Equity and efficiency in adaptation finance: initial experiences of the Adaptation Fund

ASA PERSSON*, ELISE REMLING

Stockholm Environment Institute (SEI), Linnégatan 87D, Box 24218, SE-104 51 Stockholm, Sweden

The Adaptation Fund, established under the Kyoto Protocol of the United Nations Framework Convention on Climate Change (UNFCCC), has now been approving funding for adaptation projects for more than two years. Given its particular institutional status and specific focus on concrete adaptation, it is particularly relevant to study the initial experiences of it for any future upscaling of international adaptation finance, despite the fact that its own resources are getting scarce. Alternative rationales for allocating funds, based on equity and efficiency concerns at both international and subnational levels, are here tested against the criteria and priorities of the Fund and decisions made on project approval. It is concluded that equity concerns appear to be the primary motivation and that allocation is de facto made between states rather than by considering inequity between subnational communities. However, the currency of vulnerability for determining equitable outcomes in allocation decisions has not been formalized, despite its central importance to the Fund. Instead, uniform national caps have been introduced. Such an equality approach can be considered equitable. Finally, it is noted that although the Adaptation Fund Board has continuously developed its proposal review practices and adopted a learning-by-doing approach, it should provide both a further specification of the evaluation criteria and a compilation of best practices from approved proposals, and moreover enhance the transparency of the review process, all of which would clarify its core priorities for current and future project proponents.

Policy relevance
Adaptation to climate change is a complex phenomenon. Given the uncertainty of climate impacts, the magnitude of expected adaptation needs globally, the limited knowledge regarding what constitutes effective adaptation, and scarce public resources, it is of vital importance that the policy and scientific communities learn how it can best be supported. The Adaptation Fund is an innovative funding mechanism in several respects, yet it is still unclear what the underlying rationale is that informs the allocation of its scarce resources. This article aims to interpret whether equity or efficiency concerns influence allocation and make some concrete recommendations as to its future form, thereby contributing to the state of knowledge regarding the Fund’s role.

Keywords: adaptation; adaptation finance; economic efficiency; equity; vulnerability assessment

1. Introduction
The Adaptation Fund (AF), established under the Kyoto Protocol of the United Nations Framework Convention on Climate Change (UNFCCC), issued its first call for proposals in April 2010 and has now been approving funding for more than two years. Funded through a share of the proceeds from transactions of the Clean Development Mechanism (CDM) (2% of the market value of Certified Emission Reductions [CERs]) and complemented by voluntary contributions, the AF represents an

*Corresponding author. Email: asa.persson@sei-international.org

© 2014 Taylor & Francis
innovative source of climate finance. The operationalization of the AF coincided with adaptation to climate change becoming an increasingly legitimate issue for international financial support. Today, there are a range of funding mechanisms and programmes for adaptation in developing countries within bi- and multilateral official development assistance (ODA). The issue of whether such programmes really represent ‘new and additional’ financial resources (see Stadelmann, Roberts, & Michaelowa, 2011) has led to attention being directed towards the AF as a new type of institutional and revenue stream mechanism. For this reason (and many others, not least the AF’s focus on concrete adaptation projects), it is now particularly relevant to study the initial experiences of operating the AF for the intended upscaling of international adaptation finance, which was declared in the 2009 Copenhagen Accord, and for the design of the Green Climate Fund (GCF).

