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Abstract

Adaptation to climate change presents dilemmas of justice to the international community, including those around the responsibility of developed countries to assist developing countries in adapting to changing climate. We propose a framework for analysing justice issues in these contexts and examine justice implications of international environmental law on adaptation. We argue that adaptation involves both distributive and procedural justice; the former focusing on the incidence of consequences of adaptive responses and the latter on how decisions on adaptation are made. Moreover, both consequentialist and deontological concerns must be recognised in the two areas of justice. Adaptation is comprised of inaction and proactive and reactive responses at the international, national, local and individual levels. Inaction at higher levels delegates the responsibility for adaptation to lower levels, and higher-level responses influence alternatives that are available at lower levels. Justice is thus always implicit in the choice of adaptive responses. We discuss how international law on adaptation expresses a commitment to assist developing countries but does not provide a clear foundation for it and does not resolve how the burden of funding ought to be shared and how the adaptation funds ought to be distributed. The Marrakech Accords of the Framework Convention on Climate Change have increased the emphasis on procedural justice, such as the role of developing countries in decisions on adaptation. While creating ways to acknowledge and hear developing country and local voices, the recent legal changes do not create full rights to participation in decision-making on adaptive responses.

Keywords

Climate change, adaptation, justice, UN Framework Convention on Climate Change

1. Introduction

Adaptation to climate change presents formidable dilemmas of justice to the international community. Anthropogenic climate change is caused predominantly by greenhouse gas emissions of developed countries, while the climate change impacts will disproportionately burden developing countries. The debates on 'who suffers what' also often focus on the differential effects of climate change on the nation states, because the impacts of climate change are typically presented and projected at the global, continental or national levels. Yet local communities face differential climate impacts and have different vulnerabilities. National governments do not necessarily forward their interests equally. Therefore, local communities that are likely to be exposed to significant climate change impacts yet have little power to influence international efforts to mitigate greenhouse gas emissions. These dilemmas are identified both in scientific communities reaching out to assess the societal consequences of observed and projected climate change (summarised in IPCC, 2001) and by those who recognise the potentially significant impacts that climate change may have on development processes (e.g. Adger et al, 2003; Ribot et al., 1996; Barnett, 2001a; Kates, 2000). The dilemmas of justice are, we argue, more immediate and in some senses more acute in resource dependent communities and economies in the developing world.

The debates within the UN Framework on Climate Change (UNFCCC) and elsewhere ignore many other justice concerns. For example, how do adaptive responses impact differentially on individuals and social groups? Do adaptation strategies alleviate or reinforce uneven distributions of power between and within social groups? It is essential to understand these and other justice implications of adaptive strategies for both moral and instrumental reasons. Unjust adaptive strategies are less likely to be adopted and ineffective if they are adopted (see Kates, 2000).

In this paper we discuss theories of justice that are pertinent to the debates on justice in adaptation. We do so because there have been calls for greater attention to justice in the context of adaptation (Adger, 2001; Kates, 2001). We also outline a framework for analysing justice issues in adaptation. The framework of analysis we suggest demands attention to:

- *Distributive justice* – how the beneficial and adverse effects of humanly induced climate change and adaptation to climate change impacts are distributed across groups of people and time (see Elster, 1992; Miller, 1992; Young, 1994). Equity and fairness are common concepts of distributive justice.
- *Procedural Justice* –how and by whom decisions on adaptive responses are made (see Anand, 2001). Recognition, participation, and legitimacy are common concepts of procedural justice.

This framework is a pluralist one, because we argue that both distributive and procedural justice can be based on several alternative foundations. Some approaches to justice emphasise one overarching consequence (such as human welfare) or principle (such as equality) as decisive when resolving dilemmas of justice. Other more pluralist approaches recognise that multiple consequences or principles may be needed simultaneously to achieve justice. We argue that, in the context of adaptation, there are often good reasons to resolve dilemmas of justice by simultaneous use of complementary rules. For example, there are good reasons to adapt so as to improve the situation of most vulnerable people. Other important concerns such as security, avoidance of danger, and the survival of non-human species can be protected simultaneously by using complementary rules of justice.

In what follows, the second section discusses theories of justice and distils their lessons for the analysis of justice in the context of adaptation. The third section discusses adaptation to climate change in order to mobilise the analytical framework for empirical enquiries. The fourth section examines the justice implications of international environmental law on adaptation. The concluding section discusses the practical implications of our observations and arguments and identifies future research needs.

2. Justice in Adaptation to Climate Change

In comparison to adaptation to climate change, mitigation of greenhouse gas emissions presents a fairly well-delineated dilemma of justice for the international community: that of how to allocate rights to emit greenhouse gases to the global atmosphere. Yet the debates on, and analysis of, justice in adaptation could potentially benefit from the debates on justice in mitigation. For example, a vast amount of literature already exists on the latter theme (see e.g. Azar, 2000; Cazorla and Toman, 2000; Helm and Simonis, 2001; Jamieson, 2001; Müller, 2001; Neumayer, 2000; Ringius et al., 2002; Rose et al., 1998; Toth, 1999; Vira, 2002; Wiegandt, 2001).

