On the moral differences between mitigation and adaptation – the new ‘facts’ in the case

Göran Duus-Otterström¹ & Sverker C. Jagers²

Abstract
In this paper we investigate the ‘asymmetry assumption’ in climate justice, according to which climate change mitigation and adaptation can lead different distributions of moral obligations. Proceeding from a classic distinction between negative duties (not to harm) and positive duties (to aid if you can) and an ambitious typology between different forms of mitigation and adaptation, we identify various asymmetries that scholars and policymakers have neglected to discuss. However, these asymmetries is not, as we have argued elsewhere, primarily derived from differences between mitigation strategies and adaptation strategies but rather between polluters duties not to cause harm and the universal duty to aid if one has the capacity to.

Introduction
One of the fundamental questions of climate justice is how the burdens associated with combating anthropogenic climate change should be distributed among relevant parties. The burdens involved in managing the problems of a changing climate are in turn of different types. Following the terminology employed by the IPCC (2007), the literature predominantly distinguishes between mitigation and adaptation.³ Mitigation refers to various steps to decrease radiating forces and in this way reduce ongoing global warming. This can be done either by decreasing the emissions of greenhouse gases (GHGs), by increasing the use of various sinks, e.g. produce more biomass, or, finally,

¹ Research Fellow, Department of Political Science, University of Gothenburg. goran.duus-otterstrom@pol.gu.se
² Professor, Department of Industrial Economics, Luleå University of Technology sverker.jagers@ltu.se & Associate Professor, Department of Political Science, University of Gothenburg. sverker.jagers@pol.gu.se
³ A full list over climate burdens usually also include compensation.
through carbon capture and storage. Adaptation is typically understood as ‘measures which enable [persons or states] to cope with the ill-effects of climate change’ (Caney 2005: 752), and involves measures that prevent the effects of climate change to be harmful (Paavola & Adger 2006). It is by now widely recognised that any comprehensive set of responses to climate change will have to include both aggressive mitigation and adaptation to the climatic changes that are already unavoidable (see e.g. Adger et. al. 2006; Caney 2009).

While both needed, mitigation and adaptation represent quite different types of actions. Given this, it would be surprising if the differences between the two strategies have no consequences for the overarching question of climate justice. Yet, most theorists seem to hold exactly this. The convention in the literature is to run them together under the generic heading of ‘climate burdens’, and treat striking a balance between the two as merely a pragmatic affair. According to this view, climate justice concerns how we fairly share the costs involved in alleviating climate harm to fundamental human interests, and it is not in itself important whether we do this via adaption or mitigation (see e.g. Caney 2005; Page 2006). The requirements of climate justice can thus be settled independently of specifying the nature of the climate burden. Call this the ‘symmetry assumption’, as it holds that the two types of burdens lend themselves to the same kind of normative analysis.

Inspired by Paavola & Adger’s (2006) seminal work on climate change adaptation, we have elsewhere taken issue with the symmetry assumption (Jagers & Duus-Otterström 2008). We argued that there are principled differences between mitigation and adaptation in terms of their normative logics, which scholars need to tend to in order for their accounts of climate justice to be complete. In other words, we defended an ‘asymmetry assumption’.

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4 Some prefer to speak of geo-engineering as an additional type of climate burden. As geo-engineering involves using technology to remove GHGs from the atmosphere, we include this measure in the concept of mitigation.
Asymmetry assumption. The way climate burdens are distributed between
agents can be affected by whether these burdens are ones of adaptation or
mitigation.

It should be noted that this assumption speaks of an asymmetry specifically regarding
the distribution of burdens. In other respects there are clearly morally significant
differences between adaptation and mitigation. Let us provide a couple of examples.
Adaptation involves allocating resources which have been raised from burden-takers,
whereas in the mitigation case the relevant questions are more or less exhausted by
emissions cuts or other GHG reducing action. It is true that different ways of cutting
down on emissions will affect different agents in different ways, but there is no
comparable distributive output-side in mitigation. It would not make sense to say, ‘now
we have cut down on GHG emissions, but who should we allocate this benefit to?’ But in
adaptation that sort of question is perfectly natural. Justice in adaptation simply requires
in a more concrete way that we attend to normative questions of benefit-distribution.
This means, among other things, that we in adaptation have to be more concerned
about whether allocated resources actually reach their intended target as well as the
procedural fairness of the processes being applied to identify and rank target areas
(Paavola & Adger 2006). But the asymmetry assumption makes a stronger and more
controversial claim than these differences. It pertains to the very question of burden-
sharing. Put bluntly, it says that different agents will be held responsible when we
switch between the burdens.