For years, there has been a debate over what the rationale underlying the international climate funds and what the principles for its governance should be. Whilst developing country parties have framed adaptation finance as an issue of restitution between sovereign states and have argued that transferred funds should be used at the discretion of the recipient, developed country parties have preferred to frame it as an additional focus of conventional ODA (Klein & Persson, 2008). As well as these divergent rationales at the international level, there are potentially divergent national rationales on how to spend new incoming government budget resources: to address equity by (re-)distributing to those who are most vulnerable, or to strive for efficiency by choosing adaptation investments with the highest net social benefit as measured by some indicator. ‘Efficiency’ here will be taken to refer to the allocation of public resources such that net social benefits are maximized. Seeking efficiency involves considering whether it is justified to use public resources instead of, or in addition to, private resources to adapt to climate change (cf. Aakre & Rübbelke, 2010), and whether a particular selection of publicly funded adaptation activities represents the generation of the highest net social benefits (Mendelsohn, 2000). Efficient adaptation has been rightly claimed to be difficult – if not impossible – to achieve, not least due to uncertainty about actual climate impacts in the future. However, if adaptation needs grow as predicted and the available public funds are not dramatically increased, it is likely to be a relevant allocation criterion in the future (cf. Füssel, Hallegatte, & Reder, 2012). ‘Equity’ is a complex concept and can be interpreted and operationalized in numerous different ways. Based on a literature review, it is proposed that in the context of multilateral adaptation finance it is most relevant to understand equity in terms of the proportion of funding provided relative to the level of vulnerability (cf. Füssel et al., 2012; Grasso, 2010a,b). This equity approach can be contrasted with an equality approach, which disregards differences in vulnerability.

Arguably, it has only been recently (when adaptation finance started to flow) that de facto definitions of eligible and high-priority adaptation activities for multilateral funding have emerged and that rules balancing different rationales have begun to be institutionalized in practice. Earlier work on the AF found that the prospects for a vulnerability-oriented approach in the allocation of funds are limited (Fankhauser & Burton, 2011; Horstmann, 2011; Klein & Möhner, 2011) and that, based on a smaller sample of proposals than considered here, funding has so far been approved in high-income and less vulnerable countries for projects that exhibit high absolute wealth savings (Stadelmann, Persson, Ratajczak-Juszko, & Michaelowa, 2013).

In Section 2, some background on the AF is provided. In Section 3 it is discussed how the concepts of equity and efficiency might be interpreted in the context of adaptation finance, at both the international (allocation between countries) and subnational (allocation between projects in one or...
more countries) levels, and an analytical framework is developed. In Section 4 the strategic and operational criteria governing AF allocation are reviewed. In Section 5, the 48 project proposals submitted at the 18th meeting of the Adaptation Fund Board (AFB 18) in June 2012 are analysed, including the decisions to approve 25 of these, in order to trace which rationale – efficiency or equity – dominates in practice. In Section 6 it is concluded that a particular interpretation of the equity rationale has been strongly dominant so far, and some recommendations for the proposal review procedure are made.

2. The Adaptation Fund: background and objectives

The AF was legally established through the Kyoto Protocol (UN, 1998, Article 12.8) to ‘assist developing country Parties that are particularly vulnerable to the adverse effects of climate change to meet the costs of adaptation’. A definition or measurement of those country Parties that are ‘particularly vulnerable’ was not made then and has not yet been unambiguously elaborated (Klein & Möhner, 2011). In 2001, the 7th Conference of the Parties (COP 7) decided that ‘an adaptation fund shall be established to finance concrete adaptation projects and programmes’ (UNFCCC, 2002, Decision 10, authors’ italics). It was further decided that the Fund should be operated by a trusted entity directly under the guidance of the Conference of the Parties serving as the Meeting of the Parties (CMP) to the Kyoto Protocol.

As the Kyoto Protocol entered into force in 2005, CMP 1 (UNFCCC, 2006, Decision 28) confirmed the elaboration of ‘particular vulnerability’ included in the Preamble to the UNFCCC (UN, 1992, p. 4, para. 9): ‘low-lying and other small island countries, countries with low-lying coastal, arid and semi-arid areas or areas liable to floods, drought and desertification, and developing countries with fragile mountainous ecosystems are particularly vulnerable to the adverse effects of climate change’. This wording is clearly neither particularly precise nor excluding. In 2006, Decision 5 of CMP 2 adopted a further set of guiding principles for the AF: balanced and equitable access for eligible countries, transparency and accountability in fund governance, and funding on full adaptation cost basis. It was also decided that a majority of seats on the AFB should be held by developing countries.