The literature on justice in mitigation frames the allocation of emission rights and mitigation duties mainly as a problem of distributive justice, reflecting a more general tendency among political and economic theories to frame all moral dilemmas narrowly as questions of just distribution. Following Jamieson (2001), commonly suggested ways to resolve the justice dilemma in mitigation include:

- To allocate to each country equal per capita emissions
- To allocate to each country emission rights according to their historical responsibility
- To allocate emission rights according to the countries' ability and willingness to pay
- To use a mixture of above described rules

These four alternatives are all manifestations of a discourse of global managerialism (Goldman, 1998; Adger et al., 2001) that holds that fully defined exclusive property rights over the global atmosphere are an essential starting point for justice. The alternatives are based on different rules of equity, serve as baselines for market-based strategies for greenhouse gas mitigation, and inform future post-Kyoto type agreements (see Sagar, 2000). However, the four alternatives do not exhaust all the ways to resolve justice dilemmas in mitigation of climate change. As O'Neill (2001a) has argued, individuals and communities often express their obligations toward others through the explicit *denial* of exclusive rights over certain goods. From this viewpoint, the acceptance of fully defined exclusive property rights over the global atmosphere would endorse a particular distribution of power.

Justice also encompasses a broader terrain than that of just distribution. Therefore, the use of narrow framework of distributive justice as a guideline to resolving moral dilemmas may omit relevant justice concerns and complicate rather than simplify their resolution. In what follows, we will discuss justice in greater detail to widen the focus of analysis.

2.1 Theories of justice

Müller (2001) has argued that decisions concerning climate change are morally ambiguous. There are indeed a number of competing approaches to forming and interpreting normative arguments concerning justice. We have mapped alternative approaches to distributive and procedural justice in Table 1. The table indicates that the frequently cited utilitarian theories of justice are monistic examples of a broader category of consequentialist theories, which also include pluralist theories. The common feature of these theories is that they base notions of justice on the goodness of outcomes. Deontological theories -- of which the rights-based approaches are an important example -- offer an alternative strategy which considers justice a matter of following just principles or rules. Deontological theories can either emphasise one supreme principle, such as equality or respect of rights, or acknowledge that different principles or rules may be needed in different contexts.

Table 1. Alternative distributive and procedural theories of justice

Area of Justice	Consequentialist theories	Deontological theories
Distributive Justice	Monist theories such as utilitarianism and welfarism identify a supreme good to which other goods are reducible, and frame justice as a matter of just distribution of this supreme good. Pluralist theories acknowledge the existence of a number of irreducible goods. Justice becomes complex matter of possibly inconsistent and conflicting notions of what is good.	Deontological theories can suggest the use of universal rules (such as that of simple and unqualified equality) which parallel the thrust of monist theories of distributive justice. Deontological theories can suggest the use of different rules (such as desert or need) depending on the context. Walzer's (1983) complex equality would accommodate such a set of rules.
Procedural Justice	Monistic theories of procedural justice, such as rule-utilitarianism view the just procedures as a question of maximising the overall good (utility or welfare) by the choice of procedures. Pluralist theories would identify a variety of good consequences, which should inform the choice and assessment of procedures.	Rights-based theories can result in a mirror-image of monistic theories when respect of rights (whatever they are) is the supreme concern that informs the choice and assessment of procedures. Other deontological theories of procedural justice could identify a number of rules and principles that inform the choice of procedures.

The worldviews of consequentialist and deontological notions of justice are in conflict in many ways. As Rayner and Malone (2000) argue:

> 'the distinction between utilitarian and rights-based approaches to equity is not merely an artefact for the history of ideas or a scholarly distinction of mere academic interest. It actually lies at the heart of the crisis of governance that pervades the local, national, and global communities … that is, the tension between interdependence and independence, between pursuit of the greatest happiness of the greatest number, and the assertion of individual, local, or ethnic rights that ought not to be violated even at the expense of the aggregate good' (Rayner and Malone, 2000, p.219).

Welfare economics is an approach to justice which considers welfare or utility as the supreme consequence on which judgements of justice can be based. There is no lack of alternative rules of justice within welfare economics. For example, the Pareto test justifies only those changes to *status quo* that do not harm anybody and benefit at least one individual. The potential compensation test of Kaldor and Hicks in turn identifies as fair those distributions which maximise social welfare, even if some individuals are actually worse off, while the maximin criterion of Rawls (1971) guides us to choose so as to improve the lot of the worst off. While these concepts have been mostly applied to distributive justice, they are also pertinent to procedural justice. For example, welfare considerations can be used to promote the use of such institutional solutions as trading systems, which give effect to ability and willingness to pay in decision-making and arguably are efficient and maximise social welfare.

