

# Equity and justice in climate change adaptation amongst natural-resource-dependent societies

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## Abstract

Issues of equity and justice are high on international agendas dealing with the impacts of global climate change. But what are the implications of climate change for equity and justice amongst vulnerable groups at local and sub-national levels? We ask this question for three reasons: (a) there is a considerable literature suggesting that the poorest and most vulnerable groups will disproportionately experience the negative effects of 21st century climate change; (b) such changes are likely to impact significantly on developing world countries, where natural-resource dependency is high; and (c) international conventions increasingly recognise the need to centrally engage resource stakeholders in agendas in order to achieve their desired aims, as part of more holistic approaches to sustainable development. These issues however have implications for distributive and procedural justice, particularly when considered within the efforts of the UNFCCC.

The issues are examined through an evaluation of key criteria relating to climate change scenarios and vulnerability in the developing world, and second through two southern African case studies that explore the ways in which livelihoods are differentially impacted by (i) inequitable natural-resource use policies, (ii) community-based natural-resource management programmes. Finally, we consider the placement of climate change amongst the package of factors affecting equity in natural-resource use, and whether this placement creates a case for considering climate change as ‘special’ amongst livelihood disturbing factors in the developing world.

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## 1. Introduction

Adaptation to climate change presents formidable dilemmas of justice, many of which are most acute in natural-resource-dependent communities in the developing world (Adger et al., 2003b; Paavola and Adger, 2002). The predominant focus of the UN Framework Convention on Climate Change (UNFCCC) on issues at national and larger scales potentially leaves a vacuum at sub-national levels with regard to the equitable nature of the impacts of adaptive strategies to climatic change.

Indeed, issues of equity and justice in the context of climate change are probably far more readily argued and embraced at this country-to country level than at smaller scales, where, to date, they have received scant attention. This is significant, since climate change is likely to impact and disrupt the development process, with adaptation processes potentially exacerbating inequalities in well-being by creating winners and losers (Kates, 2000).

Developing countries are often considered more vulnerable to the effects of climate change than those that are more developed (Burton, 1996; Smit et al., 2001), with this inequitable distribution of negative climate change impacts attributed to a low capacity to adapt in the developing world. A society or individual's

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ability to adapt may be linked closely to *vulnerability*. Vulnerability has different forms (Few, 2003), of which the ability to withstand shocks and stresses to livelihoods is commonly considered most significant in terms of potential climate change impacts (Moser, 1998; Adger, 2000; Sokona and Denton, 2001; Beg et al., 2002; Metz et al., 2002). High levels of vulnerability and low adaptive capacity in the developing world have been linked to a range of factors that include a high reliance on natural resources (WorldBank, 2000a), a limited ability to adapt financially and institutionally (Beg et al., 2002), low per capita GDP and high poverty, and a lack of safety nets (Desanker et al., 2001; IPCC, 2001).

Climate variability and change are however just two of the many disturbances that impinge upon livelihoods and well-being in the developing world (WorldBank, 2002). Other disturbances include conflict, environmental degradation, colonialism and postcolonialism, market and demographic changes, and disease including HIV/AIDS. Thus while adaptation is a significant issue within climate change agendas, it is not necessarily a new phenomenon per se for those who have to or will have to adapt in the developing world, yet ‘only a few guidelines on planning adaptation to climate change have explicitly stated the need to build on poor people’s own coping strategies’ (WorldBank, 2002:x).

Given these issues and caveats, and the concerns that exist regarding equity and justice issues in adaptation to climate change (Adger et al., 2005), it is potentially very valuable to explore the equity and justice issues that arise at the sub-national scale when natural-resource-dependent societies (defined here as those societies where the direct use of agricultural, forestry, fishery or other natural resources contributes a significant but not necessarily dominant input to livelihoods) to have to adapt and respond to non-climatic livelihood disturbances, as analogies for adaptation to the stresses brought about by climate changes (cf. Meyer et al., 1998; Thomas and Twyman, 2004). Following an exploration of key issues in natural-resource-climate change relationships in the developing world, this paper sets out to explore equity issues in sub-national scale adaptations through short case studies of societal responses to non-climatic disturbances to livelihoods in southern Africa, and the justice and equity issues that these generate.

