Adaptation Duties

Marco Grasso

Contents

Abstract

This chapter addresses an under investigated issue of climate ethics: the duty of adaptation, i.e., a standard of moral behavior required of duty bearers due to their violation of the no harm principle which involves a practical commitment to rectify consequent harmful impacts. This chapter, after framing the duty of adaptation within a harm-centered perspective, first identifies its constitutive moral features: the *duty bearers,* i.e., the agent who should bear the burdens required of the duty of adaptation; the *forms* in which the duty of adaptation abides by its moral mandate; the *scope*, i.e., the morally-pertinent harm that the duty of adaptation should financially rectify; and the *duty-recipients*, i.e., the agents entitled to rectification and the modality of the allocation of the rectificatory actions among them. It goes on to examine the empirical features

M. Grasso (✉)
University of Milan-Bicocca, Milan, Italy
e-mail: marco.grasso@unimib.it

G. Pellegrino, M. Di Paola (eds.), *Handbook of Philosophy of Climate Change*,
Handbooks in Philosophy, https://doi.org/10.1007/978-3-030-16960-2_53-1

of the duty of adaptation dictated by its moral articulation: the *structure* through which the duty of adaptation should be attained; and the *currency* and *magnitude* of its required rectification actions. Finally, the chapter provides an overview of why and how other agents have a second-order duty to ensure the bearers of the duty of adaptation meet their commitments.

Keywords

Adaptation · Adaptation funding · Climate change · Compensation · Disgorgement · Duty of adaptation · Financial rectification – Harm · Second-order duty · Social vulnerability

Introduction

It is almost unanimously acknowledged that to comprehensively address anthropogenic climate change, both adaptation – measures that prevent and/or lessen its harmful impacts – and mitigation – the reduction of emissions of human-generated greenhouse gases and/or the enhancement of the capacity to variously sequester them – are unavoidable. Adaptation and mitigation entail two moral duties: the first demands efforts aimed at preventing climate impacts or adapting to them; the second requires managing carbon to avert dangerous interference with the climate system.

This chapter explores the duty of adaptation: however, before scrutinizing it, clarification about the definition of adaptation is required. By and large, adaptation has long been marginalized in the climate debate, which has so far tended to privilege mitigation issues. This was largely due to the fact that *climate orthodoxy* attributed a pivotal role to a strong reduction of emissions in order to avert the impacts of climate change. In this discourse, adaptation weakened any willingness to control emissions and thus ultimately crowded out mitigation initiatives. In short, adaptation was considered an anti-environmental and fatalistic approach, whereas only mitigation was fundamental in light of the United Nations Framework Convention on Climate Change's (UNFCCC) ultimate goal of stabilizing greenhouse gas concentrations at a safe level (Grasso, 2010).

The impending climate crisis changed everything, and nowadays adaptation is considered, along with mitigation – and sometimes with negative emissions technologies and solar geoengineering approaches – essential to tackling the harmful impacts of the changed climate. The various climate change literatures put forward many definitions of adaptation: common to all of them is a focus on the adjustment of systems triggered by climate impacts; they do, however, differ in breadth, interpretation, and scope (Sietsma et al., 2021). Any systematic scrutiny of adaptation first demands definition of the subject or object involved, variously called *system of interest*, *unit of analysis*, *exposure unit*, or *sensitive system* (Grasso, 2010). The characterization of the system involved relates mainly to scale: adaptation at the household level may involve, say, installing air conditioning, at the local

level perhaps the development of new green areas, and at the national or supranational level a switch to less water intensive agricultural production.

The potential success of adaptation initiatives and the evaluation of their merits, especially in moral terms, as well as the priority of adaptation options, depend on properly defined characteristics of systems called *determinants of adaptation*. The most significant of these – and which suffice to synthesize the entire range – are sensitivity, vulnerability, and adaptive capacity. Sensitivity is a system's biophysical negative and positive responsiveness to climate impacts. The notion of vulnerability is more controversial because it entails at least two definitions: one *biophysical,* where the vulnerability of a given system or society is a function of its physical exposure to climate change effects and its ability to adapt to these conditions; and the other *social*, where what matters is the ability of individuals and of groups to deal with climate hazards. The latter is the most opportune when referring to the duty of adaptation, as clarified later. Adaptive capacity can instead be generally understood as the potential of a system, region, or community to adapt to the effects or impacts of climate change.

Given this scope of the notion of adaptation, it is quite obvious that adapting to climate change imposes a burden on individuals and communities, especially the more vulnerable (Duus-Otterström & Jagers, 2012). In moral terms, such burdens imply that some agents have a positive – requiring agents to act in certain ways – duty of adaptation, which by and large involves the provisions of the means to sustain activities that protect other agents from being harmed by climate impacts, e.g., building sea-walls; subsidizing people to relocate from threatened areas; implementing irrigation systems in drier areas; planting trees to cool cities; etc. (Caney, 2010). Accordingly, this chapter, after framing the duty of adaptation within a harm-centered perspective, first identifies its constitutive moral features: the *duty bearers*; the *forms* in which the duty of adaptation abides by its moral mandate; the *scope*, i.e., the morally pertinent harm that the duty of adaptation should financially rectify; and the *duty-recipients*. Subsequently, it looks into the empirical features of the duty of adaptation dictated by its moral articulation: the *structure* through which the duty of adaptation should be attained; and the *currency* and *magnitude* of its required rectification actions. Finally, the chapter provides an overview of why and how other agents – christened *second-order agents* – have a *second-order duty* to put pressure and/or ensure the bearers of the duty of adaptation meet it.

Climate Change and Harm

Climate change has an array of negative impacts on the planet's natural and socio-economic systems, directly or indirectly harmful to all forms of life, that are potentially catastrophic for many of the most vulnerable people in the world. The most manifest of these impacts include increased water stress and reduced crop yields; rising sea levels; more widespread and diffuse inland floods and coastal flooding and erosion; reductions in the thickness and extent of glaciers, ice sheets, and sea ice; exposure to new health risks; rises in the frequency and severity of

extreme climatic events; and increased conflicts over the control of scarcer resources, migrations, state failures and the resulting risks (Field et al., 2014).

