

Article

A Fair Distribution of Responsibility for Climate Adaptation-Translating Principles of Distribution from an International to a Local Context

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Abstract: Distribution of responsibility is one of the main focus areas in discussions about climate change ethics. Most of these discussions deal with the distribution of responsibility for climate change mitigation at the international level. The aim of this paper is to investigate if and how these principles can be used to inform the search for a fair distribution of responsibility for climate change adaptation on the local level. We found that the most influential distribution principles on the international level were in turn built on one or more of seven basic principles: (P1) equal shares, (P2) desert, (P3) beneficiary pays, (P4) ability, (P5) self-help, (P6) limited responsibility for the worst off, and (P7) status quo preservation. It was found that all the basic principles, but P1, P3, and P7, are to some extent translatable to local climate adaptation. Two major problems hamper their usefulness on the local level: (1) several categories of agents need to take on responsibility; and (2) emissions do not work as a base for all principles. P4, P5, and P6 are applicable to local adaptation without changes. P4 is of particular importance as it seems to solve the first problem. P2 is applicable only if the second problem is solved, which can be achieved by using risk of harm instead of emissions as the basis for desert.

Keywords: responsibility; forward-looking responsibility; fair distribution; climate change adaptation; local adaptation



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1. Introduction

The aim of this paper is to investigate if and how principles for fair distribution of responsibility for climate change mitigation on an international level can be used to inform the search for a fair distribution of responsibility for climate change adaptation on the local level. This is an issue of increasing importance, as individuals, countries, cities, and communities face the negative effects of climate change, with more commonly occurring extreme weather events and sea level rise [1].

The issue of responsibility for climate change adaptation has been discussed in the academic community, either empirically, often on a case-by-case basis [2,3], or ethically, most often as part of the wider climate justice debate focusing on climate change mitigation [4]. There have been some attempts to establish an ethical basis for the distribution of responsibility for adaptation within country contexts [5–7], but most articles discuss the distribution of responsibility from an empirical perspective, rather than from an ethical one [2,8,9]. There is thus much more work to be conducted when it comes to the ethical aspects of the question how responsibility for climate change adaptation can be distributed on the local level. In connection with this, it makes good sense not to start by reinventing the wheel, but to make use of theories, principles, and discussions already occurring in the literature.

Responsibility is a concept that is very much in focus in discussions about climate change ethics [10]. Why this is so becomes very clear when looking at the international

negotiations about climate change mitigation, where the hardest negotiations have focused on how much different countries should cut down their emissions relative to other countries. Most academic discussions regarding distribution of responsibilities in connection with climate change have accordingly dealt with climate change mitigation on the international level [10–22]. We therefore believe this is the right place to start in the quest to identify distribution principles that might also be useful on the local level. Byskov et al. [23] argue that principles for distributing responsibility for climate change mitigation might not be applicable to adaptation. However, others point out that we cannot assume this without investigation (see [24] for a discussion). We will contribute to an answer to that question by investigating if and how principles for fair distribution of responsibility for climate change mitigation on an international level can be used to inform the search for a fair distribution of responsibility for climate change adaptation on the local level.

In the following text, we will first make some initial clarifications about focus and concepts (Section 2) and then move on to discuss how we tackled the task in terms of method and what literature we utilized to locate principles for an international distribution of climate change mitigation (Section 3). From the wide array of different principles mentioned in this literature, we extracted seven basic principles, in some cases with sub-principles, for distributing responsibility for climate change mitigation among countries (Section 4). Finally, we analyzed the usefulness of these different principles at a local level (Section 5).

2. Some Initial Clarifications

The most important term in this paper is ‘responsibility’. Hayward [10] and Lang Jr. [25], among others, have distinguished between two senses of the term ‘responsibility’. In one sense, we can say that someone is responsible for performing a certain act. In another sense, we can say that someone is responsible for having (or not having) performed a certain act that should have been performed (or not performed) by that agent. Following van de Poel [26] and Rovane [27], we call this second sense of responsibility ‘backward looking responsibility’. This form of responsibility also goes under the terms ‘ex post responsibility’ [28,29], ‘retrospective responsibility’ [30,31], ‘accountability’ [32], or in many legal documents, ‘liability’. These terms are sometimes used as synonyms and are sometimes assigned different nuances, though they all refer to what we call backward looking responsibility.

In discussions about climate change, the perspective is usually forward looking in the sense that the discussion tends to focus on how to avoid our harmful effect on the climate system more than we have already endeavored (mitigation) or on how to prepare for the expected effects of a changing climate (adaptation). Nollkaemper and Jacobs [29] call this kind of responsibility ‘ex ante responsibility’, and they explain that when used in this sense, ‘responsibility’ means the same as ‘duty’ or ‘obligation’. We choose to call this kind of responsibility ‘forward looking’ in contrast to the above-mentioned ‘backward looking’ responsibility (see [26,33]). In this paper, the focus will be solely on forward-looking responsibility. This does not necessarily mean that past actions will be irrelevant. Some theories dealing with the distribution of forward-looking responsibility put a large weight on past actions (or inactions). We will return to that later in the paper. Many authors use the term ‘responsibility’ without further explanation to mean what we call ‘backward looking responsibility’ (see [17,20,34–37]). Because our focus is on forward-looking responsibility, however, we will, when nothing else is stated, use the term ‘responsibility’ to mean ‘forward-looking responsibility’.