### 1.1. *Equity and justice issues in climate change impacts in the developing world*

Equity and justice, or ‘fairness’ (Beg et al., 2002), in climate change can be considered in terms of *processes*, which largely relate to emissions issues, and *outcomes*, that relate to impacts, vulnerability and adaptation (Rayner and Malone, 2000). Justice can also be considered to have *distributive* (cf. Miller, 1992) and

*procedural* (cf. Anand, 2001) forms (Paavola and Adger, 2002), where the former relates to the distribution of benefits and adverse affects of climate change across society, and the latter, in this theoretical framing, to how and by whom decisions on adaptive responses are made.

At the international scale, elements of the process dimensions of equity and justice are represented within the UNFCCC by the division of countries into those mainly industrialised (Annex 1) and those mainly developing (Annex 2). Our focus is on climate change equity and justice issues relating to natural-resource users in the developing world, and is thus placed principally within the field of climate change outcomes at sub-national scales. The equity issues contained within this context in the main relate to the distribution of the benefits and costs of adapting to climate change (e.g. Burton et al., 2002), where any comprehensive assessment of adaptation costs must consider issues relating to social well-being and equity, as well as the economic factors that are more commonly considered (Smit et al., 2001). We focus on developing world natural-resource users as this group is frequently considered to be amongst the biggest likely ‘losers’ in climate change impacts (Adger et al., 2003b; Kates, 2000; Smit et al., 2001). In this respect Sokona and Denton (2001) suggest that equity relates to ‘assuring that vulnerable people in the remotest outposts of the world do not become imprisoned in perennial cycles of destitution and impoverishment at the mercy of climate events’ (p. 120).

This worthy view in effect considers developing world equity issues solely in terms of distributional dimensions. It is heavily embedded in outmoded deterministic concepts that regard developing world people simply as passive victims of global forces (Broad, 1994; Crush, 1995) playing little part in decisions and actions that affect their own livelihoods and well-being, and ignoring their capacity to adapt and build elements of resilience (Adger, 2000; Thomas and Twyman, 2004). Writing in the context of flood prone areas, but with relevance to all contexts of climate change disturbances in the developing world, Few (2003) considers the potentially disempowering effect of creating a discourse of vulnerability that undervalues and undermines the potential and actions of people facing significant disturbances by climate change impacts. Therefore equity in the context of climate change outcomes ought to be much more than simply ensuring that the vulnerable are treated fairly and buffered from unduly bearing the burdens of impacts. It should relate to a wide range of issues including: decision-making processes—who decides, who responds; frameworks for taking and facilitating actions; relationships between the developed and developing world; and also to relationships between climate change impacts and other factors that affect and disturb

livelihoods. In the language of Paavola and Adger (2002), it therefore has a strong procedural dimension too, which can affect the opportunities that are available for adaptation.

The view that high levels of natural-resource use creates vulnerability to climate change (e.g. WorldBank, 2000a) ignores the increasingly observed resilience and ability to adapt to changes of people close to the land (Mortimore and Adams, 2001). Processes of change among natural-resource-reliant groups have however been observed to enhance the differentiation of well-being (e.g. Murton, 1999). Adger et al. (2003b) have observed that in the developing world, local level climate change impacts are likely to affect sectors of society differentially. Since climate change does not occur independently of other processes impacting upon developing world societies, an important issue for the 21st century relates to how climate change and development processes interface and whether this interface will enhance existing inequalities or provide an opportunity to simultaneously progress equitable development and reduced vulnerability to climate change (IPCC, 2001, p. 8; Beg et al., 2002).