While utilitarian theories give utility or welfare the position of a supreme good to which all other goods can be reduced, pluralist theories of the consequentialist kind deny reductionism and argue that there may be a number of irreducible goods that may demand different basis for justice in different contexts. For example, human welfare, health, absence of danger and the preservation of non-human species could be considered outcomes that mark what is just in the area of distributive justice. Similarly, outcomes such as self-determination could underlie judgements concerning procedural justice. It is often possible to frame concerns for these and other valued outcomes also as matters of rights, which takes us to rights-based approaches.

Rights-based approaches to justice resonate with evolving ideas of rights to economic security espoused by, for example, Sen (1999) in his *Development as Freedom*. They could focus on rights to citizenship, well-being, security or a place of settlement, for example (Barnett, 2001b). Rights-based notions of justice are sometimes considered problematic, because achievements in international political arenas often require compromises and bows to powerful interests. It is also difficult to derive obligations on, or specific prescriptions from, particular rights in a manner that enables to implement them (Paterson, 2001). For example, a recognition of a right to absence of climate dangers would be difficult to implement without a legitimate procedure for defining 'danger' in each and every circumstance.

We argue that only a broadly pluralist approach that can acknowledge justice concerns based on all of the foregoing approaches can adequately encompass all justice issues related to adaptation. In what follows, we outline such an approach.

2.2 Towards a framework of justice in adaptation

The framework we propose for analysing justice issues in the context of adaptation is broadly pluralist and pragmatic. First, we do not distinguish political from moral choices: all choices are moral and have justice implications in the sense that they need to be informed by some values that guide the comparison of alternatives and choice between them. Second, we recognise that different choices are informed by different values and that oftentimes compromises have to balance between multiple standpoints. As Müller (2001) has argued:

> ‘In the context of moral decisions, things are not simple and the key to resolving inconsistent conclusions is not to reject moral theories, but to try and find a morally acceptable compromise between them’ (Müller, 2001, p.275).

As we will discuss in greater detail in the following section, adaptation to climate change consists of incremental individual and collective choices and responses that are taken at different levels of action in the context of particular (present and predicted) climate change impacts, other social concerns and priorities, and the existing institutional framework that engenders a particular distribution of resources, wealth and power. The incremental nature of adaptation -- in contrast to mitigation -- may to an extent obscure the justice issues related to it. However, several dilemmas do exist in the context of adaptation in both areas of justice.

In the area of distributive justice, the central dilemmas include:

- The foundation and nature of responsibility of developed countries to assist developing countries in adapting to changing climate and, as a consequence, the amount of assistance that would be just;
- Distribution of the burden among developed countries of making funds available for assisting developing countries to adapt.
- Distribution of funds for assisting developing countries to adapt to climate change. Are these distributive decisions to be based on present or future vulnerability, ability to adapt, or some other criteria?
- Distribution of (intended and unintended) beneficial and adverse consequences of adaptive responses. Who benefits from adaptive responses and who loses?

The central dilemmas of procedural justice in turn include:

- Whose interests are taken into account in planning and decisions related to adaptation, and how? Are nation-states the only entities whose interests matter, for example?
- Who can participate in planning and decisions related to adaptation, and how? Is participation in decision-making limited to nation-states, for example?
- How much influence different parties have on plans and decisions, and on what basis? For example, can non-governmental organisations and local communities directly influence planning and decisions, or do they only have informal ways to do so?

There clearly is a need for a welfarist element in climate justice in the context of adaptation (see Table 2). Distributive justice requires strategies that are beneficial at least in some sense. It would appear attractive to frame distributive justice in terms of vulnerability, rather than simply proxies of aggregate welfare. Namely, vulnerability to climate change does not simply map onto the distribution of wealth or income -- it also brings in issues such as access to resources, institutional dynamics and power (Bohle et al., 1994; Adger, 2001). A rule that bases justice on vulnerability could be one based on the Rawlsian maximin principle: to maximise the benefits to those who are most vulnerable to climate change, for example.

Distributive justice in adaptation probably also needs to acknowledge other concerns in addition to distribution of utility or welfare (se Table 2). For example, security and the absence of dangerous climate change impacts can be understood as hallmarks of justice that are valuable independently of their welfare consequences. Alternatively, security and absence of danger can be framed as rights. The Framework Convention's Article 2 indeed treats the integrity of climate system and the absence of dangerous climate change either as a valuable thing in itself or its preservation as a guiding principle. Obviously, the avoidance of danger cannot easily be separated from vulnerability: avoidance of ‘danger’ reduces vulnerability. Hence concerns for security and the absence of danger are interdependent with concerns for the distribution of welfare. Moreover, vulnerability and danger can be defined in various

ways because they have both objective and experiential dimensions (Kasperson and Kasperson, 2001). This brings distributive and procedural justice into picture simultaneously.

The right of non-human species to continued existence can also be acknowledged as part of climate justice. This could be warranted because climate change impacts will exacerbate trends which are already threatening the stability and resilience of many key ecosystems, over and above the threat to presently endangered individual species (Scheffer et al., 2001).

