

Clare Heyward¹ & Edward Page²

Rectifying Secondary Climatic Injustices

Due to faulty planning or unforeseeable contingencies, policies undertaken to manage climate change may succeed in reducing one source of disruption in peoples' lives only to introduce a new source of disruption. Where these disruptions would be intolerable without further intervention to ameliorate them, we can say that a 'secondary climatic injustice' has arisen. Secondary climatic injustices can usefully be distinguished from 'primary climatic injustices', which concern unjustified disruptions of peoples' lives that arise due to the absence of policies designed to manage climate change. In this paper, we show how secondary climatic injustices arise from multiple pathways of policymaking and then set out an account of how these injustices can be rectified by compensating the victims so that, even if they do bear some additional costs, they share the costs of tackling climate change equitably with other users of the climate system. This basic level of compensation, we argue, may be enhanced if one or both of two exacerbating features arise on the part of the policymakers who cause a secondary injustice. These are (i) how avoidable the secondary injustice was from the policymaker's perspective, and (ii) how excusably ignorant the policymaker was for not selecting the most just policy.

¹ Clare Heyward UiT: The Arctic University of Norway. jennifer.c.heyward@uit.no

² Edward Page, University of Warwick e.a.page@warwick.ac.uk

1. Introduction

It has long been known that climate change will have severe impacts that, without intervention, will lead to widespread loss and damage (IPCC 2014: 14; IPCC 2023: 24-27). In most cases, those who will be most adversely affected will be the poorest and, historically speaking, least responsible for emergence of climate change (IPCC 2023: 5). The seriousness of these losses and damages has led to the adoption of a series of international and domestic policies of *mitigation* (actions to limit changes in climate by limiting increases in atmospheric greenhouse gas concentrations) and *adaptation* (actions to ensure that any climatic changes that do occur do not result in harmful effects on human well-being).³ Normative theorists have made a significant contribution to mitigation and adaptation policy by providing rigorous critique of the arguments and justifications offered for alternative policies. A common point of agreement, however, is that significant mitigation and adaptation is required, funded primarily by developed states, as a matter of global and intergenerational justice (Caney 2005, 2011a,b; Moellendorf 2014; Vanderheiden 2008; Wallimann-Helmer 2015).

More recently, the focus of climate scholars has expanded beyond “mitigation” and “adaptation” to include up to five separate policy types (*emissions reduction, sink enhancement, solar radiation management, adaptation, and compensation*) that reside on a continuum from prevention to rectification.⁴ The normative literature on climate change, to the extent it has evaluated and recommended action under this expanded list of policies, has typically emphasized the way that unmanaged climate change will lead to disruptions of lives in developed and developing states (see Eckersley 2016; Page and Heyward 2017; Wallimann-Helmer 2015). Where such disruptions cannot be justified – for example, where they arise for populations who are the least able to cope while also having played the smallest role in driving climate change – they can usefully be seen as ‘primary climate injustices’ since they arise from changes in climate that arise *despite* attempts to manage climate change.

There is, however, a further source of injustice that has been largely neglected by climate change scholars: adverse effects of climate change that arise *from* measures implemented to manage climate change. It is important to note that not all of the undesired impacts of climate policy will be unjust but, so long as they surpass a threshold of a harm and cannot be justified to those that suffer from them, they should, we argue, be seen as ‘secondary climatic injustices.’⁵ Secondary injustices arise from imperfections, foreseeable or otherwise, in the design or operationaliza-

³ In the paper, we refer interchangeably to ‘policies’, ‘measures’ and ‘responses.’

⁴ For an early exploration of this expanded taxonomy of climate policy, see (Heyward 2013).

⁵ Henceforth we shall often refer simply to “primary injustices” and “secondary injustices”.

tion of climate policies that do not interfere with the realisation of the objectives specified in the case for their adoption. They may also arise from unpredicted, or unpredictable, responses of human and natural systems to policies during or after implementation. Since secondary injustices are human originating, highly debilitating, and would not have arisen in a world free of climate change, there is little reason why they should not be given an equally prominent role in normative evaluations of climate change as primary injustices.⁶

In what follows, we develop, in Section 2, the concept of secondary climatic injustice and give some examples and a rough typology. Section 3 then argues that it is appropriate to rectify secondary injustices, but not necessarily in the same way as primary climatic injustices. Unlike primary injustice, the just rectification of secondary injustice need not always involve making victims fully “whole again.” It can, instead, aim at a form of constrained compensation that restores a “rough justice” between the affected parties. This section also sketches two normative criteria that play a role in modifying the exact amount of compensation a victim of a secondary injustice should receive. Section 4 concludes.

