Local and Regional Initiatives for Sustainble Food Systems in Indonesia

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ABSTRACT: Limited supply, increasing demand, environmental change and inequality are major drivers of a looming global food security crisis, and Indonesia is among 30 most at risk countries. Since the 1960s Indonesia has industrialised agriculture, following the advice of the global bio-tech research complex, corporations and development agencies. There is, however, an alternative approach, favoured by local grassroots organisations, NGOs and many researchers; of moral economy-based solutions grounded in communal solidarity, small-scale production, local knowledge and direct distribution networks. To illustrate the viability of this alternative, the paper explores new farmers' initiatives that provide high-yield, high-quality, low-cost food with ecologically and socially responsible methods. Using 'symbiotic cooperation' strategies founded upon a moral economy ethos, they protect farmer livelihoods and vulnerable consumers. The case studies presented contribute toward a model for a worldwide transition to socially and ecologically sustainable regional food systems.

Introduction

Food insecurity is set to escalate in the 21st century, prompting warnings from international agencies (FAO 2018), as several trends combine to create a perfect storm. These include deteriorating environmental conditions, increasing demand from a growing population with rising per-capita consumption, declining yield improvements, and decreased accessibility in the wake of rising inequality.

Indonesia is one of 30 countries most at risk of severe food insecurity and thus a pertinent case study.

Mainstream food security policies, promoted by the agricultural research complex, agro-corporations, development agencies and many national governments since the 1960s, have focused on capital investments into 'agro-industrialisation' and new technologies, opening of national markets to imports, increased production of high-profit crops for export, and market interventions to protect consumers from food price spikes. Such policies favour corporations with large land holdings rather than small farmers. The former aim to maximise profit rather than food security, while small farmers and fishers still produce most of the world's staple foods. Most of Indonesia domestic rice, for example, is produced by smallholders who struggle to make a living. As government market interventions depress rice prices to protect low-income consumers, farmers are indirectly subsidising low-wage manufacturing industries (Jakarta Post 2018).

An alternative approach, advocated by small-farmers organisations, NGOs and some researchers, is grounded in local knowledge, traditional farming, and locally sovereign systems of food production, distribution and consumption. International agencies too are increasingly supportive of this approach as a way to meet the SDGs. The radical disjuncture between the two approaches hinders the development of integrated models. This paper, based on recent field research in Central Java, seeks to address this disjuncture by exploring new farmers' movements promoting organic, ecological and socially responsible methods, while increasing profitability, productivity and consumers' food security. These initiatives work across the gap of understanding by addressing issues of capitalisation, technology, insurance and market access. Moreover, they protect vulnerable consumers and farmers from market volatility, using what they call 'symbiotic cooperation' based on moral economy principles. Some of the case studies may serve as models for a transition to ecologically and socially sustainable food systems in line with the SDGs.

Revitalising Sustainable Smallholder Agriculture and Moral Economies in Java

Indonesian food systems today are hard pressed by

rising demand, threatened by climate change (IFPRI 2009) and resource limits such as soil degradation, and encircled by land conversion. Vulnerability to food supply shocks is high.

While these problems present as economic and environmental ones, they are also moral economic ones, in a dual, social and ecological sense. Ecologically sustainable and socially responsible food systems offer viable, long-term solutions (Reuter 2017a). Neo-traditional and innovative variants of small-scale and 'organic' farming thus may help preserve local ecologies as well as the moral economies of farming communities. Halberg and Muller (2013), for example, provide evidence of the positive influence of organic farming on livelihoods and food security in the Global South. There is growing international recognition that small-scale farming is vital to food security. Small and relatively biodiverse farms feed two-thirds of the world with healthy food on less than a quarter of arable land, while corporate farming tends to specialise on mass-producing sugar and fat, along with fuel products such as bioethanol and biodiesel (Herrero et. al. 2017). A report by IIASTD (2008) also recognises the potential of small scale, organic farming to feed the world entirely, and expresses concerns about plans to launch another, GMO-based Green Revolution.