If it is accepted that the societies least able to cope with climate change are the ones that will be exposed to its worst impacts (Smit et al., 2001) and that these groups are heavily reliant on the use of natural resources (Adger et al., 2002), then a very strong case can be made for needing to understand and foster appropriate adaptation strategies, and the equity and justice issues contained within them. This core issue will be considered in the remainder of the paper through discussions in Sections 2 and 3. In Section 2 we consider the relationships between climate change and future natural-resource use in the developing world, particularly whether natural-resource using societies are especially vulnerable to future climate change impacts. In Section 3 we use case studies to consider procedural and distributional dimensions of equity and justice within current natural-resource use and access in the developing world, and by so doing we provide a baseline against which future adaptation issues can be set. The paper then concludes with a discussion of the policy responses that might best facilitate equity and justice in developing world natural-resource users adaptations to 21st century climate change.

## **2. Climate change impacts on natural-resource-dependent societies: is there a case for being concerned about equity and justice?**

With a few exceptions (e.g. Ramakrishnan, 1998), it is widely considered that the tropical and sub-tropical agricultural systems in the developing world are those most liable to be adversely affected by global temperature and climate system changes during the 21st century

(Tol et al., 2000). For example, many GCM scenarios predict marked warming, precipitation decreases, seasonality changes and increases in extreme climate events in many parts of Africa by 2050 (Desanker et al., 2001; Hulme, 1996; Ringius et al., 1996). It is not surprising therefore that many general regional and national surveys in the developing world predict gloomy outcomes of climate change, with significant vulnerability to its impacts identified for example in west Africa (Denton et al., 2000) and South Africa (Kikar, 2000).

Somewhat contrary to these surveys, which are often conducted at the national level and based on formal institutional criteria, are an ever growing number of local and regional studies that show considerable resourcefulness in the face of external change (Mortimore and Adams, 2001; Reij and Waters-Bayer, 2001; Scoones, 2001). There is some recognition of these local level differences in the climate change literature, but more as ‘complexities’ in trying to achieve generalisations than as realities (Smit et al., 2001). These local pictures raise issues of within and between community equity and justice that require consideration. Pelling (1999) illustrates that issues of equity are complex as even responses to extreme climatic events (such as floods) can provide social and economic benefits to some groups (waste clearance, aid flows, etc).

A frequently expressed concern is that adaptation to climate change in many parts of the developing world is hindered by reliance on natural resources, compounded by a lack of equity in terms of access to the natural-resource base (IPCC, 1997; IPCC, 2001). For Africa, it is commonly considered that agriculture is the primary rural activity, though the level of productivity has been in decline in recent decades (WorldBank, 2000a). Using World Resources Institute data (WRI, 1994; IPCC, 1997) states that a third of Africa’s land area is permanently used for agriculture, 30% of African GDP is derived from agricultural production, 75% of the population lives in rural areas and almost all of the rural labour force is engaged in agriculture (including livestock, forestry and fisheries). Data such as these contribute significantly to the assessment of low adaptive capacity in Africa and high vulnerability to climate change impacts, a situation that is mirrored by assessments from other developing world areas.

Ellis (1998) suggested that up to 60% of rural African income was derived from the land, but a multi-country empirical study has suggested that in some formerly agriculturally dependent regions this figure is now only 20–40% (Barker, 2003; Bryceson, 1996, 2002). ‘Depeasantization’ or ‘deagrarianisation’, is attributed to ‘a long-term process of occupational adjustment, income-earning reorientation, social identification and spatial relocation of rural dwellers away from strictly agriculturally-based modes of livelihood’ (Bryceson, 2002, p. 726). Overall, much evidence shows that African

rural livelihoods are commonly diversified (Dercon and Krishnan, 1996) and continue to diversify (Ellis, 2000), rather than being overly focussed on agricultural production as suggested by gross country level data.