2. The surprising familiarity of secondary climatic injustices

Adverse impacts of policies designed to tackle climate change, although under theorised in the normative literature, are well documented by academics and policymakers concerned with the complexity and contingency of climate policymaking. Barnett and O’Neill (2010: 221) explore how certain adaptation measures, designed to reduce the vulnerability of some groups to climate change, may result in ‘an increase in vulnerability of other systems, sectors or social groups.’ Sidi (2012: 349) explores how certain mitigation measures, designed to reduce the greenhouse gas emissions of some sector or social group, may lead to equal or greater emissions by other sectors or social groups. Developing country negotiators have also referred to the dangers of bringing about undesirable impacts through climate policy in their submissions to the UN climate negotiations. Typically, their concern has been that policies designed to reduce greenhouse gas emissions in developed states ought not disrupt the economies of developing states without compensation being offered to offset these disruptions (Chan 2016).

At the same time, acknowledgment of the adverse impacts of climate policies have taken place in the broader context of great skepticism as to whether current commitments across all types of policy will lead to *any* meaningful checks on climate

⁶Our claim here is based largely on similarity of moral treatment for morally similar phenomena.

change. So, the focus of the climate change community as a whole has largely been on how to encourage more ambitious climate policies and not on the undesired impacts of those few policies that have made it through to implementation. This is troubling for two reasons. First, where the undesired impacts of existing policies and measures can reasonably be seen as imposing an unfair burden on already impoverished populations, we are presented with the puzzle of whether these effects should trigger additional action, such as compensation, in the name of climate justice. This is the puzzle of past secondary climate injustices. Second, even if undesired climate impacts are relatively small at present, given the limited scope of the climate response, they will undoubtedly increase as more ambitious climate policies are undertaken in the name of climate justice increasingly shape the lives of all populations. This is the puzzle of future secondary climate injustices. In what remains of this section, we explain how secondary injustice is an integral feature of climate policymaking as a precursor to a sketch of a normative account of how such injustice should be rectified.

2.1. Moving the side effects to the centre

Although adverse impacts of climate policies have been addressed in the literature, there has been some doubt as to the features of the policy, or the wider environment, that are most likely to trigger such impacts. For example, a common objection to the increased use of biofuels, an emissions reduction measure, is that the land needed to produce biofuels may need to be taken from the poorest and most marginalised groups without their consent (Nuffield Council on Bioethics 2011). But there has been little discussion on how this injustice, if it is indeed an injustice, might be rectified. Solar radiation modification (also called solar radiation management) technologies (SRMs) may also bring about adverse side-effects, such as changing precipitation patterns, that could be seen as unjust if they increased disadvantage in vulnerable populations (Shepherd et al 2009; NAS 2014b). Implementing certain adaptation measures, such as coastal migration, may also prove beneficial to one group while imposing intolerable costs on other groups. Finally, early warning systems, compensation programmes, and climate insurance schemes – which are designed to manage losses and damages that remain after all other policies have been attempted – may exacerbate existing vulnerabilities if they succeed in addressing one group’s loss by shifting losses to another group for example by prolonging environmentally destructive behaviours. The undesired disruptions in all these examples would have been deemed unjust if they resulted from unmanaged climate change and so, we shall argue, should be seen as unjust even though they arose from “good faith” efforts to manage climate change.

The adverse impacts of climate policies have appeared in scientific and negotiation texts under the rubric of “side effects”⁷ and “impacts of implementing response measures”;⁸ and they have also appeared sporadically in the normative literature.⁹ However, in both cases, undesired impacts are discussed in the context of the problem of whether it is *permissible* to implement a particular response measure and not as a puzzle of how the undesirable impacts of permissible climate responses should be managed. As a result, the hardships experienced by the victims are set aside so long as the policy in question is seemed a permissible method of tackling a primary climate justice *all things considered*. Simon Caney (Caney 2011a:172), for example, has argued that policies of mitigation or adaptation that violate human rights in order to counteract the adverse impacts of climate change should not be undertaken;¹⁰ and Eriksen et al. (2011) argue that adaptation policies must not shift risks onto (or reduce the adaptive capacity of) future generations since this would violate a principle of “sustainable adaptation” (Eriksen et al. 2011). Secondary injustice questions relating to SRMs, such as whether, as David Morrow puts it, one may “cause a flood to stop a fire” (Morrow 2014:123), have also focused on the question of whether it is permissible to cause some collateral damage in the drive to reduce the causes of primary climate injustice without addressing what should be done about secondary injustice (the loss and damage associated with ‘the flood’).