Now, in our previous attempt we tried to drive home the asymmetry assumption
by arguing that agents that are at or below the level of emissions they are entitled to
(i.e., agents that are not polluters), cannot be asked to mitigate, but can still have a duty
to engage in adaptation, e.g., because they can afford it. Thus, we suggested affluent

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5 For example, the current practice within the UNFCCC architecture is that countries formulate their own
rankings and targets in the form of so called NAPAs (National Adaptation Programmes of Action). Clearly
the accuracy of this method depends on the quality of local governance.
non-polluters can be duty-bound to take on burdens of adaptation but not mitigation. This seems to vindicate a clear asymmetry here.

But it is noteworthy that our previous analysis omitted the possibility of a non-polluter having a duty to mitigate others’ emissions even though it cannot sensibly be said to have a duty to mitigate its own. This idea has now found its potential institutional manifestation via the introduction of NAMAs (Nationally Appropriate Mitigation Measures) in the climate change negotiations. The way NAMAs is portrayed, e.g., in the Bali Action Plan, it is clearly implied that (future) wealthy non-polluters may come to have duties to mitigate GHG emissions though this will take place in other countries. In omitting this sort of duty our analysis of the asymmetry assumption was incomplete. Here, we aim to make up for this omission and finalize the analysis. As we shall see, this will reveal that the distinction between adaptation and mitigation is too crude.

This paper thus offers a modified defence of the asymmetry assumption. Proceeding from a standard distinction between negative duties (not to cause harm) and positive duties (to aid), we argue that while there remain possible asymmetries between mitigation and adaptation, a fuller picture emerges once we question the appropriateness of the distinction between mitigation and adaptation itself. We suggest that we need to be much more careful about the generic labels of adaptation and mitigation. On the mitigation side we ought to distinguish between direct, indirect and altruistic mitigation. On the adaptation side we ought to distinguish between compensatory and altruistic adaptation. Based on these new distinctions, we retest the asymmetry assumption and find that there are several nuances to the distribution of climate burdens which the rather crude distinction between mitigation and adaptation

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6 NAMAs are voluntary emission reduction measures undertaken by developing countries that are reported by the countries’ governments to the UNFCCC. Financial support for these measures should be provided by the developed countries (Annex 1 countries) on a voluntary ad hoc basis either bilaterally or through the Copenhagen Green Climate Fund, which the Copenhagen Accord states will be established as an operating entity of the financial mechanism of the Convention. As of today, this mechanism has not yet been set up, but is expected to be put into action soon (Dalkmann & Binsted 2010)
fails to capture. We end the paper by discussing how our findings relate to different burden-sharing principles, and why they matter.

**Negative and positive duties**

Most would agree that climate change generates considerable other-regarding duties. One need not be a radical cosmopolitan to agree with this. But this other-regarding duty can in turn be divided into different sorts. Theorists widely accept a distinction between *negative* and *positive* duties. Negative duties say that certain actions must not be taken; positive duties that taking certain positive action is required. In normative analyses negative duties are usually referred to as obligations not to cause harm (to morally relevant interests): they ‘prohibit the infliction of suffering on others’. Positive duties, on the other hand, are duties to aid or assist as such: they ‘involve furthering the well-being of others’ (Page 2006, p. 12) and are moral obligations one has simply on account of being in a position to help.

Positive duties are in general more controversial than negative duties, in particular when we are talking about assisting people with whom we lack special ties. For example, it is today widely discussed if compatriots have positive duties of justice towards non-compatriots (see e.g. Miller 2007, Nagel 2005, Rawls 1999). Less controversial is that one must not act in ways which bring about harm even if the harm only befalls people that are outside the borders of our political community (see e.g. Pogge 2008). If we do cause harm, then it is an uncontroverisal requirement of justice that we stop doing it, that we compensate the victims, or both. Moreover, it is often more pressing, other things being equal, to discharge one’s negative duties than one’s positive duties. Even if it is true that assistance is due someone, it is a further question whether I am the particular agent to take that ‘remedial responsibility’ (Miller 2007, p.

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7 For critical remarks, see Kagan (1998, pp. 131-32). The difficulty is of course that often it takes positive action not to infringe on some other’s negative right.

8 Elaborate on acts/emissions

9 For a nice overview of arguments concerning special ties, see Singer (2002).

10 Some have argued that positive duties are not ones of justice. Miller (2008) provides a cogent potential rebuttal of that idea – it all depends on a rather narrow stipulation of what justice is.
47). The same does not hold for negative duties. Usually the only way I can stop inflicting harm is if I actually stop inflicting it.

