



Check for updates

Article



Political Studies  
Association

Political  
Studies

# Compensating for Climate Change Loss and Damage

Political Studies  
2017, Vol. 65(2) 356–372  
© The Author(s) 2016  
Reprints and permissions:  
[sagepub.co.uk/journalsPermissions.nav](http://sagepub.co.uk/journalsPermissions.nav)  
DOI: 10.1177/0032321716647401  
[journals.sagepub.com/home/psx](http://journals.sagepub.com/home/psx)



Edward A Page and Clare Heyward

## Abstract

With the adoption of the Warsaw International Mechanism in 2013, the international community recognised that anthropogenic climate change will result in a range of adverse effects despite policies of mitigation and adaptation. Addressing these climatic ‘losses and damages’ is now a key dimension of international climate change negotiations. This article presents a normative framework for thinking about loss and damage designed to inform, and give meaning to, these negotiations. It argues that policies addressing loss and damage, particularly those targeting developing countries, should respect norms of compensatory justice which aim to make victims of unwarranted climatic disruptions ‘whole again’. The article develops a typology of different kinds of climate change disruption and uses it to (1) explain the differences between ‘losses’ and ‘damages’, (2) assign priorities among compensatory measures seeking to address loss and damage and (3) explore a range of equitable responses to loss and damage.

## Keywords

climate change, environmental justice, compensatory justice, environmental policy, loss and damage

Accepted: 14 March 2016

The goal of avoiding harmful impacts of climate change has been at the heart of the international response to global climate change since the adoption of the United Nations Framework Convention on Climate Change (UNFCCC) in 1992. However, such impacts, which are increasingly referred to as ‘losses and damages’, have emerged only recently as the focus of a distinctive strand of international climate change policy (Huq et al., 2013; UNFCCC, 2012, 2014). Instead, UNFCCC negotiations have focused primarily on questions of *mitigation* (the prevention of climate change by reducing emissions, or enhancing withdrawals, of greenhouse gases) and *adaptation* (the moderation of the harm, and exploitation of the benefits, of climate change through adjustments in

---

Department of Politics and International Studies, University of Warwick, Coventry, UK

**Corresponding author:**

Edward A Page, Department of Politics and International Studies, University of Warwick,  
Coventry CV47AL, UK.

Email: [e.a.page@warwick.ac.uk](mailto:e.a.page@warwick.ac.uk)

infrastructure, institutions and behaviour). A growing appreciation that mitigation and adaptation policies will not prevent a range of adverse impacts on human and natural systems, however, has led to the UNFCCC acknowledging the importance of a new type of policy that addresses climate change losses and damages that occur after mitigation and adaptation has been attempted. Nevertheless, the UNFCCC has yet to adopt an account of climate change loss and damage that is sufficiently precise to identify which changes in climate generate losses or damages, which agents should cover the costs of interventions designed to address loss and damage or what ought to be the normative goal of these interventions. In short, the discourse of loss and damage has generated significant confusion among policymakers and practitioners and requires careful elaboration if it is to become a ‘third pillar’ of climate change policy (see Fekete and Sakdapolrak, 2014; Surminski and Lopez, 2014: 267–268).

Assuming that the costs of addressing loss and damage should be pooled by the international community, rather than simply being left to burden the agents initially experiencing these costs, which normative principles and policies should guide this enterprise? A large literature in normative theory addressing the distribution of responsibilities of climate mitigation and adaptation bears on this question.<sup>1</sup> However, addressing the question of ‘burden sharing’ is only one component of a comprehensive theory of climate change loss and damage. Prior to the determination of who bears the responsibility of financing policies of loss and damage lies the question, largely undeveloped in the literature, of what the *goal* of loss and damage policies should be and why this goal is *justified*.

In this article, we address this gap in the literature by developing a normative framework that specifies the goals of loss and damage policy in terms of the concept of *climatic compensation*. In the next section, we clarify the meaning of ‘loss and damage’ and how it relates to other responses to climate change. In the following section, drawing upon Robert Goodin’s influential account of compensatory justice, we argue that the international community’s response to loss and damage should aim to compensate victims of climate change, particularly those residing in developing states, for the unjustified and unexpected disruptions in ways of life it causes. The compensatory account, we argue, rests on a sophisticated understanding of the adverse impacts of climate change due to it endorsing two key distinctions: ‘ends’ versus ‘means’ and ‘losses’ versus ‘damages’. In the subsequent sections we outline a new typology of compensatory responses based on our interpretation of these two distinctions before then responding to three objections that might be raised to the compensatory account. A concluding section sketches three distinctive policy implications of our account.

## Introducing Climate Change Loss and Damage

Championed by developing states, especially the Association of Small Island States (AOSIS, 2008), the discourse of loss and damage has grown steadily in influence since its incorporation into the Bali Action Plan (UNFCCC, 2007) and subsequent development in the form of the Warsaw International Mechanism (WIM) for Loss and Damage Associated with Climate Change Impacts (UNFCCC, 2014). Having acknowledged that ‘loss and damage associated with the adverse effects of climate change includes, and in some cases involves more than, that which can be reduced by adaptation’, the UNFCCC (2014: 6–7) assigned three primary functions to the WIM: (1) ‘enhancing knowledge and understanding of comprehensive risk management approaches to loss and damage’;

(2) ‘strengthening dialogue, coordination, coherence and synergies among relevant stakeholders’; and (3) ‘enhancing action and support, including finance, technology and capacity-building’. The WIM, however, has yet to specify how assistance will be provided by the international community to states seeking to implement policies addressing loss and damage and no distinctive funding stream has yet been agreed for this task (UNFCCC, 2015: 7–8). No agreement has yet been reached, moreover, as to the normative basis for the significant international financial transfers that will be necessary to transform the WIM from an information gathering initiative into a comprehensive approach to reduce the misery and disruption caused by unprevented or unpreventable climate changes. Instead, attempts to develop the WIM have been marred by disputes between developed and developing states as to how the concept of loss and damage can be defined so that it is action-guiding without undermining existing mitigation and adaptation commitments (Surminski and Lopez, 2014: 1–2).

Although some of the disputes over climate change loss and damage within the UNFCCC policy architecture reflect deeper conflicts of national interest and ideology, it is clear that a major stumbling block to further progress in this arena is a series of gaps in our understanding of the meaning, application and justification of the concept of loss and damage. This is evident in the text of the Paris Agreement which offers continued support for the WIM without addressing who should finance the WIM, how much financing is required or how the financing should be allocated among potential claimants (UNFCCC, 2015: 7–8, 26). In what follows, we argue that the UNFCCC’s treatment of loss and damage can be enhanced through a more systematic understanding of the appropriate *goals* of loss and damage and how these goals are *justified*.

