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The dilemmas of normalising losses from climate change: Towards hope for Pacific atoll countries

Abstract

The idea that climate change may cause the loss of atoll countries is now taken for granted in much of climate change science, policy, and media coverage. This normalisation of loss means atoll countries now face a future that is apparently finite, which is a grievous situation no other country has to contend with. This paper explains the dilemmas this presents to atoll countries: if there is a risk of forced migration, then strategic planning can minimise its social impacts. Yet doing so may bring future dangers into the present by undermining efforts to facilitate adaptation to climate change, creating new identities, and deterring investments in sustainable resource management. The paper argues for a more hopeful approach to the future of atoll countries, because for as long as the science of loss is still uncertain, and the limits to adaptation are unknown, forced migration cannot be taken as a matter of fact, and could possibly be averted through emission reductions and a vastly improved and significantly more creative approach to adaptation.

Key words: adaptation, islands, loss, optimism, temporality, uncertainty

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The dilemmas of normalising losses from climate change: Insights from Pacific atoll countries

Introduction

For decades the leaders of the smallest of island states have highlighted the potentially catastrophic effects of climate change on the future of their countries. They have drawn a baseline that has defined the meaning of dangerous climate, and this came to fruition in the 2015 Paris Agreement's target of limiting global warming to 2.0°C above pre-industrial levels, and its recognition that the international community should aspire to limit the increase in global average temperature to 1.5°C above pre-industrial levels (Dimitrov, 2016).

This political triumph may yet be a hollow victory. Even assuming that every country achieves the emission reductions targets they have pledged, the result of these efforts will still be global average warming of at least 2.6°C above pre-industrial levels by the end of the century (Rogelj et al., 2016). Given the trajectory of emissions thus far, significantly higher rates of warming seem likely (Rogelj et al., 2016). To put this into perspective, this seemingly unavoidable level of climate change is unprecedented in the history of human civilisation, and it threatens the stability and prosperity of all societies, most particularly those of the atoll countries and territories of Kiribati, the Maldives, the Marshall Islands, Tokelau and Tuvalu. Indeed, warming of 1.5°C above pre-industrial

levels is considered to put at risk the capacity of atoll environments to sustain contemporary population levels; and warming above 2.0°C is considered to be extremely dangerous for most countries and many social-ecological systems (Anderson and Bows, 2011).

Moreover, the timely and urgent warnings of the small island states on the dangers of climate change have had no sufficient support from the international community to facilitate adaptation in these most vulnerable countries. This is in part due to a lack of knowledge about adaptation, and the convoluted nature of the global adaptation finance system (Barnett and Campbell, 2010, Sovacool et al., 2016). However, as has been the case with emission reductions, the lack of response also stems from a collective disassociation from the grave risks climate change poses to atoll countries.

A lot of environmental change is now built into the earth system, and it may cause a great deal of harm to things that people value. For this reason, the issue of 'loss and damage' is now firmly established in the United Nations Framework Convention on Climate Change (UNFCCC). It is not surprising that the driving force behind this initiative is the small island states, as it represents another means by which they seek to turn attention and action to their plight (Roberts and Huq, 2015).

Climate change science and policy is now at an important juncture: there is a willingness from the international community to do more and better, yet the evidence seems to suggest that this will not be enough and that 'loss' is to be expected and somehow managed. For the atoll countries, then, this throws up some significant dilemmas about

how to plan for a future that the United Nations' climate regime and a volume of climate science both seem to accept is finite. This paper explores these dilemmas because they are central to the well being and rights of present and future generations of people living on atolls. It seeks to think through the paradox that in highlighting the dangers climate change poses to atolls, climate science and policy seem to deny the possibility of a hopeful future for atoll people, rendering their forced migration from their homelands as matter of fact rather than something that could possibly be averted through emission reductions and an expanded approach to adaptation (Methmann and Oels, 2015). If the idea of the loss of atolls is more than an act of symbolic politics, then it is worth thinking through what this means for contemporary decisions about the future of these societies, and what the institutions of climate change science and policy might do to assist atoll islands to do as they choose.