In Indonesia organic farming is booming, based on grassroots initiatives with some government support. Rapid growth in organic farming, from 40,970 to 238,872 ha between 2007 and 2010, was first based on a grassroots movement. The government also contributed (Sertori 2011), for example, with its Go Organik 2010 campaign, envisaging Indonesia as the world's biggest organic food producer (Kementerian Pertanian 2010). A number of schemes were set up to teach farmers modern organic farming technologies and marketing strategies. Unfortunately, certified organic farms actually declined in 2011 due to the crippling cost of formal certification, leaving 59.8% of organic farms uncertified (Mayrowani 2012). A national certification scheme had been set up by the Ministry of Agriculture in 2002, augmented by a private scheme such as Pamor (run by Aliansi Organik Indonesia) that use self-monitoring principles to reduce policing cost. The national standard (SNI No. 01-6729-2002) is too rigid for many farmers, who report that

compliance costs are further exacerbated by rent-seeking officials. In general, top-down agro-initiatives led by the state or corporations have struggled to inspire lasting farmer engagement in the post-Reformasi era (MacRae 2011), while grassroots initiatives tend to be more robust. This applies in particular to farmer-led initiatives grounded in a simultaneous revival or recreation of 'resilience communities' of the kind Greg Bankoff (2003) has described in the Philippines.

To identify factors that determine the success or failure of such initiatives we now present four case studies from Java. Each exemplifies a different type of initiative, from local to national farmer-led movements, to NGO- and state-led initiatives. Together they provide an outline of a new and transformative socio-ecological movement[1].

Case Study 1: A Localised Farmer-Led Initiative

Many thousands of independent farmers' cooperatives have formed across Indonesia since the Reformasi era, including Rukun Makaryo in Central Java[2]. The founder, Mr Hadi Paiman, is a local farmer who remembers the introduction of chemical inputs in 1969. Based on his own observations, he believes such substances are not broken down by natural processes and residues compromise the health of consumers, as well as killing beneficial wildlife in and around rice fields. As a victim of the repressions of 1965 and ex-political prisoner on Buru island, however, it was not until 2000 that Mr Paiman began to speak to fellow farmers about organic farming, sharing what he had learned in many years of experimentation, even when imprisoned[3]. Only 7% adopted organic farming initially, due to prejudice about his past and his being a primary school graduate only, rather than an "agriculture expert." He developed and taught a full course in organic farming between 2005 and 2010, free of charge, by the end of which 30% of his students became organic farmers. In 2013 he started a farmers' college which was eventually accredited by Tunas Pembangunan University in Surakarta. In 2015 he returned to work and teach in his own village. His course covers production of organic fertilisers, fungicides and

[1]These cases are presented here in outline only, to illustrate the range of current initiatives. They are drawn from a larger set of field data, which will be explored in more detail in forthcoming publications.
[2] Data drawn from extensive interviews with Mr Hadi Paiman and other local organic farmers in Pereng in November 2017.
[3] For a detailed account of the Buru prison 'farming school" see http://ypkp1965.org/blog/2017/10/02/petani-dari-kampus-buru/

insecticides, innovative forms of planting, traditional symbiotic cropping (tumbang sari), and the use of microorganisms (MOL; sourced from local plants and animals) and natural substances for everything from soil repair to fermenting animal feed and treating nutrient deficiencies. Mr Paiman's vast knowledge has filled 16 handbooks, and it is effective. Farmers following his methods were hardly affected by repeated plagues of BPH that devastated neighbouring rice fields, for example. Production costs are sharply reduced by avoiding industrial inputs.

Rukun Makaryo is also bypassing expensive organic accreditation systems. Their alternative is a sertipikat kepercayaan ('certificate of good faith') whereby customers visit farms and witness farmers commitment to organic production. They sell their organic rice as cheaply as possible so ordinary people can afford it. This is made easier by reducing their supply chain to only two links, producer and consumer. Members' produce, largely local heritage rice, has its own label and enjoys the trust of customers. This regime of moral economic practice works well, and supply cannot keep up with demand.

Pak Paiman sees no contradiction between traditional and organic farming. Farmers are now reviving rituals their ancestors had used for millennia to culture and apply local microorganisms (MOL), in the form of offerings. The motto of Rukun Makaryo is 'KAELO' (Kreatif Adopsi Ekonomi Lokal), which means creative adoption of traditional and modern knowledge for local economy.