One aspect of responsibility that is often discussed, not just in relation to climate change, has to do with the issue of collective responsibility. With few exceptions, the amount of greenhouse gas emissions caused by one individual is far from sufficient to cause any climate change [38]. This is sometimes taken as a reason to discuss responsibility on a higher level than the individual. On the other hand, only individuals can have intentions, which means it is very hard to assign responsibility in a strict philosophical sense to anything

other than individuals. There is an ongoing debate regarding whether entities other than individual persons can be responsible in a moral sense [10,16,25,27,31–33,35–37,39–41]. We will not contribute to this debate. Instead, we adopt the pragmatic position that it makes sense for practical purposes to treat collectives as agents, even though they are not the ultimate agents. That is, even though collective entities cannot have any interests or intentions on their own and do not set their own aims, they have aims and rules of action set for them, and when individuals make decisions or act in the name of an organization, they implement that (supposedly) in line with the aims and rules set for the organization, not in accordance with their own intentions.

We discuss the distribution of responsibility on the local level. By ‘the local level’, we mean a sub-national division of a country into smaller political areas, with some form of decision-making or implementing authority. These smaller political entities, on the local level, are what countries are on the international level: They are responsible for decision-making and implementing them locally. They can also differ between countries and contexts.

3. Method

To identify the basic principles for distribution of responsibility for climate change mitigation (and, to a limited extent, adaptation) among countries (i.e., on the international level), we studied the ongoing discussion through a selection of influential academic books and journal articles dealing with climate ethics or climate justice from a forward-looking perspective. We did not set out to scan the entire literature in order to achieve a representative description of the discussion. Instead, we aimed at identifying the basic ethical principles that the discussion revolved around. To achieve that, we started with texts we knew to be influential in this debate and continued reading until we no longer found any new principles. This means that we perhaps missed some rarely mentioned and thus less influential principles, but we found this to be an efficient way of catching the most influential principles.

All of the principles mentioned in the referred literature were serious contenders in the discussion, and were used in our study, including principles that were discussed but not advocated by the authors. We gave each principle that we found in the literature a code; see Table S1 for the full list.

We found that all of the coded distribution principles relied on one or more of the seven basic principles, some of which could be further divided into sub-principles. Some of the principles for distribution mentioned by the authors were combinations of different basic principles and some were principles for how to prioritize among the basic principles [42]. The seven basic principles with sub-divisions are presented and explained in the next section.

As the next step, we analyzed if and how the seven basic principles could be applied on the distribution of responsibility concerning local climate change adaptation.

4. Principles of Distribution among Countries

Here, we present the seven basic principles with sub-principles, extracted from the discussions in the surveyed literature (Table S1).

4.1. P1: Equal Shares

The most basic principle that is mentioned by most of the authors is, perhaps, that responsibility should be divided equally among the agents. According to Ringius et al. [43], this is the default option in international negotiations. Singer [19] also sees this as the default alternative and states that it should only be diverged from for good reasons (though he also states that there often are good reasons).

There are three subcategories of this principle. The most basic subcategory divides responsibility equally among countries (P1.1: nation-based equal shares—R2002A [43]; Si2010A [19]; V2008C [20]). Another subcategory, which is also the most popular of

the three subcategories among the authors, is to divide responsibility among countries based on population size (P1.2: per capita-based equal shares—B2013A [11]; B2014C [12]; G1992B1; G1992B2 [14]; G2010A [15]; G2011C [36]; J2010C [16]; M2009D [17]; M2011A [18]; R2002G [43]; V2008A [20]). In addition, there is also a sub-category based on the burden each country has to endure to cut their emissions (P1.3: burden-based equal shares). This distribution is thus not focusing on equal distribution of the emissions or emission cuts as such, but on the costs (in a wide sense) (G1992D [14]; M2011D [18]; R2002E [43]; S2015B [44]; V2008B [20]); marginal costs (G2010D [15]; G2011E [36]; M2011D [18]); opportunity costs (P2011B [42]); burdens (G1992D [14]; G2011E [36]; M2009A [17]; V2008B [20]); or consequences (R2002B2 [43]) of cutting emissions. Though different authors focus on different burdens and ways of quantifying burdens, we chose to include all under the same heading here, since the basic normative idea is the same: The burdens borne as a result of the emission cuts should be shared, not the emission cuts themselves.

4.2. P2: Desert

This basic principle for distribution of responsibility is mentioned, and often recommended, by many of the authors. It states that responsibility should be based on the country's share of global emissions. Some authors only mention the basic principle (B2014B [12]; C2005B [45]; C2006C [13]; C2010A [46]; H2012A [10]; J2010B [16]; R2002B1; R2002K [43]; Sh2010C [21]; V2008D1 [20]), while others are more specific, focusing on one of the following sub-principles. The first sub-principle states that only present emissions should count (P2.1: current guilt—G1992A1 [14]). The second states that responsibility should be based on a country's total emissions over time (P2.2: historic guilt—C2006A [13]; C2009C [47]; G1992A2 [14]; G2011B [36]; M2009B; M2009C; M2009N3 [17]; M2011B [18]; R2002K [43]; S2015D [44]). The third sub-principle bases its distribution on how much a country has already done to cut down their emissions (P2.3: accomplishments—S2015A; S2015C [44]).