Negative and positive duties stem from human interests, but their underlying logics differ. As indicated, the imperative of the former is: ‘don’t harm!’ The imperative of the latter is ‘assist if you can!’ It is easy to see why both kinds of duty are raised by climate change. Most obviously, polluters have a clear negative duty to stop polluting, as this harms current and future people. But if we can have positive duties to further the well-being of others on account of our ability to do so without unreasonable cost, then we can clearly have them in regard to climate change too. Climate change is predicted to bring about severe harm, and should be taken on par with many other of the global problems that are usually taken to trigger duties to aid.

**Climate burdens: a typology**

Armed with the distinction between negative and positive duties, let us return to the issue of climate burdens. It is clear that what types of duties an agent can have will depend on whether or not the agent is (or, possibly, has been) a polluter. As a first stab at the issue, it thus seems sensible to say that polluters have negative and possibly also positive duties to take on climate burdens, while non-polluters - if they have any duties at all - only have positive duties. The positive/negative distinction straddles the predominant distinction between adaptation and mitigation. We would argue that the following types of climate burdens are plausible (Figure 1):
Let us explain Figure 1. To begin with, it is important to note, as was hinted at earlier, that a ‘polluter’ is different from an emitter of GHGs. All living creatures are emitters of GHGs, but that is not to say that they are all polluters. A ‘polluter’ is an agent that emits more than it is entitled to. This serves to remind us that no agent can be expected to, at least not as a matter of justice, emit less than its fair share. For example, it is unreasonable to ask an agent to emit less than it requires to meet its basic needs (Shue 1993). Any account of climate justice must therefore include a specific account of how much GHGs different agents are entitled to emit. This question, which crucially involves the problem of how much GHGs there ought to be in the atmosphere, must be answered independently of the question of burden-sharing.

Suppose that an agent is a polluter. Other things being equal this agent fails to discharge its negative duties and is required to stop causing harm.\textsuperscript{11} This could be done either by addressing the cause side or the experienced harm side of the equation. The former consists in reducing one’s pollution, i.e. regular mitigation. Regular mitigation

\textsuperscript{11} We say ‘other things being equal’ because an agent violates its negative duties only when it inflicts harm and is unjustified in doing so. For example, all agents might emit more than they are entitled to, and it is unclear if one can single out an agent as in violation of its negative duties under universal non-compliance.
can in turn be *direct* or *indirect*. The latter consists in engaging in *compensatory* adaptation (or, possibly, compensation simpliciter). Let us specify:

*Direct mitigation*: a polluting agent stops causing harm by addressing its own excessive emissions (by way of emissions reductions, creating or maintaining carbon sinks or by capture and storage).

*Indirect mitigation*: a polluter stops causing harm by offsetting its own excessive emissions by way of reducing some other agent’s emissions.

*Compensatory adaptation*: a polluter prevents harm by way of adapting others, in various ways, to the ill-effects of climate change.

Clearly, a polluter can discharge its negative duties by pursuing any of the strategies, or a combination of them. It is also noteworthy that these different strategies all have purchase in climate policy-circles. Given the physical properties of the atmosphere, it is inconsequential, from the purposes of reducing radiative forcing, exactly where GHG emissions are reduced. A reduced tonne of CO₂ is a reduced tonne regardless of whether a polluter lowers its own emissions directly or offsets them by reducing some other agent’s the emissions. Sometimes we might better meet our obligations by addressing others’ emissions rather than our own. It would then be strange to maintain that it is impermissible to do so.¹²

Indirect mitigation can take different forms and there are many real-world examples. Most straightforwardly, rather than reducing the domestic emissions, Annex 1 countries instead reduce emissions in other (Non-Annex 1) countries and regions. The principal reason for this is simply that it is often cheaper and more cost-efficient to

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¹² The UNFCCC and the Kyoto Protocol architecture allows for indirect mitigation, as evident by the Clean Development Mechanism (CDM) and Joint Implementation (JI) devices. Although there are many objections to CDM and JI per se, we believe there is little reason to object to the practice of indirect mitigation as such (see Caney 2010).
reduce emissions in less developed countries (they are so called ‘low-hanging fruit’). A partly different form of indirect mitigation is what in the Bali climate summit in 2007 came to be called Nationally Appropriate Mitigation Measures (NAMAs). The idea is that, rather than - or in parallel with – domestic emission cuts, the Annex 1 countries should also invest into various measures, e.g., technology development and transfer, allowing developing countries to grow economically without being dependent upon ‘old’ technology that contributes significantly to climate change. This can be arranged and administered either via bilateral devices, or via some kind of mitigation fund from which developing countries can apply for funding for technological upgrading.

