Ecological Citizenship – A New Landscape for Human Rights Debate?

Cassandra Star

Department of Politics and Public Policy, Griffith University

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Abstract

The vision of an ecological citizenship, and a new conception of the good life that has evolved out of ecological justice movements worldwide highlights not only principles of equity, equality, and justice, but also incorporates an emphasis on human rights. A conception of human rights is explicit within both the movement and academic works on notions of ecological citizenship. However, within the global justice movement, the notion of human rights embraced is one that interprets human rights broadly, beyond the current international regime, and beyond the current commitments of those in the international arena.

This paper argues that this understanding of human rights revives and breathes new life into questions about the connection between rights and the environment. Using climate change campaigns as a case study, the paper examines the formulation of rights used within environmental justice advocacy. The conception of human rights mobilised is that of a right to environment, in contrast to deep ecologist and animal rights activists’ calls for rights of the environment. The environmental justice view is composed of three separate sets of human rights: the right to a sustainable livelihood; the right to traditional and cultural use of the environment; and the right to sovereignty, and place. These understandings of a human right to the environment represent a departure from previous discussion and debates about the right to environment which typically focus only on the right to a sustainable livelihood, or clean environment. Thus, the practice of environmental justice movements provides significant new ways of conceiving and understanding the connection between the environment and rights.
Introduction

*Human beings have obligations to animals, trees, mountains, oceans and other members of the biotic community … the limits that this places on human action are severe … [and] … no existing political vocabulary has managed to capture this transformation in the relationship between society and nature (Smith 1998, 99).*

The interaction between humans and nature is of great consequence in present times because the result of this relationship has been the consistent and devastating degradation of the biosphere on which all species depend for life support (WCED 1990). The tide of present environmental awareness stems from increased human intervention in natural systems and the consequent growth of environmental degradation (World Resources Institute 2003). Population growth, and its associated demands, in combination with unprecedented technological change, has burdened the Earth’s fragile systems1. The result of this imbalance has become manifest in increasingly serious forms, which not only affect ecological stability but also human health and economic development. For these reasons, *inter alia*, the environment has been addressed as an important international issue through various ad hoc treaties and, more recently, the United Nations Conference on Environment and Development (UNCED) in Rio, Brazil in 1992, which was followed up by UNCED + 10 in Johannesburg, South Africa in 2002. Many now argue that there is a clear global environmental agenda, though one, perhaps, which has not presented the dramatic results anticipated or hoped for (Speth 2002; Najam et al 2002).

The severity of several global and transboundary problems has raised serious questions about the human-environment relationship. Western society, in particular, is founded on premises about the exemption of the human species from ecological checks and balances. Therefore, its relationship with the natural environment is fundamentally destructive because it believes itself to be above nature and thus immune to survival problems (White 1967). Consequently, social choice in these societies is frequently “ecologically irrational”2.

Although the threat of the modern industrial state to the environment and the finite nature of the Earth has long been known3, it is only in recent decades that there has been a surge in public awareness worldwide. This is due to the increased agreement in the scientific community about international environmental problems such as the greenhouse effect and the ozone layer (Flavin 1990). Additionally, through the influence of a highly mobilised and internationalised environmental movement, heightened urgency and
obligation to actively seek solutions to increasingly serious environmental questions has been demanded from national governments (McCormick 1989). The difference between these and other environmental problems is that the scope is global and their implications will fundamentally affect human societies, often in unpredictable ways.

One of the relatively recent changes of note within the international arena is the appearance of what many refer to as "the new international issues" (Halliday 1991; MacNeill 1989/1990). This refers to a range of issues that now hold their place on the agenda with the traditional issues of peace, war, security, and trade (Gurtov 1991). These are the "global" issues - issues once considered exclusively the realm of individual states, but that now, for various reasons, attract the attention of international actors. Human rights, drug trafficking, terrorism, and the environment are all considered to be within this group.

This paper examines the discourses of rights and justice in the international arena, particularly in relation to the climate change debate. Contemporary debates surrounding global commons environmental issues and their amelioration are inextricably linked with not only the notion of a right to environment, but also a parallel discourse of environmental justice. It is argued that the claims of a right to environment have taken a significant new turn. They represent a formulation of an understanding of the right to environment, concerned with the right to sustainable livelihoods, a right to cultural and traditional use, and a right to sovereignty and place. However, this concept of rights competes with other claims to rights within the climate change debate – in particular, rights are asserted on behalf of non-human nature and future generations.