Most of the authors equate P2 with the so-called polluter-pays principle [16,20,45,46]. Hayward [10], on the other hand, thinks it is a question of two different principles. According to Hayward, the point of P2 is to use events that have already taken place as a basis for assigning responsibility, while the purpose of the polluter-pays principle is to internalize expected environmental costs in the decision-making process so as to avoid the incurrence of at least some of these costs.

4.3. P3: Beneficiary Pays

This principle tells us that those who benefit from a practice (in this case, greenhouse gas emissions) that causes a problem (in this case, climate change) should pay for the damage caused by this practice, independently of whether they took an active part in it or not (C2006B [13]; C2005A [45]; G2011A [36]; H2012B [10]; J2010A [16]; P2011C [42]).

P3 is usually brought forth as an answer to critique against P2.1. Here, we classify it as a separate principle because it is based on a separate normative idea.

4.4. P4: Ability

This basic principle states that responsibility should be distributed according to the ability to shoulder that responsibility, in this case, to cut down one's emissions and adapt one's society, as well as helping other countries to cut down their emissions and adapt (C2010B [46]; H2012C [10]; J2010D [16]; M2009N4 [17]; M2011C [18]; P2011A [42]; R2002I; R2002J [43]; Sh2010D [21]). In the discussions about distribution of responsibility for climate change mitigation among countries, 'ability' usually refers to economic wealth; however, it can, in principle, refer to any kind of ability, for instance, in the form of knowledge, access to technology, or influence (though these abilities are not totally independent).

4.5. P5: Self-Help

The idea behind this principle is that countries that benefit more from emission cuts have a larger responsibility to contribute to such measures (R2002C [43]; Sh2010B [21]). In practice, this means that countries that are more at risk from the effects of climate change have a responsibility to do more to mitigate and adapt.

4.6. P6: Limited Responsibility for the Worstoff

The idea behind this principle is that there should be a limit to what we demand from those who are worst off in terms of resources and/or living conditions (B2010A [22]; B2014A [12]; C2009D [47]; C2005B [45]; G1992E; G1992G [14]; G2010B; G2010C [15]; G2011D [36]; M2009N1 [17]; Sh2010A [21]; Si2010B [19]). This principle is very popular among the authors of the texts we used. The aim of this principle is thus not to distribute responsibility per se, but to limit responsibility for some parties, which of course has important implications for how to distribute responsibility. Since this principle cannot really stand on its own, it is usually combined with some other principle, usually P2, P3, and/or P4.

P6 can be motivated by a will to limit the costs of climate change mitigation for those worst off, but often it is also motivated by a concern for equality in a consequentialist sense; that is, a concern that any responsibility distribution should aim at increasing, or at least not decreasing, equality (contrary to procedural equality, which can be seen as the normative basis behind P1). P6 also comes in different varieties, in particular, regarding the degree of leeway given to the worst off, ranging from slightly lower demands to accepting an increase in emissions for the worst off.

4.7. P7: Status Quo Preservation

The opposite of P6 is the principle that no special considerations should be awarded to anyone, and no redistribution should take place. This is commonly operationalized as a distribution according to which each country should cut down their emissions by the same percentage (C2009A [47]; G1992F [14]; H2012D [10]; J2010E [16]; R2002H [43]).

In addition to the “pure” principles and their different versions, there are also some mixed principles (C2005B [45]; G1992C [14]; M2009C; M2009E [17]; V2008D2; V2008E [20]), as well as some principles concerned with how to prioritize among other principles (P2011D1-3 [42]). Some principles are purely procedural and do not suggest an actual distribution (J2010G [16]; R2002D; R2002F [43]).

5. Applicability of the Basic Principles for Adaptation on the Local Level

Here, we discuss each of the seven basic principles and their subdivisions with the aim of investigating if and how they can be used to inform the search for a fair distribution of responsibility for climate change adaptation on the local level. This involves two shifts in focus: a move from mitigation to adaptation, and a move from the international to the local.

The shift from mitigation to adaptation has a large impact on what the responsibility concerns. The reason why it cannot just be assumed, that principles developed for the distribution of responsibility for mitigation can be applied straight off for adaptation, is that the two issues differ in important areas (see [24] for a discussion). Mitigation is a global issue. It does not matter where on Earth emissions are made—they contribute equally to climate change. As a consequence, all emission reductions have an equal effect on the climate system. As such, the benefits of mitigation efforts, wherever made, are shared by all, whereas the burdens for those efforts (including costs for negative side effects resulting from those efforts) are not. Adaptation does not share this characteristic. Adaptation measures are place-based, not only in the sense that they will be implemented in a particular place, but also in the sense that the benefits they provide will accrue locally. This means that burdens can be distributed locally, but also nationally or internationally (at least in terms of the financial burden), but the direct benefits are local.