According to the UNFCCC, climate change losses and damages can be defined as ‘the actual and potential manifestation of climate change impacts that negatively affect human and natural systems’ (UNFCCC, 2012: 4). The problem is that this general statement can be interpreted in a number of ways. Losses and damages, for example, are treated by the UNFCCC as broadly equivalent to the ‘adverse impacts of climate change’, and it is not specified whether these impacts are those that could have been prevented by mitigation and adaptation (unprevented but preventable impacts) and/or which could not have been prevented by mitigation and adaptation (unpreventable impacts) (Chambwera and Heal, 2014: 8; Frankhauser et al., 2014: 8). The UNFCCC is also silent on other salient issues such as whether ‘losses’ are equivalent to ‘damages’ and whether the discourse of loss and damage should be focused on all post-mitigation/post-adaptation costs or only those that arise in the poorest states (Surminski and Lopez, 2014: 2–3).

According to the definition we adopt in this article, loss and damage refer to the unjustified disruptions in the lives of individuals and communities, whether permanent or otherwise, that are attributable to anthropogenic climate change and which remain after mitigation and adaptation efforts have been attempted (see Frankhauser et al., 2014: 8–9). Such disruptions, which may be economic or non-economic in origin, will be extensive for three reasons. First, existing mitigation and adaptation actions have not prevented some physical impacts of climate change already occurring and consequently giving rise to loss and damage (Intergovernmental Panel on Climate Change (IPCC), 2014b: 4–8; Warner et al., 2012). Second, a further and substantial set of future losses and damages is now unpreventable by mitigation due to slow onset climate changes (such as oceanic expansion and acidification) that are now ‘locked in’ due to inertial properties of the climate system (IPCC, 2014a: 20–26, 2014b: 20–25). Third, only a proportion of the climatic impacts that cannot (or will not) be prevented by climate

change mitigation are amenable to policies of adaptation since behavioural and institutional adjustment is highly constrained in states that are reliant on ecosystem services, or have limited capacity to respond to environmental disasters, or are located in regions that will be first to experience extreme changes in climate (Dow et al., 2013; Hope, 2009: 102; UNFCCC, 2012: 7–16).

In terms of the normative dimension of developing the UNFCCC's approach to loss and damage, we defend here a *compensatory* (as opposed to a resilience-based, risk-based or insurance-based) account. The rationale for our focus on compensation, rather than resilience or insurance, is that a compensatory 'ethos' is the distinctive feature of loss and damage as it has developed under the UNFCCC. Risk management and risk prevention capture effectively the goal of 'increasing the resilience' of a population vulnerable to adverse impacts of climate change through behavioural and institutional adjustment in order to limit the extent of loss and damage and hence are best seen as a part of the discourse and concept of adaptation. Climate change insurance, meanwhile, while clearly a policy addressing loss and damage, can be seen at a deeper level as a species of compensation in that it has the objective of making agents who qualify for assistance 'whole again' after they experience loss or damage as a result of an extreme weather, or slow onset climate change, event which is covered by the rules of the scheme (Duus-Otterström and Jagers, 2011: 326–329). The concept of compensation is broader than, and not reducible to, insurance, and it is also usefully compatible with a number of innovative legal and policy mechanisms such as climate change compensation commissions, international solidarity funds and international litigation (Burkett, 2009, 2015; Farber, 2008).

## A Normative Framework for Responding to Climatic Loss and Damage

A comprehensive normative theory of loss and damage must explain what the *goal* of the international response to loss and damage should be and how this goal can be *justified*. According to the account offered here, the distinctive injustice arising from climatic losses and damages is that they disrupt unjustifiably the settled social and environmental conditions that victims of climate change reasonably came to rely upon in the process through which they framed and pursued their valued objectives prior to the loss or damage they sustained. Such disruptions arise because mitigation and adaptation, even if successful in their own terms, cannot (or will not) prevent losses and damages from blighting the existence of individuals in many states. The goal of climatic compensation is to make such victims 'whole again' in the sense that they not merely survive the losses and damages they experience but also go on to lead lives 'as well off as they would have been, had it not been for the loss' (Goodin, 1989: 61, 2013: 484–485). This, in turn, is a matter of restoring the conditions that enable an individual suffering an unjustified disruption to live the life they chose for themselves prior to the disruption (Goodin, 1991: 145, 157; see also O'Neill, 1987: 76).

The compensatory approach is usefully viewed as a *victim-centred* (rather than perpetrator-centred) and *person-centred* (rather than object-centred) method of neutralising injustice (Goodin, 2013: 480). It does not seek to punish those responsible for climate change, or those profiting from the activities that drive climate change. Neither is it limited to the transfer of lost, or damaged, objects back to their rightful owners. Instead, it seeks to restore the general condition, or well-being, of those adversely affected by

climate change to what it was before this harm occurred. In this sense, as a species of ‘corrective justice’, the compensatory approach seeks to re-establish fully, and as swiftly as possible, the condition that a disrupted life was in prior to a climatic disruption. This approach to loss and damage does not seek to *prevent* this disruption in the first place by making all potential victims more resilient to the adverse effects of climate change (*climatic resilience*) or to *improve* the condition of agents who pool premiums so that their qualifying losses and damages may be ameliorated through financial awards (*climatic insurance*).

If the aim of loss and damage policies is to ‘deal with disruption’ to human lives by making them whole again, a normative framework for loss and damage must distinguish different kinds of disruption and give some guidance as to their relative moral significance. To construct such a framework, we need to consider three questions. First, what components of a person’s life are of sufficient importance to merit a response under a loss and damage compensation policy (the ‘currency of disruption’ question). Second, what are the different ways in which these value components of a life might be disrupted (the ‘mechanism of disruption’ question). Third, how does compensation correct, or rectify, the disruption caused by climatic loss and damage (the ‘method of compensation’ question).

### **The ‘Currency’ of Climatic Disruption, Loss and Damage**

A normative theory of loss and damage must make explicit why climatic losses and damages to environmental and human resource systems are morally significant: in essence, why should we care when a person suffers a loss or damage through climate change? In order to answer this question, we endorse the view that resources matter from a normative point of view for the way they contribute to various human goals and projects: *what they allow people to do or to be* (Sen, 1999). Losses and damages to, for example, freshwater resources are of concern because of the impact of this loss or damage upon the goal of being healthy. In short, human beings have interests in being able to pursue important goals and projects.