The debate over rights has a clear resonance with developments around the discourse of environmental justice that has also served to focus negotiations and demands around climate change. These terms have been mobilised by numerous stakeholders in the debate over climate change as they seek moral legitimacy for their view of environmental justice regarding emissions reduction proposals. Differing claims within the discourse pivot on arguments over equity versus equality and what might constitute them in atmospheric politics. This paper examines the rights debate and the discourse of environmental justice through the lens of the climate change debate in Australia.
The Research Project - Climate Campaigns in Australia

I think ... all the work by NGOs over the last few years it hasn’t been that focussed, it’s been quite changeable ... [it] swings from working on Kyoto to working on individual developments to working on public awareness to working on ... things like awareness raising events ... there’s been a lot of people shifting around and probably a bit overworked ... trying to cover too much ground (Reynolds 2004).

Climate change campaigns across the world are characterised by significant differences in the focus, orientation, and understandings of the groups involved. Research into the campaigns of major environmental groups in Australia revealed some interesting findings on the nature of climate change campaigns. While revealing expected differences in the targets of climate change campaigns, orientation of campaign, and campaigning methods, a group of campaigners and organisations displayed a particular conception of the measure of good environmental decisions. Climate justice campaigns studied during this research project displayed a well evolved, and articulated notion of ecological citizenship at the core of the advocacy and campaigning work. A central element of this understanding of ecological citizenship is characterised by equity of consumption and environmental space, the recognition of ecological debt and borrowing, the importance of compensation and protection, as well as respect for human, cultural and identity rights in relation to the consideration of environmental issues (Star 2005). This conception of ecological citizenship clearly goes beyond recommendations for good environmental governance, instead encompassing a vision of the good life, and a recommendation for ethical individual and community citizenship. Thus the relationship between rights and the environment is key to understanding the vision of environmental non-government organisations.

These findings emerged from a pilot research project on Australian climate change campaigns conducted by the author in 2004. The project sought to investigate the understandings of climate change campaigners from non-governmental organisations in Australia relating in climate change. It did this by considering their particular campaign focus, other campaigns in the Australian arena, and a focus on social justice issues within climate change. The project began by establishing contact with a number of prominent climate change campaigners throughout Australia. These individuals were identified through a survey of contemporary media commentary on climate change issues in Australia, ascertaining the non-governmental organisations involved in current debates around climate, and the staff members involved in those campaigns. The eventual interviewees were predominantly full-time,
employed campaigners within non-governmental organisations, but several individuals were representatives of organisations who occupied an unpaid position. Identified individuals were contacted to discuss the project and their potential participation; a total of 12 individuals were interviewed. Subsequently, involved individuals were asked to nominate other campaigners involved in climate change that they thought were significant to speak to in regard to the Australian non-governmental sector. This method is referred to as “snowball sampling”.

Snowball sampling is used in qualitative research design and method across a range of fields and disciplines. The most important advantage of the technique is that the approach enables the researcher to benefit from the participants’ understandings and knowledge of the target individuals and the community relevant to the research project. “Snowball sampling is a method that has been used in the social sciences to study sensitive topics, rare traits, personal networks, and social relationships. The method involves the selection of samples utilizing "insider" knowledge and referral chains among subjects who possess common traits that are of research interest” (Kaplan, Korı, and Sterk 1987, 566). Thus, as a method of selection of activists involved in climate change campaigning, snowball sampling is an appropriate and useful tool.

The primary research tool to establish and evaluate campaigner views and attitudes was in-depth interviewing. The in-depth interview can be viewed as “a conversation between researcher and informant focussing on the informant’s perception of self, life and experience, and expressed in his or her own words” (Minichiello 1990, 158). The use of this method provides the chance for those interviewed to express their ideas, thoughts and views in their own words, through conversations that take place facilitated by a structured, but open-ended interview process (Minichiello, 1990; Reinharz, 1992). The interview process utilised a semi-structured approach, which provided a guide for the conduct of interviews, while enabling free interaction between the researcher and the interviewee(s) (McCracken, 1988). The interview schedule provided to participants ahead of the interview listed issues and topics to guide the interview process. The intention was to provide an open but loosely structured approach to each individual interview while maintaining a consistent focus in the discussions with each campaigner involved. The inclusion of broad open-ended questions around climate campaigns in Australia enabled participants to discuss and explore their views at length, and to raise a diverse range of issues they considered pertinent to the research project.
From Environmental Justice to Ecological Citizenship

“...[we are] evolving to more a social ecology or social justice movement rather than a traditional Western/European quality of life, biodiversity conservation focus network ... [because an] ... inherent fundamental flaw with a lot of modern environmentalism ... I think that you have to come from a social justice perspective to be really relevant in this day and age ...” (Walker 2004).