Table 2. Justice issues in adaptation to climate change

Justice issues	Examples of justice rules	Questions and problems
Distributive justice	*Utilitarian rules*	
	- welfare maximisation	Commensurability of types of benefit
	- maximax; most able adapt	Who defines adaptive capacity and how?
	- maximin; most vulnerable prioritised	Who defines vulnerability and how?
	Other consequentialist rules	
	- avoidance of climate danger	Who defines danger and how?
	Deontological rules	
	- equality of burden-sharing	Equality of impacts, exposure, or adaptation?
	- existence right of non-human species	Who defines rights?
Procedural justice	*Utilitarian rules*	
	- rules that give effect to preferences and ability and willingness to pay	Why not willingness to accept compensation?
	Other consequentialist rules	
	- self-determination; affected parties only	Who is internal and who is external?
	Deontological rules	Why not recognise the intensity of interests of e.g. most vulnerable?
	- equality	

Procedural justice to an important degree underlies the legitimacy of UNFCCC, for example. The convention enjoys legitimacy among the Parties to the Convention to the extent that diverse voices are heard and accounted for in the deliberations. Procedural justice also underlies the legitimacy (or lack thereof) of the government in preparing and implementing a strategy for adaptation. Legitimacy of the government is tied to the legitimacy of the process by which the strategies and plans are developed -- the character of consultation process and participation of stakeholders. In the case of individual adaptive responses, say within a fishing community, the actions of individuals must be legitimate within the pertinent community. Here the issues of procedural justice may include the absence of effects on others or, in the case of presence of such impacts, informing the affected parties and obtaining their consent.

Central issues of procedural justice such as recognition, hearing and participation may be relevant to individual adaptive choices when they impact on others and certainly concern collective choices. An additional important issue is the explicit or hypothetical consent to the

decisions. Explicit consent is more likely in the case of individual adaptive choices and collective choices which do not involve representation. Other collective decisions regarding adaptation that are based on representation frequently involve implicit consent (Rayner et al., 1999). For example, purchasing a house in a flood prone area (assuming knowledge of the risk) involves the acceptance of risk, while government planning to minimise flood risks implies the consent of individuals to government for making such adaptations on their behalf.

As already noted, distributive and procedural justice are not independent of each other. For example, the rights of future generations and non-human species involve issues of procedural justice in addition to simply accounting for impacts upon them. Future generations and non-human species have 'problems for the very possibility of representation' in environmental decision-making (O'Neill, 2001b). Their representation by presently living humans is also problematic because perceptions of nature and beliefs in its intrinsic right to be preserved are unevenly distributed in society (Dryzek, 2000). Yet the systemic, profound, and global nature of climate change itself calls for such concerns to be recognised somehow.

3. The Topography of Adaptive Responses

Adaptation to climate change can be based on uncoordinated choices and actions of individuals, firms and organisations or on collective action and choice at local, national, international as well as intermediate and multiple levels (see Table 3). The distinction between individual and collective responses can be based on different theoretical approaches to these varieties of choice. It is also important because collective choices bring up issues such as representation, participation, procedure and assent that do not characterise individual choices. To date, research on adaptation to climate change has focused on empirical differences in adaptive responses (see e.g. Pielke, 1998; Smit et al., 2000; Smit and Skinner, 2002; Smith, 1997; Smithers and Smit, 1997; Tol et al., 1998). However, for the analysis of justice, it is more important to understand who decides on adaptive responses and how adaptive responses are timed with respect to climate change impacts (see Burton et al., 2002).

We emphasise the existence of multiple levels of adaptation for several reasons. First, we want to remind that adaptation is not an activity that takes place exclusively at international political arenas: it concerns national and local governments and individuals and organisations both in developed and in developing countries. We also remind that individual adaptation is *not* autonomous adaptation (Adger et al., 2003). Individual and collective responses are interdependent because the set of alternatives available for individuals is determined by antecedent collective action and because collective action is taken specifically to alter the choice sets faced by individuals. That is, adapting individuals are constrained by institutions and individual and collective responses of others. They are also facilitated by networks and social capital which are collective goods in the context of resource use and decision-making (Adger, 2002). Thirdly, we argue that there is no right or optimal level for adaptive actions. We acknowledge that climate change impacts do influence the scope of technically feasible adaptive responses. However, justice concerns may suggest a change in the level of response. Moreover, responses at multiple levels rather than at one level may frequently be needed to adapt adequately and justly to climate change impacts.