Given the ultimately harmful nature of climate change, and consistent with the only fundamental requirement shared by all the different accounts of morality, avoidance and prevention of harm to others (Gert & Gert, 2020), it is possible to claim that the moral foundation of climate change relates to avoiding/preventing harm, as the objective of the UNFCCC – that is, prevention of dangerous climate change (art. 2) – implicitly acknowledges, while critically depending on actions people take now that harm and will harm other people living now and in the future.

In particular, greenhouse gases emissions (i.e., the harmful actions related to the use of fossil fuels, long-term deforestation and agricultural practices) by a diverse group of people around the globe, which by consuming a common resource such as the atmospheric absorptive capacity, threaten the stability of climate systems and consequently alter climatic dynamics, harm a diverse group of present and future people even in remote parts of the globe. In the same vein, Shue considers the requirement to do no harm as the fundamental component of climate ethics (Shue, 2011); Vanderheiden maintains that any plausible approach to climate justice should uphold a strong imperative to prevent people from suffering climate-related harm (Vanderheiden, 2011). It is also worth recalling that this notion of harm is akin to that of injustice, i.e., something wrong that exists per se, independently from, and prior to, considerations of justice (Wolgast, 1987).

Additionally, it should be noted that the development of harm-related approaches to morally address climate change can be usefully grounded in the Western philosophical tradition. Such a broad strand of theories and principles is not of course monolithic or exclusive and has developed a common basis for raising universal moral claims and arguments. In this philosophical and cultural milieu, a convenient starting point for the construction of a harm-centered duty of adaptation is the consideration of the liberal account of justice. The reference is to modern liberalism and, by and large, to the body of literature that has flourished since the 1970s and Rawls's path-breaking contribution from 1971, *A Theory of Justice* (republished in: (Rawls, 1999)). Liberal justice is, in fact, based on equality, freedom, redistribution, inclusion, and care. It gives equal or impartial consideration to the interests of all and displays a general concern for the least well-off subjects, who should be given the opportunities, means, and choices to live a dignified life, the improvement of which is the most ethically important objective. This concept is the nerve center of liberalism; liberal justice can be employed to support the governance of climate change because the elements affected by it "fit naturally into standard liberal accounts of justice such as those of Rawls" (Miller, 1999, p. 171). In this view, liberal justice can play a major role as a unifying basis to facilitate sustainable collective action in climate change. It should be stressed that the choice of developing the duty of adaptation within the Western moral tradition does not imply its superiority, but it is determined by the fact that its theoretical constructs are widely acknowledged around the globe (Jamieson, 1996) and have largely contributed to the formation of existing, albeit weak, global governance institutions. Western ethics may thus prove useful for initially addressing the moral requirements of action in

adaptation, since it would not be disruptive for the dominant values and views of world politics, whose likely resistance against inclusion of different ethical traditions can be weakened only gradually. Moreover, moral traditions are open-ended and non-exhaustive systems, so any difference with other moral traditions can be included within them. A further, more ambitious, duty of adaptation could, and indeed should, include non-Western ethical traditions, as well as other more radical ethical considerations for effectively protecting all forms of life from climate change.

The starting point to address the duty of adaptation within a harm-centered perspective is the acknowledgment that climate change poses severe existential threats to people's fundamental rights and interests, and to the planet they inhabit. Given this, it is useful to first clarify the moral status of the harm the duty of adaptation refers to. As said, the requirement to do no harm is a central tenet of ethics and has shaped and guided societies for generations. The *do no harm* principle, first proposed by John Stuart Mill (Mill 1859, republished 2015) states that agents have negative duties, i.e., they must refrain from action, and more specifically they should eschew certain behaviors in order to prevent and/or avoid doing harm to others.

At the same time, harm arising from climate change is difficult to specifically identify, it is viewed as distant, abstract, so "[w]e tend not to see climate change as a moral problem, it does not motivate us to act with the urgency characteristic of our responses to moral challenges" (Jamieson, 2007, p. 546). The human brain too is unprepared to respond to the challenges raised by the climate crisis since it has evolved to cope with more immediate threats that violate individuals' moral sensibilities. In short, climate related harm does not have the characteristics of an archetypal moral problem: (i) intentionality on the part of harming subjects; (ii) the possibility of identifying the harm and the harming and harmed subjects; and (iii) proximity in time and space of the harm and the harming and harmed subjects. In fact, in the context of climate change, there is no clearly identifiable subject (agent) that acts intentionally in order to harm another clearly identifiable subject (victim), who is near in time and space. Rather, there are numerous agents who, through their ordinary everyday actions (driving a car, working at a computer, eating meat, turning on a light), inadvertently and/or inevitably and/or unwittingly set in motion forces that will harm numerous victims distant in time and space (Grasso, 2013; See the chapter ▶ "Responsibility for Climate Harm" by Obst, this volume).

In light of these difficulties, what are the relevant moral traits of the notion of harm pertinent to the duty of adaptation? The overall moral cogency of climate-related harm originates from and can be dealt within the doctrine of *doing/allowing* and *enabling* harm. Reasons against doing harm, i.e., starting or sustaining a causal sequence that leads to foreseen harm, as defined by Foot (2002) must be more stringent constraints, demanding more of perpetrators after the harm has been done, compared to reasons against merely allowing harm. The moral status of enabling harm – actions involving the removal of obstacles that prevent harm, or the creation of obstacles to harm prevention – is another matter altogether, and a contentious one at that. This is not the place to enter into this thorny and still unresolved

philosophical dispute. Suffice it to say that some hold views that enabling harm is morally equivalent to doing it (Barry & Øverland, 2016; Foot, 2002). Various explanations justify this view. One very pertinent to the case of the duty of adaptation seems to be Barry and Øverland's (Barry & Øverland, 2016, pp. 96–121). This school of thought first notes that where an agent thwarts harm prevention in any way, this is tantamount to enabling harm. Doing and enabling harm share the important moral feature of giving rise to costs, while allowing harm – being a so-called *innocent bystander* – generally, does not. In their understanding, giving rise to costs means that an agent's location, movements, or (in)actions have as a consequence that another agent be harmed. As giving rise to cost is morally significant, they then posit that this is the reason why doing/enabling harm is morally different from allowing harm. Finally, this perspective holds that agents who give rise to costs by doing and enabling harm have more stringent duties to address such harm than those who merely allow it. Barry and Øverland (2016) suggest that harm-doing and harm-enabling need to be addressed through an overarching methodology of *contribution-based responsibility*, which is part of a broader approach of corrective, or rectificatory, justice. Corrective justice originates from harm doing and harm enabling and helps focus on past and present harm generated, elaborating on the resulting duties required to rectify the injustice thus produced. This view seems also consistent with Caney's *harm avoidance justice*, which demands harm be avoided/minimized, specifies the agents involved and their duties, as well as the potential victims (Caney, 2014, p. 126).