Livelihood diversification may occur within households but also by economies (Ashley and Maxwell, 2001). Diversification can be *within* agriculture and natural-resource use as well as *beyond* activities reliant on the environment (Twyman et al., 2004). Furthermore, diversification may be achieved not simply by increasing the range of income sources, but by a range of other processes, including capital exchanges, that raise the portfolio of activities that support individuals and households (Ellis, 1998). Diversification within natural-resource use may be regarded as reinforcing vulnerability to climate change, but the fact that diversification occurs is indicative of a level of responsiveness to external forcing factors that may be significant in terms of the capability to adapt, particularly as there is evidence that livelihood changes can be triggered by, or occur despite, the effects of drought (Mortimore and Adams, 2001) and changes in the natural-resource base (Thomas and Twyman, 2004).

This discussion allows some conclusions to be drawn about the pertinence of equity and justice within developing world climate change adaptation. First, for individuals and communities at the front line of natural-resource use, climate change futures may represent real hypotheticals in the context of the immediacy of other livelihood disturbing factors. Second, however, this does not mean that adaptation can or should be ignored: climate change is happening. Developing world governments are significant amongst the 186 countries that have ratified the UNFCCC (Grubb and Depledge, 2001), and they will react to the obligations of the convention, including adaptation needs. Third, the socio-economic vulnerability of developing world people demands that equity be included within all dimensions of the climate debate if it is to remain relevant to the governments of the countries within which they reside (Sokona and Denton, 2001). Fourth, these issues of equity require a realism on the part of those assessing and developing adaptation strategies at national levels that recognises climate as only one of many livelihood disturbing factors to which equity and justice considerations are pertinent (Smit et al., 2001).

### 3. Equity and justice in adaptation amongst natural-resource-dependent societies in the developing world

In this discussion, we provide evidence of the complexity of equity and social justice within current natural-resource use. As we have demonstrated above, livelihood adaptation is not novel in the developing world, with natural-resource-dependent societies already

adapting livelihoods to a wide variety of external factors. There is a long legacy of inequitable natural-resource access (Berry, 1989; Leach et al., 1999), especially in Africa. Beinart and Coates (1995, p. 5) note how during pre-colonial times societies debated 'means of containing disturbances', perhaps through trial and error within livelihood practices. However, by the colonial era many natural-resource-dependent societies had to cope with changes to livelihood practices (e.g. promotion of cash crops), as well as changes to the asset bases upon which these relied. Post-independence, people have been exposed to increasing interventions, whether from government, NGO or other local or global institutions, notwithstanding the legacy of past policies and practices. For example, in Botswana, a policy shift from food self-sufficiency to food security had a major impact on farming and non-farming households in rural areas in post-independence (Thomas et al., 2002). This affected not only national and regional marketing systems, but also local credit schemes, ploughing practices and food security. Therefore contemporary understandings of adaptation to change (and the inherent equity and social justice dimensions) must be embedded within such a historical context.

There are strong explicit and implicit linkages within current development agendas between empowerment and equity and justice (Brown, 2002; Chambers, 1983; DFID, 2002; Logan and Moseley, 2002). These linkages have implications for adaptation because of links to procedural and distributive elements of the development process. These are explored below in two case studies drawn from southern Africa research conducted through the PANRUSA and the CINDE projects<sup>1</sup> (Thomas et al., 2002).

#### 3.1. Equity and procedural justice and the decentralisation of rural water supply in Namibia

Close links can be made between equity and empowerment (Adger et al., 2003a), and empowerment and procedural justice, with these highlighted as desirable development goals (DFID, 1997) and alternative routes for development (Pieterse, 1999). In practice there are problematic assumptions within these terms: (a) for whom is equity defined and for what specific purposes; (b) is equity universally desirable (or possible) or will we always have 'winners' and 'losers'; and (c) who defines the winners and losers and the parameters of equity? Overall, we need to question how closely equity and empowerment are linked.