The lack of discussion about how to respond to secondary injustices is troubling for two reasons. First, the creation of undesirable effects is an inescapable part of climate policymaking and may arise from even the most well-designed policy. Similarly, even the best designed policy may create impacts that it would be wrong to leave to continue to blight the lives of those initially affected. One issue is that both human beings and the institutions they create are inherently fallible. Accordingly, “honest mistakes” and “policy failures” are an integral feature of all forms of public policy. Climate change is also uniquely complex. This makes it unavoidable that mistakes, failures, and adverse side effects will occur. Climate change has, in

⁷ Side effects are the effects of policies that did not feature in the justification for undertaking the policy. They are generally, but not always, unanticipated, unintended, and unexpected. Chan (2016: 228) usefully distinguishes between ‘first order effects’ (the unprevented and unpreventable negative effects of climate change) and ‘second order effects’ (the negative effects of attempts to control climate change on the economic development of affected, particularly developing, states).

⁸ The UNFCCC obliges parties to give ‘full consideration, in the implementation of the commitments of the Convention, the specific needs and concerns of developing country Parties arising from the impact of the implementation of response measures. When addressing climate change concerns, the Kyoto Protocol commits Parties to strive to minimize adverse economic, social and environmental impacts on other Parties, especially developing country Parties’ (see http://unfccc.int/cooperation_support/response_measures/items/4908.php).

⁹ See e.g. Caney 2011a; Eriksen et al. 2011; Morrow 2014:123.

¹⁰ Caney suggests that victims of such violations are due compensation (2011a: 171) but does not elaborate.

this way, been described as a “wicked” problem (see Hulme 2009; Incropera 2016; Ney and Verweij 2015). Even if this complexity and “wickedness” is understood by policymakers, this will not prevent mistakes being made which could then lead to secondary injustices.

Second, concerted action on climate change should have begun many decades ago and/or should have been implemented at a much faster and larger scale. Because it was not, losses and damages are already occurring due to climate change - and it is no longer possible to prevent all future losses. In these less-than-ideal circumstances, trade-offs will have to be made. As we saw above, some theorists have cautioned that some secondary injustices might be sufficiently grave to render impermissible the connected policy. However, we must also allow for the possibility that, even if a secondary injustice is not sufficiently grave to do this, the problem remains as to how the impaired condition of the victims should be rectified. For example, policies designed to reduce greenhouse gas emissions in developed states may save the developing world from severe climate impacts in the future. It does not follow, however, that the negative effects of these policies on businesses in developing states should be left to blight those affected. The policymakers in such situations seem to face a tragic choice. In such cases, creating some injustice is unavoidable from their perspective even though this does not involve wrongdoing provided they choose the best response available, i.e. that which reduces primary climate injustices and attempts to avoid secondary ones. In what follows, we focus our concern on this important category of secondary climatic injustices, namely, disruptions in peoples’ lives that it would be wrong to leave uncorrected even though they owe their existence to climate policies that were permissibly undertaken.

2.2. Three key pathways to secondary injustice

Having established that side effects are an integral feature of climate policymaking, the task remains to clarify the specific categories of secondary injustice that may arise from side effects. We argue that there are three such categories each linked to a separate pathway through which permissible policies may generate secondary injustice.

2.2.1. Unfair distribution of implementation burden (category 1)

Implementing any climate policy will require some agents to bear costs over and above those they would have borne otherwise. Some of these burdens will be borne by project developers, others will be borne by citizens through general taxation, and others will be borne by those who ‘pay’ for the policy in some other way. The term

“burdens” should be understood broadly as including the economic and non-economic costs of implementing a climate policy and will include everything from the policy’s operational financial cost to the adjustments in lifestyle, cultural and spiritual practices required by the policy for it to be a success. If a response to climate change is successful in its own terms but imposes disproportionate and unfair costs on those who pay for the policy, a secondary injustice may arise. Often, the risk of an unfair set of burdens of implementation would be seen by policymakers in advance and may even make the policy impermissible if other alternatives are available which lack this unfairness. Even if this category of secondary injustice is rarely instantiated, it is at least possible that a climate policy has sufficient merit that it is permissible, all things considered, even if it introduces significant unfairness in the distribution of burdens of implementation.

Different types of policy response will be vulnerable to specific instances of implementation burden injustice. An adaptation policy, for example, might benefit a particular disadvantaged group as planned but to the detriment of another group that disproportionately pays for the scheme despite the latter having become similarly worse off or marginalized since the adoption of the policy.¹¹ A further set of examples relates to land-use change policies that reduce emissions (or enhance sinks) of greenhouse gas at the cost of raising the risk of conflicts over tenure and access to land. The concern here is that indigenous peoples may pay a disproportionate price for the success of the policy in terms of land dispossession. A similar, related, issue is that of “justice in siting” (Hunold and Young 1998). Although the disadvantaged may not be prevented from accessing or using a piece of land, they are instead forced to cope with having hazardous, or otherwise unappealing, industrial projects built near their homes or near sites of special significance to their communities. Controversies about the siting of carbon capture and storage (CCS) plants (e.g. Fischer 2014), show that various emissions reductions schemes may be unwelcome to the local population, and, depending on the conditions of that population, constitute a case of unjust siting. The same may be the case of sink enhancement projects which involve large-scale industrial engineering, such as direct air capture projects and enhanced weathering projects which require large quantities of minerals to be mined (Shepherd et al 2009: 14).