The primary challenge in connection with the second shift of focus, the move from the international to the local, concerns to whom responsibility should be distributed. This problem also exists on the international level, but it is less problematic. For example, Caney [45] argues that it is far from self-evident that it is among countries that responsibility should be distributed. He lists several types of agents that could hold responsibility, including countries and individuals, but also economic corporations and international regimes and institutions. He argues that one argument for focusing only on countries (although he does not prefer it) is that countries can be seen as incorporating the other agents and their responsibility. As countries (with some limitations) can be said to have authority over their citizens and companies active within their jurisdiction, focusing on countries is a pragmatic choice. That all countries are considered (legally) equal within the international system also makes it possible to treat them in the same way as individuals. This is not as easy on the local level for two reasons. First, on a local level, there is, in most cases, no similar authoritative entity such as those that countries have, with the ability to assume the responsibility of all agents active within its jurisdiction. Second, that climate change adaptation differs from mitigation in terms of the distribution of burdens and benefits, and it has important consequences for how to think about who is responsible. An international distribution of responsibility for climate change mitigation usually concerns emission reductions or emission shares, which does not indicate how countries are to reach their reductions or confine emissions within their shares. This has to be decided and implemented within each country. The local level is different in this regard, as targets cannot be delegated to others to reach, and local political entities often lack the power needed over agents within their jurisdiction. Because of this, responsibility has to be considered as incorporating a wider variety of roles, including for initiating processes, for making decisions, for implementing measures, for paying for them, and so on. These roles cannot be filled by only one type of agent, for example, individuals or public authorities. As public authorities and decision-making bodies, individuals, companies, and civil society organizations are involved in adaptation [4,48], it seems reasonable, as Markowitz et al. [49] suggest, to include all these agent types when considering who should be responsible for adaptation on the local level. In this paper, we will not discuss responsibility in terms of specific roles other than when it clearly affects the principle in question, for example, in terms of the principle of ability.

One challenge with the shift of focus to the local level is that it is organized differently in different countries, with different levels of authority in relation to national and regional levels [8,50,51]. This means that though we can treat local political entities, for example, municipalities or cities within the same country, as alike in the same sense as countries are treated internationally, we cannot treat local entities in different countries as alike, as they may not only have different possibilities to take on responsibility but may also be completely different types of agents. We still think it is worthwhile discussing the local level in general, especially in terms of whether it is possible to draw general insights from the principles for the international distribution of responsibility for climate change mitigation. In the following discussion, we will concentrate on developed and democratic countries, as these can be expected to share characteristics connected to the democratic system as well as having the governing capacity to decide, administer, and finance adaptation measures. This limitation is made for pragmatic reasons only. Our results might be valid for the local level in all types of countries, but this aspect has to be considered further.

Below, we discuss each of the seven basic principles with subdivisions, successively.

5.1. P1: Equal Shares

On the international level, this basic distribution principle tells us to divide adaptation costs, emission cuts, and/or emission shares equally among all countries. Can we convert this principle into a principle for the distribution of responsibility for climate change adaptation on the local level? The equal shares view is typically based on an understanding of climate change as a global commons problem (that is, the atmosphere is a global

common in the form of a CO₂ sink, and climate change is caused by overuse of the global commons [17,36,52]; see also [11] for a critical view), in combination with the view that all human beings have an equal right to this global common. The size of the emissions share can be divided equally based on one particular type of entity (greenhouse gases) that can be quantified in one particular unit (CO₂-equivalents). In the case of adaptation, whether discussed in terms of an international or a local distribution of responsibility, there is no metric that we can use, and adaptation does not concern a global common. This poses problems especially since different places and individuals will face different kinds of effects from climate change, and different environmental and other circumstances may favor different adaptation measures.

Another difference that could make it difficult for applying the principle of equal shares to local adaptation is that, on the international level, it is assumed that all agents are countries. On the local level, we have to consider many different categories of agents.

We see two different ways of handling this incongruence. One can (1) decide that every agent is equal and distribute responsibility equally across the whole spectrum of agents; or one can (2) try to identify equal agents, group them together, and distribute responsibility equally among equal agents.

The first alternative (1) seems counterintuitive from an ethical perspective for the same reason as many authors have turned against P1 on the international level, namely that all agents are not equal, which makes it unfair to divide costs or benefits equally among them. They differ, for instance, with respect to how much they have contributed to the problem, their ability to deal with the problem, their vulnerability to the problem, and so on, which of course is why the other distribution principles (P2–P7) were suggested in the first place. These differences seem to be even more pronounced when we talk about adaptation on the local level, both because responsibility for adaptation can only partly be equated with payment, and because we deal with a larger range of agents that need to take on responsibility, compared with the international level, where we talk about distribution among countries.

From this perspective, the second option (2) seems more reasonable, but it comes with its own problems. The most important problems seem to be:

- A. We need to find a basis for grouping the agents into equal sets, which means we have to leave P1 and move to one (or more) of the other principles. Merely claiming that it is “natural” to divide the agents into public authorities, companies, and individuals (for example) is not a valid reason [45]. If the reason for the division is that not all agents are equal, we need to determine and be transparent about which differences are valid bases for division and why. Not all groupings of agents will be possible in all countries, as there will be large differences in what agents there are and what their roles are. Such a grouping therefore has to be context-based.
- B. Even if we manage to construct the groups in such a way that it would be fair to divide the responsibility equally within each group, we still require some way of dividing the responsibility between the groups. That is, even if we figure out how to divide responsibility fairly among individuals and among companies, for instance, how do we make a fair division between the groups of individuals, companies, and public authorities? This cannot be carried out by the help of P1, as it does not consider the differences between the groups, which was the reason why we decided to divide all agents into groupings in the first place.