But a polluter might also address not its emissions, but their ill-effects. It could engage in adaptation to an extent which prevents the amount of harm its surplus emissions is likely to cause, for example by building flood walls which protect low-lying regions from rising sea-levels or improving health care to better combat tropical diseases. It is important to note that the adaptive measures would have to be aimed at other agents, because what we are talking about is still an other-regarding duty to stop causing harm. For this reason, we refer to this type of adaptation as compensatory.\textsuperscript{13}

So far we have exclusively elaborated on the negative duty to stop causing harm, which can only befall polluters. Let us now turn to the positive duties, those that stem from a simple duty to aid. Again we can distinguish between strategies that target the cause-side of the equation from those that target the experienced harm side. The former we refer to as altruistic mitigation and the latter altruistic adaptation.

\textit{Altruistic mitigation:} a non-polluting agent assists in preventing harm (to others) by reducing the emissions of polluters.

\textsuperscript{13} Compensatory adaptation is problematic because climate harm is characterized by its potentially global scope. Thus, even if one could say definitively that a polluter inflict harms to a magnitude of x, and the polluter engages in adaptation to an extent that counter balances x, it still remains physically true that the agents emissions harms other people than the ones it has adapted. In that sense it could be argued that a polluter will invariably be causally implicated in harm, and thus violate its negative duties.
Altruistic adaptation: a non-polluting agent assists in preventing harm (to others) by way of engaging in various forms of adaptation to the ill-effects of climate change.

We should explain the prefix ‘altruistic’. We do not rule out that a non-polluter might have a self-interested reason to take these actions. As the countries of the world can aptly be characterized as ‘overlapping communities of fate’ (Held et. al.1999, p. 81) it is often true that problems in one part of the world will ultimately have negative consequences also for other parts of the world. It follows from this interdependence that everyone might have an interest in, say, adapting the world to climate change. Thus, we do not use ‘altruism’ here as denoting the opposite of self-interest. Instead, we intend the motivation of agents to engage in mitigation and adaptation even though they are not polluting (and, we might add, have compensated for their possible prehistory of pollution). These duties are duties one takes on because one wishes to prevent harm as such, not because one causes it.

Let us begin with altruistic mitigation. As of yet, this type of climate action is mostly hypothetical, but it may become highly topical in the future.\textsuperscript{14} The basic idea is the following. In the future there will be wealthy agents that have become wealthy without having emitted an excessive amount of GHG. Following the present discussions in the climate change negotiations, these countries will have few obligations in terms of emission reductions since they do not contribute, nor has contributed, to climate change. For altruistic reasons, these countries may nevertheless be interested in further global emission reductions (e.g., because other countries they care about are vulnerable). This leaves them with two options. Either they lower their own emissions additionally although this is neither morally ‘necessary’ (nor, presumably, particularly [cost] effective). Or they help other countries (poor or rich) to lower their excessive emissions. The latter is what we primarily intend by altruistic mitigation.

\textsuperscript{14} See footnote 6.
Often it would be difficult to say whether an agent mitigates another agent’s emissions for altruistic or self-interested reasons. A good historical example of the latter is Sweden’s policy to manage acid rain. Up until the 1990s Sweden suffered from acid rain caused by sulphur emissions released in countries such as Poland, Germany and Great Britain. Rather than trying to decrease their already modest levels of sulphur emissions, however, Sweden instead invested in cleaning devices in the polluting countries. The motives to take this kind of action can thus be at least two. Either one does it out of self-interest – only if the global emissions are being reduced far below the level caused by my own emissions will the climate be stabilised, thus diminishing the risks for me. Or one does it for reasons of fairness and/or efficiency: It is better if the wealthy low-emitting country $X$ pays the costs to lower the emissions in (poor) high-emitting country $Y$ so that the latter country can use their relatively limited resources for better purposes such as welfare increases. In practice, agents can of course have mixed motives, and saying which motive is weightier is subject to the usual epistemic constraints. But it remains true that altruistic mitigation represents one distinct and so far neglected type of climate burden.