In light of this contextualization of harm-doing/enabling in climate change, it seems sensible to argue that both the duty of adaptation and the duty of mitigation are instrumental. In other words, they are means for dealing comprehensively with the harm resulting from climate impacts, the ultimate end of the struggle against climate change. In fact, the only way to avoid/prevent harm associated with climate change requires both protecting society from nature (adaptation, i.e., prevention of harm) and nature from society (mitigation, i.e., avoidance of harm) (Stehr & Storch, 2005). In particular, mid- and short-term harm prevention largely depends on adaptation measures, whereas both harm avoidance and long-term harm prevention depend almost exclusively on mitigation efforts.

The duty of adaptation, therefore, addresses mid- and short-term harm prevention: given this focus, it is now possible to specify the moral features that flesh out this duty. But before developing such framework of analysis, a brief clarification of the differences between the similar yet different – and hence the necessity of this clarification – duties of compensation (for a thorough analysis of this duty see the chapter ▶ "Compensation Duties" by Mintz-Woo, this volume) and of the moral superiority of the duty of adaptation is unavoidable.

When financial means are provided to maintain or restore people's ability to protect themselves from harm, this should be considered as adaptation; the duty of compensation – be its operationalization based on approaches that connect it to emissions or on those that are independent of them (see the chapter ▶ "Compensation Duties" by Mintz-Woo, this volume) – implies instead a justificatory level prerogative of people to live in a world where they are not harmed by anthropogenic climate change. When this

entitlement is not met, compensation is owed to remedy an unjust situation. From a moral perspective, it is better to avoid harm in the first place than to compensate it – financially or not – in retrospect (Baatz, 2018). In this regard, Goodin's argument seems very useful (Goodin, 1989, p. 60): in the event of irreplaceable loss, he distinguishes between *end-displacing compensations* that help people in pursuing other ends that would leave them as well off as they would have been if the loss had not occurred; and *means-replacing compensation* that provides people equivalent means for pursuing the same ends. The former is inferior, because it obliges people to pursue other goals with other means. Therefore, the duty of adaptation corresponds to *means-replacing compensation* and is morally superior to the duty of compensation since this corresponds to *ends-displacing compensation*. It must be stressed that, as thoroughly clarified at point (ii) of the ensuing section, while part of the relevant literature (e.g., Goodin above) uses the term *compensation*, as synonymous for what is meant here as *financial rectification*, this chapter considers compensation to be a specific form of financial rectification that requires the identification of the recipient of the funds. Financial rectification of the harm done is instead generally understood as a cash-based form of rectification. *Rectification* signifies a broader term that includes not only material forms (financial and non-financial) but also non-material ones, such as recognition of blameworthiness and apologizing, etc. In view of this taxonomy, the duty of adaptation entails the financial rectification of the harmful impacts of climate change, as the section "Empirical Features of the Duty of Adaptation" elucidates.

The Moral Features of the Duty of Adaptation

In light of this harm-based contextualization of the duty of adaptation and of its moral superiority to the duty of compensation, its main moral features include defining the following (Caney, 2006; Grasso, 2019):

(i) The duty bearers (i.e., the agents who should bear the burdens required of the duty of adaptation);
(ii) The forms (i.e., the ways in which the duty of adaptation abides by its moral mandate);
(iii) The scope (i.e., the morally-pertinent harm that the duty of adaptation should rectify);
(iv) The duty-recipients (i.e., the agents entitled to rectification and the modality of the allocation of the rectificatory actions among them envisaged by the duty of adaptation).

The rest of this section will investigate these four moral features of the duty of adaptation. Before proceeding, a clarification of the controversial notion of *duty* is in order: in this work, a duty is understood as a standard of moral behavior resulting from a violation and involves a *practical* commitment to either undertake or refrain from undertaking specific courses of action. It should not therefore be confused with the broader notion of *responsibility,* which entails the *condition* of being responsible

according to principles of justice and the obligation to take action, which in this context can be understood as a pre-condition – not investigated – of the duty of adaptation.

The Duty Bearers

Some scholars maintain that the bearers of the duty of adaptation are to be identified through the application of a polluter pays principle (PPP) and a beneficiary pays principle (BPP) (Baatz, 2018). The PPP distributes the financial burdens associated with the rectificatory action in proportion to past contributions that agents have made to the overall level of emissions. The BPP holds instead that such proportionality should be calculated on the basis of the benefits that agents have derived from activities generating emissions. However, this account may be considered narrow (Grasso, 2019; Shue, 2015): while the rectificatory action required to the bearers of the duty of adaptation is certainly justified by the two backward-looking principles outlined (the PPP and the BPP), to enlarge and strengthen the moral justifications of the duty of adaptation finance, it might be opportune to add the forward-looking cogency of the ability to pay principle (APP), which posits that the quota of burdens should be proportional to the agents' relative capacity to bear such burdens (Caney, 2006).

Given the urgency of adequately addressing adaptations, the stronger and the more inclusive the duty of adaptation is, the more cogent it is and the greater its potential to meet the challanges of adaptation.

The three principles – the PPP, the BPP, and the APP – that would make up this *triply* hybrid moral basis of the duty of adaptation might be somewhat controversial at their theoretical periphery, but nonetheless they all converge at the practical core (Shue, 2015, p. 8) of reinforcing one each other. In fact "those who contributed heavily to creating the problem of excessive emissions thereby both benefitted more than others and became better able to pay than most others" (Shue, 2015, p. 16). In other words, all three principles are inevitably closely intertwined, and forgetting one makes the moral stringency of the duty of adaptation for the duty-bearer falter, or at least narrows its scope. In particular, the inclusion of the APP considerably strengthens such an account as it makes it possible to better capture the *wealth component*, which in this case is very important, given that the rectificatory action envisaged by the duty of adaptation in most cases is carried out through disbursement of funds, as shown later.