Of the two alternatives, alternative 1 seems to be a nonstarter. Demanding that an individual take on the same responsibility as public authorities is just not a realistic option. If we talk about alternative 2, we could, for instance, have different public authorities that are in charge of different issues in a local political entity pay jointly for all adaptation measures in that entity, independently of their own adaptation needs or roles. This may be difficult to implement, as public authorities usually only get funding for their particular tasks. There seems to be both ethical and practical issues with applying the basic principle P1 to local adaptation.

The different subdivisions do not fare much better concerning local adaptation, as will be discussed below.

5.1.1. P1.1: Nation-Based Equal Shares

What the equivalent of nation-based equal shares on the local level could be is not clear. One intuitive answer would be to divide responsibility equally among the local political entities within a country, for instance, municipalities or cities. This is a practical solution to how to divide responsibility (which is also one of the motivations behind this sub-principle on the international level). There are two problems with this. (1) Whether it is fair is a controversial matter. On the international level, dividing responsibility among nations seems like the obvious default division, but it has been criticized since nations are not really equal. Among other things, they are different in population size, which is the reason why P1.2 below was suggested. On the local level, the same holds true as well. (2) A division of responsibility between local political entities implies a shift from the local to the national level because it will not be a division of responsibility within the local political entity itself but between such entities. Seeing local political entities as responsible for all adaptation within their jurisdiction in the same way as nations (or countries) are seen as responsible for all emissions within their jurisdiction might also be ethically and practically questionable, especially in countries where local political entities have little authority. Therefore, P1.1 seems not to be applicable to local adaptation.

5.1.2. P1.2: Per Capita-Based Equal Shares

In line with what we said above under P1.1, the local equivalent to P1.2 would be to divide the responsibility among local political entities based on the number of inhabitants. This means P1.2 is not applicable to the local level either, since if you divide responsibility based on the population of different local entities, the discussion has been moved from the local to the national level.

5.1.3. P1.3: Burden-Based Equal Shares

Following this principle would mean to divide burdens so that the burdens each agent has to endure following from adaptation measures (or the lack thereof) becomes equal.

Applied to the local level, P1.3 needs to divide responsibility within sets of equal agents in order to avoid the problems raised in P1. The most likely candidate would be for all individuals to share the burdens equally. This seems to be in line with redistribution policies that aim to provide citizens with equal benefits of, for example, public service. Such policies might be more common in some countries, but the principle has probably a broad general traction, as it speaks to a country's duty to care for its citizens [53]. A problem with this solution is, once again, that it shifts the group in which responsibility would be divided from the local to the national level. If conceived only within a local context, the principle comes with other problems. As highlighted by Fuller [54], in regard to climate change mitigation, a distribution among individuals will only lead to other agents not having to take responsibility for their emissions. She highlights further that individuals do not have equal possibilities to decrease their emissions. The same problems as for P1 apply here as well.

The fact that P1.3 on the international level is explicitly about costs or burdens, contrary to P1.1 and P1.2, which are made to be applicable to both costs (emission cut-downs) and benefits (division of emission shares), makes it seemingly more straightforward to adapt P1.3 to the distribution of responsibilities, also typically seen as a burden (adaptation obviously creates benefits, but it is not the distribution of these benefits we discuss here). The problem here is that if it is difficult to compare the burden (economic or otherwise) that climate change mitigation will place on country A with that of country B, it is probably nothing compared to the difficulties of weighing up adaptation measures, for example, the burden on a city for building a wall (in terms of economic costs, but also in terms of obscuring sea view and so on.), the burden on a building company for not being able to

exploit the (for now) most attractive seaside sites, and the burden on an individual home owner for not being allowed to use non-permeable materials in gardens. This is probably easier said than done, which in turn means that P1.3 may even be a more difficult task to apply to remedy our problem, after all.

5.2. P2: Desert

Distributing responsibility based on desert (positive or negative) seems fair but applying that principle to adaptation on a local level comes with its own challenges.

On the international level, this principle is usually about grounding responsibility in each country's relative contributions to global greenhouse gas emissions. Using greenhouse gas emissions as a basis for distribution of responsibility for climate change adaptation on the local level could work, at least in principle. The problem is, once again, how we distribute responsibility in a fair way between different types of agents. Let us assume that we need to distribute the cost of building a barrier along a river running through a city. How do we, based on their relative contributions to climate change, distribute responsibility in a fair way between public authorities, the individuals who live along the river and in the city in general, the school located next to the river, the country club further up the river, and the insurance companies that have insured the properties along the river? How do we measure contributions in a way that makes them comparable across these very different types of agents?