Although the loss and damage literature gives many examples of lost or damaged objects/resources, it is the thought that losses and damages to these objects will compromise *human ends* that normatively justifies a response to climate change. Appeals to the implications of potential or actualised climatic losses and damages for ‘human security’ (e.g. O’Brien et al., 2007; Warner et al., 2012), human development (United Nations Human Development Programme (UNHDP), 2007), human rights (Caney, 2010b) or capabilities (Holland, 2014) are all based on the idea that objects and resources matter because of their relation to various important human ends. Thus, we talk of loss and damage to objects and resources because of the concern that this will lead to loss of (or damage to) certain important human ends, and whether compensation makes an individual ‘whole again’ will depend on the extent to which they can pursue the same ends as they could before the climate-induced disruption.

### ***The Value of Ends***

Particular objects – such as buildings, animal and plant species and rivers – can relate to multiple ends. For example, a river ecosystem that is severely affected by climate change might be regarded by some individuals as an important source of water, by others as a

good site for recreation and by other individuals as the home of a deity. In the case of the first, the river is linked to the end of securing water for drinking and irrigation. In the second, the river is linked to the end of leisure. In the third, it is linked to the end of pursuing a spiritual life. Where objects are linked to one or more ends, there might be conflicts over them and decisions will have to be made about which ends have priority. A full account of important human ends cannot be given here. However, we can at least note that in the literature on distributive justice, some ends are relatively uncontroversial. No matter what personal projects and goals an individual adopts as ends for himself or herself, it is reasonable to expect that they will still value being nourished, sheltered and in reasonable health, and so will require the opportunity to secure at least basic food, water and shelter. Such ends appear in many conceptions of distributive justice, as well as human security and human rights. Other ends such as raising a family, pursuing a career, developing a talent for a sport, living in accordance with nature, artistic endeavour or a life of religious devotion find places in only some conceptions of a good human life.

### ***The Relationship between Means and Ends***

Particular objects can also relate to ends in different ways. Things that contribute to human ends can be categorised as *means* or as *constituents*, depending on the nature of their contribution to any given end (Raz, 1986: 200). Means are conceptually separate from, and contingently connected to, the end that they serve. They cause the end to be achieved, or at least make it more likely that it is achieved, but there is no deeper connection between them. If the object is a constituent, then it is conceived as one element of the valuable end. Its absence affects the value of that end in addition to any contribution to its achievement. Consider the loss of traditional species in the Arctic. In a 2005 petition, Inuit groups raised concerns about many impacts of climate change on the Arctic, including the decline of caribou that some Inuit groups hunt for subsistence (Inuit Circumpolar Conference (ICC), 2005). We might say that caribou are a *means* by which Inuit groups achieve the end of nourishment. A natural response to the loss of this means would be to make other means, such as replacement foods, available so that the end is not compromised. The petition made a further claim, however, that the hunting of caribou was a key aspect of Inuit life. Specialist skills and knowledge were developed around the practice; and the subsistence economy, of which caribou hunting was an integral component, was key to the distinctiveness of the Inuit communities. Maintaining this cultural distinctiveness, it was implied, was itself an important end, which was compromised by the decline in caribou, regardless of the availability of food in local shops. According to our account, the Petition presented caribou and the hunting of them not simply as a means to nourishment but as a *constituent* of the Inuit culture, the preservation of which is an important end.

### ***Disputing a Means to a Valuable End***

Disagreements over whether any given object counts as a means to, or a constituent of, a particular end are to be expected. Some might wonder whether it is possible ever to ascertain whether an object is valued merely as a means or as a constituent of an end. Although the difficulties of making distinctions between ends and means should not be underestimated, doing so is not necessarily impossible. One approach is to listen to an individual's account of the importance of the object in question. An account will differ qualitatively depending on whether the object is regarded by the individual as a means or as a

constituent. For example, an individual who regards a piece of land under threat from sea-level rise as a constituent of an end (they may think that it is a sacred burial site and thus a constituent of their religious practices) will be more likely to talk about how the site came to be regarded as sacred, how long it has been so regarded and various stories (actual and mythological) in which it featured. An individual, by contrast, who sees a stretch of land under threat from sea-level rise as a means to an end will not be able to tell the same stories since they will be confined to talking about how various features of the resource are instrumental to some end they endorse. Put simply, the description of the object will be more elaborate if the individual regards it as a constituent of an end than if she regards it as a means to an end. This is because the former requires an explanation of the end of which it is a part and its relations with other constituent elements, whereas the latter requires merely an explanation of how its properties cause the end to be served.<sup>2</sup>

### *The Priority of Ends over Means*

As we have argued, it is ends that are valued for themselves rather than the means; and the loss or damage of a constituent is, all things being equal, more serious than the loss of a means to an end. The loss or damage of a constituent entails that the end is *necessarily* compromised, whereas if a means is lost or damaged, the end it serves might or might not be compromised depending on the ready availability of other means to that end. Thus, a compromise to a constituent *is* a compromise to an end and we shall henceforth use ‘compromise to constituent’ and ‘compromise to end’ interchangeably. However, an object might be both a constituent element of one end and a means to another end that is regarded as more important. The question about what kinds of ends should be regarded as important is, of course, contested. What can be said at the level of principle is that, because ends are more important than means, when an object can be conceived either as a constituent of an end or as a means to another end, it is the former that should be given priority because it is worse to treat something that is intrinsically valuable as a means than it is to treat a means as intrinsically valuable. This is assuming that the ends in question are of equal importance. When it is the question of which out of two ends should have priority, we suggest extra weighting to the end proposed by those who are the least advantaged in terms of the less/non-controversial ends. For example, if some individuals regard a piece of land as good farmland but others regard it as a sacred site, then, assuming there are no ways of making a compromise, the end adopted by the least well off should be the one taken into account.<sup>3</sup>

### **The ‘Mechanism’ of Climatic Disruption, Loss and Damage**

In the growing literature on loss and damage, a qualitative difference in disruption is sometimes, but not always, picked out by stipulating a difference between ‘loss’ and ‘damage’. The UNFCCC defines ‘climate losses’ as ‘negative impacts in relation to which reparation or restoration is *impossible*’, whereas climate damages are ‘negative impacts in relation to which reparation or restoration is *possible*’ (UNFCCC, 2012: 3 – emphasis added). Some have interpreted this as a distinction between a ‘loss’ (which is permanent) and a ‘damage’ (which is in theory reversible) (see Kreft et al., 2012). This is a significant distinction for normative purposes. A permanent alteration to the pattern of an individual’s life is more disruptive than a temporary one.