At CMP 3 in Bali 2007, detailed functions and terms for the AFB were established, which enabled its start-up in 2008. An important struggle was won by developing country Parties in that ‘direct access’ was ensured (UNFCCC, 2007, Decision 1, para. 29). In practice, this means that national or regional agencies within eligible developing countries, as decided by the AFB, can apply for funding and administer such resources rather than going through multilateral implementing entities (MIEs), which had up to that point been common practice in other multilateral funds. National or regional implementing entities (NIEs/RIEs) need to be accredited by the Fund’s Accreditation Panel. By June 2012, twelve of them had been accredited, three of which – Senegal, Uruguay, and Jamaica – have had projects approved. To improve the balance, the AFB introduced a cap for MIE-led projects so that they can only access 50% of the budget at the start of each session (AFB, 2010a).

The first two years of the AFB were spent, inter alia, on developing strategic and operational criteria and guidelines. The first call for project proposals was issued in April 2010. Monetization of CERs by the trustee (i.e. the World Bank) had already begun in 2009. By the end of March 2012, the AF had received US$291 million, of which around 59% originated from CER proceeds and 41% from donor contributions (AFB, 2012a). Of this, $19 million has been disbursed to projects and (by June 2012) around $180 million has been committed to funding of the 25 approved projects. Resource availability has
thus not been a problem, but general concerns given the rate of proposal submission and low CER prices led the AFB to adopt a fundraising strategy in March 2012 with the goal to raise $100 million by the end of 2013 (AFB, 2012e). 

3. Justifying adaptation finance: efficiency and equity rationales

Given the limited resources of the AF, how should they best be allocated? Moving on from the focus on mobilization of finance and burden sharing between contributing countries (Dellink et al., 2009; Müller, 2008; Persson et al., 2009; UN, 2010), there is now a rapidly growing literature on the allocation among recipient countries and how to spend it on the ground, including the type of activities and whom they should benefit (Aakre & Rübbelke, 2010; Fankhauser & Burton, 2011; Grasso, 2010a, 2010b; Smith et al., 2011; Stadelmann et al., 2013; van Kerkhoff, Ahmad, Pittock, & Steffen, 2011). Ideas on appropriate allocation depend on underlying conceptions of adaptation. The adaptation literature suggests several possible reasons for public intervention and funding (see e.g. Dovers, 2009; Fankhauser, Smith, & Tol, 1999; Füssel et al., 2012; IPCC, 2007; McGray, Hammill, Bradley, Schipper, & Parry, 2007; OECD, 2008), including:

- Supporting the ‘additional’ cost of adapting to climate change in any public development project, e.g. climate-proofing of new transport infrastructure
- Discrete, one-off investments in specific adaptations, whose benefits and costs can be estimated, e.g. building a seawall
- Reduction of climate-specific vulnerability, e.g. providing drought-resistant seeds
- Reduction of multi-stressor vulnerability and/or building of general adaptive capacity, e.g. local institutional capacity building or improved implementation of national policy generally

In line with the idea of restitution mentioned above, a reason for international adaptation funding could also be just to fulfil obligations under the UNFCCC to address equity (Müller, 2008). Another political reason may be strategic considerations in international negotiations (Eisenack, 2012).

Whereas appropriate types of adaptation activities have been discussed at length in the literature, less attention has been paid as to who should benefit from publicly funded adaptation. For example, should only adaptations with some kind of public benefit be funded (cf. Aakre & Rübbelke, 2010; Tompkins & Eakin, 2011)? This raises the question as to what counts as public benefits. The number of beneficiaries could be a crude indicator, but this would disregard the magnitude of benefits per beneficiary and the targeting of funds to selected beneficiaries based on equity concerns (e.g. highly vulnerable communities and households). For example, economic theory stipulates that only adaptations with public (e.g. prevention of climate-sensitive vector-borne diseases) or club good (e.g. a seawall) properties should be publicly funded (see e.g. Mendelsohn, 2000).

Integrating all the possible objectives of adaptation funding listed above in one project may be possible (while not mandatory), but arguably some prioritization is inevitable when funds are scarce, including the balance between public and private benefits. Here, two alternative criteria to guide such prioritization are considered: equity and efficiency. The compatibility between equity and efficiency as criteria has been discussed by Rübbelke (2011) and Stadelmann et al. (2013). These two
criteria have been chosen because of their general influence on climate finance discussions. Other potential criteria could include effectiveness, investment sustainability, robustness, transparency, accountability, participation, multiplier effects, and learning potential (see Adger, Arnell, & Tompkins, 2005).