¹¹ There is precedent for this in domestic policy. For example, governments’ initiatives in the USA and Republic of South Africa that aimed to benefit the “poor white” populations were usually severely detrimental to the even poorer and more marginalised black communities and indigenous peoples.

2.2.2. Displacement of climate impacts (category 2)

A second category of secondary injustice arises from policies that successfully reduce one type of climate impact only to cause (or exacerbating) a different type of impact. Emissions-reduction and sink enhancement policies, for example, may require large-scale land-use changes to reduce global warming (such as the planting of fuel crops and trees in “plantation style”) only to reshape local biodiversity and agriculture. If these side effects are sufficiently severe, they may constitute a secondary injustice by damaging the livelihoods of local populations who rely on land and marine species for subsistence. SRM technologies counteract global warming by reflecting the sun’s energy back into space but some of them (particularly aerosol injection) come with the risk that, if they fail or are intentionally terminated, rapid climate change could result that causes severe impacts (Shepherd et al 2009: 26; IPCC 2021: 37). Some of the adverse effects risked through by the policies describe above may seem so grave that the initial implementation of the relevant technologies should have been seen as impermissible. In other cases, the matter may be more finely balanced and so raise issues of secondary injustice if the adoption of the technology reduced global warming but increased ocean acidification and sea level rises.

Finally, some adaptation measures may displace environmental impacts of climate change from one group to another even if the combined impact is reduced. The IPCC cautions that some schemes designed to combat coastal erosion may result in erosion taking place further down the coastline (Noble and Huq 2014: 858). Similarly, diverting a river, or drawing extra water from it, may be a good form of adaptation for a community at risk of draught or desertification, but one that leaves downstream communities short of water, thereby increasing their vulnerability to the very effects the upstream community sought to avoid. Whereas the balancing of the interests of different communities may have been permissible when the policy was adopted, the policy in implementation has led to displaced impacts seen as intolerable for those affected.

2.2.3. Undermining the climate effort (category 3)

Even where a policy brings about the desired change in the selected dimension of climate change, a secondary injustice may arise if the policy undermines the contribution or commitment of the affected populations to other climate policies. There are three pathways through which this injustice might be brought about: *incentives reduction*, *perpetuating vulnerability*, and *self-defeat*. In each case, though a policy was permissibly enacted and successful in its own terms, a secondary injustice is generated though the undermining of another part of (or kind of) the climate response.

Incentives reduction. Climate policies may sometimes succeed in their own terms but at the cost of reducing incentives to engage in other kinds of climate policy. Reducing incentives to cut greenhouse gas emissions in a certain way, for example, may discourage the take up of alternative emissions reduction measures if the original policy unexpectedly fails or is discontinued for some other reason. This would result in a greater need for CDRs, SRMs or adaptation measures if loss and damage is to be avoided. The ‘discontinuation effect’ has been one of the most frequently raised concerns about sink enhancement and SRM technologies but the incentives reduction problem arises across all policy types. Barnett and O’Neill, for example, warn that mismanaged adaptation policies could reduce incentives to adapt ‘by encouraging unnecessary dependence on others, stimulating rent-seeking behaviour, or penalising early actors’ (2010: 212). In fact, virtually any climate policy if poorly implemented could discourage the take up of alternative policies and thereby impose additional costs on others.

Perpetuation of vulnerability. Climate policies may inculcate a false sense of security amongst agents to the effect that the policy has removed a climate threat when the threat remains present. The IPCC gives an example of people and developers moving to areas where coastal protections are being built (Noble and Huq 2014:858). Should these protections turn out to be inadequate (e.g. because the climate change-caused storm surges are higher than predicted or demographic changes render the defences inadequate to protect a growing population) then the policy may succeed in narrow terms only at the cost of increasing vulnerability of some populations.

Self-defeat. A response measure, though permissible at the time of adoption, may unexpectedly unravel due to the emergence of hidden costs. In such cases, the policymakers may have engaged in sufficient deliberation and planning to render the policy permissible, but circumstances change so much that the policy wastes valuable time and consumes valuable resources in a way that disrupts lives without any tangible reward. A good example here is a preventative response that reduces emissions as planned in one sector only at the cost of using more energy in its implementation than was reduced. The idea is that once the hidden defects of some policies are fully understood, these policies cannot reasonably be seen as injustice-free despite their objectives, narrowly defined, being achieved. One example would be policies encouraging greater use of air conditioning to counteract heat waves that require greater fossil fuel consumption which may then make mitigation more costly harder and also crowd out investment in less carbon intense adaptation policies and behaviours.