Procedural justice is closely linked with notions of legitimacy (Adger et al., 2003a). In particular it is concerned with the absence of effects on others, or with

<sup>1</sup>See <http://www.shef.ac.uk/panrusa> and <http://www.shef.ac.uk/cinde> for further information.

obtaining their consent when impacts occur (Paavola and Adger, 2002). However, when policies affect the social institutions that govern key natural resources, especially at the local level, some fundamental questions relating to equity and justice need to be raised.

Water resource management in rural dryland Africa is increasingly viewed as a local-level responsibility, rather than a state-centred provision. This follows a global trend in community-based natural-resource management which recognises that local people may have a greater interest in the sustainable use of resources than more centralised government or private management institutions (Tsing et al., 1999). The ‘rules’ of how decentralisation must occur are however not straightforward. For example, there are questions regarding the rules giving effect to preferences and the ability and willingness to pay; who is internal and external to the different institutions involved and how power over decision making is distributed within them (Paavola and Adger, 2002). Paavola and Adger (2002) also ask how the intensity of interests can accommodate issues of equality and/or self-determination. The following case illustrates some of these questions.

Following the principle of cost recovery and financial sustainability through decentralisation, the Directorate of Rural Water Supply (DRWS) in Namibia aims to have all rural water points in communal areas under community-based management by the year 2007. Under this policy, communities elect a Water Point Committee to supervise the operation and maintenance of the water supply. Members of the committee are then trained to manage the borehole pump, or pipeline-accessing tap. The committees must also embrace the issue of grazing management since water and grazing for domestic stock are closely related (Twyman et al., 2002).

In some areas, for example northwest Namibia, some water points had previously been heavily monopolised by a few individuals. However, the state recognition that water points were resources for the community gave legitimacy to previously marginalised individuals to voice their concerns and in some cases reclaim access to water resources. However, there were also cases of exploitation and reports of individuals having to work for ‘elites’ to gain access to water resources when they were unable to fulfil monthly payments to the water point committees (Twyman et al., 2002). It is clear that marginal and vulnerable groups have the potential to be excluded from access to water unless they are able to offer something in return, such as labour, or their costs can be borne by others within the group. Whilst dimensions of formal and informal elements of procedural justice allowed some to reclaim resource rights, this was by no means universal.

In other cases, where wildlife and domestic stock compete for water resources, communities needed to involve and collaborate with existing local institutions

responsible for wildlife management. This proved problematic since the emergence of community natural-resource management institutions in Namibia is a relatively recent phenomenon and members lack appropriate technical and organisational skills (Twyman et al., 2002). It is intended that all Water Point Committees will receive initial training from DRWS, but this training focuses on water issues and there is evidence to suggest that it lacks the necessary degree of integration with other sector approaches. Once a committee is trained and established, the government will lease the water point to the community. However, under the Water Act (1956) a committee cannot be legally registered, a requirement for holding a lease. Therefore a new Water Act has come into force allowing communities to register and hold lease rights over water points.

The DRWS is aware that the cost recovery approach could cause marginalisation but admit that this will be difficult to identify. They do maintain a degree of formal procedural justice at the core of their approach. For example, extra extension officers are being recruited to introduce this system to communities and ‘sensitise’ them to the policy implementation process. For those communities that can be identified as ‘very poor’, water points will continue to be subsidised by the government. However, the overall aim is that the ‘very poor’ households in differentiated communities will be subsidised by the ‘rich’. How this is to be achieved in practice is unclear and the potential for exploitation remains. Although this policy sees decentralisation of resource management as the key to empowering local communities, the complex relationship between empowerment and equity has not been thought through.