All in all, the duty bearer is the agent who has contributed to climate harm (PPP), has benefitted from the action producing it (BPP), and is able to shoulder the financial rectification required by it (APP). The actual overall accountability of the duty bearer is the combination of their accountabilities to the single principle: therefore, their commitment to the duty of adaptation should be proportional to this combined level of accountability.

The Forms

In the harm-centered moral milieu delineated, the objective of the duty of adaptation is to address the harm caused by anthropogenic climate change by supporting affected agents. There are different ways to support them, from immaterial approaches, like public acknowledgment and apologies, *naming and shaming*, or providing a genuine account of climate change and its implications through, for instance, the establishment of a truth commission, to material rectification of historical wrongdoing (Goodin, 2013; Goodin & Pasternak, 2016). In the context of climate change, many practical matters to address its harmful impacts are necessary. The duty of adaptation, therefore, must be mainly material and aim at preventing/avoiding/lessening climate impacts through practical actions.

There are different forms to materially address harmful impacts, too. For example, *restitution* implies returning misappropriated things to the rightful owners or their successors; *compensation* means compensating the rightful owners or their successors for the harmful impacts; *disgorgement* requires the relinquishment of the fruits of historical wrongdoing (Goodin, 2013).

Restitution squarely applies to the duty of compensation, whereas given its very nature – returning the *misappropriated thing*, despite the difficulty of pinpointing it, apart from a rather abstract notion of atmospheric absorptive capacity which was wrongfully overconsumed – this form of rectification is not pertinent to the duty of adaptation: only compensation and disgorgement are. The fundamental distinction between the two is that the former requires the identification of both the duty-bearer and the duty-recipient, while disgorgement focuses only on duty-bearers relinquishing current assets related to historical wrongdoing.

Unfortunately, compensation too is problematic considering the complex nature of climate change. Given substantial temporal and spatial lags between carbon emissions and their impacts, it is difficult to identify the actual duty bearer and the rightful duty-recipient, apart from very circumstantiated cases. So, it seems safe to claim that compensation applies only to what can be defined as *localized* adaptation in terms of spatial scope and/or institutional context. This is limited to, for example, an institution – a municipality or a road construction business – that by cutting trees for its institutional/business purpose – building a new residential area or a new road – contributes to generate more severe heat waves for local communities. There are myriad possible examples of localized adaptation, but it is nonetheless undisputable that they remain a limited portion of the more general extent of adaptation. In all the remaining circumstances that can be defined as *generalized* adaption, compensation fails. In fact, in the case of generalized adaptation, disgorgement appears to be more appropriate. Disgorgement, as said, requires only the relinquishment of the fruits of historical wrongdoing, in the case of the duty of adaptation of the climate-related harm-doing and harm-enabling actions. Generalized adaptation circumscribes duty bearers and duty recipients only in terms of moral categories, without specifically identifying them: the former, therefore, are required to disgorge their tainted assets and benefits in favor of the latter.

Not all assets and benefits that are attributable to duty bearers' climate-related harmful actions should be viewed as *tainted*. For example, assets used for decarbonizing their activities/behaviors should not be seen as tainted, nor charity donations or benefits to communities. On the other hand, all those assets and benefits not employed in climate-productive ways would be tainted. Furthermore, it should be specified that the notion of wrongdoing reasonably applies to duty bearers' climate-related harmful actions since 1992 (presentation of the first IPCC Assessment Report at the Rio Conference). After this point in time, ignorance about the consequences of certain actions (e.g., emissions, deforestation) and any alleged impotence to reduce them became inexcusable, and hence the duty of adaptation squarely applies.

The Scope

The scope of the duty of adaptation consists of the *morally pertinent* harm the duty bearers should rectify. Rectifications – in the form of compensation and disgorgement – required by the duty of adaptation first involve clarification of which impacts would have naturally occurred versus those attributable to anthropogenic climate change; obviously, duty bearers cannot be held morally responsible for any harm falling into the former category. The first point is then to distinguish between anthropogenic and non-anthropogenic climate change. To this end, the causal chain that goes from human influence on climate change to distinct impacts on human, socio-economic, and natural systems can be clarified through different kinds of approaches of attribution science (Marjanac et al., 2017), usually through a risk-based one which addresses this point probabilistically, or a story-telling approach which inspects the role of the various factors contributing to the event and decides its attributability deterministically. A first step – known as *detection of change* – requires proving that a particular variable has changed in a statistically significant way. The second step – named *factor attribution* – involves identifying the possible causative factors to determine the role of one or more drivers with respect to the detected change and the consequent harm. Eventually, *source attribution* seeks to ascribe any change to specific agents (Burger et al., 2020).

Source attribution goes even further, in trying to identify and attribute climate impacts to specific sources; a *source* could be a particular agent (e.g., a country or a company), a sector, or an activity (Burger et al., 2020). Source attribution makes it possible to allocate a pertinent part of anthropogenic climate harm to individual duty bearers. This attribution is based on their proportional contribution to changes in global atmospheric composition, on the extrapolation of the proportional contribution to localized events, and on the identification of the actual harm caused by those impacts (Burger & Wentz, 2018). In other words, it seems that a sound causative chain going from anthropogenic climate change to harm and the consequent monetary costs, to duty bearers is increasingly possible.

Given this scientific background, attribution science certainly has important moral implications (Mechler & Schinko, 2016), which are complex and often

difficult to unravel (Burger & Wentz, 2018). Attributing specific harm to carbon emissions can imply responsibility and duties for emitters, including countries, regions, sectors, companies, and individuals. Of course, attribution science is not sufficient, and does not aim to establish emitters' moral responsibility or duties – which is a multifaceted issue that extends far beyond climate science (Wallimann-Helmer et al., 2019). In other words, determining who should bear the duty of adaptation remains largely a moral, social, and political question.