Note also that these altruistic duties mention preventing harm ‘to others’. Climate harm that does not befall others of course logically befalls only the agent itself. It is possible to say that an agent has a further ‘duty’ to prevent harm to itself. But this duty is self-regarding, and as such simply in the self-interest of the agent. It is not the job of a theory of climate justice to explain why or whether agents are permitted or required to protect their own interests – we simply assume that this is something that they are going to do.\(^\text{15}\)

Finally we have altruistic adaptation, which is a fairly straightforward idea. Consider the bleak prospects people in poor, low-lying regions face if or when the sea-level continues to rise. These people are facing considerable harm to their fundamental

\(^{15}\) It is worth commenting the fact that we are systematically vague in terms of specifying our moral subjects. We are aware that terms such as ‘agent’, ‘polluter’, ‘emitter’ provide poor guidance. This is however done deliberately. In this paper we wish to stay principle, avoiding a discussion whether – and to what degree our findings are dependent upon level of analysis, i.e., individual, corporate or state level (cf. Nagel 2005: Miller 2008). This is, however, an issue for the future to ascertain.
interest: their life as well as their property and livelihoods are threatened. If we have a positive duty to assist such people, it follows that we can discharge this duty by financing adaptation, e.g. by building flood-walls or by helping communities move to less vulnerable locations. A duty of altruistic adaptation is thus similar to any other kind of duty of aid, and it is possible that we have these duties simply on account of our ability to help without unreasonable sacrifice, and not because we are responsible for the impending harm (see e.g. Singer 1972). But unlike altruistic mitigation, which targets the causes of climate change, altruistic adaptation targets the effect side: the ill effects of a changing climate.

So far we have argued that beneath the burdens associated with the overarching labels ‘mitigation’ and ‘adaptation’ are in fact different subcategories of climate burdens (see, again, Figure 1). They differ in terms of what kind of action they involve, and by extension also in terms of their normative logics. By definition a non-polluter cannot have negative climate duties. One cannot have duty to stop inflicting a harm one does not inflict. But can polluters also have positive climate duties? This is a tricky question, since our positive duties to aid are often thought to apply at least potentially to all who are able to offer aid. But theorists typically hold that negative duties take priority over positive ones: it is more important to stop causing harm than it is to prevent harm one is not responsible for (Kagan 1998, p. 97, Miller 2007, p. 47). At least in climate change this is a sensible approach, as any efforts of a polluter to reduce the GHG-concentration in the atmosphere should, analytically as well as morally, be understood as aiming at reducing its own emissions. So when polluters take on climate burdens, we shall say that this is considered an element of their negative duties, until the agent ceases to pollute and emits no more than its fair share. (Possibly it should also be added that has compensated for past pollution.) Only when the agent ceases to be a polluter do we face the next question whether it also has any remaining positive duties to take on climate duties.  

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16 In this paper we duck the obvious demur to this position, namely ‘what if a polluter decides to prioritize and aid the interests of an agent that is relatively disadvantaged but not amongst the least advantaged?’
A further question is if it matters to the victim of climate harm if the harm is caused by a polluter or not. Many argue that, from the perspective of the ‘entitlement holders’, it is irrelevant where the harm comes from; the important thing is merely that it is prevented (see e.g. Caney 2009, p. 212). So it might be argued that the distinction between positive and negative duties really has no significance here. But this view seems flawed. It is reasonable to care more about harm which we suffer as a result of the excessive pollution of others than the harm that ‘just happens’, because the former is brought about by wrongdoing. It comes encoded with a disrespectful message; that some find it permissible to put others at risk by overusing the atmospheric common. So whereas non-anthropocentric climate harm still requires action in the interest of prospective victims (cf. Page 2008), in our opinion it remains true that there is an even greater obligation that polluters stop causing the harm.

Testing the asymmetry
Let us systematically go through the climate burdens we have identified and the kinds of agents that may have an obligation to shoulder them. It should be clear from what we have said so far that we take the two main normative factors to be causal contribution to the problem and ability to pay. We have spoken throughout about polluters and non-polluters, as well as well-off and badly-off agents. Let us stay with these rather simplified distinctions, as they are all we need to examine the issue. It is not important to be very specific about either of them.

First, let us by a ‘polluter’ simply understand an agent that emits more than it is entitled to, as determined by some ‘safety-level’ (a level which would avoid dangerous climate change - whatever that means more precisely - if everyone emitted at the level).\(^\text{17}\) Next, we have the distinction between agents who have a high ability to take on

\(^{17}\) We claim that all agents are entitled to emit green house gases (GHG) up to a certain level. It is a further question whether all agents should enjoy an equal per capita right to emit. For a defence, see Singer (2002). For a criticism, see Caney (2010). If the agent is below that level, it is considered a non-polluter. Just to give a hint as to where we would place the level: In pre-industrial time, the atmospheric concentration of (GHG) was approx. 275-285 ppm (parts per million). Today (2005) that level is estimated
climate burdens versus those who have a lower. This distinction is obviously very tricky to handle, as it is difficult to establish the relevant criteria of ability, let alone to say where the possible cut off points are. Minimally, however, we could distinguish between agents who cannot take on climate burdens without compromising their ability to meet their basic needs and those who can. For simplicity we shall refer to the former as ‘badly off’ and the latter ‘well-off’, overlooking the huge variance that exist within both classes of agents.