### *3.2. Equity and distributive justice in Botswana’s dryland mixed-farming systems*

Distributive justice refers to the distributional consequences of environmental decisions and actions (Paavola and Adger, 2002). In southern Africa, households and communities are recognising new natural-resource use and livelihood opportunities in response to a range of different drivers (Thomas et al., 2002). Adaptations occur through both formal and informal opportunities, and, regardless of whether there are government interventions, rural people have demonstrated their resourcefulness. However, some interventions, and some situations where interventions are not currently occurring, are contributing to a growing polarization of well-being, i.e., an uneven distribution of the impacts of the intervention.

A good example of this is the Financial Assistance Programme (FAP:1982–2001) in Botswana which awarded up to 90% grants to support new or expanding business initiatives. Available in urban and rural areas, it was mainly seen as a way of supporting rural

development. The FAP had the potential to generate livelihood diversification as it minimised the risks borne by individuals and could be applied flexibly in different urban and rural locations.

FAP-funded initiatives have included livestock purchases (e.g. poultry and smallstock); agricultural development (e.g. market gardens); and small enterprises (e.g. brick making, transport services). There have been notable discrepancies within the manner of FAP implementation between districts in Botswana. In south-east Botswana close to the market town of Lobatse, a range of individuals received FAP funding for a diversity of projects. However, in remote and arid southwest Botswana, many potential FAP benefits were not realised for two main reasons: very few non-smallstock related schemes were supported, and the absence of financial infrastructure restricted the ability of individuals to make applications (Thomas et al., 2002).

A number of households submitted FAP applications for schemes such as chicken breeding and tourism, but only those relating to small stock farming, the dominant agricultural practice in the area, received support. Consequently, individual attempts to diversify within and beyond agriculture have not been supported. It was frequently those who were better off who were able to provide their 10% contribution and thus benefit from the scheme. Survey data collected in villages such as Struizendam in southwest Botswana repeatedly revealed comments regarding the remoteness of the area relative to financial and other services (2 days travel were needed to visit a bank or the application office) meaning that any application required a considerable investment in time. Again, the less well off often lacked the time and the means to travel in order to submit an application.

This example illustrates that intervention-generated opportunities are not being taken up, or even applied, evenly in Botswana. Formal attempts at distributive justice can be well placed but may not always have intended outcomes. Some interventions are actually even increasing, rather than reducing, vulnerability, particularly amongst poorer groups. Though the focus on small stock support in southwest Botswana was environmentally appropriate, this had the potential to increase vulnerability by restricting people's attempts at diversification. Furthermore, well-being differentials (i.e. inequality) in the region were increasing as poorer farmers were excluded from the means of access to the intervention. Situations such as this can therefore contribute to widening gaps in well-being and to unsustainable natural-resource use, as well as inhibiting local creativity and innovation in adaptation.

### 3.3. *Implications for equity in climate change adaptation*

From the perspective of community level equity and justice in resource use and management, the case studies

above show clearly that community management is not as utopian as is widely suggested in the literature. Wider evidence to support this can be drawn from research in the Machakos District of Kenya. Here changes in national policies allowed the reinstatement of 'traditional' soil erosion strategies that had fallen into disuse during the colonial period, facilitating a shift to more intensive market-oriented production. The reinstatement of traditional practices can be equated with self-empowerment, and aggregate assessments of the outcomes in terms of productivity and wealth generation showed significant livelihood improvement (Tiffen et al., 1994). Murton (1999), however, identified losers as well as winners, with the marginalisation of some households, leading to polarisation of well-being. Twyman et al. (2001) also found community self-empowerment to have marked implications for equity considerations and for those involved in the formalization of development outcomes. Therefore, only with such multi-scale analysis can the full nature of equity and empowerment issues be exposed, allowing particular attention to be paid to supporting strategies that will enhance secure livelihoods and aid poverty reduction, in addition to enhancing our understanding of fairness (cf. Beg et al., 2002).