The Duty Recipients

Finally, to morally articulate the duty of adaptation, it is necessary to identify who should be entitled to the rectification of climate's harmful impacts: agents most vulnerable to them should be the rightful duty-recipients. Vulnerability to climate change impacts is not simply about the risks of certain harmful events occurring; it is about the preparedness and capacity of different groups to cope with these effects. In this light, it is useful to clarify the notion of vulnerability, which, applied to social systems, is also termed social vulnerability (Brooks et al., 2005). Social vulnerability could be broadly understood as a state of well-being pertaining directly to individuals and social groups. Its causes are related not only to climate impacts but also to social, institutional, and economic factors, such as poverty, class, race, ethnicity, gender, etc. (Paavola & Adger, 2006). Social vulnerability produced by climate impacts endangers a number of critical aspects of well-being, such as life, health, livelihood, etc. The degree of social vulnerability can be used to define duty recipients' level of entitlement to the funds: the greater their social vulnerability, the larger the financial rectification. Shue's third general principle of equity clearly endorses a stringent normative imperative of putting the most socially vulnerable first (Shue, 1999). This principle of guaranteed minimum states that those who have less than enough for an adequate human life should be given enough. To this end, being socially vulnerable means being deprived and having far less than enough. More socially vulnerable agents, therefore, should be given the rectification means (the funds, in this case) necessary to attain a level sufficient for them to cope with adaptable climate impacts.

Empirical Features of the Duty of Adaptation

To fully specify the duty of adaptation, two empirical features springing from its moral articulation outlined in the previous section need to be addressed:

(i) The *structure* (i.e., the concrete means through which the duty of adaptation should be attained)
(ii) The *currency* and the *magnitude* (the kind and the amount of rectification duty recipients are entitled to)

This section deals with them.

The Structure

In practical terms, the duty of adaptation can be structured depending on the kind of adaptation it targets. In the case of localized adaptation, the question is straightforward: it is the *specific* duty bearer that should provide adaptation funding to the *specific* duty recipient based on some agreed estimates of the harmful impacts that the latter has to adapt to.

More complex is the case of generalized adaptation – the large majority of adaptations – where duty bearers and duty recipients are defined only in terms of moral categories (i.e., respectively those accountable to the triply hybrid principle and those more socially vulnerable, as explained in the previous section) and where the specific harm to be adapted is not specified. In this context, a funding mechanism similar in its objectives to the *Earth Atmospheric Trust* (Barnes et al., 2008) to financially support duty recipients should be implemented. This fund should be gradually replenished through the tainted assets and benefits of duty bearers, as illustrated below (the amount of the financial rectification required by the duty of adaptation is instead expounded in the next sub-section).

To achieve its moral mandate and meet the requirement of the duty of adaptation, this fund should include a number of elements. Ideally, the fund should be administered by trustees selected among members of civil society, governmental and non-governmental organizations working on climate change, science and education, environmental issues, justice, peace and security, development, international law, financial matters, and scientific communities; they will be subject to a mechanism – examined later in this section – to monitor the fund's activities to ensure efficiency and to avoid the possibility of corruption or malfeasance. As an institution through which staggering sums of money will pass, it must be prepared to be subject to rigorous public and media scrutiny to ensure it is *above suspicion* in the assignation of funding – it must, therefore, have financial disclosure policies, protocols to ensure third-party accountability, whistleblower protection, and any other process necessary to maintain institutional integrity and safeguard it from charges of corruption.

A financial mechanism of this kind would facilitate strategic focus, rigorous project management, solid monitoring and evaluation, and high levels of transparency. Its structure should be similar to that of a *sinking fund*, whose entire principal and investment income is disbursed over a fairly long period – a starting point could be to set the terms over a 30-year period – until it is exhausted and thus reduced to zero. Its capitalization and resource mobilization strategy is exclusively dependent on money disgorged by duty bearers.

Any local source of emissions concurs to the global increase of the concentration of greenhouse gases in the atmosphere, so given the undifferentiated global origin of duty bearers' contribution to climate change, the fund should be truly global in its scope. It should not take into account any regional/national/local/sectoral distinctions in terms of financial replenishment or the disbursement of its funding.

The fund's operational facets of the replenishing and disbursing procedures should be established in socially agreed ways decided upon by all the relevant stakeholders. Given the centrality and sensitivity of the entire reparation process, it is vital that the functioning and effectiveness of the fund be subject to regular checks and a thorough critical review. To facilitate this monitoring process, the fund should include some overarching and cross-cutting calibration and adjustment mechanisms, involving epistemic qualities, which provide the evidence required to achieve its ultimate goal that of supporting the most vulnerable subjects in dealing with climate-related harm. Among these epistemic qualities, two of the most prominent in relation to the nature and objectives of the fund are accountability, i.e., the demand that the fund abide by certain codes of conduct, and the prospect of judging whether it actually conforms to that conduct; and transparency, i.e., the possibility of monitoring the running of the fund, so as to avoid malfeasance. These qualities would allow the consistency of the fund's conduct and mission to be understood and evaluated (Grasso & Tàbara, 2019).

The Currency and the Magnitude

As referred to and implicitly held throughout the chapter, the *currency* of the duty of adaptation is money: the disparate ways in which adaptations are carried out make it virtually impossible to account for any other currency besides a financial one. This view, consistent with the one generally held by economics (Thurow, 1974) responds to the logic that *cash transfers* do not constrain the duty of adaptation, but rather allows it to take full account of the actual needs of duty recipients.

With regard to the duty of adaptation's *magnitude*, the moral ideal that would make it possible to meet the requirements of the duty of adaptation is *sufficiency*. Sufficientarianism holds that every subject must have a sufficient, yet not equal, share of the specific *unit* of justice: "what is important from the point of view of morality is not that everyone should have the same but that each should have enough" (Frankfurt, 1987, p. 17). The very point of sufficientarianism is therefore that all agents should have enough to be above a certain threshold, below which it is impossible to have adequate opportunities in life, i.e., to have access to the basic environmental, social, and economic conditions to live a decent life. Sufficientarianism has gained a privileged role in the literature on environmental-related justice (Kanschik, 2016) by virtue of its strong acknowledgment of, and accordance with, the stipulations of sustainability.