However, there is another relevant distinction, which is better captured by a more natural understanding of ‘loss’ and ‘damage’ as separate pathways of disruption. If something

is lost, a thing that is previously available to an agent has become unavailable (e.g. a flood victim's belongings have been displaced in a flooding event). This might be on a temporary basis or permanent. If a thing is damaged, however, it remains available. If it is a means, it is less able to fulfil its function and is thereby impaired (if a storm damages a building, for example, then we can assume that this building is impaired in its provision of shelter). Similarly, if an agent is pursuing an end (e.g. developing a talent for fishing), he or she may encounter impairments or setbacks in its achievement (e.g. if materials used to make nets become less reliable), or that achievement of or pursuit of an end might be rendered impossible (e.g. all readily accessible rivers and ponds dry up). In the first case, we can say that an end is damaged, in the sense of being impaired; in the second, we might say that the end is not available to the agent, or colloquially, that it has been lost to him or her. All things being equal, having a means or an end become unavailable is more disruptive than having a means or end impaired since, in the latter case, it might still be possible to continue as before, albeit with greater effort. If something is rendered unavailable to an agent, the agent is left with no choice but to change his or her behaviour.

The types of response that will be appropriate to the residual impacts of climate change will depend on the kind of disruption experienced. Of particular relevance here is whether the disruption concerns the availability of *an end or valuable objective* or whether it is a disruption in the availability of the *means* to that end or objective. While the distinction between temporary and permanent disruption is normatively important, it does not affect the type of response merited to an actual disruption, but rather sets priorities for avoiding disruptions, as well as the urgency of such response and possible conditions attached to it.

## **Methods of Justly Compensating for Climatic Disruption, Loss and Damage**

Having clarified the nature of climatic loss and damage, as well as the mechanism through which these losses and damages arise, we are now in a position to sketch an account of how such disruptions might be corrected (or 'neutralised') through a scheme of climatic compensation. There are essentially two methods through which climatic compensation might be pursued: 'means-based compensation' and 'ends-based compensation' (Goodin, 1989: 60–66).

Means-based compensation can be pursued in three different ways. If a means is made unavailable to an agent due to climate change, the most obvious response is to see whether it can be returned to them. If the means is impaired, then it may simply be necessary to *repair* it by replacing a certain component (e.g. a building might need a new roof after a storm). If neither means-restitution nor means-repair is possible, the means in question may be *replaced in full* by another object. 'Means-replacing compensation' aims to leave an agent in the same condition as they were in just before the unjustified injury was inflicted upon them by providing the victim with a bundle of *alternative* goods and opportunities that will provide the 'same objective capacity to promote exactly the same end as does the [original bundle]' (Goodin, 1989: 65). An example of such compensation is a financial award from an international compensatory fund or commission to an individual farmer for the purpose of replacing livestock or equipment after a climate change-related storm surge seriously damages their farm. The central normative feature of the means-based methods is that by restoring, repairing or compensating, that is, substituting, it leaves the injured party 'whole again' in that they are able to pursue all of the important human ends that they affirmed before the climatic impact.

If none of these means-based responses are available, then the ends that they serve are compromised. Ends might also be compromised if a constituent is rendered unavailable due to climate change (recall the example of caribou hunting in the previous section). In such cases, we need to turn to ends-based methods of compensation. The first of these is *ends-restitution* (e.g. restoring environmental conditions conducive to caribou hunting). However, due to the difficulties of this, it is likely that the most called-upon category will be ends-displacing compensation. Ends-displacing compensation aims to provide the victim with a bundle of goods and opportunities that will enable them ‘to pursue some other ends in a way that leaves them *subjectively* as well off overall as they would have been had they suffered no loss at all’ (Goodin, 1989: 60). In such cases, a person is left non-identically situated even though they are as well off as they were *all things considered* since they have been forced into adopting a new set of valued ends and not merely a new, or repaired, set of means to these objectives. As such, ends-displacing compensation is the appropriate response when there is no means-substitution, restitution or repair that will suffice to make the victim whole again. In such circumstances, people must be given the resources necessary for them to pursue substitute *ends* that deliver the same satisfaction but which do not fulfil the exact same role as the previously endorsed ends. Rather than enabling her to continue her life without hindrance, we might say, ends-based compensation provides assistance to a victim to *change* it.

As with means-replacing compensation, ends-displacing compensation enables an agent to ‘get back on their feet’, but by setting them on a different path rather than recreating perfectly their original path. Since this new path expresses a form of unjustified disruption, ends-based compensation should be seen as inferior to means-based methods and should only be considered if these are not possible. Consider two examples of ends-displacing compensation in the climatic context: (1) education and training for a person who has been forced to abandon a valued occupation because of persistent drought and (2) financial support to enable a person to resettle to another part of a state (or even a different state) in response to rising sea levels. In both cases, victims of climate change face a fundamental disruption to the coherence and unity of their life plans and not merely an unexpected substitution of one means (to an end) for another means (to an end).

It is worth acknowledging that climate compensation is limited in scope due to its focus on making victims of an injustice ‘whole again’ by providing them with replacement ends and means, or repaired or restored means. In some cases, the losses or damages inflicted on a community may resist full compensation due to extreme cost or technological barriers. The compensatory approach may not, therefore, generate convincing accounts of what should be done about loss and damage in some circumstances such as when a climatic disruption is so severe that some of the associated losses and damages are uncompensable in the sense that the ends affected matter so much to the people experiencing disruption that there is no obvious way of making them ‘whole again’. Certain (but not all) types of non-economic losses due to climate change may fall into this category (Adger et al., 2011: 16; Frankhauser et al., 2014). For example, there is no straightforward way in which the loss of an ancestral burial site could be fully compensated. There is a sense in which asking how much compensation should be awarded seems inappropriate in cases like this. According to the account proposed here, such losses may need to be supplemented by a quasi-compensatory response that invokes measures of ‘satisfaction’. Measures of climatic satisfaction (such as public apologies and disclosures, truth and reconciliation initiatives, commemoration and memorialisation) are designed to restore ‘relations of respect’ between agents differentially affected by and responsible for climate

change (see Hyvarinen, 2012: 5; Thompson, 2002: 34) and may accompany the ‘victim-centred’ measures that compensation can offer. Insights from the reparations literature also suggest that an expressed commitment to ensure that a similar situation does not arise in future would also be a suitable measure of satisfaction (e.g. Burkett, 2009).