Sections of the environmental movement have long argued for less of a focus on issues of environmental quality, and more of a focus on equity within environmental issues: in essence, the embrace of social justice. This social justice orientation is widely referred to in the literature on the environment movement as an environmental justice approach. It refers to a broader attempt in some sectors of the movement to encompass a wider range of socio-political concerns in environmental debates. They argue that “[e]nvironmental problems are a component of social exclusion and an issue of social justice” (Agyeman 2002, 46). The movement has re-defined the environmental debate toward issues of justice, equity and rights. A narrow focus on environmental quality in the environmental movement inevitably misses the important aspect of human equality. “In the wake of the rapid dispersal of ideas which characterize the contemporary era of globalisation, peoples across the globe are intoning and rallying around novel concepts, norms and standards of environmental protection as a social justice objective” (Obiora 1999, 465).

The discourse of environmental justice was earlier brought to bear on urban industrial environmental problems, including the siting of toxic waste dumps, polluting chemical industries and waste processing facilities in largely black and Hispanic lower socio-economic neighbourhoods in the United States (Bullard 1983, 1990, 1993, 1994, 1995). Campaigns mainly on toxic waste related issues pointed out the correlations between race and class, and environmental risk in the workplace and the community. Race was a predominant characteristic within the evolution of the environmental justice movement in the United States, which was the first movement to “link environment and race, class, gender, and social justice concerns in an explicit framework” (Taylor 2000, 42). In other countries, while race has been less important, the dimension of socio-economic disadvantage has proven to be significant. For example, in the UK, communities characterised by economic depression, and social dysfunction are those most affected by industrial pollution (Agyeman 2002, 40). As these connections became drawn, attention was also concentrated to the often unequal contributions of different sectors of society to the production and consumption that introduces environmental risks. The over-consumption by the privileged of those items that create these
risks, and their ability to purchase “protection” from these risks through better housing, better medical care, and better nutrition is a recurrent theme.

With the advent of global environmental problems and their entry onto the international political agenda, the parallel of the contributions versus burdens of lesser developed countries in these issues was highlighted (Esteva 1992; Hofrichter 1993; Khor 1993). The discourse of environmental justice has focussed attention on the disproportionate production of toxic and hazardous wastes by developed countries, and their export of these risks to lesser developed countries lacking the capacity to treat or store them safely. It also recognises the lack of capacity for adaptation amongst developing countries, as well as the relatively small contributions that they have historically made to global environmental problems. Beck (1995) argues in his work that risk has become central to modern politics and an understanding of how ecological concerns are explored and negotiated in contemporary societies. He also notes the importance of the “second age of modernity” in opening the way for transnational risk communities and the recognition of the globalised risks (2000) that characterise environmental justice movements and approaches. This has certainly been demonstrated within climate change campaigns:

_Climate change does speak to social justice and definitely is about not only … the ability of the rich countries to be able to say, well, we’re going to keep polluting even though we know it could have catastrophic consequences for the whole world including people who didn’t create any of this pollution … but the rich countries are thinking in the back of their minds – but it’s ok because we have the resources to be able to adapt …_ (Richards 2004)

Such understandings and communities also allow campaigners to point out that the destination for old growth timbers from tropical rainforests in the lesser developed world was for furniture and flooring in upmarket developed world homes. The shift of industrial processing and manufacturing from the developed world meant a cleaner environment in developed nations, as well as uninterrupted affordable consumption. However, the cost for lesser developed countries has been increased industrial pollution and unsafe workplaces. Shiva (2002) has referred to this process whereby the lesser developed world loses control of its natural resources, and bears the majority of environmental risks as “environmental apartheid”, while other critical academics have referred to “environmental colonialism” (Agarwal & Narain 1991; Redclift 1992; Jasanoff 1993; Nelson 2003). Thus, environmental justice has become a globally oriented discourse highlighting the “winners” and “losers” in relation to the burdens and costs arising _unequally_ from environmental issues. However, Agyeman (2002) argues that the discourse of
environmental justice goes beyond mere considerations of environmental equity to include an element of participatory decision making and self-determination for communities.