Based on the sufficiency ideal, every duty recipient should be provided with the financial means to cope effectively with the impacts of climate change. Obviously, any meaningful estimate of the adequateness of the portion of adaption funding pertinent to any duty recipient is impossible; therefore, a necessary simplification is to look at the aggregate level through an index of social vulnerability to climate change (Grasso et al., 2014; UNDP, 2017). Those communities/peoples below the median level of an agreed upon social vulnerability index should be brought above it through adaptation funding; the funds required by the duty of adaptation should be

proportional to the distance to the median level of the index and parametrized to the relevant population.

Second-Order Agents and Duty

The duty of adaptation imposes obligations on duty bearers, which, in turn, must be pursued through concrete actions in the form of financial rectifications. Consequently, to meet their obligations the bearers of the duty of adaptation incur substantial costs, understood in broad terms to include non-monetary ones, such as opportunity costs. Therefore, even if they were able to pass on some of these costs to other parties, it is unlikely that they would meet their duty of adaptation voluntarily. In fact, this would require that the moral urgency of the duty of adaptation directly, almost automatically, motivate their action. Gardiner and Jamieson, with reference to the overall responsibility for climate change, believe that this is possible and argue that *justificatory reasons* reinforce agents' motivation to modify their behavior. If this is not the case, they argue, it is because the justification of their responsibility is inadequate (Gardiner, 2011; Jamieson, 2014).

Alternatively, and possibly more realistically, it is necessary to resort to the notion of second-order duty, i.e., the duty of other agents to ensure that first-order agents fulfil their (first-order) duty of adaptation (Caney, 2014; O'Neill, 2001, 2005).

A first possibility, in the face of duty bearers' failure to meet the obligations that stem from their duty of adaptation, would be for other agents to fulfil them (Caney, 2005; Shue, 1996, pp. 71–73). This circumstance, however plausible, seems unsatisfactory, as it would be a purely reactive response, where proactive action is needed.

A more articulated option, and in this context much more satisfactory, comes from Caney, who argues that when some agents do not fulfil their (first-order) obligations, four alternative strategies can be adopted (Caney, 2016a, b):

(i) Set less ambitious targets
(ii) Include considerations in addition to moral ones for strengthening the justificatory rationale
(iii) Share some of the burden of actions required by first-order obligations with other agents
(iv) Change the incentive structure of the context in which first-order agents operate

In the current context, however, strategies (i) and (ii) still seem to be mostly reactive, while strategy (iii) seems only moderately proactive, as it aspires, at best, to change agents' behavior by inducing them only to perform actions that they would otherwise have avoided. In general, therefore, strategies (i) to (iii) do not seem adequate to induce first-order agents – the bearers of the duty of adaptation in this case – to meet the obligations required by the duty of adaptation.

The strategy outlined in (iv), in which (first-order) agents are induced to fulfil their (first-order) obligations by modifications of the social, political, economic, and legal contexts they operate in seems more useful with regards to the duty of

adaptation. This strategy, in fact, favors its fulfilment by influencing the opportunities, limits, and incentives duty bearers face. The key elements to articulate this notion of second-order obligations are *tasks* – i.e., what needs to be done to favor the achievement of the duty of adaptation – and (second-order) *agents* (Caney, 2005, p. 769, 2014, pp. 134–146, 2016a, pp. 9–10). By matching them, it is possible to develop a coherent and inclusive system of (second-order) obligations for (second-order) agents in relation to the duty of adaptation.

In a broad sense, the normative justification for second-order obligations, i.e., the reason why second-order agents have a duty to undertake certain tasks, is that, in doing so, they can make a substantial difference. That is, based on Spiderman's Uncle Ben principle "*with power comes responsibility*," it is possible to argue that second-order agents who have the power to induce and/or force first-order agents to fulfil their (first-order) obligation, have the second-order duty to do so.

There are four main tasks that second-order agents can undertake to favor (first-order) agents to meet their duty of adaptation:

1. Establish the legal and political framework to enable the duty of adaptation.
2. Establish enforcement mechanisms, including transparency and accountability tools to achieve the duty of adaptation.
3. Disseminate social norms and good practices that support the recognition of the importance of adaptation and its funding and more generally seek to modify the behavior of the agents involved in them.
4. Overcome the resistance of duty bearers against their commitment to the duty of adaptation.

Which are the most appropriate second-order agents to carry out the tasks listed above? Or, more specifically, which (second-order) agents have the (second-order) duty to induce the first-order agents to orient their action toward the achievement of the duty of adaptation? The answer, of course, varies depending on the task. Some *traditional* second-order agents – states (governments) and international organizations – certainly play a central role. However, other less obvious agents play important roles too.

For tasks 1 and 2 – legal and policy framework and enforcement – in the current Westphalian international order of state sovereignty, it would seem that only states have the power to establish and implement the legal and policy framework for compelling duty bearers to abide to their duty of adaptation. In a different perspective, however, citizens, and more broadly, civil society can also play an important role in undermining the consensus to governments that do not show sufficient commitment to climate related priorities. Additionally, given that the duty of adaptation is likely to involve internationally collaborative actions and that national initiative might be consequently coordinated and integrated, it can be assumed that international organizations are also second-order agents in this regard, as in fact is the case with the Green Climate Fund and the previous adaption funds (Grasso, 2010) under the 1992 United Nations Framework Convention on Climate Change (UNFCCC).

The other tasks suggest instead less *conventional* second-order agents. In the case of social norms and best practices – task 3 – the main agents are, so to speak, unexpected, as for the dissemination of such norms and practices ". . . a significant role can be played by figures as diverse as church leaders, poets, novelists, charismatic individuals, and gifted communicators." (Caney, 2014, p. 1). Similarly, in the case of the last task – overcoming resistance from duty bearers – the most effective second-order agents turn out to be those who are able to communicate most effectively – yet objectively and reliably – the need for funding adaptation to climate change, how it can be achieved and the benefits it can bring. For example, scientists who can speak in layman's terms, science journalists and other types of investigative journalism, environmental disclosure organizations, and so on.