It has been noted many times that climate justice needs to take both contributory responsibility and ability into account. The UNFCCC’s principle of ‘common but different responsibilities’ (CBDR), for example, acknowledges that climate efforts be distributed ‘on the basis of equity and in accordance with their common but differentiated responsibilities and respective capabilities’ (UNFCCC 1992, article 3.1). The thinking behind the CBDR principle underlines that there is a strong presumption in favour of letting the rich, polluting countries take the lion’s share of the climate burden. This presumption reveals what we take to be a salient feature of the climate debate: that the climate burdens can all be tied to agents who, through their blatantly excessive emissions, have significantly violated their negative duties. ‘Mitigation’ and ‘adaptation’ are under these circumstances to be understood as regular mitigation and compensatory adaptation. These can indeed be treated in a symmetrical way.

But this way of looking at the issue is too simplistic. Polluters may have burdens of adaptation or mitigation. Non-polluters cannot have burdens of mitigation but may intuitively still have duties of adaptation. There thus seems to be an asymmetry between mitigation and adaptation, when both are thought of as stemming from causing or having caused climate harm. When using the terms mitigation and adaptation to about 380 ppm (IPCC 2007). We propose that a reasonable threshold to proceed from is an individual contribution up to an overall level of GHGs in the atmosphere equivalent to about 360ppm, which was the approximate atmospheric level around 1990 – after which the ill-effects of emissions could be expected to be known for all agents. Thus, demands on mitigation kicks in when an agent’s emissions reach the level beyond which it effectively becomes a net producer of +360ppm-emissions in the atmosphere.

It is telling that article 3.1 continues: ‘Accordingly, the developed country Parties should take the lead in combating climate change and the adverse effects thereof’.
in an unreflective manner, therefore, the case in favour of the asymmetry assumption seems strong.

However, it should be clear by now that the interesting point is not so much the possible asymmetry between mitigation and adaptation as it is the imprecision of this very distinction. There might be duties to adapt and mitigate which do not stem from polluting that climate theorists need to consider. Let us walk through out typology over climate burdens and see which agents might have an obligation to take these on.

Consider first burdens of direct and indirect mitigation. What agents can have these? Clearly only polluters. The same can be said for compensatory adaptation. If an agent decides to discharge its negative climate duties by engaging in adaptation, it is still premised on there being prior or ongoing pollution. These duties are about not causing harm, and so will naturally only apply to those who in fact are causing, or have been causing, harm.

Consider next altruistic mitigation and altruistic adaptation. These are positive burdens agents have on account of their being in a position to prevent harm as such. Can polluters have these burdens? Quite possibly – but, as an analytical if not sequential point, we have argued that polluters (contributing to truly global harm) first have to discharge their negative duties and stop causing further harm. But the key thing to notice is that non-polluters may very well have these burdens, in particular if they are wealthy. Thus, an agent which has lowered its emissions to the extent that it no longer counts as a polluter, and in addition might have compensated for past pollution, will not escape climate duties just because it is now ‘green’. Green agents might still have an obligation to help others ‘go green’ (altruistic mitigation) and to adapt the world to unavoidable climate change (altruistic adaptation).

Does the distinction between negative and positive duties track the distinction between adaptation and mitigation? No. In a previous paper we suggested that they did, but this was premised on the assumption that when an agent emits below her limit, she cannot be expected to engage in mitigation (Jagers & Duus-Otterström 2008). But
this only holds as long as one excludes altruistic mitigation from the equation. Table 1 summarizes our results.

**Table 1. The distribution of climate burdens**

<table>
<thead>
<tr>
<th>Responsibility of agent</th>
<th>Ability of agent</th>
<th>Negative duties</th>
<th>Positive duties</th>
</tr>
</thead>
</table>
| Polluter                | Well off         | ▪ Regular mitigation
                      |                  | ▪ Compensatory adaptation |
|                         | Badly off        | ▪ Regular mitigation? | ▪ None |
| Non-polluter            | Well off         | ▪ None           | ▪ Altruistic mitigation
                      |                  | ▪ Altruistic adaptation |
|                         | Badly off        | ▪ None           | ▪ None |

Comment. By saying that well-off polluters have ‘secondary’ positive duties we intend that the agents have these duties in principle, but that, analytically, they apply only after the more pressing negative duties are discharged and the agents cease to count as polluters.