Thus, there is a clear mobilisation of the language of rights and responsibilities that weaves itself through the environmental justice literature and campaigns of NGOs on climate change. I have argued elsewhere that this approach represents a departure from an environmental justice approach, and an evolution toward an ecological citizenship (Star 2005). The guiding principles within this configuration include sustainable and equitable consumption, equal right to environmental space, the recognition of the notions of ecological borrowing and ecological debt, the importance of compensation and protection, as well as a connection to human, cultural and identity rights. Taken together, these principles represent a well defined and cohesive conception of ecological citizenship, and a vision of the good life.

Ecological Citizenship and Rethinking A Right to Environment

The framework needs to be human rights, internationalism and owning up to our responsibilities i.e. the ecological debt … most people are basically good, most people basically do the right thing if they can and certainly if opportunities are presented to them to allow them to make good choices in their lives, and in their collective realm … (Walker 2004).

Before considering the current approach on the environment and rights, it’s worth revisiting the previous discussions around this issue that have already been undertaken in the international arena.

The idea of a right to the environment has developed in the international arena, and international law since the United Nations Conference on the Human Environment in Stockholm in 1972. The conference adopted a human rights approach to environment: “[t]he protection and improvement of the human environment is a major issue which affects the well-being of peoples and economic development throughout the world” (Stockholm Declaration 1972, Part I, paragraph 2) and that “[b]oth aspects of man’s (sic) environment, the natural and the man-made (sic), are essential to his well-being and to the enjoyment of basic human rights – even the right to life itself” (Stockholm Declaration 1972, Part I, paragraph 1). The 1980 World Charter for Nature elaborated a right to environment, as well as duties and obligations required to protect the environment (UN General Assembly Resolution No. 37/7 1982). The Expert Group on Environmental Law of the World Commission on Environment and Development included the right to a healthy environment
in its recommended legal principles to the WCED (Nijhoff 1987). In 1988, the Additional Protocol to the American Convention on Human Rights in the Area of Economic, Social and Cultural Rights asserted that “[e]veryone shall have the right to live in a healthy environment”\(^4\). The Hague Declaration on the Environment in 1989 expressed “the right to live in dignity in a viable global environment”\(^5\). In 1994, the Draft Principles on Human Rights and the Environment was released by the Special Rapporteur to the UN Sub-Commission on Human Rights. The report’s second principle states that “[a]ll persons have the right to a secure, healthy and ecologically sound environment”\(^6\). The Bizkaia Declaration of 1999 also states that “everyone has the right, individually or in association with others, to enjoy a healthy and ecologically balanced environment … [which] may be exercised before public bodies and private entities, whatever their legal status under national and international law”\(^7\).

Clearly, there is a significant history in the international arena around the idea of human rights and the environment. Specifically, the discourse has been dominated by claims about the right of humans to a clean and healthy environment. Similarly to environmental justice perspectives, debates on rights and the environment, current approaches can be delineated between rights to the environment, and rights for the environment. The right to the environment approach asserts a human right to the environment; individuals have a right to a clean or healthy environment. The second approach has been characterised by arguments regarding the standing of nature, and species other than humans in relation to environmental change. This school of thought is characterised by the highlighting of the anthropocentric nature of the first approach, and calls for a re-conceptualisation of rights to extend to non-humans (Dion 2000). The climate justice conception discussed here clearly frames its discussions within an anthropocentric framework, demonstrating an example of the first approach outlined:

“[I]t [climate change] will lead to incredible … social dislocation and social disruption and loss of wealth and … loss of … the community and families being broken up and loss of countries … I don’t think many people working in it [climate change], even environment groups, are doing it just because of concerns about impacts on places … its also because of impacts on people” (Reynolds 2004).

Therefore, the approach taken within the social justice movement is clearly focussed on human rights when considering the impact of environmental issues: individuals and human communities are their focus.
Fitzmaurice (1999) argues that there are three main perspectives on human rights and the environment. The first approach posits that without an environmental right, other human rights are not possible. Another perspective recognises a right to a healthy environment, but connects this to already existent human rights, such as a right to life. The final approach questions the legitimacy the arguments for a right to environment.