This framework of the second-order duty has important normative and practical implications for the achievement of the (first-order) duty of adaptation. In normative terms, the concept of second-order duty can indicate actions and strategies other than those usually considered necessary to achieve the duty of adaptation. Moreover, it identifies a broader group of (second-order) agents who refer to different and more cogent moral grounds to justify their actions in support of the duty of adaptation.

In practical terms, by matching tasks with agents, it becomes evident that numerous second-order agents – not only states and international organizations, but also scientists, journalists, communities, charismatic individuals – can in different ways favor the achievement of a duty of adaptation.

The precise identification of these second-order agents is only possible with reference to specific contexts and, therefore, with reference to empirical analyses. It is useful, however, to identify the broad framework within which these second-order agents are activated to help overcome the resistance of the bearers of the duty of adaptation. In this vein, particular attention should be paid to the analysis of primary and operational second-order agents: the main role of the first group is to spread norms and raise awareness on the necessity for adaptation and its funding to effectively and justly address climate change; the second group is expected to promote political action and legal initiatives and explore approaches finalized at modifying the behavior/steering, duty bearers in view of their achievement of the duty of adaptation (Grasso, 2022).

Conclusion

That centrality of adaptation in the current climate crisis is undisputable: what is missing is a fully-fledged moral account of the duty of adaptation, given that the inclusion of ethical considerations implies greater feasibility and can persuade parties with conflicting interests to collaborate more closely on collective actions such as those required by adaptations.

This chapter aspires to be a first step of the path toward filling this manifest gap. It presents a harm-centered account of the duty of adaptation that specifies its moral basis, i.e., those features that by highlighting the moral building blocks of such a duty and the agents involved in it, should favor its establishment. So in this spirit, it

is worth emphasizing by way of conclusion the sore need for further work on the moral issues entailed by adaptation. In this regard a possible useful starting point is the analysis carried out in this chapter: it can be usefully contextualized and operationalized to the different kind of situations to which adaptations apply, since analysis of this kind can provide the groundwork for, say, the emergence of social forces backing and favoring the duty of adaptation, or for developing a version of it that can justly prioritize adaptations.

Cross-References

- ▶ Responsibility for Climate Harms
- ▶ Compensation Duties

References

Baatz, C. (2018). Climate adaptation finance and justice. A criteria-based assessment of policy instruments. *Analyse & Kritik, 40*(1), 73–106.

Barnes, P., Costanza, R., Hawken, P., Orr, D., Ostrom, E., Umaña, A., & Young, O. (2008). Creating an earth atmospheric trust. *Science, 319*(5864), 724–724. https://doi.org/10.1126/science.319.5864.724b

Barry, C., & Øverland, G. (2016). *Responding to global poverty: Harm, responsibility, and agency*. Cambridge University Press. https://doi.org/10.1017/CBO9781139381758

Brooks, N., Adger, W. N., & Kelly, P. M. (2005). The determinants of vulnerability and adaptive capacity at the national level and the implications for adaptation. *Global Environmental Change, 15*, 151–163. https://doi.org/10.1016/j.gloenvcha.2004.12.006

Burger, M., & Wentz, J. (2018). Holding fossil fuel companies accountable for their contribution to climate change: Where does the law stand? *Bulletin of the Atomic Scientists, 74*(6), 397–403. https://doi.org/10.1080/00963402.2018.1533217

Burger, M., Horton, R., & Wentz, J. (2020). The law and science of climate change attribution. *Columbia Journal of Environmental Law, 45*, 1–185. https://doi.org/10.7916/cjel.v45i1.4730

Caney, S. (2005). Cosmopolitan justice, responsibility, and global climate change. *Leiden Journal of International Law, 18*, 747–775. https://doi.org/10.1017/S0922156505002992

Caney, S. (2006). Environmental degradation, reparations, and the moral significance of history. *Journal of Social Philosophy, 37*(3), 464–482. https://doi.org/10.1111/j.1467-9833.2006.00348.x

Caney, S. (2010). Climate change and the duties of the advantaged. *Critical Review of International Social and Political Philosophy, 13*(1), 203–228. https://doi.org/10.1080/13698230903326331

Caney, S. (2014). Two kinds of climate justice: Avoiding harm and sharing burdens. *Journal of Political Philosophy, 22*(2), 125–149. https://doi.org/10.1111/jopp.12030

Caney, S. (2016a). Climate change and non-ideal theory: Six ways of responding to noncompliance. In C. Heyward & D. Roser (Eds.), *Climate justice in a non-ideal world* (pp. 21–42). Oxford University Press. https://doi.org/10.1093/acprof:oso/9780198744047.003.0002

Caney, S. (2016b). The struggle for climate justice in a non-ideal world. *Midwest Studies in Philosophy, 40*(1), 9–26. https://doi.org/10.1111/misp.12044

Duus-Otterström, G., & Jagers, S. C. (2012). Identifying burdens of coping with climate change: A typology of the duties of climate justice. *Global Environmental Change, 22*(3), 746–753. https://doi.org/10.1016/j.gloenvcha.2012.04.005

Field, C. B., Barros, V. R., & Intergovernmental Panel on Climate Change (Eds.). (2014). *Climate change 2014: Impacts, adaptation, and vulnerability: Working group II contribution to the fifth assessment report of the Intergovernmental panel on climate change*. Cambridge University Press.