A few conclusions can be drawn from Table 1. First of all, there are a lot of nuances to the distribution of climate burdens which the crude distinction between mitigation and adaptation fails to capture. Secondly, as already noted the main asymmetry is not really between mitigation and adaptation but between positive and negative duties. Regular mitigation and compensatory adaptation are ascribable only to polluters. Altruistic mitigation and altruistic adaptation, on the other hand, do not depend on being a polluter. This result is perhaps not surprising, but a great deal of clarity and precision can be gained, we believe, by refining the typology of climate burdens.

Important to notice is that we have put a question mark as to whether badly off polluters have a duty to mitigate their emissions or not. This question will become increasingly important as relatively poor countries with substantial levels of per capita emissions are emerging. Take for instance the case of Kazakhstan. Kazakhstan is a significant polluter. In 2006 it emitted 12,6 tonnes of carbon per capita. But it is also relatively poor – recent figures from the IMF puts the country at 11,693 international
dollars per capita (PPP-adjusted). (This can be compared with Sweden, which the same year had a GDP per capita of 35,965 international dollars while ‘only’ emitting 5,1 tonnes of carbon per person).\(^\text{19}\) Of course, it would perhaps be far fetched to say that a country such as Kazakhstan is badly off in the sense that it cannot afford to meet the basic needs of its citizens. But there is an important discussion as to how much should be expected in terms of regular mitigation of the relatively poor, which at the same time have many other development goals to meet. We could distinguish here between strict approaches that say that polluters must mitigate, moderate approaches that say that they must at least not worsen the situation by emitting more than they do, and soft approaches that say that poor polluters have a license to pollute.\(^\text{20}\) This is not the place to discuss how to handle this important problem, but it deserves to be mentioned.

**Asymmetry and burden-sharing principles**

What is the point of scrutinizing these issues as thoroughly as we do? Is it not enough to establish that addressing climate change gives rise to various burdens and that these burdens ought largely to be shouldered by the developed world? In recent years many principles of burden-sharing has been proposed by both by climate negotiators and theorists. At least the most recognized of those principles all say that the developed world ought to take most burdens, regardless of whether we focus on causal contribution, ability to pay, or the degree to which people have benefited from climate changing activities (or, more popular still, some combination of these factors).\(^\text{21}\) Do we need to know more?

Our line is that that we do. The current situation of convergence between burden-sharing principles is deceptive. There are already developments that threaten it,

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\(^{20}\) An interesting parallel can be drawn to the CFC negotiations and the Montreal protocol from 1987, in which it was specified that some of the developing countries, e.g., China and India, were entitled to a transitional period during which they could continue using various gases contributing to the thinning out of the ozone-layer in the stratosphere (Morrisette 1989).

most notably the emergence of relatively poor polluters. In this situation it is important to call into question the assumption in favour of symmetry between climate burdens, for the convention of speaking simply of ‘climate burdens’ depends in large part on the current state of affairs, in which heavy pollution, ability to pay, and historical benefit largely coincide in the developed world. But if or when this state of affairs changes we will need to think about how different types of burdens can apply to different types of agents. Because we are interested in not only managing climate change effectively but also fairly, then we are simply forced to go through the underlying questions of burden-sharing carefully, even questioning the simple distinction between adaptation and mitigation.

In environmental politics there is a well established principle guiding a majority of all policies: the ‘Polluters Pay Principle’ (PPP). The one who causes environmental degradation is the very same who has the responsibility to take the costs that come with it and, typically, is also assumed to change behaviour in order to prevent further degradation. For most environmental problems this is a fully reasonable principle: it is an attractive idea that having contributed to a problem obligates one to remedy its ill effects (to a degree which corresponds to one’s level of causal contribution). The PPP suffers from a range of problems, some of which stem from facts that are particular to climate change. For example, because of the long halving times of some of the GHGs (e.g., 140 years for CO₂) it is problematic to point out remedial responsibility since many of the emitters who have caused the problem are no longer alive. Moreover, in its unmodified version the PPP cannot account for the plausible fact that it seems unfair to hold people responsible for emissions they could not know were dangerous. Nor can it account for why very poor polluters arguably should be exempted.

The PPP can by definition only ascribe duties to polluters, i.e. negative ones. It cannot distribute positive duties. The normative logic of the PPP is thereby a particularly fitting principle to distribute burdens of regular mitigation. To the extent we think of adaptation as something which one has *in addition* to one’s mitigation burdens,

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22 As noted by Page (2006), the PPP is also incomplete as it cannot tell us how to respond to climate harm which is non-anthropogenic.
then adaptation does not lend itself as well to allocation via the PPP (Jagers & Duus-Otterström 2008).