To conclude this analysis of secondary injustice pathways, two points of clarification should be added. First, secondary injustices are not *policy failures* in the sense that they are the result of a policy failing to meet its stated objectives. It is not the failure of the policy that explains how a secondary injustice arises but rather the imposition of intolerable burdens in pursuit of the success of this policy. Policies generate secondary injustices when their second order effects are intolerable and not because they failed in terms of their objective to bring about the desired first order effects. The failure of an otherwise permissible and successful emissions reduction programme to achieve the stated emissions cuts, for example, does not generate secondary injustice so much as leave intact a primary injustice. Second, our aim here has been to highlight the *possibility* of secondary injustices. Although they appear impossible to avoid entirely, it is by no means clear how often they will occur or how severe they will be in comparison to primary injustices. As we have seen, history, plus the complexity of the problem of climate change, give us reason to think that there will be extensive secondary injustice and it is a mark of a comprehensive theory of climate change justice that we prepare for this.

3. Rectifying climate injustices

In this section, we argue that an attractive approach to secondary injustice is to treat it as a problem of constrained (or ‘rough’) compensation whereas primary injustice is naturally treated as a problem of full and immediate compensation. As we saw above, both primary and secondary climate injustice arise from disruptions linked to anthropogenic climate change and both involve lives being disrupted through no fault of their own in a way that will not be repaired without further intervention. Both injustices will also be most disrupting for communities that have done least to cause climate change, benefited least from the economic practices that drive climate change, and have the least ability to respond.¹² There are, however, important normative differences between these two sources of injustice which indicate that they have different solutions.

The basic case for addressing primary climatic injustice is that agents who suffer a significant drop in well-being due to the wrongful actions of others ought to be compensated because they have suffered an *unjustifiable disruption* to their lives. These disruptions compromise the valued ends that people purpose and/or the

¹² In pure economic terms, the cost of secondary injustice may be highest in developed states due to the higher combined value of disrupted assets located within these states, but we focus here on the secondary injustices arising in developing states since the citizens and institutions in these states can sometimes have less capacity to respond through domestic action. This is effectively to apply the ‘common but differentiated responsibilities’ principle to secondary climate injustice as it has often been applied to primary climate injustice.

means that people use to shape and pursue these ends (Page and Heyward 2016). Some secondary injustices may be sufficiently trivial that they do not pass a *de minimis* test that the adverse disruption must be of sufficient moral importance to trigger compensation. But, if this test is met, victims are due *full* and *immediate* compensation so that their relationship with the means at their disposal, as well as the valued ends pursued with these means, is restored as closely as possible to what it was prior to their experience of the injustice (Goodin, 1995:484-5).¹³ Receiving such compensation makes the victim's life 'whole again' in the sense that (to the greatest extent possible), it is as if the unjustifiable interruption of the victim's life had never happened.¹⁴

Secondary injustices, by contrast, arise from *justifiable* disruptions in peoples' lives associated with attempts to counter the primary injustices of climate change. This crucial difference raises the possibility that it may not always be appropriate to make the victims of secondary injustice "whole again" to rectify the injustice between these victims and those agents responsible for their impaired state. Why might this be the case? So long as these policies were permissibly undertaken, the "victims" were not wrongfully treated by the policymakers and so may be reasonably required to bear *some* of the cost of adverse secondary effects along with the policymakers. To put it into crude terms, policymakers may say to the victims something like the following:

'We can see that your life has been disrupted and you have lost out in the way the policy was designed or implemented. You did nothing to deserve such an interruption. However, had we not taken this course of action, we would have violated our responsibility to all those who suffer unjust disruption from climate change and these people are similarly undeserving. Indeed, you were included in this population, seen impersonally, since we undertook the action for everyone. So, we haven't wronged you so long as you are not singled out for an unfair burden of these additional costs.'

The idea is that climate policies that but cause undesirable effects may be justifiable *all things considered* so long as these policymakers set aside sufficient com-

¹³ This is a rectificatory approach to secondary injustice since it seeks to make it the case that the injustice between the perpetrator, in this case the policymaker, and the victim, who suffers from secondary injustice due to the actions of the policymaker, had never happened. It can be usefully contrasted with a "distributive approach" that would 'rectify' the injustice only if, and to the extent that, it departs from a preferred ideal of distribution. We shall not discuss the latter here except to note that rectificatory approaches to secondary climate injustices are compatible with viewing other parts of the climate problem in distributive terms. We should also to note that the rectificatory approach defended in the text is somewhat pluralist in incorporating elements of distributive justice in the way initial compensation for secondary injustice is measured.