With regard to the timing of adaptive responses, there are three alternatives (see Table 3). Proactive responses are characterised by anticipation and planning so as to best deal with climate change impacts. Reactive responses are taken after the realisation of climate change

impacts but they are, nevertheless, not necessarily *ad-hoc* as is sometimes argued. It may be sometimes rational and justified to postpone adaptive responses and to take action when information on alternatives has become available or has improved. Finally, inaction may also be chosen, implicitly or explicitly, as a response to climate change impacts. The type of climate change impact, vulnerability and justice considerations influence the timing of adaptive responses. Moreover, proactive and reactive responses frequently complement each other. Proactive responses to water scarcity such as the building of additional storage capacity, for example, complement and facilitate reactive responses such as rationing of water. Yet proactive and reactive measures are unlikely to fully adapt people to climate change impacts: they, together with inaction, will determine which residual impacts are realised.

Table 3. A typology of adaptive responses to climate change impacts with examples on responses in the context of agricultural productivity and food security.

Response	Proactive	Reactive	Inaction
International	Guidelines for national adaptation strategies, support for development of new crop varieties	Food aid measures	No responses are taken to instigate context-specific behavioural responses
National	Grain storage, investments and changes in agricultural policies to adapt crop mix and agricultural practices to changing climate	Changes in tariffs and fiscal policy to augment food imports; disaster relief and food aid	No small-scale proactive investments in infrastructure that confer only local adaptive benefits
Local	Small-scale infrastructure investments for groundwater recharge, irrigation and flood protection, local seed banks, and coordination of adaptive responses	Collective action and reciprocity in overcoming obstacles in agricultural production and mitigating the effects of shortages of food and water	Migration ignored as an adaptive response
Individual	Diversification of livelihood, investment in human capital, physical capital, and alteration of agricultural practices	Migration	Adjustment of increased vulnerability and/or reduced welfare

Adaptive responses include changes in public policies or institutional arrangements that alter the choice set of individuals or their evaluation of choice alternatives. Examples include the elimination of subsidies for agricultural products that hinder adaptation and the provision of financial support to new lines of agricultural production that adapt food production to changing climate. Adaptive responses also include public and private investments in infrastructure and other durable goods such as water storage capacity, flood protection, and improved buildings. Finally, adaptive responses include behavioural changes, such as changes in dietary or cooking habits so as to better cope with climate change impacts. Adaptive responses can be complementary or supplementary. When complementarities are present, policies may make new investment opportunities and behavioural changes feasible, for example. When alternatives are supplementary, the use of one alternative – such as the

provision of flood insurance – may compromise other alternatives such as public or private investments in flood protection or relocation (see Fankhauser et al., 1999).

The analysis of justice implications becomes complex when all levels, timings and types of adaptive responses are considered simultaneously. Adaptation to reduced agricultural productivity as a result of warming climate and increased incidence of drought provides a good example (see Table 3; see also Kandlikar and Risbey, 2000; Risbey et al., 1999). The international community may decide to foster proactive national adaptation strategies and policies and the development of new varieties of crop plants. Alternatively, or perhaps additionally, international community may provide food aid and disaster relief when crops fail and famine is imminent. National governments may expand the storage of grain, change agricultural policies to alter the mix of cultivated crops or invest in infrastructure in order to extend the scope of markets and the capacity of individuals to improve their food security on their own, for example. National governments can also decide to deal with some climate change impacts as they are realised and to ignore others, passing the responsibility on to local communities and individuals. Local communities may undertake small infrastructure investments for groundwater recharge, irrigation and flood protection, for example, as well as to establish local seed banks and to co-ordinate adaptive responses. Individuals can in turn use diversification, investments and behavioural changes in proactive manner while using migration, for example, as a reactive response. Of course, individuals may also choose, or be forced to, absorb the residual impacts.

It is obvious from the foregoing example that the set of adaptive responses actually chosen has important justice implications. The choice of the levels and timings of responses influences what alternatives exist and what their implications are for the adapting units. The level and timing of responses also distribute the costs and benefits of adaptive responses in particular ways. Finally, the choice of level and timing of adaptive responses also includes a particular set of decision-making procedures, with attendant implications for procedural justice. Thus all decisions -- whether individual or collective; or whether local, national or international -- concerning adaptation have justice implications.

We conclude that the analysis of justice in adaptation to climate change requires initially a narrow focus. For example, it is possible to analyse the justice implications of responding to rising sea levels in different ways in, say, the Netherlands. However, we cannot at once present a comprehensive view of justice issues involved in adaptation to raising sea levels all over the globe or, for that matter, of justice issues involved in adaptation to all of the climate change impacts in the Netherlands. This is because judgements concerning justice issues are by necessity contextual. A more encompassing view of justice implications of adaptation can be attained by carrying out context-sensitive analyses of justice issues involved in adaptation to different climate change impacts and by generalising on their findings.

4. Justice and International Environmental Law on Adaptation

International environmental law on adaptation to climate change has emerged in the context of UN Framework Convention for Climate Change (UNFCCC). The primary sources of international environmental law on adaptation to climate change include the text of the convention itself, the Kyoto Protocol, and the decisions of the Second Session of COP6 held in Bonn and COP7 held in Marrakech (see also Melkas, 2002; Verheyen, 2002). In what

follows, we will first discuss the substance of this law and then analyse its justice implications.