Normalising the loss of atoll countries

For as long as climate change has been a contemporary issue in world affairs the small island states have been framed as being particularly vulnerable to its adverse effects. Among the small island states it is those comprised of atolls have been the *cause celebre* of many in the climate science and policy community, and they have certainly been very vocal and influential actors in the UNFCCC (Shibuya, 1996). There are four sovereign countries comprised entirely of such islands: the Maldives in the Indian Ocean, and in Pacific the sovereign states of Kiribati, The Marshall Islands and Tuvalu (as well as

Tokelau which is a territory of New Zealand). Climate change and in particular sea-level rise are a significant threat to these countries' sovereignty, and this is a unique magnitude of risk shared by no other country (Barnett and Adger, 2003).

The science of climate change predicts a very dire future for these atoll countries. This knowledge comes mostly from long range and global scale models of changes in the atmosphere and oceans, which provide projections of very distant futures where the atmosphere and oceans are warmer, sea-levels are higher, storms are more intense, and rainfall is more variable. The impacts that are thought to arise from these changes in the earth system include that: the corals that are essential to atoll building will bleach more severely and frequently, crops and near shore and pelagic fisheries will become less productive, freshwater will become increasingly scarce, shorelines will erode and land will become progressively inundated, infrastructure will be damaged and the costs of protection and recovery will mount, and risks to human health (including mental health) will increase (Bell et al., 2013; Kumar and Taylor 2015; McIver et al. 2016; Mimura 1999).

Therefore, the first key risk identified by the Intergovernmental Panel on Climate Change's most recent fifth assessment report is the "risk of death, injury, ill-health, or disrupted livelihoods in low-lying coastal zones and small island developing states and other small islands, due to storm surges, coastal flooding, and sea level rise" (Field et al., 2014: 13). While the IPCC is cautious in its summations, a number of academic papers are less so, referring to the abandonment of islands in their titles, for example

Yamamoto and Esteban (2010) write of 'Vanishing island states and sovereignty', and Reed (2002) talks of 'Rising seas and disappearing islands', and Skillington (2017) of 'disappearing states'. More recently, a leading Pacific coastal geomorphologist was quoted in a feature article in *Nature* as saying that he tells his own I-Kiribati children "your children will not grow old in the atolls" (in Weiss, 2015: 627).

The projections that arise from modelling are not yet matched by empirical observations of changes in atoll environments. The evidence that does exist is not always consistent with model forecasts – at least not yet. For example research by coastal geomorphologists has shown that some atolls grew rapidly – in some cases by up to 1 meter - in response to more elevated sea-levels during the Holocene, and that they could grow up to at least that height again (Kench et al., 2014). Hubbard and Dullo (2016) suggest that some – though not the majority – reefs may keep up with rising sea-levels. Looking at evidence of change in recent times, McLean and Kench (2015) have argued that rising sea-levels over the past 50 years have led to changes in the shape of islands, but not necessarily a loss of mass – which is not to say that this is not a serious problem, but it is perhaps a tractable one given sufficient adaptation responses. Indeed, if there are uncertainties about the response of island ecosystems to climate change, even less is known about how social systems may respond (this issue is discussed later in this paper).

So, without discounting the dire risks climate change poses for atoll islands, for any given island the science that supports a prediction of loss remains somewhat uncertain

both because of the complex nature of biophysical responses and the uncertainty of what adaptation might be able to achieve. For these reasons, no-one seems able to say *when* it might be that atolls can no longer sustain their existing populations, let alone what the response of people on these islands might be as social and environmental conditions deteriorate.