Procedural justice that empowers local actions needs to create 'head room' (Tompkins and Adger, 2004, p. 3) within which local actions can develop. Furthermore, even when this occurs, devolved decision making (an element of procedural justice) does not necessarily lead to distributive justice and equity in terms of resource access and actual local level decision making. As a result winners and losers are produced at a range of scales, and equity may well be sidelined as an unobtainable ideal. So, if climate change in low latitude developing countries impacts on the natural-resource base, by for example affecting species distributions, crop growing seasons, and water availability, the 'head room' for equity is likely to be reduced through the diminishment of resource base availability. While resource shortages do not necessarily create conflict, they may well create different spaces in which it is more likely for winners and losers to polarise. Furthermore, given the variability of institutions potentially adapting to climate change at a range of different scales, the explicit role of equity in outcome (whether intended, unintended, expected or unexpected, as in the case of the FAP in southwest Botswana) needs to be a central concern.

## 4. Discussion: creating opportunities for adaptation to climate change

There is a growing body of evidence indicating that individuals and communities in the developing world can be highly resourceful in responding and adapting to external disturbances and change. Whether or not climate change at the local level is manifestly different

in its impact on livelihood strategies than other agencies of disturbance and change, the ability to adapt and respond appears to be manifest in developing world communities if there is ‘head room’ (Tompkins and Adger, 2004) for adaptation to occur at multiple temporal and spatial scales. ‘Head room’, which is synonymous with the ‘room for manoeuvre’ concept of Clay and Schaefer (1984), may embrace real tangible space, economic space or policy space. For communities and systems that are agriculturally reliant, climate change impacts in the developing world may in general be regarded as reducing environmental opportunities (e.g. Tol et al., 2000), although many case studies indicate that adaptation within agriculture can be opportunistic and can have multiple facets that do not rely on the availability of physical space (Mortimore and Adams, 2001; Scoones, 2001; Tiffen et al., 1994). The ability to diversify beyond and within natural-resource reliance is clearly alive and active at present in the developing world, as witnessed by the many studies that exist of livelihood diversification. Economic space and capacity for diversification beyond and within natural-resource use is also needed, as is policy space that allows local level innovations and responses to evolve, as illustrated by the case studies from southern Africa that have been outlined.

These observations would suggest that at the national and international levels, policy responses to climate change should be oriented towards creating or facilitating the emergence of ‘head room’ thus enabling, rather than inhibiting, local and regional level adaptation options. Clearly, international responses to climate change, including the mitigation of greenhouse gas emissions, must not compromise the development process if international justice is to attain fair outcomes (cf. Kates, 2000). Advocating the creation of head room is not to suggest a lighter touch to climate change adaptation policy, nor vagueness, nor inaction. Rather it calls for recognition of the need to *create* space, and the right kind of space, and to *facilitate* appropriate, innovative and creative adaptation, that retains principles of equity and social justice at its core.

One approach to investigating how responses to climate variability and change occur in reality is to focus on analogues: the study of past and present responses to climate variability or change in a search for adaptation insights. There are acknowledged problems with this approach, for example, the uncertainty of future change making comparison with past practice problematic (Adger et al., 2003b). There is also a case to suggest that climate change and climate variability should not be viewed as separate processes, and that connecting near-term variability and long-term change provides a means to engage stakeholders in adaptive resource management strategies that are meaningful to their real-world experiences (Washington and Swann, in

press). Tompkins and Adger (2004) argue that this approach, of collaborative resource management and decision making, is extremely pertinent to developing climate change adaptation strategies that reduce vulnerability, increase resilience and improve well-being among natural-resource-dependent groups. In doing so they inadvertently develop a case that adaptation to climate change is not necessarily ‘special’ in relation to adaptation to other external disturbances.