4.1. International environmental law on adaptation

The UNFCCC establishes a framework for international cooperation on climate change. Mitigation has dominated international cooperation in the context of the convention but the need for adaptation is recognised by the convention and adaptation is currently receiving increasing attention. The Convention's Article 2 indicates that the stabilisation of greenhouse gas concentrations in the atmosphere should take place within the time-frame that does not threaten food production and enables sustainable economic growth. This goal recognises that there are limits to the resources that can be allocated for mitigation: it should not compromise food production and sustainable economic growth. The goal can also interpreted to mean that mitigation efforts have to be serious enough to maintain climate change impacts within adaptive capacity, so as not to endanger food production and sustainable economic growth.

The Convention's guiding principles are expressed in Article 3, where Paragraph 2 directs developed countries to consider the specific needs and special circumstances of particularly vulnerable developing countries. Paragraph 3 of the same article formulates a duty for all parties to "take precautionary measures that *anticipate*, prevent or minimise the causes of climate change and *mitigate its adverse effects*" (emphasis added). Paragraph 3 also indicates that these responses ought to be cost-effective so as to ensure global benefits at the lowest possible cost. This principle is, however, more pertinent to mitigation efforts than to adaptive responses, because the latter often provide only local benefits and are usually specifically undertaken with local benefits in mind.

The Convention's Article 4, Paragraph 1(e)-(f) commits the parties to cooperation in preparing and planning for adaptation and requires the parties to take climate change considerations into account in their economic, social and environmental policies so as to minimise adverse effects on public health, environmental quality and on mitigation and adaptation measures. The Article's Paragraph 3 commits developed countries to cover the costs of developing countries in meeting their obligations, while Paragraph 4 commits developed countries to assist particularly vulnerable developing countries in meeting the costs of adaptation. Paragraph 7 underlines that the degree to which developed countries fulfil these financial commitments will determine how developing countries can fulfil their obligations, recognising that the eradication of poverty and social and economic development are their primary concerns. Paragraph 8 demands attention to the specific needs and concerns of developing countries, listing small island states, countries with low-lying coasts, arid countries and countries dependent on fossil fuels as requiring attention when deciding on financial assistance, insurance and the transfer of technology. Paragraph 9 presents a similar requirement for acknowledging the special needs and circumstances of the least developed countries.

The climate change convention's adaptation provisions have been specified in the Kyoto Protocol and in the decisions of the conferences of the parties to convention. Kyoto Protocol's Article 3, Paragraph 14 commits the Annex I countries to meet their emission reduction targets so as to minimise adverse social, environmental and economics consequences for developing countries, referring specifically to those countries meant by the convention's article 4, paragraphs 8-9. Article 10, Paragraph 1(b) of the Kyoto Protocol directs the non-Annex I parties to the protocol to formulate, publish and regularly update national

programmes for adaptation to climate change. The article directs the parties to include information on these programmes and measures into their national communications and into their other reports. Decisions of the conferences of the parties held in Bonn and Marrakech have invited the parties to prepare and submit National Adaptation Programmes of Action (NAPAs) according to the issued guidelines (see Decision 28/CP.7). The NAPA guidelines require, among other things, that the NAPAs ought to be based on a multidisciplinary approach and on extensive public participation and consultation.

Article 12 of the Kyoto Protocol – which establishes the Clean Development Mechanism (CDM) -- provides that a share of the proceeds of CDM projects should be used to assist particularly vulnerable developing countries to adapt. COP6 decided in Bonn to establish an adaptation fund to receive the proceeds and to assist adaptation projects in developing countries. The fund is to receive 2 percent of the proceeds of CDM projects (excluding projects undertaken in the least developed countries) in addition to other funds provided by the Annex I countries for the purpose. These decisions have recently been adopted at COP7 in Marrakech (see Decisions 5/CP.7., 6/CP.7., 7/CP.7., 10/CP.7., 17/CP.7., 27/CP.7.). COP meetings in Bonn and Marrakech have also established the special climate change fund and the least developed countries fund. The special climate change fund will support, among other things, adaptation activities and capacity building while the least developed countries fund will support the work programme of the least developed countries under the convention, including the preparation of NAPAs (Decision 5/CP.7.). These two funds will be managed by the Global Environmental Facility (GEF) and be based on the funding invited from the Annex I countries. Several annex I countries have indeed pledged funding to the funds.

We will now move on to analyse the justice implications of international environmental law on adaptation to climate change.

4.2. Justice issues in international adaptation framework

The UNFCCC, the Kyoto Protocol, and COP decisions resolve that developed countries have to assist developing countries -- particularly the vulnerable and least developed ones -- to adapt by providing finance, insurance and the transfer of technology. The convention's preamble anchors this resolution to an acknowledgement of the importance of the widest possible cooperation by all countries "in accordance with their the common but differentiated responsibilities and respective capabilities and their social and economic conditions." While all provisions of the convention and decisions made under it have justice implications, we will focus on the issues that surround assistance to developing countries for adaptation.