To summarise, the compensatory approach responds to loss and damage by making victims ‘whole again’ after a climate-related disruption to the conditions that they reasonably relied upon to frame and pursue their life plans. Making whole again might be achieved either by ‘means-based methods’ or ‘ends-based methods’. Where neither is sufficient, measures of satisfaction should be offered.

## **Objections and Responses**

We have space to discuss three objections to the compensatory account. Although we cannot offer a full defence, we hope the discussion will serve as a basis for future debate.

### *Attribution, Causation and Climatic Compensation*

The compensatory model is vulnerable to the objection that despite the fact that human activity is certainly a significant driver of climate change, it is not possible to prove that anthropogenic climate change was uniquely responsible for any particular loss or damage-creating event since similar events frequently occur as a consequence of natural climate variability. Since any extreme weather event could theoretically have occurred anyway, a state requesting compensation for loss and damage under the WIM could not reasonably claim that the loss or damage-creating event would not have occurred ‘but for’ anthropogenic climate change or, by extension, the excess greenhouse gas emissions of other states. While the IPCC reported in 2012 that it was ‘very likely that the length, frequency, and/or intensity of warm spells or heat waves will increase over most land areas’, for example, it also added that ‘attribution of single extreme events to anthropogenic climate change is challenging’ (IPCC, 2012: 112). The attribution problem may seem to undermine the application of the compensatory paradigm to climate change losses and damages since compensation appears to presuppose ‘but for’ causation as the appropriate standard for linking recipients and providers of compensation in that the former must be able to show that the loss and damage accruing in its territory would not have occurred ‘but for’ the negligent behaviour of the latter (Allen and Lord, 2004: 551). It seems safe to assume that this issue is one of several concerns that led to the final text of the Paris Agreement including the assertion that ‘the Agreement does not involve or provide a basis for any liability or compensation’ (UNFCCC, 2015: 8)

Two opposing responses to the attribution problem may be offered. Defensively, the notion of ‘probabilistic attribution’ may be developed to reconcile climatic compensation with standard legal notions of harm and liability. The idea is that the anthropogenic climate change contributed to making the occurrence of a loss or damage-creating climatic event ‘more likely’ and this sense of probabilistic causation can be appealed to when upholding an agent’s claim for climatic compensation (Allen et al., 2007: 1385–1386; Hugel et al., 2013: 694–645). The cumulative greenhouse gas emissions of the international community, we can say, ‘helped to cause’ a loss or damage by increasing the chance that the event behind this loss or damage would occur (Allen and Lord, 2004: 552; Farber, 2008: 401–402). On this view, a claimant launching a claim for compensation must be

able to show their injuries were made more likely by a risk factor for which another agent is responsible, but the claimant would not have to maintain that this risk factor was responsible for *all* of the risk of the adverse event occurring (Allen et al., 2007: 1393–1394; Allen and Lord, 2004: 552).

Offensively, it might be denied that institutionalising compensation into the WIM's treatment of loss and damage requires a strong link between those who have caused climate change and those who have suffered losses and damages as a consequence. Instead, the account can be developed in terms of 'social insurance', international 'solidarity funding' or 'international compensation commissions' (see Burkett, 2015; Farber, 2008; McKinnon, 2012: 105–106). Each of these institutions rests on connecting providers and recipients of loss and damage finance as a consequence of their collective endorsement of a principle of international solidarity rather than state liability for transboundary environmental harms.<sup>4</sup> Each approach, moreover, is fully consistent with the core aim of compensatory justice 'to make the victims of climate change whole again' even if each abandons the aim 'to make perpetrators pay so that their victims are made whole again'. The reluctance of many developed states to agree to any proposals that invoke the notions of state liability for adverse climate changes occurring in other states<sup>5</sup> indicates that a solidarity-based alternative is currently the most feasible pathway for the institutionalisation of compensatory justice within the UNFCCC.

### *Baseless Expectations and Unreasonable Assumptions*

A notion of 'reasonable reliance' is a key element to the compensatory account. This is because compensating for each and every disruption to an individual's life caused by climate change would be both undesirable and unworkable. Compensation is due only for climate-induced disruptions to conditions that individuals could reasonably rely on to remain stable when they were framing and pursuing their life plans. But have the 'reasonable expectations' of victims of loss and damage actually been violated by climate change? First, as scientific understanding and the broader public awareness of local impacts of climate change increase, we might question whether individuals have a reasonable expectation that climatic conditions remain stable or their lives remain undisrupted. Any losses and damages that vulnerable communities are forced to endure cannot reasonably be seen as 'bolts from the blue' that go on to 'make a mockery of their life plans', as Goodin (1991: 157) has put it. If we compensate only for unexpected climatic shocks, however, then compensation for much loss and damage would not occur.

Second, turning to the claim that the victims of climatic losses and damages reasonably believed that these *should not* occur, it could be argued that many losses and damages would have been avoided if greater attempts to build resilience had taken place within the affected communities. Many populations choose to continue to live in coastal areas that are now vulnerable to rising sea levels and storm surges, while other populations lead lives that are less sensitive to climate change-caused disruptions. Is it unreasonable to expect the former to bear some of the burden associated with changes in climatic conditions since they could in many cases predict the occurrence of climatic disruptions in their lives?

In response to the 'reasonable reliance' objection, it is worth stressing that although it may no longer be reasonable epistemically to expect losses and damages to bypass any particular state, it does not seem unreasonable in the normative sense for the citizens of a vulnerable state to claim that the natural climate variability of the *Holocene* should not have

been permitted to give way to the additional climatic volatility of the *Anthropocene*, given the international community's legal and moral commitment to prevent dangerous climate change. Accordingly, compensation should be awarded where climate change has undesired effects on the affected populations even if they had prior warning that these effects could not, or would not, be prevented. In addition, many individuals are clearly unable to act upon the knowledge that the climate is changing, and potentially bringing great disruptions to their lives. To return to the example of coastal communities, there are many individuals living in developing states who simply cannot afford to migrate and thus it is incorrect to say that they 'choose to remain'. If a coastal community was established before the facts of climate change became known, moreover, its individual members may have been acting under the reasonable expectation that they and their children would continue to be members of that community in the long term. Moving away would constitute a loss of their community and could itself be a disruption to their life plans.