Nevertheless, the UNFCCC now has a policy instrument to assess and consider responses to losses arising from climate change. This is known as the Warsaw International Mechanism for Loss and Damage associated with climate change impacts, and it recognises that “the adverse effects of climate change includes, and in some cases involves more than, that which can be reduced by adaptation” (see Roberts and Huq, 2015). There is a sense of pragmatic fatalism associated with the loss and damage agenda in the UNFCCC, and, as explained later, it may influence the way the international community talks about and acts on highly vulnerable places. It nevertheless seems very likely to remain a key pillar and point of contention in the global climate change regime.

The Australian political elite has seemingly normalised the idea of the loss of small islands. In 2015 the Australian Immigration Minister was overheard sharing a joke with the Prime Minister about being in the Pacific Islands with “water lapping at your door” (Guardian Australia, 2015). And, although he was not joking, eminent economist and former diplomat Ross Garnaut has said, “the South Pacific countries will end up having their populations relocated to Australia or New Zealand and the rest of the world

expects that and in the end, we're likely to accommodate that so there's a solution there” (ABC, 2009).

Finally, the normalisation of the loss of atolls is most firmly established through the popular media, as Carol Farbotko has documented so well (Farbotko, 2005; Farbotko and Lazrus, 2012). It is an issue that is at times treated quite glibly, with headlines such as “Sinking islands, vanishing worlds” “Climate refugees in a drowning Pacific” “Rising seas ... washed an inhabited island off the face of the earth” “Tuvalu Toodle – oo”. Such framings of catastrophe persist, often for good intentions, despite recognition that messages of fear and catastrophe do not seem to stimulate collective or individual action to tackle climate change (O’Neill and Nicholson-Cole 2009).

This process of normalisation does not just emanate from beyond the region. Kiribati’s National Leaders make similar pronouncements about the inevitability of the demise of their country. For example, in his speech at COP19 the Kiribati Minister for Environment said:

“this is a critical issue for the survival of our people.... Scientists tell us that calamity awaits What lies beyond adaptation? What can be done if we can no longer adapt to climate change? How can we continue to adapt when our survival is at stake? Prudence demands that we prepare for a long term future for our people....it would be irresponsible to acknowledge what we are experiencing on the ground and not do anything to prepare our people and communities for eventual migration” (Kwong, 2013).

Though this pessimistic narrative is the dominant one about small islands in popular culture and climate change science and policy, it is not hegemonic, and at least two other narratives exist. First, entwined within much of the climate impacts science is a more cautious narrative that stresses uncertainty (if not optimism) and the unfulfilled potential of adaptation (e.g. Nurse et al., 2014). Second, within atoll countries there is a strong religious framing of climate change, where external narratives about climate change are translated through religious frames such that local understandings of cause and consequence diverge from mainstream science. For example, in Kiribati, the Marshall Islands, and Tuvalu it is common for people to put their faith in God to solve the problem of climate change, or to disavow the problem altogether because God promised Noah that the earth would never again be flooded (Kuruppu and Liverman 2011; Paton and Fairbairn-Dunlop 2010; Rudiak-Gould 2009).

Nevertheless, the idea that atoll islands may become uninhabitable is now a significant socially construed fact, even if the state of scientific knowledge is somewhat less certain (Methmann and Oels, 2015). It is an unthinkable outcome that is now taken for granted, and which requires some thinking through. If there is some basis for despair it is because climate change policy efforts have dismally failed to provide any sense of security for small islands, both with respect to reducing greenhouse gas emissions, and with respect to facilitating the kinds of adaptive responses that can help to avoid or manage the risks of climate change, as explained in the following section.

Limited Adaptation

The prima facie argument for adaptation in atolls is that they are highly and particularly vulnerable to a problem not of their making – and this is well understood and lies behind the various articles in the UNFCCC that refer to adaptation and most vulnerable places. Despite this, thus far adaptation in atolls has been very limited, which is remarkable given that for more than 25 years reductions in greenhouse gas emissions and strategies to avoid or reduce the risks of climate change (called ‘adaptation’), have been promoted in science and policy as necessary for the survival of small island states (e.g. Lewis, 1990; UNFCCC, 1992).