The convention articulates a commitment to assist developing countries to adapt that is based by the convention text on a forward-looking principle of equity: all countries are responsible for managing atmospheric resources according to their ability and circumstances. The text does not recognise any historical reasons for such assistance. That is, the convention avoids framing assistance as compensation to developed countries for the already occurred and prospective injuries caused by the use of fossil fuels in the developed countries. However, the framing of assistance in the text of the convention has not remained uncontested. For example, the Brazilian proposal for allocating emission rights is explicitly based on historical responsibility for climate change (see Neumayer, 2000). Historical responsibility could also be the basis for assistance to developing countries for adaptation.

The justification indicated by the text of the convention for assistance to developing countries could be explained by the incentives created by alternative principles of justice. Framing assistance as compensation would give incentives to rent-seeking -- the extraction of largest possible transfers from the developed countries. One important instrument for such rent-seeking would be to hold out from fulfilling the obligations under the convention. This could render the climate change regime ineffective. In contrast, "common but differentiated responsibility" creates incentives for participating in the climate change regime: developing countries obtain assistance in proportion of their involvement. Incentive effects are undoubtedly important for the functioning and effectiveness of climate change regime. However, the choice of principles of justice solely on the basis of their incentive effects is problematic. In the forward-looking sense, the climate change regime's common but differentiated responsibility may indeed be fair and equitable, but it fails to address past injustices. Yet the relevance of historical considerations is substantiated by the fact that they are frequently evoked in climate change debates -- as exemplified by the Brazilian proposal. This is not to say that responsibility for climate change must be given full force and result in duty to fully compensate for the injuries. However, it is to say that past injustices have to be addressed and resolved in some way.

It is unlikely that developed countries will easily accept full legal liability for the injuries caused by climate change impacts. Usually the arguments rejecting liability have been based on the difficulty of attributing climate change impacts to the antecedent actions of developed countries. There are also a number of legal doctrines regarding to injuries, some of which would not entail liability for the injuries created by climate change impacts. For example, common law usually requires proof of negligence or unreasonableness for award of damages, and both of them would be difficult to establish in the case of carbon dioxide emissions to the atmosphere in the distant past. This does not mean that developed countries should be vindicated, however.

First, strict liability provides a foundation for compensation. Strict liability is usually applied to activities which are known to be dangerous. While it would not necessarily apply to all historical emissions (because they were not known to be dangerous), it would apply to post-UNFCCC emissions. The convention itself recognises the dangers of interfering with the climate system, and climate change impacts *can* now be attributed to greenhouse gas emissions. Moreover, alternative views of compensation exist which can find a middle ground between no assistance and full legal liability. Compensation is frequently framed as a payment determined in the court *ex post* in exchange to the right -- such as a right to unchanged climate -- the defendant had appropriated without legal authority. The idea is that there is a fair price for the right in question. An alternative basis for compensation is to restore the dignity of the injured party. This is pertinent especially when the injury -- such as the loss of limb or life -- is such that it cannot or *should not* be priced. That is, no exact relationship is established between the size of injury and the size of compensation -- compensation is made available to express sympathy and concern for the injured party. In the context of climate change, this reasoning would be particularly pertinent with regard to small island nations which face inundation by rising sea levels. Other developing countries can to some extent protect themselves from the adverse effects of climate change and common law recognises a duty to avoid unnecessary damage. Still, the restoration of dignity argument would provide an additional justification for assisting adaptation and the fulfilment of other obligations under the convention.

Originally the UNFCCC framed justice in the context of climate change almost exclusively in terms of distribution of wealth: justice was considered a matter of an adequate amount of assistance. Other consequentialist concerns apart from economic development and social welfare received relatively little explicit attention. The preamble of the convention recognises the importance of food production and, consequently, the preservation of human life independently of sustainable economic growth. The convention also instructs governments to take climate change into consideration in their policies so as to avoid adverse effects on public health and the environment and recognises that the assistance to developing countries is partly needed because of the priority of the eradication of poverty in developing countries. While the explicit attention to concerns for non-welfarist consequences has been scant in the climate change regime, these concerns have an important implicit role in the convention and documents that amend it. For example, references and guidance for planning for adaptation identify areas such as agriculture, forestry, water supply and coastal zones for attention in part because they are economically important and in part because they are intimately connected to nutrition, shelter and human well-being in general.

While it is important that non-welfarist concerns find at least practical expression in guidelines for attention and action, it remains a problem that these concerns are not addressed explicitly. The justification for looking at particular areas of life such as agriculture and water resources remains ambiguous and subject to competing interpretations. In part the explanation for the lack of explicit attention to non-welfarist concerns may be the overwhelming focus in the climate change regime on mitigation: mitigation is quite appropriately framed in terms of global distribution of wealth. However, adaptation presents in this respect different dilemmas. Adaptation has to do with local impacts of climate on people and their environments. Conventional notions of distributive justice work less satisfactorily in this context. Distinguishing between concerns for human life and health and economic development, for example, would provide a basis for refining planning for adaptation and prioritising some adaptation measures over others.