Next, consider ability-based principles. According to the ‘ability to pay’ (ATP) principle it is one’s ability to accept remedial responsibility which determines whether one is remedially responsible or not (see e.g. Shue 1999). The better off an agent is, according to this principle, the greater its obligation to accept the burdens of climate change. There is a further question here about what counts as ‘better off’ – is it simply an agent’s wealth or is it the size of its opportunity costs in paying? – but the important thing for our purposes is that, unlike the PPP, the ATP attaches no moral significance to causal responsibility (i.e. historical or current pollution). Since the relevant factor is one’s level of ability, it is perfectly possible to envision remedially responsible agents without causal responsibility, and causally responsible agents without remedial responsibility.

Because the ATP focuses on ability, it can distribute burdens among polluters and non-polluters alike. It is currently true that high ability tends to go hand-in-hand with pollution – one of the drivers behind economic development is and has been a carbon-intensive economy. But this pattern might very well change in the future (and, leaving the state-centred approach aside, is surely not uncommon among individuals). Since the ATP can apply to polluters and non-polluters, it can distribute any of the climate burdens in our typology. But it is especially suited, we would argue, to distribute altruistic adaptation and mitigation. It is a requirement of climate justice to relieve the climate harm that can be relieved, and ability is an attractive method to decide who should do most to meet this requirement.

Conclusions
In this paper we have dealt with an issue that has puzzled us ever since having read Paavola & Adger’s (2006) piece on climate change adaptation, in which they argued that adaptation ‘presents formidable dilemmas of justice to the international community, ones which are more complex and no less important to those presented by mitigation’
(ibid. 594). Clearly, there are significant differences between mitigation and adaptation - e.g., while justice in mitigation is primarily about burden-sharing, justice in adaptation also requires normative analysis regarding benefit-distribution. These differences previously lead us to suggest an asymmetrical relationship between mitigation burdens and burdens related to adaptation: different agents are held responsible depending on which burden we are allocating. While mitigation burdens are only a matter for polluters, we argued, adaptation burdens should be taken by both polluters and (wealthy) non-polluters.

Thanks to the introduction of NAMAs on the climate change political arena, according to which wealthy polluters (and potentially also non-polluters) should help developing countries to mitigate, we not only see a potentially new burden entering the game. Intuitively, the previously identified asymmetry between mitigation burdens and adaptation burdens is suddenly fading away.

When proceeding from a classic distinction between negative and positive duties, as well as a typology comprising no less than five different subcategories of climate burdens, we still find obvious asymmetries in the case of climate change justice. However, we can no longer conclude that these asymmetries are principally associated with mitigation or adaptation. Instead the paper demonstrates that the asymmetries are related with weather we ascribe agents negative duties not to cause harm or positive duties to aid. From this we conclude that the appropriateness of the two most commonly suggested burden sharing principles, PPP and ATP, clearly differ, but not because of different normative characteristics connected to mitigation and adaptation but depending on what subcategory of negative and positive burdens we are dealing with.

Though we are rather confident that the asymmetries still being identified in the case of climate change burdens do matter for identifying and specifying relevant burden-takers on the global arena as well as inducements for why this is the case (which burden sharing principle is appropriate for which burden), in the end the paper perhaps raises more questions for the future than it answers. As indicated, we duck several
intricate issues, all of which call for further scrutiny. Let us end the paper by giving a few examples.

First, throughout the paper we have omitted to deal with the questions of moral agency and level of analysis. Who are actually the ‘agent’ and the ‘polluter’? Do our results differ depending on whether the answer to this question is, say, a corporation, a state or an individual?

Second, we have only discussed two burden sharing principles, PPP and ATP. How are our results affected by an introduction of other principles, e.g., those that focus on having benefitted from climate change?

Third, we have kept away from whether badly off polluters have a duty to mitigate their emissions or not. Even if this issue may not have theoretical priority – after all, historical responsibility trumps emerging responsibility - it is certainly relevant seen from how the current negotiations are evolving (read the US vs. China positions). The implications of raising these kinds of questions must thus not be underestimated. Today there are only two parties in the climate change negotiations: those with a historically high emission track record (annex 1 countries) and those with a (historically) completely clean conscience. Since the latter group include countries such as China and Brazil, both of which’s GHG emissions are increasing dramatically annually, it is interesting to ponder upon which responsibility they have, not to speak of the adequacy of the present division between annex 1 and non-annex 1 countries.

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