Previous systematic analysis has shown three important characteristics of adaptation funding in the Pacific Islands (Barnett and Campbell, 2010). First, funding for climate change related activities in the Pacific Islands is not as substantial as the magnitude of the problem or the magnitude of the talk about it might suggest, with only US\$112 spent on all projects on climate change in the Pacific Islands between 1991 and 2009. Second, of this spending, about a third was on ‘adaptation’, with the majority of spending going towards climate science conducted by Australian and New Zealand science agencies. Third, the vast majority of funded projects were ‘regional’ projects, meaning they were implemented by regional organisations and spread across multiple countries, and this scale of implementation has significant trade offs for effectiveness in any given place.

Not much seems to have changed in the last eight years, even for the most vulnerable atoll countries. Betzold’s (2016). careful analysis shows that the Pacific Island countries

receive only a small share of global aid for adaptation and this aid is distributed very unevenly within the region and between its atoll countries and territories: the Marshall Islands and Kiribati, for example, receive far less than the less populous Tokelau and Tuvalu. Moreover, Betzold (2016) shows that not only is this aid to the Pacific Island countries vastly less than the estimates of required support, it has fallen in volume since 2011 (due to a decline in Australian contributions).

In terms of effect, the United Nations Development Programme's climate change adaptation portal serves as a clearing house on activities, and it says: "at present, the Marshall Islands appears to be participating in a low number of adaptation projects relative to other countries in the Pacific region; and all are being undertaken as part of broader, multi-country initiatives. Most projects emphasize capacity building, training and policy and planning." For Tuvalu it says: "a relatively moderate amount of adaptation actions are underway in Tuvalu, predominately through its involvement in a number of regional climate change projects." And, for Kiribati, the UNDP summarises that there are "a moderate number of adaptation projects, relative to other Pacific Island developing countries, underway ... most of which seek to build local capacity" (UNDP, 2016).

Arguably the most intense and sustained effort to facilitate adaptation in the Pacific (and possibly all developing countries) has been the Kiribati Adaptation Program (KAP), which has been underway since 2003. The KAP is now in its third phase, the first two of which focussed on understanding impacts, and developing policies and plans

respectively, with the current third phase supporting the implementation of adaptation actions (UNDP, 2016). It is notable that in speeches to the UN Kiribati rarely mentions the KAP, and indeed the KAP has many critics. For example: Kuruppu (2009) shows that the KAP has not aligned well with local institutions, cultures and values; Storey and Hunter (2010) say that most evaluations described it as 'unsatisfactory', and they themselves describe it as largely a failure; Webber (2013) argues that it has done far more to perform the idea of vulnerability than it has to materially address the risks of climate change; and Donner (2015) has explained that the one tangible outcome of the KAP – a series of sea-walls - were significantly damaged by waves and erosion within the space of a few months. It is perhaps worth noting as the one country that has the most substantial aid-driven adaptation program, Kiribati is also the country that has the lowest expectations of adaptation, and is preparing for the failure of adaptation by exploring strategies for relocation (see below). Whatever the causality, this is far from a resounding vote of confidence in the seemingly best efforts of the international community to support adaptation in a small island state.

This adaptation deficit arises in part from the asymmetries in power between atoll countries and donors (Betzold 2016). This is more of a structural problem than one of malignant action: the governments of atoll countries are very small and their capacity to identify and implement adaptation programmes is in some ways limited (Maclellan 2011). However, there is a large difference between the capacity of people on atolls to adapt to environmental change – which they have done for millennia in some cases - and

the capacity of their governments to comply with what the regional agencies and bilateral and multilateral actors themselves think are the necessary processes for building adaptive capacity (Chasek 2010). In this sense the adaptation agenda is thoroughly if unknowingly colonised by international actors – who have shifted the issue of adaptation into a lesser issue of capacity, who assume they have the mandate and means to build that capacity, and who set the agenda of work by virtue of their control over resources (Barnett and Campbell 2010). The international institutions for adaptation therefore need considerable rethinking, including recognition that they themselves do not have the capacity to work patiently and carefully *with* local institutions (Donner and Webber 2014). This isn't a matter of individuals, rather it is a question of funding pipelines, time frames, methods of engagement, project cycles, unaligned expectations, and the simple geographies of travel and hotels and travel allowances.