Key features of other localised, independent, farmer-led initiatives are similar to those of Rukun Makaryo[4]. Shared elements include free farmer education, social solidarity (Jav. rukun), consumer friendly prices, direct marketing, and, in one case, credit provision coupled with sophisticated financial management advice. One-stop supply chains, cultural and community revival and strengthening food system resilience are core aims of most of these groups.

Their cooperation strategies are being extended to artisan workers and other local groups, and 'symbiotic cooperation' is being established to rebuild livelihoods and

[4] Three examples are the Joglo Tani sustainable farming school, the Bumi Langit permaculture project run by a Muslim community, and the Lumbung Tani Lestari cooperative with an associated Credit Union, TYAS Manunggal.

Figure 1: Liquid and Solid Fertiliser Production at Rukun Makaryo.

moral economy from the ground up.

Not all local farmers cooperatives are fully independent, however. The Indonesian government also establishes or recognises, supports and liaises with farmer organisations that meet the expectations and conform to the new rules spelled out by the Ministry of Agriculture in the Reformasi period (Rule No. 273/Kpts/ot.160/4/2007). These are known as 'Association of Farmers Groups' (Gabungan Kelompok Tani, or Gapoktan). Unlike the completely state-dominated farmers' cooperatives of the New Order period, these cooperatives enjoy a degree of independence, but primarily serve as local partners and recipients of government training, subsidies, funding or material support. This system is of some value but also riddled with mismanagement issues. Government aid is often not aligned with the needs of Gapoktan. Rather than sustainable, programs tend to subsidise chemical inputs and hybrid seed, which is lucrative for input manufacturers but keeps farmers industry-dependent and ignorant of

cheaper organic alternatives (Reuter 2017b)[5].

Case Study 2: A National Farmers mass movement

A different dimension of the new Indonesian farmers' movement is resurgent, re-politicised national mass organisations (ormas). These are federations of the countless small, local cooperatives, fiercely independent from government. The largest is Serikat Petani Indonesia (SPI, Union of Indonesian Farmers)[6]. Originally known as FSPI (Federasi Serikat Petani Indonesia), SPI was founded at a national farmers' gathering in North Sumatra in1998, shortly after President Suharto resigned. This marked the rebirth of farmer mass organisations after 32 years of oppression[7].

SPI, with more than one million members, has considerable political clout, enabling it, for example, to stage demonstrations or bargain with political parties[8]. With branches on all main islands, SPI promotes sustainability, food sovereignty and agrarian renewal based on neo-traditional and modern organic farming methods and the strengthening of local communities and economies. Human rights, land reform, fair trade and other agrarian justice issues are central preoccupations. SPI encourages organic production but not to maximise prices, as this would compromise low-income consumers' human right to healthy food. Farmers benefit from going organic by reducing input costs, pest and disease vulnerability and increasing long-term yields.

Farmer education and field schools teach about organic fertilisers and pesticides; sustainable land management; prevention, identification and eradication of pests; crop observation; harvesting and storage; as well as organisational skills and human resources management. This education is continuous and long-term, with regular visits by trainers and community facilitators[9]. Education is largely lateral, between peers, some of whom are specialised. For example, some are experts in organic fish farming, while others specialise in microorganisms and herbal tonics for agriculture.

[5] Interview with Mr Badri, head of a Gapoktan in the district of Polanharjo, Klaten Regency, Central Java.
[6] http://www.spi.or.id/
[7] Other organisations include the 'Fraternity of Friends of Farmers and Fishers' (Persaudaraan Mitra Tani Nelayan), the development conflict-focused 'Agrarian People's Communication Forum' (Forum Komunikasi Masyarakat Agraris, founded 22 December 2011 in Kulon Progo), the new umbrella organisation 'Farmers Movement of the Indonesian Archipelago' (Gerakan Petani Nusantara, founded 21 January 2016) and several others, all of which are interlinked
[8] Data are based on interviews with leading SPI members and field visits to locations where SPI is running education and development programs in 2017 and 2018.
[9] SPI prefers 'farmer experts' but there is some collaboration with like-minded academics, who are still a minority in agro-technology-dominated agriculture faculties.