As already mentioned, efficiency is difficult to secure when allocating adaptation resources due to uncertainty. Further, given the often locally specific nature of vulnerability and adaptation challenges, and lack of common metrics and indicators for adaptation, the scope for quantitative and routine comparative assessment of adaptation benefits of proposed projects to the AF is still small. For this reason, cost–effectiveness is a more practical evaluation criterion. (The practices of the AF for comparing benefits of projects, with a view to allocating its resources efficiently, are reviewed in Section 4.)

Equity is complex and multifaceted. A ‘positive’ approach is concerned with whether conditions or procedures are perceived to be equitable by stakeholders (Adams, 1965), whereas a ‘normative’ approach entails deriving principles of justice from theory. Here, a very brief overview of normative approaches is provided, but the focus will be on (1) those allocation principles that have been frequently referred to and perceived as relevant in the policy discussion around adaptation finance and (2) the perceived justice of outcomes in relation to adaptation finance (i.e. allocation of funds) in contrast to the justice of procedures by which decisions regarding adaptation finance are taken (see e.g. Paavola & Adger, 2006; Thomas & Twyman, 2005). ‘Outcome’ or distributive justice has been widely discussed in relation to the topic of climate change, and adaptation finance has often been described as one of the compensatory mechanisms for getting developing countries to take on emissions reduction commitments (see e.g. Paterson, 2001). Here, however, the focus is on the allocation of adaptation finance to Parties defined as eligible, as a subset of the larger distributive problem of tackling global climate change with all the benefits and burdens it involves.

A set of principles and approaches are potentially relevant when considering equity, including egalitarianism (in this context, equal funding to all eligible recipients), prioritarianism (i.e. benefits to the worse-off matter more than benefits to the better-off, so the worse-off should receive more), sufficiency (i.e. stressing the importance of people living above a certain ‘good enough’ to-be-defined threshold), and the leximin principle (i.e. a stepwise process of first levelling out the worst-off with the second worst-off, then with the third worst-off, etc.) (see Füssel et al., 2012; Grasso, 2010a, 2010b; Paavola & Adger, 2006; Stadelmann et al., 2013). All these approaches naturally require a basis for comparison, or currency. In the case of adaptation finance, relevant currencies could be, for example, general well-being, poverty, or adaptive capacity. However, climate vulnerability is chosen as currency here, following the reasoning of Grasso (2010a, 2010b) and considering the central importance of this concept in the formation of the AF (Horstmann, 2011; Klein & Möhner, 2011). Two of the distributive justice approaches mentioned above were chosen, and specific interpretations that were empirically examined were defined. Again, relevance to the AF context was a selection criterion, more specifically the CMP guidance to ensure ‘balanced and equitable’ access of eligible countries. An egalitarian view is here taken to imply equal funding to each eligible subject, regardless of their vulnerability levels, while a prioritarian view is here taken to imply funding proportional to the level of vulnerability (either as preferential access to funds or level of funding granted).

Figure 1 illustrates some of the implications of the equity vs. efficiency rationales for international adaptation funding. It provides an analytical framework for reviewing AF criteria as well as project decisions in the next sections. In addition, there is a vertical axis representing scale
and whether the allocation is to be made between countries or between (subnational) projects within countries. As mentioned above, the AF supports (and presumably compares) projects, which have to be located within and formally endorsed by eligible countries (‘particularly vulnerable’ developing country Parties). Note that these axes are illustrated as continua, rather than as mutually exclusive categories in a matrix.

In quadrant I (the top-left quadrant), adaptation funding would be reserved for such projects (at various levels) that generate benefits at the global or supranational level (e.g. ecosystem-based adaptation in a biodiversity-rich landscape) so that efficiency at an international level is enhanced. Funding based on the rationale depicted in quadrant II (the bottom-left quadrant) would focus on local-level benefits and be allocated to projects in which there are significant public benefits (e.g. improving community water storage or enabling a national flood zoning policy). This would require a comparative assessment of net benefits of several investment opportunities, rather than providing project funds on an ad hoc basis. Because potential efficiency gains may not be spread out evenly across eligible countries, the existence of national funding caps could lead to a sub-optimal allocation of adaptation funds. Considering the difficulties in estimating and comparing the benefits of adaptation projects, the relative cost–effectiveness of projects is a more practical criterion.