It may also be the case that the progress on adaptation is impeded by the normalisation of loss, which creates a sense that adaptation cannot or may not work. Adaptation is about changes to secure futures, and so carries with it a precondition that there is a future to be secured; absent of such an idea, then adaptation loses much of its purpose. Indeed, there already exists an implied and sometimes explicit economic rationality that suggests that the most efficient thing to do is to manage the future away – to not invest in adaptation responses because these will ultimately fail, and to instead approach the future of these societies through managed relocations – the kind of

palliative care approach espoused by Ross Garnaut (above), or by the former head of the Australian Bureau of Agricultural and Resource Economics, who saw the 'appeal' of relocating small island states due to the financial 'costs and benefits' of this when compared to the costs of reducing greenhouse gas emissions (see Bitu, 1996).

Given expected rates of global warming, if the future of adaptation responses in atolls is no better than the experience thus far then there is every reason to consider that climate change does indeed imperil their future. This raises some uncomfortable questions about how to talk about and plan for a future that seems to be finite.

The dilemmas of loss

If the science of climate risks to atoll countries is far from certain for any given island or country, and the scope for adaptation is unclear and constrained by recent practices, then prophecies of loss may be premature and potentially self-fulfilling. Research on temporalities and climate change has shown that dangerous futures have a habit of becoming materialised in the present, for example by creating new identities and anxieties about the future, deterring investment in seemingly 'lost causes', undermining the norm of sustainable development, and blaming avoidable environmental impacts on 'climate change' (Brace and Geoghegan, 2011; Connell, 2003; Donner, 2015; Fincher et al., 2015; Marino and Ribot, 2012). Similarly, research on the reception of climate change ideas suggests that some local cultures – including those in the Marshall Islands

– are not empowered by the prospect of loss nor are they stimulated to adapt, but rather tend towards self-blame and fatalism (Rudiak-Gould, 2012). The net effect of these changes is more likely to be maladaptation rather than adaptation (Barnett and O'Neill, 2012).

Therefore, a dilemma facing climate science and policy, and decision makers on atolls, is that while there is no doubt that raising the prospect of the loss of atolls has helped to make the case for emission reductions; the message has not effected anything like the kind of emission reductions or adaptation practices necessary to maximise the chances of future generations to live meaningful lives on atoll islands - and it may indeed have undermined the adaptation effort in subtle ways.

Further, with the exception of Kiribati (discussed below), the prospect of loss has not lead to any significant planning for relocation should catastrophic climate impacts materialise. If it is likely, then planning for relocation is very important for there is ample evidence that relocated communities experience significantly less trauma and resettle far better when they are familiar with the places they ultimately move to, have time to plan and are in control of that planning, have time to accommodate the idea of movement, and move at a time of their choosing and in an orderly manner (Wilmsen and Webber, 2015).

So, another dilemma is that the scientific evidence, while uncertain, nevertheless does suggest that atolls may cease to be habitable, and this arguably cannot simply be denied lest it lead to poor planning such that the impacts on future generations are worse than

need be. Yet, in a bleakly iterative logic, this then raises the initial dilemma again, in that planning for relocation may ultimately only precipitate otherwise avoidable social-environmental decline and relocation.

In amidst these dilemmas the leaders of atoll countries have presented two different responses. First, there is the Kiribati position, developed most fully between 2003-2016 under the leadership of President Anote Tong, and which entails a layered strategy to: first, promote mitigation of greenhouse gases; second, to pursue adaptation; and third, to prepare for the inevitable future by paving the way for relocation through a strategy labelled 'migration with dignity'. The underlying logic is best captured in Anote Tong's comment that he'd "rather plan for the worst and hope for the best", by beginning to talk about and plan for resettlement in various ways (in Weiss, 2015: 626). This is the politics of pragmatism, accepting that loss is possible, and planning for it through a process of sensitising the population to the possibility, through skills training for nurses and seafarers so that a larger number of I-Kiribati can work elsewhere, and through purchases of land in Fiji.