A problem with grounding responsibility on different agents' contributions to climate change is also that, contrary to what is the case on the international level with countries as the immediate agents, most agents on the local level are too small to have any discernible effect at all on climate change, making it difficult to assign guilt. (At least, this is true for individuals. There may of course still be some high-emitting entities in the area such as large factories.) We then encounter another problem: it is not clear if guilt, based on emissions that are global in character, can be repaid by taking a larger responsibility for local adaptation. For companies that are present in several locations, it is also difficult to determine how large part of their emissions should be assigned to a particular local entity.

One way of translating P2 to the local level might be to distribute responsibility according to whether an agent's actions have created, increased, or reduced the risk of harm to themselves or to others from negative climate effects (see Nilsson [55] on using risk as a basis for forward-looking responsibility); in essence, if they have contributed to adapting society, meaning less responsibility (in accordance with sub-principle 2.3), or increased vulnerability, meaning more responsibility (in accordance with sub-principle 2.1 or 2.2, depending on whether it is an ongoing or a finished project). Contributing to adaptation could be, for instance, that property owners ensure that surface water can be retained on the ground by green areas. Contributing to vulnerability could be the opposite—that property owners replace green areas by hard surfaces, decreasing the ability of the ground to retain water, thereby increasing risks for other properties. This would make it possible to distribute responsibility regardless of the type of agent. However, the same problems as those highlighted in P1.3 apply here as well. Some individuals will not have the capacity, either financially or in terms of knowledge about what behavior is beneficial and not, to change the way they behave. We could add a requirement that agents have the capacity to affect their behavior in the appropriate direction, to assign responsibility. One particular area where P2 might be useful in relation to local climate adaptation is in relation to insurance fees. Those who chose to live in risk-prone areas get a higher insurance fee (desert in terms of guilt), whereas those who have adapted their property get a discount (desert in terms of accomplishment).

For P2 to become useful concerning local climate adaptation, it cannot be based on an agent's emissions, but it may be based on an agent's influence on the risk of harm caused by climate change.

5.2.1. P2.1: Current Guilt

Of the three sub-principles of P2, the one most easily applicable to local adaptation seems to be P2.1, though this is also the version that is the least popular among authors who discuss these principles on the international level [14,21,36,45,47]. Those who are guilty of currently deciding on or executing plans that will lead to an amplified harm of negative climate effects need to take on responsibility both for acting to decrease the risks they impose on others, and to pay for such actions. It seems reasonable to assume that most agents today are aware of the possible negative effects of climate change, although they might not be able to determine how to act in order to decrease risks. In order to divide responsibility based on current guilt, we therefore need to find a way to assure that agents have this information.

5.2.2. P2.2: Historic Guilt

For local adaptation, historic guilt could be assigned to those who have contributed to increasing the harm caused by climate change on others, for example by poor constructions or constructions in risk-prone areas. A problem here is that when most of these constructions were put in place, knowledge about global warming and its effects were not present or widely known. The same could be (and often are) argued for historic emissions on the international level [10,12,19,44,56,57]. Assigning guilt for historic actions, whose consequences were not well understood, is often seen as ethically questionable, though its power as an objection against historical guilt as a basis for responsibility is also questioned. Gardiner [15] argues that if he accidentally breaks something that belongs to you it seems reasonable that he fixes it even if he cannot be blamed for breaking it.

Another problem with guilt-based responsibility that is often pointed out in discussions about climate change mitigation on the international level is that the individuals behind the emissions, in many cases, are no longer alive [10,36,45,57]. On the global level, this could be dealt with by not reducing guilt to the individual level but by accepting collective guilt for nations [45]. This solution is in need of independent justification; however (as pointed out by Caney [45]), and on the local level, it would have limited power. It might work for non-human actors such as municipalities and companies, but then we have to leave individuals out of the equation.

For assigning responsibility for local adaptation, limited historic guilt could be used instead of historic guilt. It seems reasonable to expand guilt from current actions to encompass actions made after a point in time when we could reasonably argue that knowledge about climate change and its effects would be well-known and widespread [19,58]. After that point in time, historic guilt could be used for assigning responsibilities. This could entail that public authorities, construction companies, or individuals who have made decisions and executed plans that have led to amplifying the negative effects of climate change are assigned a larger responsibility to act and take on costs for adapting society.

A complicating factor when determining the baseline is that it involves another kind of responsibility, namely the responsibility to inform oneself. That is, in order to decide when the knowledge of climate change and its effects was sufficient and sufficiently accessible to form a basis for responsibility for adaptation, we also need to determine what is reasonable to demand from different agents in terms of a responsibility to find out. The answer to the latter question probably differs between agents. That is, it is probably reasonable to demand more from public authorities and companies than from individuals when it comes to actively seeking knowledge about things such as climate change and its effects.

5.2.3. P2.3: Accomplishments

This basic principle states that those who have already acted to reduce their emissions have less responsibility to continue decreasing them. When applied to local adaptation, P2.3 could, as we saw above, be understood to mean that those who have already contributed to the adaptation of the society and/or their property would have a lower responsibility for further adaptation measures. It seems quite reasonable to use this principle in connection

with responsibility for local adaptation. How much and in what way agents need to contribute to adaptation to count as accomplishments is a question of proportionality connected to the level of risk we accept in society. If an agent has contributed to reducing risk to that level, it could be argued, based on the agent's accomplishments, that its responsibilities are met. Adaptation that results in negative effects for others cannot be accepted as accomplishments, even if it reduces one's own risk.