An even ‘weaker’ version of this rationale would be to aim for adaptation effectiveness regardless of cost. Achieving effectiveness is not trivial. There are well-known common barriers to adaptation, including a failure to deal with the root causes of vulnerability (Moser & Ekstrom, 2010), conditions relating to the operators of adaptation actions and (lack of) means (Eisenack & Stecker, 2012), conflicting timescales (Biesbroek, Klostermann, Termeer, & Kabat, 2011), and the risk of maladaptation (Barnett & O’Neill, 2010). This rationale would then imply allocating funds to projects that are most likely to be effective and not maladaptive. Underlying national implementation capacity, as defined

**Figure 1.** Alternative rationales for international adaptation funding.
by Barr, Fankhauser, & Hamilton (2010), could be one determinant of effectiveness, although the project idea and design is arguably at least of equal importance.

Quadrants III and IV (top-right and bottom-right, respectively) address equity and, based on the literature review above, three different interpretations in each are defined, which should be tested empirically. First, in line with the prioritarian view, funding could be proportional to vulnerability. Of course, the problem is constructing and agreeing upon a measure, such as an index, for the complex phenomenon of ‘vulnerability’, especially at a nationally aggregated level. Several vulnerability indices have been constructed (see e.g. Barr et al., 2010; Buys, Deichmann, Meisner, Ton That, & Wheeler, 2009; Füssel, 2010). However, they have been strongly criticized for being prescriptively normative, misleading when nationally aggregated (local variation not conveyed), measuring symptoms rather than pointing to the causes of vulnerability, and near-impossible to agree upon politically (Eriksen & Kelly, 2007; Füssel, 2010; Hinkel, 2011; Klein & Möhner, 2011). Despite the absence of any agreed indices or indicators under the AF, the role vulnerability plays in the (qualitative) assessment of proposals is examined below and project decisions are compared with available country-level vulnerability indices.

Second, an egalitarian approach would involve equal funding. Both equal lump-sum funding of countries and/or projects and equal per capita funding of countries and/or projects is considered here. In eligible countries there are substantial differences both in population and probably also in the number of people that stand to benefit from different projects. Note that equality (between individuals or countries) could be considered inequitable in this context, if and when vulnerability conditions differ (Ratajczak-Juszko & Feaver, 2011).

Quadrant III (the top-right quadrant) thus depicts the situation in which there is equity among nation states. Equal lump sums to eligible nation states entails that neither population size nor the variation in vulnerability conditions domestically is taken into account. This may not be considered particularly ‘equitable’, as stated in Decision 5 of CMP 2. If equity is interpreted in terms of the level of vulnerability at the subnational level, as in quadrant IV (the bottom-right quadrant), then funds could end up unevenly distributed across countries. This may not be considered particularly ‘balanced’, as also stated in Decision 5 of CMP 2.

4. Criteria and funding priorities of the AF

Are any of the rationales depicted in Figure 1 reflected in the criteria and priorities of the AF? To answer this question, a literature review of relevant documents, including project proposals, was undertaken (the documents were all accessed from the AF website (see www.adaptation-fund.org); see online Annex I for a list of all criteria and priorities in the supplemental files at http://dx.doi.org/10.1080/14693062.2013.879514).

The first and high-order set of allocation criteria are specified in the Strategic Priorities, Policies and Guidelines, adopted by the CMP in 2008 (AFB, 2012c, Annex 1). In 2009, the AFB developed Operational Policies and Guidelines, which were revised in 2011 (AFB, 2012c) and again since the writing of this article. More technical documents were then developed: (1) the Template for Technical Review of Proposals, which is used by the AFB secretariat in their initial screening of projects (AFB, 2012c, Appendix 3, Annex C); (2) the Strategic Results Framework for monitoring progress at an aggregate fund level, from
which individual projects are invited to pick indicators for project-level result frameworks (AFB, 2010a, Annex IV); (3), Instructions for Preparing a Request for Project or Programme Funding from the Adaptation Fund (AFB, 2012b). This latter document was prepared following a 2011 review of lessons learned in the proposal review process (AFB, 2011a). Finally, another important decision with a bearing on what and who is funded (and by how much) has been the introduction of country caps such that any eligible country can only receive a maximum of $10 million from the Af (AFB, 2011c). This decision on country caps followed a series of extensive consultations (in the 8th to 13th AFB meetings) in which the Board discussed – and failed to reach consensus on – different options for setting funding priorities (see AFB, 2010b, 2011b; Kaloga & Harmeling, 2011).