This approach accepts dangerous climate change and draws attention to a palliative type of response, but in so doing may compromise commitment to the mitigation of greenhouse gas emissions and to adaptation by embracing the possibility of their failure. As suggested earlier, it may also have other unintended consequences, for example by: undermining efforts to sustainably manage environments: disempowering local adaptation and creating anxiety about the future; and by leading to climate change being

blamed for otherwise avoidable environmentally damaging local practices. These arguments are not lost on local people, as one local commentator has argued, “because the Kiribati government has undertaken plans fast forwarding for about 50-100 years, it has ignored and neglected pressing problems on the ground” (Korauaba, 2015). Earlier regimes recognised the dilemmas as well, for example in 2000 the then climate change officer said “I think of emigration as being the stage where you know you’re losing the battle, we’re nowhere near that” (in Pearce, 2000: 47).

It is too early to evaluate the effects of the Kiribati position, but for now much depends on the extent to which one considers some combination of mitigation and adaptation responses to be potentially sufficient to sustain atoll social-ecological systems, and/or the extent to which one accepts that relocation is therefore unavoidable and so best planned for. More simply, it is perhaps a matter of pessimism or optimism about the future.

There is a notable distinction between the I-Kiribati position and the position of Tuvalu and the Marshall Islands, as expressed by the Foreign Minister of the Marshall Islands Tony de Brum, when he said recently “displacement is not an option we relish or cherish and we will not operate on that basis. We will operate on the basis that we can in fact help to prevent this from happening” (in Mathiesen, 2015). And that:

“People do not want to be detached from their homelands. It's their soul. If you were to take the Marshallese community as it is now and say, we're going to move you some place else, that's the end of a culture and a people and a tradition.

That's tantamount to even worse atrocities in the past in destroying the soul of a society" (de Brum, 2015)

In a similar vein Tuvalu Prime Minister Sopoaga has said that:

"Some have suggested that the people of Tuvalu can move elsewhere. Let me say in direct terms. We do not want to move. Such suggestions are offensive to the people of Tuvalu. Our lives and culture are based on our continued existence on the islands of Tuvalu. We will survive" (Sopoaga, 2013).

This second position stands in stark contrast to that of Kiribati. It refuses to countenance the loss of atoll societies, it asserts the right to control this discussion, and it considers that it is premature to talk about relocation, let alone to plan for it. This is the politics of principle, refusing to let the international community avoid its responsibilities for mitigation and adaptation. But it could be argued that it is a naïve position, denying the seeming reality of failed efforts to mitigate and to adapt, and failing to plan to insure the welfare of future generations that may be relocated.

Though markedly different, the Kiribati and Marshall Islands/Tuvalu positions each have their own justifiable logics. They are manifestations of the almost impossible and necessarily imperfect choices imposed on peoples imperilled by climate change – a problem not of their making but to which they are most acutely exposed. The only thing that is certainly wrong is the situation that atoll societies now find themselves in: facing the loss of all that they hold dear with only token recognition or support from those responsible for its cause.

Towards a more hopeful approach to the future of atolls

There is a certain god-like vision that is associated with much climate impacts science, in that it tends to point to the demise of places based on assumptions of causality that cascades through uncertain climatologically, oceanographic, biological, chemical, geological and geomorphological processes. Though the science of impacts on ecosystems in many parts of the world is very well established and undeniable, as explained above this is less the case for the Pacific Islands. Indeed, for the Pacific Islands the very notion of 'loss' or 'catastrophe' is itself quite poorly specified with respect to where, when, sequence, effect, and people impacted. The sense, though vague, is that sea-level rise will be the major driver of loss, eventually inundating low lying islands that cannot sufficiently accrete. But as suggested above, this may not be the case: some islands may grow, some may not, and some may be modified (as has occurred in Majuro) by human endeavours. Paradoxically, the growth of atoll land areas mostly occurs through storm waves depositing coral from reefs to construct the elevated islands on which people live. Cyclones and their effects are therefore critical to atoll formation, but the effect of climate change on cyclones remains uncertain, and the consequences of this for atoll morphology are not well considered.