¹⁴ On the idea of correcting an injustice as a matter of making it as if wrongful transactions had never happened, see Ripstein (2007: 1993) and Gardner (2012: 28-31).

compensation to those unfairly affected. But what would be *sufficient*? In our view, compensation for secondary injustice is sufficient not when it is indexed to a situation where the disruption at the heart of the injustice had never happened but rather to a situation where the unplanned disruption of an otherwise successful and permissible policy is equitably shared amongst victims and non-victims. We might call this the ‘fair burdens baseline.’ Secondary injustices are corrected, on this view, when no one can complain that they have been singled out for unfair treatment in the bearing of the secondary injustice as they would be if they were the initial victim, and the costs were left for them and no-one else. If this fairness in burden sharing is achieved, it is as if the secondary injustice had never happened since no agent will be paying an unacceptable price for the implementation of a *just* climate policy. For example, suppose that policymakers and their expert advisers have a reasonable belief that a sink enhancement project should be located in a rural area. The required industrial engineering will require large quantities of minerals to be mined and this will have an adverse impact on the local community which is already suffering from significant disadvantage. The argument here is that the local population should be generously compensated for the disruption incurred so that they bear a roughly equal burden of the climate response even if this does not return to them to the same level of satisfaction or wellbeing as they would have enjoyed had the installation been sited elsewhere.¹⁵

3.1. Modifying compensation

Are there circumstances where the victims of secondary injustices can demand more than the minimum level of compensation as described above? Here we propose *two* factors that boost the amount of compensation that victims might

¹⁵ It might be objected that remedying secondary injustice in the way suggested raises the potential for an endless regress since, if climate policies cause a secondary injustice, then responding to this injustice by restoring fairness in the sharing of burdens of adverse policy side effects could be expected to create further injustices which then would require remedy. Even the constrained compensation associated with the ‘fair burdens baseline’ can be seen as a form of policy, liable to defects, that will create further injustice. Wouldn’t it be better just to ‘let it be’? Consider an SRM project enacted by P, in good faith, which causes a secondary injustice to V through increasing precipitation and flood events in V’s region. V is then compensated by P by cash payments and new flood defences so P no longer bears a disproportionate burden of the secondary injustice caused by the SRM project. If this new policy turns out to be maladaptive in any way (perhaps the flood defences induce a boom in migration to the area which causes a collapse of healthcare) then a tertiary injustice seems to arise for a new set of victims that requires even more compensation and so on and so on. But this certainly overstates the problem. First, the disruption in question, to be a secondary injustice, cannot have arisen ‘but for’ the impugned policy. This will become much harder to establish over time in the same way that any effect is harder to trace back to its causes in the more distant past. Second, the disruption in question, to be a secondary injustice, must meet the *de minimis* challenge. This will also become much harder to establish over time since each round of compensation will, all things being equal, reduce the residual unfair climate burden.

reasonably demand of the policymakers responsible for a secondary injustice.¹⁶ The two factors are (1) *other alternatives* and (2) *inexcusable ignorance*.¹⁷ Where either (and especially both) of these factors are present, a policymaker, P, can be said not to be acting fully innocently with respect to a victim of secondary injustice, V, such that V may reasonably demand additional compensation from P to match the increased moral damage done to them. We do not attempt to specify the exact magnitude of the compensation enhancements in these contexts but rather we simply introduce the two factors and explain why they should affect the overall amount of compensation due. To this end, we endorse a pluralist approach, accepting that the relative weighting of each factor may vary on a case-by-case basis.¹⁸

3.2. Other alternatives

In some contexts, a policymaker, P, may only have a single course of action available to them that would discharge their duty of combating climate change. This will likely be the case if P is located in a state that is impoverished or especially vulnerable to the impacts of climate change. P, in such circumstances, may have little or no option other than to implement a policy that generates secondary injustice. Under the model we are proposing, P, due to their lack of options, would be excused from providing additional compensation to V above the ‘fair burdens baseline’ on the grounds that no one can be singled out for discriminatory treatment if the policymakers could not have done otherwise. All other things being equal, to require P to make V fully whole again (or to compensate above the fair burden baseline) would involve P being treated in the same way as we would treat a policymaker that could do more (but refused) to reduce secondary injustice. This, we argue, would be unfair on P and overstate the moral damage done to V. However, some compensation from P to V is due in recognition that P’s action has damaged the life of V in a way that it has not damaged others and there is no justification for P to ignore V’s continuing disadvantage in this respect. P might have done the right thing all things considered,

¹⁶ Although we talk of ‘policymakers’ as the ‘perpetrators’ of secondary injustice and thus the bearer of the duty of compensation for secondary injustice, P could also be thought of as a state (or a group of states acting collaboratively to combat the injustice caused by climate change). It is also worth noting that, although responsible for injustice, the ‘perpetrators’ in our model are not necessarily wrongdoers (in the sense of being culpable) but rather creators of loss and damage that it would be unjust not to rectify. We therefore depart from the standard use of the term.