Seed sovereignty is another priority. In the SPI network, farmers have collected 250 local rice varieties, as well as other food plants, which are shared through a seed multiplication scheme. Trade in 'uncertified' and 'non-standardised' seed is criminalised in Indonesia, but SPI challenged this in court and gained permission to produce, select and distribute seed on a local scale, far below commercial prices.

SPI view Indonesian government policy as aligned with the interests of the agroindustry but concede that the current government 'appears for the first time to be on the

Figure 2: A shelf in Mr Udik's Farmer Laboratory.

side of farmers,' at least partially, providing free organic certification to some members, and supporting seed sovereignty (though till favouring hybrids) and fertiliser sovereignty. SPI therefore has opened up to cooperation with government agencies, but conflicts also persist. For example, a government field officer (petugas penyuluh lapangan, or PPL) recently threatened a SPI-run organic

catfish farm with closure, in the name of consumer protection, because they produced their own fish feed granules from abundant organic materials, rather than using expensive and chemical-laden but "certified" industrial feed. SPI's fish farm model is achieving returns on capital of 20% per month. Local microorganisms are used to purify the water and prevent diseases.

The innovation capacity of SPI's mutual help and education system is formidable. One initiative is an ingenious crop-failure insurance scheme, allowing farmers to use by-products such as manure or rice straw rather than

Figure 3: An SPI-Run Organic Catfish Farm Threatened by its Own Success.

money to pay premiums. With regard to community-based finance, SPI is not as advanced as some local schemes (such as TYAS Manunggal, Bantul District), but the coherence of Java's 'sustainable and just' food movement is now such that knowledge transfer is very quick.

Another frontier where many initiatives converge is direct supply from farmers to consumers. The national government recently trialled (2015) and launched (2016) an initiative through the food security branch of the Ministry of Agriculture, of 'Indonesian Farmers Stores'

(Toko Tan Indonesia - TTI)[10]. These stores allow farmers to sell through a supply chain of only three links, while elsewhere up to nine links are common (Wardhani 2016). In 2016, 1652 TTI shops opened, most of them in Java, but the scheme appears to have slowed. There are also countervailing trends as national and international food retail chains open thousands of branches in Indonesia. While some stock organic produce, prices are high and farmers report price gouging and long delays before payment.

Case Study 3: An NGO-Led Food Sovereignty and Local Food Systems Initiative

Another component of the larger movement is LSM (lembaga swadaya masyarakat), usually translated 'non-government organisations' (NGOs). LSM are different from 'mass organisations' such as SPI, in that their members are not necessarily farmers but activists - often students, academics, food experts, consumer advocates, food industry experts, and leaders of farmer or consumer groups. Rank-and-file members typically volunteer their time, but well-established LSM often have some salaried staff.

Food-related LSM position themselves variously between four stakeholder groups – international actors, government, farmers and consumers. They depend on project funding or more durable financial and technical partnerships with international agencies such as USAID or global NGOs such as Oxfam. Constructively critical of national or regional governments, they advocate for improved policy on behalf of communities who may not have a voice.

Farmer ormas are oriented toward social mobilisation and transformative action, whereas most LSM are advocacy and policy-oriented. The line is not sharp, however. Many LSM activists also have field projects in farming communities to disseminate new ideas and technologies to bring about change. Some individuals are active in both kinds of organisations, and at times the latter enter into partnerships to achieve specific objectives.

The Institute for Promoting Sustainable Livelihood Approach (InProSuLA), is the most active LSM on food security/sovereignty issues in Central Java and the

[10] http://tti.pertanian.go.id/

'Yogyakarta Special Region' (DIY). InProSuLA was founded in Yogyakarta in 2002. Its aims are 'socio-ecological' - supporting disadvantaged communities and simultaneously protecting the environment[11]. With only 17 paid staff, its real strength lies in its unpaid members, many of whom represent of local farmers' networks.