5.3. P3: Beneficiary Pays

In the discussion about international responsibility, beneficiaries are defined as those who have reaped benefits from greenhouse gas emissions, regardless of whether they themselves caused the emissions. When adapted to the issue of local adaptation, this would mean that all those who have benefitted, or are benefiting from emissions, have a larger responsibility to contribute to adaptation, predominantly in terms of paying for adaptation measures. The main advantage over P2, according to those who have suggested this principle, is that we do not have to concern ourselves with a problem whose main contributors are now dead [10]. The same applies to the local level, with the added benefit that we do not have to worry about the problem that the emissions of most individuals are not sufficient in themselves to make a discernible contribution to climate change.

However, a problem with applying P3 to local adaptation is how to apply it in practice. The principle is difficult enough to apply in an international context where, even though some countries clearly have benefited from their emissions more than other countries, it may sometimes be inappropriate to only consider differences between, and not within nations, and where it is sometimes argued that all countries have benefitted from the technological and medical innovations made possible by the use of fossil fuels [10,14]. On the local level, the problem may be worse. The difference in how much different agents have benefitted from greenhouse gas emissions is probably rather small compared to differences between countries, although this might differ between countries and local contexts. This makes P3 difficult to use for distribution purposes on the local level.

If we, despite this, want to apply the principle on the local level, we need to figure out some way of distinguishing between different levels of benefit on these levels. Can we say, for instance, that if you, as an individual, have a larger responsibility—if you work for and thus get your salary from a company that has low emissions today but reached its present position as market leader through its earlier use of cheap technology with high emissions before you started working there—than I do, who work for a company that always had low emissions? Does it mean that someone who works in a different position at the same company and has a higher salary than you (and thus benefits more) has a larger responsibility? Both these positions are possible, though it demands a lot of work to gather all relevant facts to make the necessary comparisons for a fair distribution based on this principle, and it may be difficult to gain acceptance for it.

5.4. P4: Ability

The basic principle that responsibility should be distributed based on ability is by some held forth as the fundamental principle in relation to adaptation [6]. There are two main reasons for why ability is an important basis for responsibility. A normative reason—it seems fair, and a practical reason—it is usually more efficient and the result can be expected to be better if responsibility is connected with ability [10,20]. On the other hand, it can also be argued from both normative and practical reasons that it is not a good idea to “punish” the more able by assigning them more responsibility, at least not without compensation. These considerations seem to be the same whether we talk about mitigation or adaptation and whether we talk about the international or the local level. Therefore, are there any differences? If anything, ability may in fact be more relevant on the local level.

In the discussions about fair distribution for climate change mitigation on the international level, ability is largely equated with economic ability, sometimes in combination with access to technology. These abilities can be expected to be important on the local level

as well, but here, we can also expect larger differences in knowledge and wider capacities among different agents. In an international context, where agents are countries, it is long since impossible to argue that the agents have insufficient knowledge. In a local context, where agents might be individuals, issues of limited knowledge come into play (see [5]). One could argue that all have a responsibility to inform themselves, but not all have the ability to do so. It is also quite a different thing to have knowledge about the possible effects of climate change and to understand how to act on that knowledge.

There are also some other differences between the international and the local level that need to be considered. On the one hand, the impossibility of equating all responsibility for adaptation to payments, and on the other, the difficulty to subsume all agents' responsibility under that of the local political entity, both make it more difficult to apply P4 on the local level.

Another difficulty is that some individuals will be better positioned to contribute to adaptation, as they own property or land, or hold a decision-making position, whereas others will have much less possibilities to contribute. Based on these aspects, it is clear that agents having the ability to adapt society will vary largely between countries on the one hand, and local contexts, on the other (see [51]).

Another difference between the international and the local level is that, on the international level, it is mostly clear which agent (i.e., country) has control over which area. On the local level, agents have overlapping control over the same area. Even if a property is privately owned, public authorities can place demands on the property owner through legislation. This power overlap decreases each agent's ability to decide if and how adaptation should be conducted. This also means that responsibility will potentially be spread out on a number of agents, not necessarily leading to better results. One way of solving this dilemma might be to assign responsibility to the agent with the largest ability to conduct adaptation to the benefit of all. However, this would decrease the level of self-determination of individuals, which might not be seen as fair by the public. Therefore, if P4 is to function for local adaptation, we might need to live with the problem of power-overlap, which might lead to less efficient adaptation, as the measures decided or implemented by different actors might not work well together or even counteract each other.

5.5. P5: Self-Help

This basic principle is applicable to local adaptation without any amendments, unsurprisingly, as it has mostly been discussed in connection to adaptation internationally. It would mean that those who are at risk or have been hit by flooding, heat waves, or something similar, have to take responsibility for their own situation regardless of why they are at risk or are hit and regardless of whether they had any role in causing it or the ability to cope. This entails a far-reaching individual responsibility but could also be used to distribute responsibility over different types of agents. For example, it could also be used to assign responsibility to local political entities or companies that wish to ensure their own survival against, e.g., increased sea levels. That the whole responsibility according to this principle rests on the victim without any concern for the victim's own role in the cause of the problem, and without any concern for things such as equality, makes this principle questionable from an ethical perspective. It is also a principle that is not discussed by many of the authors we have read, and those who discuss it do not favor it [21,43].