### *Recreating the Dysfunctional?*

The compensatory account, as a species of corrective (or 'rectificatory') justice, seeks to reverse an unjustified disruption to a settled distribution of rights and resources upon which members of a community had reasonably come to rely. This account does not take a strong normative stance on whether the *status quo ante* that it seeks to restore fulfilled some independent standard of distribution that each member of a community could regard as just. In this sense, corrective justice and distributive justice appear permanently in tension (Goodin, 1991: 144, 149; Weinrib, 2002). The objection to the compensatory account that arises from this consideration is that the pre-existing distribution of rights and resources that climatic compensation aims to recreate may appear unjust on a range of accounts of global and domestic justice. The compensatory approach may recreate this injustice, thereby preventing a move to a more just and environmentally sustainable division of resources within the targeted states (Wrathall et al., 2015).

Such concerns, although understandable, are not decisive. First, the process of correcting climatic injustice through compensation may reasonably be seen as a necessary first step towards the elimination of social structures that produce impoverishment and vulnerability. Such compensation could be expected to help victims of adverse climate changes cope with disruptions in their lives which hinder their ability to engage in debates about social justice from a position of equality and security. The compensatory approach, moreover, is fully compatible with mechanisms of global or domestic justice that redistribute wealth alongside, or after, compensation policies have been enacted (Goodin, 1991: 157–158). Second, while compensation for loss and damage may not be sufficient to guarantee that a society stays on the path of climate-resilient development, it can nevertheless play a critical role in this task by linking participation of compensatory mechanisms to reasonable efforts to increase climate resilience, even if the authorisation and size of specific awards are not linked to such concerns. Third, it can simply be disputed that it is the function of loss and damage policies to bring about 'structural transformation' since this might be seen as the distinctive focus of policies of *adaptation*. The idea here is that increasing resilience is an important element of the climate change response but recognising its importance does not mean that it should be the primary focus of loss and damage policy. Instead, while mitigation and adaptation aim at reducing vulnerability (to future loss and damage), policies of loss and damage aim at making 'whole again' victims of loss or damage as and when it occurs.

## Conclusion

The discourse of loss and damage has rapidly risen to prominence in the climate change policy arena in recent years motivated by the recognition that significant setbacks of interest will arise regardless of how effective policies of mitigation and adaptation are at limiting their causes. The urgency of responding to these ‘residual’ costs of climate change is underlined by their disproportionate impact on impoverished populations located in the developing world.

We have argued that compensatory justice, as captured by the notions of ends-based and means-based compensation, explains how and why the international community should take action rather than merely leaving the victims to bear these costs alone. This is by no means intended to be a full account of climate compensation, but merely a framework of a plausible account. Issues that need to be resolved within this framework include the question of which ends, both economic and non-economic, are of sufficient importance to merit compensation and what the balance should be between compensatory and distributive values. In the interim, we conclude by sketching three policy implications of the compensatory account.

### *Getting the Response Right*

A compensatory approach to loss and damage will mirror the feature of just compensation more generally in that the type of compensation offered to victims of loss and damage must correspond closely to the loss or damage they have endured (Goodin, 1989). Compromises to *ends*, or alternatively the *means* we use to fulfil these ends, generate two separate problems of climatic injustice and accordingly demand two distinct solutions. Any compensation of a damaged end (such as a lost livelihood) with an unrelated end or means (such as money or alternative housing) would substitute ‘unlike for unlike’ rather than ‘like for like’ and so preserve injustice. Substituting ‘like for like’ may prove problematic or costly. What is a means for some might be regarded as an end by others, it might be disputed that a substitution of ends leads to the same overall satisfaction, and the process of compensation may require financial transfers that the international community may find unreasonable. Getting the compensation right is essential since climatic changes that threaten human ends involve a greater injustice than climatic changes that threaten human means. This is because the former necessarily involves a threat of the loss of a unique and valued form of life, whereas the latter involves a threat that, even if realised, permits subsequent action to avoid the loss of an end through repair or substitution of ‘means for means’.

### *The Need to Go Beyond Compensation*

Ends-based compensation cannot remove all traces of climatic injustice since restoring the level of overall satisfaction to an agent cannot offset totally the injustice of being forced to remodel their lives by forces beyond their control. This is another feature carried over from general theories of compensation as the reversal of disruption of reasonable expectations (Goodin, 1989: 73). Moreover, in a range of cases, populations facing extreme climate changes may face ‘uncompensable losses’ in the sense that (1) *no* replacement end (or combination of replacement ends) could bring affected individuals back up to the level where they enjoy the same overall satisfaction as they enjoyed before their ends were disrupted by climate change or (2) it is simply not possible to repair or

replace some of the means damaged by climate change that a person would require to continue pursuing a life of equal satisfaction. In each case, an injustice persists and must be recognised by loss and damage policy even though it cannot be fully corrected. The appropriate response to such circumstances, however, is not to ignore these injustices, or abandon the compensatory account, but rather to engage in measures of ‘satisfaction’ that are in one sense beyond compensation even though they fit with its primary aim to make the victim’s life whole again.

### **Priority of Prevention and Adjustment over All Forms of Compensation**

Policies of mitigation, adaptation and compensation should be viewed as *complementary* but *not fully substitutable*. They are complementary because effective mitigation and adaptation will result in fewer human means and ends being compromised, thereby reducing the need for compensation of any sort. They are non-substitutable, as no amount of mitigation or adaptation can now avoid the need to compensate vulnerable populations for significant loss and damage. As noted earlier, this is due to the limitations of adaptation policies, the consideration that some loss and damage is inevitable due to inertial properties of the climate system and the fact that some loss and damage has already occurred. But there is a further, forward-looking point: putting too much emphasis on compensation – and thereby under-emphasising policies of mitigation and adaptation – is a risky method of avoiding the harmful impacts of climate change since compensatory demands may become overwhelming as damages accumulate, and as we have seen, ends-based compensation should be viewed as a last resort in that it always leaves the victims experiencing a residue of injustice. This suggests that mitigation and adaptation should be seen as priorities so long as the *ends* of vulnerable populations are under threat (which is very often the case given the effects of changes in climate such as global warming and sea-level rises). Correctly understood, the ‘third pillar’ of climate change policy strengthens, rather than undermines, the two pillars from whose limitations it emerged.

### **Acknowledgements**

The authors would like to thank audiences at the University of Warwick, University of Uppsala and University of Frankfurt – as well as three anonymous referees – for helpful comments and discussion.

### **Funding**

Clare Heyward gratefully acknowledges support from the Leverhulme Trust (grant ECF-2013-352).