InProSuLA's main foci are sustainable agriculture and aquaculture, ecosystem and farmland restoration, local handicrafts development and rural credit. While an organic production model is promoted, the term 'organik' and organic certification are not. Their priority is producing healthy, nutritious food cheaply and sustainably. Teams provide capacity building, including climate change and disaster resilience workshops. They assist in building farmer, consumer and women's networks, and organise stakeholder fora and public consultations. One project aimed to incentivise production of organic fertiliser from manure by providing farmers with low cost, low maintenance, locally replicable technology for capturing methane for domestic use or resale[12].

InProSuLA's main role is in advocacy. The current director, Mr Saridjo, represents LSMs on the multi-stakeholder Council for Food Security (Dewan / Badan Ketahanan Pangan), which also includes academics, entrepreneurs and government officials. The council advances President Widodo's food self-sufficiency agenda in the three key crops of rice, maize and soya (PaJaLe; padi, jagung, kedele) but InProSuLA questions the fetishization of key crops and recommends crop diversification.

Their most impressive campaign strives to reform the controversial BULOG program RASKIN, or "Rice for the Poor" (beras miskin), founded in 1998. In 2014, RASKIN officially provided 15,530,897 disadvantaged households with a monthly allowance of 15kg of rice at the heavily subsidised average price of 1,600 IRP/kg, which was less than the cost of distribution alone. Based on extensive monitoring in 2013, InProSuLA questioned the poor quality of RASKIN rice, a unit cost to the government as high as double the market price, failure to identify all poor households, poor monitoring and complaints-management procedures, failures of distribution, and an overall band aid approach to poverty

[11] This and subsequent data are based on interviews with Mr Iwan Prasetyo and other InProSuLA representatives in Yogyakarta in June 2016.
[12] The project, on the slopes of Mt Merapi, in collaboration with Sanata Dharma University, has achieved better outcomes than comparable top-down, state-run biogas programs on the neighbouring island of Bali (Reuter 2017c).

alleviation. The subsidised rice also undermines the income of local farmers, many of whom are impoverished themselves. BULOG does not purchase from farmers but from favoured dealers, sometimes at rates above the market price. We can confirm these complaints from interviews with farmers and RASKIN recipients.

InProSuLA partnered with several Gapoktan to redesign the program and rename it RASDA or "Rice from the Region" (beras daerah). The proposed program marks a shift from a food security to a food sovereignty model, as part of an integrated approach to poverty alleviation (InProSuLA 2015)[13]. The idea is to source rice from local farmers rather than through long supply chains that reduce farmers' share of the retail price. Such decentralisation, it is hoped, would reduce corruption, distribution costs and other failures of the RASKIN scheme. It would provide local farmers with a market for their rice and other foods (pangan daerah, PANGDA)[14]. Public meetings and media briefings were held in 2013, as well as hearings with members of local parliaments and finally a national conference (12.-14. 12. 2013). The initiative in subsequent years developed a pilot project in Kulon Progo, DIY, with an MoU in 2014 between BULOG's DIY branch, the regent and the local Gapoktan (farmers' association), who have the supply capacity.

LSM thus fulfil an important role at the intersection between farmers, consumers and government. Nevertheless, there is a risk of farmers remaining subject to administrative structures beyond their control and arbitrary political decisions.

Case study 4: A Government-Led Initiative for Organic Farming

Top down initiatives tend to be less successful, but not necessarily so. Where there is consistent political will and local commitment, lasting success can be achieved. An example is the regency of Sragen, Central Java province, where a local regent (bupati), Mr. Untung Wiyono Sukarno, during his two terms (2001-2011) pushed hard to make a whole district and eventually the whole regency organic. This policy floundered under his successor, but has resumed under the current regent, Untung Yuni Sukowati

[13] See Reuter (2015) for an analysis of the differences between food security and food sovereignty approaches.
[14] The PANGDA concept is currently receiving significant attention and support from the National Development Planning Agency, Bappenas (Badan Perencanaan Pembangunan Nasional).

Figure 4: Farmers Campaigning for RASDA (InProSuLA 2015:cover).

(2016-), who is Untung Wiyono's daughter.

The upstream district of Sambirejo was selected for the program because of its extant traditional farming pattern, uncontaminated water, and ample manure from cattle and goats. The program began in 2001. One organic cooperative, Tani Sri Makmur, for example, now involves 40 farming households[15]. All wet rice fields in the village came under organic cultivation, while chemical inputs are still being used on rain-fed maize and cassava fields on a modest scale. Across the whole district, 232 of 740 ha of rice fields are now organic.