There are myriad other problems of freshwater availability, food supply, health, and infrastructure that may also be exacerbated by climate change – but the question of thresholds at which 'loss' arises and people begin to suffer or seek to leave remains

completely unexplored, with almost no answers to key questions such as: how might environmental change transpire, what can be managed through adaptation, what impacts can people live with, who will suffer, and who will seek to leave? Loss therefore exists as an existential and uncertain threat – its possibility is no less real for this, but it is uncertain. Uncertainty does not mean the loss of atolls cannot happen, but it also does not mean it definitely will.

The normalisation of loss assumes that people on atolls have no or very limited agency, in that it does not account for any human response over the coming decades that can in any way alter the outcome of climate change. This ignores the significant fact that the ancestors of today's atoll peoples voyaged in canoes across vast distances and settled on narrow sandy islands with no soils and surface water. Some atoll islands have been settled for well over two thousand years, with no 'collapse' in the populations living on these most marginal of terrestrial environments despite climate extremes, colonization, blackbirding, world war, and dramatic changes in economic and political conditions.

This denial of the scope for adaptation is further belied by a range of contemporary technologies and practices such as rainwater harvesting, desalination, composting toilets, desalination, hydroponic vegetable production, renewable energy, labour migration and remittances, and imported healthy food – all of which have shown the potential to contribute to more adaptable atoll social-ecological systems (Barnett and Campbell 2010). Community-based adaptation approaches that utilise participatory processes, customary knowledge and affordable technologies also show great promise

(McNamara 2013). Yet in the normalisation of loss, it is as if nothing can be done and people on atolls have and never will learn or change: it is these assumptions that render their vulnerability absolute, and their demise a foregone conclusion. It is as if research and policy is afraid of the idea of successful adaptation led by atoll peoples, and rather more in awe of the possibility of their powerlessness and displacement.

It is time to ask if the loss of atolls can be avoided, and to commit to a science and policy that seeks to create constructive and optimistic futures for the atoll islands. Such an optimistic future requires deep cuts in emissions to slow the rate of climate change as much as possible, thereby creating more time and space for adaptation. It also requires a vastly more creative and committed approach to adaptation, which is necessary now because delayed and poorly considered adaptation will be less effective and efficient than well considered early action, and because more hopeful accounts of adaptation may be more empowering and constructive for people on atolls as well as those in the international community who seek to assist them. It is also necessary simply because it is unethical to not even think about - and simply give up on - efforts to secure the rights of people to continue living on atolls.

There are strong parallels here between the way we theorise about the power of climate change and the way we theorise about other larger structural forces that shape social life. For example geographers JK Gibson-Graham (2008) have argued that strong theories that confer all power to neoliberal economic institutions are not innocent in that they deny the existence of a possibility for new economic spaces: the same could be

said for strong accounts that deny the possibility for a future for atoll islands. In the same way that Gibson-Graham argue for an economic geography that focuses on the possibility of new economic beginnings rather than conditions of their impossibility, we should also be seeking to develop research and practices that create openings and freedoms for atoll people, and which, in their words “produce the ground of possibility ... to uncover or excavate the possible, and creativity to generate actual possibilities where none formerly existed” (p. 620). It follows then that climate science and policy could advance accounts of the future of atolls that are ‘hopeful’ in the sense that they don’t claim to know too much, or to see too far, but which work with what is known, and which explore and promote innovations and experiments and practices to build better futures progressively over time (Gibson-Graham, 2008).