Climate justice campaigns make not just an inherent, but also an explicit connection between issues of environmental justice, and issues of human rights. Just as the environmental justice approach drew issues of race and gender into its analysis, the climate justice campaign takes this analysis further with the inclusion of social inequality, and historical injustice to open up a dialogue around environmental problems and a range of human rights issues. For example, NGOs have been clear in their concerns that within other organisations, human rights is a neglected issue in the environmental arena in the past: “... no one in Australia was talking the justice, equity, or the human rights perspective ... [but] ... at its centre, global warming is a human rights ... issue, or ... problem, it’s, it’s, secondary that it’s economic, political and scientific and so on ...” (Walker 2004). Thus, the social justice approach clearly embraces a connection between human rights and environment in its advocacy. Their conception of this connection is that environmental rights are fundamental rights – the removal of this right creates significant impacts for the ability of individuals and communities to enjoy their other human rights.

Within the current discourse on global warming within social movements, three clear strands around a human right to environment can be identified: a right to a sustainable livelihood, a right to cultural and traditional use, as well as a right to sovereignty and place.

*The Right to a Sustainable Livelihood*

Within the international arena and academic literature, a right to a clean environment and a sustainable livelihood is the most common conception of a right to environment. This formulation has wide ranging implications, especially when considering people potentially displaced by potential environmental degradation. Elementary human rights are implicated through the issue of environmental refugees: “the fundamental principle of justice [states] that every individual is entitled to the protection of a state in a territory where they can earn the necessities of life” (Nash 1999, 229).

In particular, these ideas have been mobilised around the vulnerability of Pacific islands to salt water incursion, and eventual submersion through sea
level rises resulting from global warming. The human rights of potentially displaced peoples are seen to be transgressed in a number of ways by the over-consuming, over-polluting and over-emitting countries of the global North. Such an approach acknowledges that while human rights are viewed as a socio-political issue far removed from environmental quality issues in Northern societies, that in the social justice perspective on environmental issues, human rights and environment are inextricably intertwined. There is a “reciprocal relationship between social and environmental welfare ... [and a recognition that] ... the struggle for environmental responsibility and justice ...” (Obiora 1999, 465) go hand in hand.

“[I]n Australia ... when people think human rights in environment it’s seen as an optional add on ... whereas in the majority world human rights is just a fundamental element in terms of sustainability whether you’re fighting ... oil production in Nigeria or free trade zones in Mexico, human rights and environment are not seen as separate things ... “ (Walker 2004).

The right to a sustainable livelihood is seen to be threatened by the impacts of climate change for many low-lying areas in the Asia-Pacific. The need to import water and food by islands with agricultural systems affected by salt intrusion denies the right to a sustainable livelihood, causing increasing dependence on the ecosystems of other countries. Similar arguments can also be made about the impact of increasing storm surge activity and its impacts on low lying atolls in particular, and increased flooding in areas such as Bangladesh. These events provide serious challenges to the ability of both individuals and communities to maintain a sustainable livelihood in their nations of birth (or choice).

The Right to Cultural and Traditional Use

A range of dimensions exist to these claims to rights, and one of the most prominent is in relation to cultural rights, and the rights of indigenous people, to a connection with their traditional land or dwelling place, and their cultural practices.

This awareness and understanding extends to the consequences of movement of peoples, and an acknowledgement of the cultural importance that peoples assign to connection to place or country. People in the Pacific who will potentially be displaced by climate change may lose the “... ability to maintain that when the entire landscape from which that heritage, that cultural heritage has developed goes and you don't have any access to that landscape again ... particularly for indigenous people who have a strong connection to land and sea ... “ (Long 2004). This is also true for those
individuals or groups who have traditional cultural practices that may be affected by climate-induced changes, or the impact of environmental problems. This would include the claims of the Inuit that global warming is impacting on their cultural practices due to the reduction in snow and ice cover in Northern Canada and the Arctic, and the impact on the populations that they traditionally hunt (Brown 2003). The embrace of a concept of a right to cultural tradition and cultural practice has important implications, especially in terms of obligations and responsibilities.

Recently, the Inuit announced their intention to seek redress through international law for the destruction of their cultural heritage, and the impingement on their cultural rights by the United States’ refusal to sign the Kyoto Protocol or curb their emissions. The Inuit claim stems from the encroachment of sea level rise, the shortening of the winter hunting season, and potential destruction of places of cultural importance (Brown 2003).

*The Right to Sovereignty and Place*

Global warming presents some serious challenges for sense of place. At least five small island states may cease to exist – and this presents new questions for the current international regime on refugees and human rights. FoE and others point to the current situation facing residents of Tuvalu, Kiribati, the Maldives, Niue and the Cateret Islands to illustrate the forthcoming plight of many Pacific islanders, as well residents of the wider Asian region, over the coming decades. The future is far from certain for those threatened by climate change, and those areas most at threat are those who can least afford to follow the status quo and institute “adaptation” strategies later. Several of the above Pacific islands have already instituted internal migration problems as a strategy to deal with emergent impacts.