Sceptical farmers were instructed by government extension workers how to transition from chemical fertiliser to locally produced manure. They noticed their compacted soil becoming soft and water-absorbent again and populated with earthworms. Their first three harvests showed reduced yields but, under pressure from government they persisted and soon yields returned to previous levels, while production costs declined. Farmers began to keep their own seed for the next crop. Pests are

[15] Data from interviews with the head of the cooperative, Mr. Sumardiyanto, the head of local agro-tourism, Mr. Sukamto, and others in 2017.

uncommon and controllable with homemade natural pesticides. Microorganisms from local plants are used to accelerate compost fermentation (instead of commercial products such as EM4). SRI-based or traditional (jagar legowo) planting patterns that give plants more space to grow have also been introduced with success. By 2010 organic farms' return on capital in Sragen regency was 2.83x, compared to 1.81x for non-organic ones (Mayrowani 2012:104).

Rice routinely distributed to local government employees (PNI) as a salary supplement is now sourced from local organic farmers. Assistance was also provided to obtain organic certification and farmers have renewed certificates at 3-yearly intervals. Technical advisors (PPL) from the local government attend monthly meetings of the farmer cooperatives to address problems, sometimes with direct aid. In 2017, for example, the government donated eight cows to boost local meat and compost production. Not all government support has been so useful, however. Complicated biogas equipment introduced to compost producers has failed and not been repaired.

Nevertheless, the government views Sukorejo as a model case. There are frequent visits from officials, agriculture students and farmers from other regions. The village has also provided community-based agro-tourism (kelompok sadar wisata or PokDarWis). Many come for working holidays to learn about organic farming, emulating the international WWOOF movement, which also offers placements in Indonesia[16].

Farmers do not yet achieve optimal returns, however, because they lack local facilities to process their organic rice separately. Hence, they must sell at the market price for ordinary rice. They see local processing as the next step and already Mr. Supriyanto, son of the founding head of the cooperative, Ali Sutrisno, has begun milling and packaging sun-dried rice with government-provided equipment, to be sold at a much higher price. This family's leadership shows how much successful government-led interventions depend on personal commitment from local partners.

The current regent meanwhile hopes to increase organic rice to 1200 ha and, in 2017, laid the foundation stone for a new organic rice factory. The factory is to

[16] See https://wwoofindependents.org/hosts/search/location/indonesia-49937.

process organic rice for export to global markets and is owned by former military (TNI) commander General Moeldoko. Will farmers be paid fairly, will they be coerced to supply at a price that favours the factory owner, or will they be free to sell their organic rice wherever they wish? Farmers have learnt from bitter experience that so long as they are still 'led' by the government, they remain vulnerable. While the priority of governments is economic gain, their initiatives lack the socially transformative effect of more grassroots initiatives like those described in Cases 1 and 2. Government initiatives can nevertheless have an impact, providing they are persistent and fair enough to retain local support.

Short term economic motives, however, can produce severe unintended consequences. An example is the nearby Amanah Agrowisata, an agro-tourism complex in the neighbouring regency founded in 2004[17]. Designation as an agro-tourism site typically triggers an influx of investors, seeking to profit from public infrastructure investment and associated publicity. The Amanah complex has created what can only be described as a circus, with swimming pools, water slides and rides for children in the manner of an amusement park, with a token 'organic garden' to justify the label 'agrowisata.' Busloads of tourists arrive daily at a small city of hostels, restaurants and shops, for which fertile rice fields have been bulldozed. There is some education, which does promote the idea of sustainable farming among mainly urban visitors, but it is questionable whether this compensates for the environmental damage. Government initiatives are more likely to lead to positive change where they are aimed squarely at farmer empowerment and environmental conservation, rather than generating profits for rent-seeking 'green' investors. Even with the best of intentions, Indonesian government agencies face a long road to rebuild the moral authority that was lost by the New Order regime and subsequent failures to reduce corruption.