Foot, P. (2002). *Virtues and vices*. Oxford University Press. https://doi.org/10.1093/0199252866.001.0001

Frankfurt, H. (1987). Equality as a moral ideal. *Ethics, 98*(1), 21–43. https://doi.org/10.1086/292913

Gardiner, S. (2011). Is no one responsible for global environmental tragedy? Climate change as a challenge to our ethical concepts. In D. G. Arnold (Ed.), *The ethics of global Climate Change* (pp. 38–59). Cambridge University Press. https://doi.org/10.1017/CBO9780511732294.003

Gert, B., & Gert, J. (2020). The definition of morality. In E. N. Zalta (Ed.), *The Stanford encyclopedia of philosophy (fall 2020)*. Stanford University. https://plato.stanford.edu/archives/fall2020/entries/morality-definition/

Goodin, R. E. (1989). Theories of compensation. *Oxford Journal of Legal Studies, 9*, 56. https://heinonline.org/HOL/Page?handle=hein.journals/oxfjls9&id=66&div=&collection=

Goodin, R. E. (2013). Disgorging the fruits of historical wrongdoing. *American Political Science Review, 107*(3), 478–491. https://doi.org/10.1017/S0003055413000233

Goodin, R. E., & Pasternak, A. (2016). Intending to benefit from wrongdoing. *Politics, Philosophy & Economics, 15*(3), 280–297. https://doi.org/10.1177/1470594X16653624

Grasso, M. (2010). *Justice in funding adaptation under the international climate change regime*. Springer Netherlands. https://doi.org/10.1007/978-90-481-3439-7

Grasso, M. (2013). Climate ethics: With a little help from moral cognitive neuroscience. *Environmental Politics, 22*(3), 377–393. https://doi.org/10.1080/09644016.2012.730263

Grasso, M. (2019). Big oil's duty of disgorging funds in the context of climate change. In *The Routledge handbook on climate justice* (pp. 251–261). Routledge Abingdon.

Grasso, M. (2022). *From big oil to big green. Holding the oil industry accountable for the climate crisis*. MIT Press. https://direct.mit.edu/books/oa-monograph/5313/From-Big-Oil-to-Big-GreenHolding-the-Oil-Industry

Grasso, M., & Tàbara, J. D. (2019). Towards a moral compass to guide sustainability transformations in a high-end climate change world. *Sustainability, 11*(10), 2971. https://doi.org/10.3390/su11102971

Grasso, M., Moneo, M., & Arena, M. (2014). Assessing social vulnerability to climate change in Samoa. *Regional Environmental Change, 14*(4), 1329–1341. https://doi.org/10.1007/s10113-013-0570-z

Jamieson, D. (1996). Ethics and intentional climate change. *Climatic Change, 33*, 323–336. https://doi.org/10.1007/BF00142580

Jamieson, D. (2007). The post-Kyoto climate: A gloomy forecast. *Georgetown International Environmental Law Review, 20*, 537.

Jamieson, D. (2014). Reason in a dark time: Why the struggle against climate change failed – And what it means for our future. In *Reason in a dark time*. Oxford University Press. https://oxford.universitypressscholarship.com/view/10.1093/acprof:oso/9780199337668.001.0001/acprof-9780199337668

Kanschik, P. (2016). Eco-sufficiency and distributive Sufficientarianism – Friends or foes? *Environmental Values, 25*(5), 553–571. https://ideas.repec.org/a/env/journl/ev25ev2523.html

Marjanac, S., Patton, L., & Thornton, J. (2017). Acts of god, human influence and litigation. *Nature Geoscience, 10*(9), 616. https://doi.org/10.1038/ngeo3019

Mechler, R., & Schinko, T. (2016). Identifying the policy space for climate loss and damage. *Science, 354*(6310), 290–292. https://doi.org/10.1126/science.aag2514

Mill, J. S. (2015). *On liberty, utilitarianism, and other essays*. Oxford University Press.

Miller. (1999). Principles of social justice. https://www.hup.harvard.edu/catalog.php?isbn=9780674007147.

O'Neill, O. (2001). Agents of justice. *Metaphilosophy, 32*(1/2), 180–195. https://www.jstor.org/stable/24439457.

O'Neill, O. (2005). The dark side of human rights. *International Affairs (Royal Institute of International Affairs 1944–), 81*(2), 427–439. https://www.jstor.org/stable/3568897

Paavola, J., & Adger, W. N. (2006). Fair adaptation to climate change. *Ecological Economics, 56*, 594–609. https://doi.org/10.1016/j.ecolecon.2005.03.015

Rawls, J. (1999). *A theory of justice* (Rev. ed.). Belknap Press of Harvard University Press.

Shue, H. (1996). *Basic rights: Subsistence, affluence, and US foreign policy* (2nd ed.). Princeton University Press.

Shue, H. (1999). Global environment and international inequality. *International Affairs, 75*, 531–545. https://www.jstor.org/stable/2623635

Shue, H. (2011). Human rights, climate change, and the trillionth ton. In D. G. Arnold (Ed.), *The ethics of global Climate Change* (pp. 292–314). Cambridge University Press. https://doi.org/10.1017/CBO9780511732294.015

Shue, H. (2015). Historical responsibility, harm prohibition, and preservation requirement: Core practical convergence on Climate Change. *Moral Philosophy and Politics, 2*(1), 7–31. https://doi.org/10.1515/mopp-2013-0009

Sietsma, A. J., Ford, J. D., Callaghan, M. W., & Minx, J. C. (2021). Progress in climate change adaptation research. *Environmental Research Letters*. https://doi.org/10.1088/1748-9326/abf7f3

Stehr, N., & Storch, H. von. (2005). Introduction to papers on mitigation and adaptation strategies for climate change: Protecting nature from society or protecting society from nature? *Environmental Science & Policy, 8*(6), 537–540. https://doi.org/10.1016/j.envsci.2005.08.001

Thurow, L. (1974). Cash versus in-kind transfers. *American Economic Review, 64*(2), 190–195. https://econpapers.repec.org/article/aeaaecrev/v_3a64_3ay_3a1974_3ai_3a2_3ap_3a190-95.htm

UNDP. (2017). *Social vulnerability assessment tools for climate change and DRR programming | UNDP climate change adaptation*. /Social-Vulnerability-Assessment-Tools.

Vanderheiden, S. (2011). Globalizing responsibility for climate change. *Ethics & International Affairs, 25*(1), 65–84. https://doi.org/10.1017/S089267941000002X

Wallimann-Helmer, I., Meyer, L., Mintz-Woo, K., Schinko, T., & Serdeczny, O. (2019). The ethical challenges in the context of climate loss and damage. In L. M. Reinhard Mechler, T. Bouwer, S. S. Schinko, & J. Linnerooth-Bayer (Eds.), *Loss and damage from climate change: Concepts, methods and policy options* (pp. 39–62). Springer International Publishing. https://doi.org/10.1007/978-3-319-72026-5_2

Wolgast, E. H. (1987). *The grammar of justice*. Cornell University Press.