5.6. P6: Limited Responsibility for the Worst Off

According to Graham et al. [59], this principle is the one most commonly associated with climate change adaptation at the local level. It can be more or less ambitious, ranging from the ambition to avoid the fact that climate change mitigation or adaptation schemes increase existing inequalities or create new inequalities, to the ambition to use climate change mitigation or adaptation schemes to decrease existing inequalities. 'Worst off' can refer either to those worst off in general terms (countries where large parts of the population lack the means to provide for themselves or their families), or to those that are

expected to be hit hardest by the effects of climate change. Discussions about climate justice on the international level usually focus on the first interpretation, whereas, for adaptation, both alternatives are reasonable. It should be pointed out, though, that in practice, those belonging to the worst-off in both senses often coincide. Groups that are hardest hit by disasters are often synonymous with groups that are economically, socially, and politically marginalized [60].

P6 seems to be applicable at any level including the local. If we assume that ‘the worst off’ refers to those worst off in general terms, this principle would, on the local level, mean that public authorities have responsibility for enacting and paying for adaptation measures with the wider purpose of reducing not only climate vulnerabilities but vulnerabilities in general for those worst off.

If we assume that ‘worst off’ refers to those who will be hardest hit by negative climate effects, it seems reasonable to compare individuals with individuals and companies with companies. Those worst off in each group could be assigned a lower (or no) responsibility for adaptation. In practice, there could be problems with this, as it might not be easy to locate those worst off in terms of climate change. Vulnerability cannot be defined based on characteristics of a particular group such as elderly or women, as it is a result of a range of socio-political factors [61] and therefore more difficult to overcome.

5.7. P7: Status Quo Preservation

In an international context, this basic principle means that the total emissions are reduced while each country’s share of the global emissions is preserved. This principle is tailor made for emission cut downs and for being applied to agents of the same kind—each country cuts down its emissions with the same percentage. In addition to being heavily criticized for preserving the current economic power relations by all the authors who mention it [10,14,16,43,47], it also seems to be an unsuitable principle for use in relation to adaptation on the local level.

6. Conclusions

The aim of this paper was to investigate if and how principles for fair distribution of responsibility for climate change mitigation on an international level can be used to inform the search for a fair distribution of responsibility for climate change adaptation on the local level. We conclude that among the seven basic principles for distributing responsibilities, extracted from the literature on principles for distribution of responsibility for climate change mitigation on the international level, some are more easily applicable to local adaptation than others.

The basic principle P1 (equal shares) is difficult to apply on the local level, as there is no straight-forward metric to compare different types of responsibilities for adaptation, comparable to greenhouse gas emissions when it comes to mitigation. Of the sub-principles, P1.1 (nation-based equal shares) and P1.2 (per-capita-based equal shares) are not applicable on local adaptation since they would not distribute responsibility locally but nationally. Sub-principle P1.3 (burden-based equal shares), focusing on burdens only, is impractical because of the incommensurability of burdens.

The basic principle P2 (desert) is possible to use for local adaptation if it is based on whether an agent affects the risk of harm from negative climate effects for others, by creating new risks, amplifying existing risks, or decreasing risks. This is a clear deviation from the way P2 is understood internationally—as connected to emissions. Among the sub-principles, P2.1 (current guilt) and P2.3 (accomplishment) are ethically and practically applicable to local adaptation, as long as they are based on the risk of harm or measures to avoid future harm, rather than on emissions. P2.2 (historic guilt) is ethically applicable only in a limited version, but practically difficult to use, due to the problem with the many categories of agents on the local level.

The basic principle P3 (beneficiary pays) makes ethical sense, but is practically difficult, as it is almost impossible to decide to what degree different agents within a country have

benefited from emissions. We therefore conclude that P3 is not applicable to local climate change adaptation.

The basic principle P4 (ability) is ethically reasonable to use on the local level, as it seems to solve the problem of the many categories of agents involved. By assigning responsibility according to ability, it would be possible to compare both within categories of agents as well as between them. There are still practical problems with the principle, but nothing that cannot be overcome. Thus, P4 will be an important distribution principle to consider in local adaptation.

The basic principle P5 (self-help) is possible to use in our case without amendments. Even on the international level, P5 is based on risk of harm, which makes it fit well with local adaptation. From an ethical perspective, it is doubtful if it can help achieve a fair distribution of responsibility on the local level.

The basic principle P6 (limited responsibility to the worst off) is also possible to use in our case without amendments. P6 has much support in the literature focusing on international responsibility because of its ethical basis, as well as in the literature on local adaptation. The ethical advantages seem to be at least as strong on the local level.

Finally, we found that the basic principle P7 (status quo preservation) was not useful for local climate adaptation.

Supplementary Materials: The following are available online at <https://www.mdpi.com/article/10.3390/philosophies6030068/s1>, Table S1: Principles for distribution of responsibility for climate change mitigation and adaptation on the international level.

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