### **Notes**

- 1 For contrasting accounts of climatic burden-sharing, see Shue (1999), Page (2008), Vanderheiden (2008: 45–80), Caney (2010a).
- 2 It might be thought the ‘ends’ and ‘means’ distinction is always unclear, as the same environmental resource might be a means of meeting subsistence needs (an economic end) and also a constituent, for example, of a secure cultural identity (a non-economic end). But perhaps this is best understood not as a ‘blurring’ between means and ends. Instead, having established that the same environmental resource serves both an economic and a non-economic end, it is a question of which end is given priority. Where there are conflicts, we suggest below that priority should be given to the least well off.
- 3 To see this, imagine group A regards a piece of land as a prime farming site whereas for B, that piece of land is sacred. If the As are less well off than the Bs in terms of the lesser controversial ends, then we might expect those ends to be served by using the land as the As wish. If, however, the Bs are less well off than the As in terms of less controversial ends, then it is wrong that individuals in B are further disadvantaged by having the As’ conception of ends prevail to the detriment of the Bs’.

- 4 Burkett (2015: 107), for example, proposes that an international climate change compensation fund be initiated which would act as a 'repository for all climate-related claims for compensation and rehabilitation between states [on the basis that] beneficiary states would waive all potential outstanding disputes regarding climate-related reparations from other participating states'.
- 5 According to the Paris Climate Change Agreement (UNFCCC, 2015: 26, para. 1), 'Parties recognise the importance of averting, minimising and addressing loss and damage associated with the adverse effects of climate change' on the basis that such action 'does not involve or provide a basis for any liability or compensation' (UNFCCC, 2015: 8, para. 52). The 'victim-centred' account of climate change compensation outlined above is nevertheless consistent with the Paris Agreement since it does not presuppose individual state liability for climate change.

## References

- Adger WN, Barnett J, Chapin FS III, et al. (2011) This Must be the Place: Underrepresentation of Identity and Meaning in Climate Change Decision-Making. *Global Environmental Politics* 11 (2): 1–25.
- Allen MR and Lord R (2004) The Blame Game: Who Will Pay for the Damaging Consequences of Climate Change? *Nature* 432 (2): 551–552.
- Allen M, Pall P, Stone D, et al. (2007) Scientific Challenges in the Attribution of Harm to Human Influence on Climate. *University of Pennsylvania Law Review* 155 (6): 1353–1400.
- Association of Small Island States (AOSIS) (2008) Proposal to the AWG-LCA Multi-Window Mechanism to Address Loss and Damage from Climate Change Impacts. Available at: [http://unfccc.int/files/kyoto\\_protocol/application/pdf/aosisinsurance061208.pdf](http://unfccc.int/files/kyoto_protocol/application/pdf/aosisinsurance061208.pdf) (accessed 6 May 2016).
- Burkett M (2009) Climate Reparations. *Melbourne Journal of International Law* 10 (2): 509–542.
- Burkett M (2015) Rehabilitation: A Proposal for a Climate Compensation Mechanism for Small Island States. *Santa Clara Journal of International Law* 13: 81–123.
- Caney S (2010a) Climate Change and the Duties of the Advantaged. *Critical Review of International Social and Political Philosophy* 13 (1): 203–228.
- Caney S (2010b) Climate Change, Human Rights and Moral Thresholds. In: S Gardiner, S Caney and D Jamieson, et al. (eds) *Climate Ethics Essential Readings*. Oxford: Oxford University Press, pp.163–177.
- Chambwera M and Heal G (2014) Economics of Adaptation. In: CB Field (ed.) *Climate Change 2014: Impacts, Adaptation, and Vulnerability. Working Group II Contribution to the IPCC 5th Assessment Report*. Geneva: United Nations. Available at: [https://www.ipcc.ch/pdf/assessment-report/ar5/wg2/drafts/fd/WGIAR5-Chap17\\_FGDall.pdf](https://www.ipcc.ch/pdf/assessment-report/ar5/wg2/drafts/fd/WGIAR5-Chap17_FGDall.pdf) (accessed 6 May 2016).
- Dow K, Berkhou F, Preston BL, et al. (2013) Limits to Adaptation. *Nature Climate Change* 3: 305–307.
- Duus-Otterström G and Jagers SC (2011) Why (Most) Climate Insurance Schemes Are a Bad Idea. *Environmental Politics* 20 (3): 322–339.
- Farber D (2008) The Case for Climate Compensation: Justice for Climate Change Victims in a Complex World. *Utah Law Review* 2: 377–413.
- Frankhauser S, Dietz S and Gradwell P (2014) *Non-Economic Losses in the Context of the UNFCCC Work Programme on Loss and Damage*. London: Centre for Climate Change Economics and Policy.
- Goodin R (1989) Theories of Compensation. *Oxford Journal of Legal Studies* 9 (1): 56–75.
- Goodin R (1991) Compensation and Redistribution. In: JW Chapman (ed.) *Nomos XXXIII: Compensatory Justice*. New York: New York University Press, pp.143–177.
- Goodin R (2013) Disgorging the Fruits of Historical Wrongdoing. *American Political Science Review* 107 (3): 478–491.
- Holland B. (2014) *Allocating the Earth: A Distributional Framework for Protecting Capabilities in Environmental Law and Policy*. Oxford: Oxford University Press.
- Hope C (2009) The Costs and Benefits of Adaptation. In: M Parry (ed.) *Assessing the Costs of Adaptation to Climate Change: A Review of the UNFCCC and Other Recent Estimates*. London: IIED, pp.100–111. Available at: <http://pubs.iied.org/pdfs/11501IIED.pdf> (accessed 6 May 2016).
- Huggel C, Stone D, Auffhammer M, et al. (2013) Loss and Damage Attribution. *Nature Climate Change* 3: 694–696.
- Huq S, Roberts E and Fenton A (2013) Loss and Damage. *Nature Climate Change* 3: 947–949.
- Hyvarinen J (2012) *Loss and Damage Caused By Climate Change: A Legal Strategy for Developing Countries*. London: Foundation for International Environmental Law and Development (FIELD). Available at: [http://re.indiaenvironmentportal.org.in/files/file/field\\_loss\\_damage\\_legal\\_strategies\\_oct\\_12.pdf](http://re.indiaenvironmentportal.org.in/files/file/field_loss_damage_legal_strategies_oct_12.pdf) (accessed 6 May 2016).