A special case of human rights is presented by the potential for countries to be submerged due to global warming, or to be degraded beyond repair by environmental problems. Environmental justice and climate justice campaigns highlight that conventional approaches to thinking about the problem, its impact, and suggested solutions miss the important issue of human, cultural and identity rights:

“I read a statement from one of the chief members of ABARE … he actually said it would be cheaper to relocate all the people of the Pacific rather than [for] Australia to give up coal … it just shows such a gross misunderstanding about the impact of climate change on human rights and people’s lives and sense of identity and nationhood … ” (Long 2004).
Climate justice campaigns clearly conceive of the right of individuals and communities to retain a sense of personal and national identity which stems not just from a right to their “place”, but also how important that is in terms of human rights overall. This has been expressed as an individual right to sovereignty: “... peoples’ right to politically or publicly identify as being from a particular nation ...” (Long 2004). Such a right is only possible with the acknowledgement of the obligations and responsibilities of the North to provide compensation and protection for those countries of the South who find their place and sovereignty threatened by the actions of others. As such, suggestions of relocating individuals or communities affected by climate change fall outside the parameters of an acceptable policy because of a right to identity, sovereignty and place. However, in a scenario of required relocation, the climate justice position on displaced peoples via climate change is clear. The current position of the international community and national governments on the issue is to reject any suggestion that they represent climate refugees or environmental refugees. But,

“... ethically, its troublesome ... you get all these displaced people, they’re not technically oppressed by their national government so therefore the national governments should look after them, but if you think of Ethiopia or Iran or Tuvalu those governments haven’t actually created the problem, it’s, it’s the over-consumers in the North, so it seems incredibly ... rude ... an unpleasant thing to do to suggest well ... if you’re displaced you should then go to our national government for support and therefore you shouldn’t be recognised as a refugee” (Walker 2004).

Thus, climate refugees – those displaced through climate-induced changes – also represent an obligation on the part of the international community, despite their failure to “fit” within the current refugee regime. This reinforces the concept of a right to nation, place and sovereignty that requires recognition.

**Conclusion**

Within the climate change debate, a clear discourse around the environment and human rights has been mobilised. This discussion has evolved in a context of debates within the international arena and international law about a right to environment, which has been consistently endorsed at the intergovernmental level. The emphasis in these moves has been on a clearly anthropocentric understanding of a relationship between environment and rights: human rights.

Current advocacy around climate change in Australia demonstrates a new consideration of human rights and the environment. This understanding of
the relationship between the environment and society focuses on the idea of a right to environment as prior to other rights; a right to a clean and healthy environment is necessary for the enjoyment of other important human rights, including the right to life. There are also three clear strands within this understanding of a right to environment: the right to a sustainable livelihood; the right to cultural and traditional use of the environment; and the right to sovereignty and place. This understanding represents a re-conceptualisation and elaboration of the right to the environment.
References


Endnotes

1 There was some debate in the 1970s about whether it was population growth itself which caused these problems (for a good example of this position see: D. H. Meadows et al., Limits to Growth (New York: Universe Books, 1972)) or whether it was the resource demands of population growth that was the problem. This debate is not central to the issue at hand.

2 The central premise behind the concept of ecological rationality is that of rationality founded on the principles and concepts that are embodied in the scientific discipline of ecology. For a social choice system to be ecologically rational it must be compatible with, and sensitive to, the feature of ecosystems. Therefore an ecologically rational social choice structure must feature negative feedback, coordination (across choices and within choices), robustness or flexibility, and, in the case of severe disequilibrium, resilience. See J. S. Dryzek, Rational Ecology: Environment and Political Economy (Oxford: Basil Blackwell, 1987); R. Bartlett, 'Ecological Rationality: Reason and Environmental Policy', Environmental Ethics, 8 (1986), pp. 221-239.


8 Kiribati has begun moving vulnerable populations to outlying islands with higher ground, Niue accepted the migration of seven families from Tuvalu, the Carteret Islands of Papua New Guinea have experienced significant salination related crop failure and will need to be relocated. Tuvalu also came to a widely publicised resettlement agreement with New Zealand which will see at least half of its population moved within the next decade.