Conclusion

These four case studies show how farmers in Indonesia are developing creative solutions, locally and nationally, how allied NGOs seek to influence policy, and how the movement as a whole has learnt to navigate

[17] www.agrowisataamanah.com.

Figure 5: Bulldozing Rice Fields for Amanah Agro-Tourism Resort.

national and local state-scapes that range from hostile to supportive to their socio-ecological agenda. But also, and primarily, they are enacting their own initiatives despite or beyond the state. While in many countries today public responses to state failures and absences are characterised by calls for a 'stronger', illiberal state, Indonesians, contemplating the prospect of an emerging post-state crisis condition, are rebuilding moral economies from the ground up. "Fair Food" is becoming a key trope for survival through solidarity.

Our observations suggest that sustainable agricultural methods and moral economy principles (Scott 1976, 1985) are inseparable parts of a whole and both vital for local food systems to deliver food security to consumers and livelihood security to farmers. To focus solely on the value of healthy ecologies and elite organic diets is not enough. A socially focused approach provides greater benefits to farmers and communities.

Ecologically and socially responsible food systems help address the emerging global food supply gap by strengthening small farmers. Traditional, local-knowledge-

based and tech-savvy, modern variants of organic farming can be combined for this purpose. New communication technologies meanwhile are revolutionising farmers' social and distribution networks. Investment in rural infrastructure, scale-appropriate mechanisation, a supportive regulatory framework, and technical support are all areas where governments can help. Most important, however, are fair incomes, empowerment and public recognition for farmers.

We hope the present case studies and analysis will prove helpful in designing a transition to socio-ecologically sustainable food systems in other parts of the world.

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ISBN 978-989-54041-4-8

ARKEOS

48

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ARKEOS 48

MAÇÃO, 2019

INSTITUTO TERRA E MEMÓRIA

FICHA TÉCNICA

ARKEOS | perspectivas em diálogo, nº 48 (volume 1)
Propriedade: Instituto Terra e Memória
Direção: Luiz Oosterbeek
Título: Resilience and Transformation in the territories of low demographic density. Studies in Honnour of Prof. José Bayolo Pacheco de Amorim, on occasion of the establishment of the UNESCO-IPT chair on Humanities and Cultural Integrated Landscape Management.
Editores deste volume: Luiz Oosterbeek, Laurent Caron

Composição: Sara Garcês e ITM
Imagem de Capa: Sara Garcês
Impressão e acabamentos: Gráfica Almondina

Refª: Oosterbeek L. & Caron L. (Eds.) (2019). Resilience and Transformation in the territories of low demographic density. Integrated methodologies of human and social sciences for Integrated Cultural Landscape Management. Mação: Instituto Terra e Memória, série Arkeos, vol. 48 (1).

Tiragem: 500 exemplares | Depósito legal: 108 463 / 97
ISSN: 0873-593X | ISBN: 978-989-54041-4-8

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MAÇÃO, 2019

(Centro de Geociências UID/Multi/00073/2013 – com o apoio financeiro da FCT/MEC através de fundos nacionais e quando aplicável cofinanciado pelo FEDER, no âmbito do Acordo de Parceria PT2020)

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RESILIENCE AND TRANSFORMATION IN THE TERRITORIES OF LOW DEMOGRAPHIC DENSITY

Studies in honnour of Prof. José Bayolo Pacheco de Amorim, on ocassion of the establishment of the UNESCO-IPT Chair on Humanities and Cultural Integrated Landscape Management

Edited by
Luiz Oosterbeek, Laurent Caron

This volume is edited as part of the Apheleia International Association (http://apheleiaproject.org), also as a contribution for the UNESCO-IPT Chair on Humanities and Cultural Integrated Landscape Management

MAÇÃO, 2019

Table of contents

VOLUME I

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Aknowledgements
This research was undertaken in the context of the strategic project of the Geosciences Centre of Coimbra University (UID/Multi/00073/2013), supported by the Portuguese Foundation for Science and Technology (FCT), through the Polytechnic Institute of Tomar and the Instituto Terra e Memória, in Portugal. The study of the Tagus basin rock art was part of the FCT funded project MTAS (Moving Tasks Across Shapes – PTDC/EPH/ARQ)/4356/2014).