¹⁷ It might be objected that these two factors also act as constraints on the permissibility of the associated policy (had there been less disruptive or risky alternatives, and had policymakers known about these, then the policy would have been impermissible and so the injustice, on our own view, would be primary nor secondary) but there is nothing unusual in factors like these being used as compensation modifiers where the all things considered permissibility of the policy is not in question.

¹⁸ For similar approaches, see Rayner et al. (2013) and David Miller (2007).

but there is some moral cost which ought to be acknowledged through compensation indexed to the fair burden baseline.

In other cases, a policymaker may have a greater range of policies available to them. Where more than one option is available, P, has a duty to choose the *most just* option available. What counts as ‘most just’ will depend upon a broader account of justice. However, all of the options will involve an ethical balancing of the claims of all potential victims of secondary and primary climatic injustice. Imagine that there are four options available to P, with 1 being the most just and 4 being the least just. If P chooses 1, then it can be said that P has “acted in good faith” since P has done the best that could be expected of any policymaker similarly situated. P need not compensate V above the fair burden baseline to remedy the secondary injustice imposed on V in such a situation. However, if P chooses the second most just option in the available set, P has made V worse off than V relative to the most just policy option. This means that P has breached a duty of care owed to the victim and, even if the qualities of the policy are such that it remains a permissible choice all things considered, P now owes additional compensation in light of the additional damage done to V. Although we do not specify the exact boost to the compensation owed, it is natural to conceive it as bringing V up to the point where their condition is what it would be in a world where option 1 was chosen and its secondary costs were distributed equitably.

3.3. (In)excusable ignorance

As we have seen, due to the complexity of the climate change problem, policies that, on the available evidence, seemed to be the most just at the time of adoption may later be found to cause secondary injustice. The policymakers in such cases failed to select the best option for reasons beyond their control and not because they disregarded the interests of potential victims. This, we argue, may affect the amount of compensation owed from P to V. Imagine that P enacts option 1 believing it reasonably to be the best option, but ten years later, option 1 is found to have adverse effects that create far more secondary injustice than option 2. Option 2, not option 1, has become the most just option with the passage of time and yet P could not have reasonably known this at the time option 1 was selected. To require P to provide full compensation to V would be to treat P the same as a policymaker who culpably caused the injustice to V and yet P is not culpable since the injustice they caused was created not by malice or recklessness but by an “honest mistake.” Full compensation would also treat V as if their disadvantage had arisen from wrongdoing which it did not. Instead, as argued above, V should be compensated so that they bear an equitable share of the secondary effects of policy 1. However, if P had succumbed to

one form of moral corruption and ignored the available evidence, then P would have been culpable for V's worse position under the chosen policy; and they would also have inflicted a greater moral loss on V than had P acted innocently. Our claim is that P, in such circumstances, would owe V compensation beyond the 'fair burden baseline' so that V's condition is as it would have been, had the retrospectively most just option been selected (in this case, option 2), and the secondary effects of this option are shared by all.

3.4. "Honest mistakes"

The extent to which policymakers acted in "good faith" is key to our claim that compensation for secondary injustice may vary from case-to-case. It is therefore natural to ask whether such judgements can be reliably made. Obviously, we can never truly know what is in a policymaker's mind when they act. As such, any judgement of "good faith" would appear to be subjective, contestable, and impossible to implement fairly or consistently. Though it is clear that judgements of good faith, like any human judgement, are fallible and subject to contestation, it is important not to overstate the implication of this for our inquiry. In practice, agents—from individual human beings to institutions such as courts and scrutiny committees—make judgements of good faith on a daily basis. Like the term "reasonableness", we may never be able to set out necessary and sufficient conditions for such judgements being warranted but this does not prevent "good faith" from being deployed in moral theory and practice. In everyday moral practice, we look for an indication that agents considered available evidence and engaged in some serious conscientious reflection before acting (if they had time available). Demonstration of readiness to admit mistakes, and to offer redress for them, is also an indicator of good faith; doing so shows that an agent takes seriously the impacts of their actions and is more concerned about those than for example their own reputation and status.

In the case of institutional agents, we can go further and sketch what might count towards evidence of good faith in climate policymaking. First, there have already been suggestions made of conditions that contribute to "maladaptation" (Barnett and O'Neill 2010). Some of those, particularly path dependency, are also identified by social scientists who work on the development of new technologies, particularly carbon dioxide removal (CDR) and SRM methods.¹⁹ A sincere attempt to take heed of this advice and avoid implementing policies with these conditions could be taken as an indicator of good faith. At the very least, it would be disingenuous for an agent

¹⁹ See, for example, Cairns (2014). For suggestions on how to avoid maladaptation also see Mangan (2014).

to claim that they expected a project which exhibited or encountered these conditions to be problem-free.