A more hopeful approach to the future of atolls would begin by asking people on atolls what it is that they value about life on their islands, and what changes would seem to them to be intolerable and reasons for emigration. Surprisingly, this has rarely been the focus of research. These could then sharpen the goals of adaptation efforts, be incorporated in adaptation pathways, and define the benchmarks of loss that could then be planned for in a more purposeful way (see for example Barnett et al., 2014, and the arguments made by Stege, 2014).

This more hopeful approach would sample from across a range of atoll island experiences, learning from the diverse practices and technologies that exist for managing fisheries, food, infrastructure, reefs, sanitation, waste disposal, and water. It

would include working with people living in already heavily fortified islands such as Ebeye in the Marshall Islands, recognising that a well developed and completely fortified island standing above sea-level, with all desalinated water and imported foods may be considered 'an adaptation' by this or future generations, given their sense of place and the likelihood of harms caused by forced migration.

A hopeful approach to adaptation should seek to ensure the rights of atoll people to dignified lives, cultural continuity, and autonomy for future generations for as long as this is possible. The means to this are many and varied, but an important principle is that adaptation (like development) is done *by* atoll peoples with support from external actors, and is not done *to* them. It would recognise that people on islands have the capacity for self-determination, and so have the right to autonomy in decision-making about what the 'end' is, when it has begun, and how it is to be managed.

This need for a sense of hope is captured in the Communiqué of the ninth conference of the Pacific Community, which met in Niue in November 2015, and whose focus was on 'resilient Pacific people', and which endorsed strategies to focus on "practical solutions to the challenges and vulnerabilities facing the Pacific region", including "documenting experiences and success stories across key areas of sustainable development, with a view to scaling up and replicating these across the region."

The task for climate science and policy, then, is to push the envelope of thinking about adaptation, exploring all ideas and possibilities for innovative and creative solutions, and implementing strategies that build on evidence of success and which create hope for

present and future generations. It would explore all available technologies and practices for managing freshwater resources and waste disposal, and vigorous investments in ICT and subsidised transport services to boost connectivity between islands and islands and metropolitan centres. It would seek to develop robust markets for the supply of healthy and affordable foods, and invest in health systems, best practices for managing coastal and marine resources, and human resource developments. And it would take seriously the idea of accessing regional labour markets and developing new migration agreements for work and training in wealthier Pacific Rim countries, with the benefits that this brings to all countries (Barnett and O'Neill, 2012).

This sanguine vision does not mean there are not very significant challenges in implementing the kinds of planning and development solutions required to sustain people's lives on atolls. It is a huge amount of hard work, and it will be "an unsexy, expensive slog" where success "will come from years of trial and error and a long-term investment by the international community in implementing solutions tailored to specific locales" (Donner, 2015: 56). The success of such a hopeful and committed approach to securing the future of atolls also depends on greenhouse gas emissions, but there is nothing inevitable yet about the collapse of atoll societies and there is no reason to think people cannot be leading dignified lives in these environments for many decades to come; anything less would be abject failure of climate change science and policy.

Conclusions

All people have a moral and legal right to choose to lead dignified lives in their homelands free from the interference of climate impacts. The predicament atoll countries face in planning for the future arises in part because of the material risks arising from climate change, and in part from the way these risks have become normalised in science and policy and the media. Though the scientific evidence to date is portentous, it is not robust enough to anticipate how and when the collapse of atoll societies will happen, and it cannot account for the ameliorating effects of adaptation. The international community has the responsibility and wherewithal to enact a comprehensive strategy to minimise the risks climate change poses to atolls: by rapidly reducing greenhouse gas emissions to stabilise warming; and by imagining a vibrant future for atoll people, and scaling up their ambitions and reforming their institutions so as to better work with atoll countries to facilitate adaptation. Normalising the loss of atoll countries obscures recognition of these responsibilities.

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The dilemmas of normalising losses from climate change: Towards hope for Pacific atoll countries

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