This is neatly demonstrated through an example drawn from Berkes and Jolly (2002). In response to decades of climate change, the Inuit in Canada changed species hunted, changed timing and methods of hunting, and altered food sharing networks and intercommunity trade. New co-management institutions emerged creating linkages across local to international scales. These responses to climate change are, however, remarkably similar to the responses of people in the Kalahari of southern Africa to changes in government policies over a similar multi-decadal time scale. During the last few decades, the Basarwa (also known as San, who are traditionally hunters and gatherers) have also changed species hunted, altered the time of year when they hunt, as well as the frequency and duration of hunting trips (Kent, 1996; Osaki, 1984). Increasingly, they have become involved in co-management schemes bringing them closer to complex networks that link local and global issues in diverse ways (Twyman, 1998). Yet these adaptations are principally in response to policy change, not climate change.

A region where significant insights into adaptation to climate and policy disturbances can be gained is the Sahel in West Africa. While Adger et al. (2003b, p. 187) refer to this region as showing ‘the most pronounced example of variability’ over a multi-decade timescale, i.e. a decline in rainfall between 1961 and 1990, this might be considered a real example of actual modern climate change (Hulme, 2001). Studies in this region illustrate how agricultural practices have changed and social and economic systems have been dynamic enough to allow individuals to adapt flexibly to climate change (e.g. Mortimore and Adams, 2001; Adger et al., 2003b). Tompkins and Adger (2004) refer to this as ‘social resilience’, and consider it as a fundamental necessity for individuals, communities and societies to adapt or respond to climate change. However, few attempts have been made to look at this issue in terms of equity and social justice at the sub-national level, and thus there remains a relative lack of attention to climate change equity and justice issues relating to natural-resource users in developing areas (cf. Smit et al., 2001).

Beg et al. (2002) indicate that there may be useful synergies between the UNFCCC and other international conventions such as the UN Convention to Combat Desertification (UNCCD) and the Biodiversity Convention in achieving successful regional and local outcomes

that facilitate sustainable development. In this context the UNCCD is worthy of consideration in the light of justice issues, since it places significant emphasis on local actions and empowerment for its success and stakeholder inputs were important at the negotiation stage (Corell, 1999; Thomas, 2003). A cornerstone of the UNCCD is the production of National Action Programmes (NAPS) that have a considerable emphasis on bottom-up strategies of consultation, empowerment and activity, and a placement of anti-desertification strategies and activities within a framework of sustainable resource use and development. The issues of scaling from global to local in the UNCCD may in practical terms be rather problematic (Scoones and Toulmin, 1999), an issue which is equally pertinent to the UNFCCC. The actual engagement of local communities and bodies in UNCCD NAP production also appears to be highly variable, with case studies in progress indicating that consultation can be cursory and wider national policy frameworks prohibitive of effective integrated programmes that genuinely facilitate local empowerment.

This process of facilitation is highly complex. The case of distributive justice in Botswana's dryland mixed-farming system has illustrated how policies can potentially open up spaces for adaptation, in this case livelihood diversification. This was successful in south east Botswana but the narrow interpretation and application of the policy in south west Botswana restricted the 'head room' available for diversification, and thus inhibited livelihood adaptation. Conversely, the lack of policy intervention in the case of equity and empowerment in Namibia's communal rangelands, demonstrates that if no direction is provided, the principles of equity and procedural justice can be severely compromised at the local level, albeit in the name of empowerment. These two cases demonstrate the need for 'spaces of adaptation', but critically show that careful facilitation and guidance is needed if fair and just outcomes are to be achieved.

Empowerment is regarded as a key element of creating equity in decision making (WorldBank, 2000b), and as central to reducing vulnerability (Skoufias, 2003; Tompkins and Adger, 2004). However it needs to be coupled with notions of procedural and distributive justice within all levels of decision making. It is not sufficient to regard the creation of space for empowerment as a successful and just achievement in dealing with climate change impacts, since local empowerment is not a simple recipe for the generation of just and equitable outcomes at community and household levels. The issues of scale raised by adaptation to climate change themselves generate a range of complexities for the processes necessary to engender equity and justice. These include the relationships between global processes (including emissions effects,

international conventions, etc.), national responses and local outcomes, and particularly the effects of national decisions and policies on local opportunities and abilities to adapt.

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