The original Convention relegated issues of procedural justice. The Convention established the conference of the parties as the supreme decision-making body in which parties are in principle equal. The Conference of the Parties can establish subsidiary bodies, rules of procedure, and rules of finance. On the basis of this authority, conferences of the parties have specified in greater detail matters of procedural justice. For example, the establishment of a least developed countries expert group (Decision 29/CP.7.) gives these countries more voice in planning for adaptation to climate change and in the identification and prioritisation of adaptation measures. The decision recognises its role as a matter of procedural justice by explicitly noting that the formation of least developed countries expert group does not form a precedence for the establishment of other expert groups to represent the viewpoints of other countries.

Procedural justice is also reflected in the guidelines concerning the preparation of NAPAs. These guidelines seek to broaden the scientific and popular base of NAPAs by requiring multidisciplinarity and extensive public participation and consultation. The concern that underlies these provisions is that non-transparent and unaccountable governments should not be able to dictate the content of the national adaptation programmes of action: a broad range of affected groups should have a say to their content and to make their interest to count. The emphasis on public participation and consultation is also linked to capacity building (see Decision 2/CP.7.) by providing both a rationale for capacity building and opportunities to exercise capacity. Another instance of concerns for procedural justice is to be found from a

motion to improve the participation of women in the representation of parties in bodies established under the Convention and the Kyoto Protocol (Decision 36/CP.7.).

The emergence of procedural justice on the agenda of climate change regime reflects the increasing attention to adaptation and the set of justice dilemmas it presents to the international community. Many adaptation measures will take place at the local level and all of them will have local impacts. There has to be a way to elicit information on local interests and circumstances as well as to enable meaningful participation of representatives of the local in internationally coordinated adaptation measures. The existing provisions create a basis for recognising and hearing developing country and local voices, but they do not provide for effective participation in decisions on adaptive responses. Procedural justice is likely to remain on the agenda as adaptation will gain in prominence in the climate change regime. For example, the distribution of assistance from the climate change fund and the adaptation fund for adaptation projects will present difficult dilemmas. How and by whom is the assistance to be allocated to eligible countries and to adaptive responses? Is assistance to be given on the basis of the merits of responses among all eligible countries or will a formula be used to ensure a desired distribution of funds across countries? Who assesses merits and develops formulas? Are all adaptive responses on equal footing and to be judged on the basis of their merits, so that public health projects compete for funds with agricultural and energy projects, or will quotas be established for specific kinds of adaptive responses? Who can initiate and implement adaptation projects – governments only or also businesses and NGOs?

A comparison of the framework of analysis that we presented above and the resolutions contained in climate change regime raises a few additional observations. The climate change regime is overwhelmingly focused on proactive responses by the international community and the national government. There is little recognition of and provisions for local and individual adaptive responses. This raises the question on the recognition and accommodation of local concerns that was already mentioned above. The regime also fails to address reactive responses despite some references to the possibility of developing a global insurance mechanism, though there is renewed interest in this option to secure international funding for necessary adaptation. Yet climate change will engender unanticipated impacts that demand rapid international and national responses. Anticipation of needs for reactive responses would offer additional relief for those who are confronted by famines or unprecedented extreme weather events. Until now, they have been left to be supported by what is offered by other international sources, national governments and non-governmental organisations.

5. Conclusions

We have proposed a framework for the identification and characterisation of issues of distributive and procedural justice in the context of adaptation to climate change. Our framework broadens the scope of analysis in comparison to debates on justice in the area of mitigation of climate change. Justice, both of outcome and process, is intertwined at the different scales of decision-making with the institutions and collective action mechanisms that actually undertake adaptation. We argue that the traditional framework of distributive justice is not adequate for a comprehensive analysis of justice in adaptation. Debates on distributive justice often collapse all justice concerns simply to those concerns over the distribution of welfare between involved parties. We argue that some consequences matter as distinct from welfare and that their incidence should form an independent area of analysis. Human life and health, societal security, and the continued integrity of the earth system are all important

justice imperatives and are elements that can be considered of importance quite independently of welfare. We further argue that a comprehensive approach to the study of justice in adaptation must pay attention to matters of procedural justice such as recognition, participation, fair process and moderation of the use of power.

Our analysis of the current international environmental law and guidelines on adaptation indicates that the climate change regime has been dominated by traditional concerns for distributive justice. Other dimensions of justice have gradually become more important and are likely to gain even more prominence as adaptation receives more attention in the international community. In part this transition relates to the fact that adaptation presents a different set of justice dilemmas than mitigation. In part the transition also reflects the fact that the UNFCCC laid down the constitution of the climate change regime, which is now gradually being detailed and complemented by ongoing decisions of the Conferences of the Parties, and which increasingly involves constituting adaptation.

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