Second, we could expect the conscientious reflection undertaken by policymakers to include consideration of the social scientific research about how individuals, institutions and social groups manage and knowledge and ignorance. For example, Steve Rayner introduces the term “uncomfortable knowledge” to refer to ‘information or understanding that is available to certain parties, but cannot be acknowledged by others’ (2012:113). Organisations, according to Rayner, typically cope with uncomfortable knowledge by one of four methods: denial, dismissal, diversion and displacement (2012: 113-122). However, the better way to manage uncomfortable knowledge is to ensure diversity of perspectives in the decision-making process (2012: 123). We suggest that a concerted effort to gather all available information about courses of action, including those emanating from marginalised perspectives, can be regarded as an indicator of good faith.²⁰ Being prepared to listen to others’ perspectives and to be flexible shows that an agent is trying to find a workable solution rather than driving through initiatives regardless of the consequences. In summary, it is possible to make meaningful, albeit fallible, judgements about an agent’s good faith and, in the case of institutional agents, taking seriously the idea of “wicked problems” is a useful indicator of good faith.

3.5. Constrained compensation and “rough justice”

We have argued that all things being equal, a policymaker (P)’s duty to provide compensation to a victim of secondary injustice, V, extends beyond the ‘fair burdens baseline’ if (a) P had better policies available to them than the one adopted and/or (b) P failed to act in good faith in the sense that they failed to choose what they reasonably believed to be a better option. These compensation enhancing conditions may seem to be discrete but, in reality, both are matters of degree and hence the boost (or not) they make to V’s claim of compensation against P will also be a matter of degree. Where the two conditions instantiate perfectly, the policy in question will almost certainly be impermissible and the policymakers will owe full compensation to victims of secondary injustice regardless of any successes in managing climate change. Where the two conditions do not arise at all, the duty of policymakers to compensate victims of secondary injustice is sharply constrained in line with P’s lack of culpability for V’s impaired state. Rather than give *full* compensation to V (to restore V’s condition to the level he or she was before the policy was implemented), P would have to provide *some* compensation and this is naturally

²⁰This is also a key feature in the design of “clumsy” or “loose fit” solutions, which are thought to be more effective in solving “wicked problems” such as climate change (Verweij and Thompson 2006).

seen as benefiting V so that they experience a fair share of the additional costs of the policy rather than suffering disproportionately.

Finally, situations where the two conditions are present to some degree are perhaps the most interesting and most commonly arising. Here, compensation is owed somewhere between the extremes of full compensation and the minimal compensation secured by the fair burdens baseline. But this should be seen not as a troubling result but rather an intuitive advantage of recognising the uniqueness of injustices arising from just policies. Because secondary injustices caused by agents acting in imperfectly good faith may still be, and often will be, *just* interventions, there is no requirement to treat the associated victims as if they were victims of primary injustice demanding nothing less than full compensation. This way of thinking about secondary injustice places much weight on our judgements about the “good faith” exercised by policymakers when they select between the options available to them and allows for significant gradations in good faith. It is unlikely that a rigid model that sets out clear priorities and formulas for calculating what is owed to victims of secondary injustice is possible. Instead, the aim should be to bring about a sort of “rough justice” amongst the parties.²¹

4. Conclusion

The objective of this paper was to introduce the concept of secondary climatic injustices and to set out a case for considering their just rectification. We argued that, once policies are distinguished as permissible or impermissible, there are three different types of secondary injustice arising from otherwise permissible policies. Each of those three types can arise for any preventative response measures. Like primary climatic injustices, secondary injustices are likely to disproportionately burden the poor, the vulnerable and future generations and so the moral impetus for addressing them is the same. However, secondary climatic injustices differ from primary climatic injustices in that the latter arise in many cases from “good faith” attempts to lessen the injustice of climate change. Where such “good faith” is fully present, we argue that agents responsible for secondary climatic injustices may contribute substantially less than those responsible for primary climatic injustices but never less than what would bring the victims up to the point where they no longer bear an unfair share of the burdens of secondary injustice. It was not possible to present a full theory of rectification for secondary injustice and it may not be possible to develop a highly principled, technical theory, due to the complexity of

²¹ Linzer (2001: 695) defines rough justice ‘as driven more by general standards of fairness than by structured (or formal) systems of rules and neat categories, justice that is often untidy, that may be second-best where the best is unachievable.’

the issue. We suggested that an appeal to constrained compensation, itself grounded in what others have called “rough justice,” may have to suffice. However, we presented two criteria which we believe can render more exact the amount of rectification required.