- Intergovernmental Panel on Climate Change (IPCC) (2012) *Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation*. Cambridge: Cambridge University Press. Available at: [http://ipcc-wg2.gov/SREX/images/uploads/SREX-All\\_FINAL.pdf](http://ipcc-wg2.gov/SREX/images/uploads/SREX-All_FINAL.pdf) (accessed 6 May 2016).
- Intergovernmental Panel on Climate Change (IPCC) (2014a) Summary for Policymakers. In: Field CB (ed.) *Climate Change 2014: Impacts, Adaptation, and Vulnerability. Working Group II Contribution to the IPCC 5th Assessment Report*. Geneva: United Nations, pp.1–44. Available at: [http://ipcc-wg2.gov/AR5/images/uploads/IPCC\\_WG2AR5\\_SPM\\_Approved.pdf](http://ipcc-wg2.gov/AR5/images/uploads/IPCC_WG2AR5_SPM_Approved.pdf) (accessed 6 May 2016).
- Intergovernmental Panel on Climate Change (IPCC) (2014b) Summary for Policymakers. In: Edenhofer O (ed.) *Climate Change 2014: Mitigation. Working Contribution of Working Group III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change*. Geneva: United Nations, pp.1–31.
- Inuit Circumpolar Conference (ICC) (2005) Petition to the Inter American Commission on Human Rights Seeking Relief from Violations Resulting from Global Warming Caused by Acts and Omissions of the United States. Available at: <http://www.inuitcircumpolar.com/uploads/3/0/5/4/30542564/finalpetitionicc.pdf> (accessed 6 May 2016).
- Kreft S, Warner K and Harmeling S (2012) *Framing the Loss and Damage Debate: A Conversation Starter by the Loss and Damage in Vulnerable Countries Initiative*. Bonn: Germanwatch. Available at: <https://germanwatch.org/en/5176> (accessed 6 May 2016).
- McKinnon C (2012) *Climate Change and Future Justice: Precaution, Compensation, and Triage*. London: Routledge.
- O'Brien K, Eriksen S, Nygaard LP, et al. (2007) Why Different Interpretations of Vulnerability Matter in Climate Change Discourses. *Climate Policy* 7 (1): 73–88.
- O'Neill O (1987) Rights to Compensation. *Social Philosophy & Policy* 5 (1): 72–87.
- Page EA (2008) Distributing the Burdens of Climate Change. *Environmental Politics* 17 (4): 556–575.
- Raz J (1986) *The Morality of Freedom*. Oxford: Clarendon Press.
- Sen A (1999) *Development as Freedom*. Oxford; New Delhi, India: Oxford University Press
- Shue H (1999) Global Environment and International Inequality. *International Affairs* 75 (3): 531–545.
- Surminski S and Lopez A (2014) Concept of Loss and Damage of Climate Change – A New Challenge for Climate Decision-Making? *Climate and Development* 7 (3): 267–277.
- Thompson J (2002) *Taking Responsibility for the Past: Reparation and Historical Injustice*. Cambridge: Polity.
- United Nations Framework Convention on Climate Change (UNFCCC) (2007) *Report of the Conference of the Parties on Its Thirteenth Session, Held in Bali from 3 to 15 December 2007. Part Two: Action Taken by the Conference of the Parties at its Thirteenth Session* (FCCC/CP/2007/6/Add.1). Geneva: United Nations. Available at: <http://unfccc.int/resource/docs/2007/cop13/eng/06a01.pdf> (accessed 6 May 2016).
- United Nations Framework Convention on Climate Change (UNFCCC) (2012) *A Literature Review on the Topics in the Context of Thematic Area 2 of the Work Programme on Loss and Damage: A Range of Approaches to Address Loss and Damage Associated with the Adverse Effects of Climate Change*. Geneva: UNFCCC. Available at: <http://unfccc.int/resource/docs/2012/sbi/eng/inf14.pdf> (accessed 6 May 2016).
- United Nations Framework Convention on Climate Change (UNFCCC) (2014) *Report of the Conference of the Parties on its Nineteenth Session, Held in Warsaw from 11 to 23 November 2013. Part two: Action Taken by the Conference of the Parties at Its Nineteenth Session*. Geneva: UNFCCC. Available at: <http://unfccc.int/resource/docs/2013/cop19/eng/10a01.pdf> (accessed 6 May 2016).
- United Nations Framework Convention on Climate Change (UNFCCC) (2015) Adoption of the Paris Agreement' (Draft decision-/CP.21) (FCCC/CP/2015/L.9/Rev.1). Available at: <http://unfccc.int/resource/docs/2015/cop21/eng/l09r01.pdf> (accessed 6 May 2016).
- United Nations Human Development Programme (UNHDP) (2007) *Human Development Report: 2007/2008: Fighting Climate Change: Human Solidarity in a Divided World/United Nations Development Programme*. Basingstoke: Palgrave Macmillan for the UNHDP.
- Vanderheiden S (2008) *Atmospheric Justice: A Political Theory of Climate Change*. Oxford: Oxford University Press.
- Warner K, Van Der Geest K, Kreft S, et al. (2012) *Evidence from the Frontlines of Climate Change: Loss and Damage to Communities Despite Coping and Adaptation*. Tokyo, Japan: United Nations University. Available at: <http://i.unu.edu/media/unu.edu/publication/31467/6815.pdf> (accessed 6 May 2016).
- Weinrib EJ (2002) Corrective Justice in a Nutshell. *University of Toronto Law Journal* 52 (4): 349–356.
- Wrathall D, Oliver-Smith A, Fekete A, et al. (2015) Problematising Loss and Damage. *International Journal of Global Warming* 8 (2): 274–294.

## **Author Biographies**

**Edward A Page** is Associate Professor of Political Theory at the University of Warwick. He has a background in normative political theory, environmental politics and philosophy of social science. His current research explores the normative challenges raised by global climate change and policies designed for its management. He has published articles in journals such as *The Monist*, *Environmental Politics*, *Political Studies*, *Journal of Global Ethics*, *International Theory* and *Res Publica*; and he is the author of *Climate Change, Justice and Future Generations* (Edward Elgar, 2006).

**Clare Heyward** is a Leverhulme Early Career Fellow at the University of Warwick. Her research interests focus on questions of global and intergenerational justice, in particular as they are raised by the problem of global climate change. She is currently working on a project focusing on the normative issues raised by geo-engineering technologies. Her publications include the co-edited book *Climate Justice in a Non-Ideal World* (Oxford University Press, forthcoming) and articles in journals such as the *Journal of Applied Philosophy* and *Environmental Politics*.