Economic and Social Development. In *United Nations Division for Sustainable Development - WSSD - Johannesburg Plan of Implementation*, New York City, United Nations.