Regarding process, the AFB Secretariat first performs a technical review of proposals received. The Project and Programme Review Committee (PPRC) of the Board then reviews proposals and reports its recommendations to the Board.

A general observation is that some of the criteria listed in online Annex I may conflict. Even when there is no direct conflict, there is no framework for internally ordering or weighting the review criteria. The PPRC has not made available any guidance document on how criteria are or should be weighted, and (beyond the technical reviews by the AFB Secretariat which were made publicly available in June 2012) details on how proposals score on the criteria have not so far been made public. This reinforces the discretion awarded to the AFB and makes a systematic and transparent review of proposal more difficult. One example of a potential conflict between criteria is that highly differentiated ‘levels of vulnerability’ might imply that access to the AF could not or should not be ‘balanced’ (as in the case of equal country funding, see Section 3). Furthermore, it is not clear whether the ‘level of vulnerability’ should be taken to refer to project scale or a national average, which could be quite different. Another potential conflict could arise from the need to demonstrate ‘measures for financial and risk management’. If it is assumed that countries with ‘high levels of vulnerability’ may in some cases also have low institutional capacity, then such measures could be hard to demonstrate. There would then be the option of having an MIE as project proponent and contractor instead. However, this might compromise the extent to which the project is ‘country driven’.

Examining which of the four rationales depicted in Figure 1 is reflected in the criteria and guidelines of the Af, it is clear that international efficiency is not a central principle. While regional co-benefits are to be taken into account in resource allocation (AFB, 2012c, Annex 1, para. 16e), there is no requirement to estimate net social benefit at either the regional or global level. With respect to both international and subnational efficiency, the costs and benefits of projects would have to be clear and comparable. In its 2011 review of lessons learned, the AF Secretariat found that economic, social, and environmental benefits had often been described in very evasive ways, and alternative project designs were not well described (AFB, 2011a). Although the revised operational guidance and more detailed instructions require estimated benefits to be quantified, no particular metrics or units (including monetary value) are prescribed, which compromises a systematic comparison of net benefits as a step towards achieving efficient allocation. There is also no guidance provided on how to estimate the number or character of beneficiaries of AF-funded projects, merely that ‘information on the expected beneficiaries’ should be included (AFB, 2012b, part II, Section B). Understanding beneficiaries should be considered a key concern for enhancing efficiency, because it would elucidate whether the adaptation in question provides more private or public benefits (assuming that AF resources should be targeted towards the latter).
Finally, the review and allocation process is not well designed for efficiency because proposals are accepted on a rolling basis and are only compared with those submitted for the same AFB meeting. Thus, eligible countries cannot be explicitly or implicitly ranked against each other. Similarly, project proposals from one country are not compared with each other over time. Such a comparison could ensure efficient allocation within a country, which might be more politically acceptable. Therefore, it appears that efficiency in the context of collective adaptation efforts across eligible developing countries has not been a key concern in the development of funding criteria and guidelines.

Turning to the rationale of international equity, it is clear that while vulnerability is mentioned in the principles and criteria guiding AF allocation, it has not been operationalized to an extent that enables either priority access or proportionately higher funding for more vulnerable countries. The AFB has extensively discussed further guidance on priorities of funding and allocation criteria in a number of meetings (from AFB 8 to AFB 12). However, no decision on the details of prioritization has been reached and the AFB has not adopted a more precise definition nor any indicators or composite index that address vulnerability at the national level (although a consultation with an Intergovernmental Panel on Climate Change (IPCC) expert on indicators for determining levels of vulnerability took place at the 10th meeting; AFB, 2010a). Thus, all 149 developing countries that are Parties to the Kyoto Protocol are equally eligible for AF funding with no qualifications regarding a particular or relative level of vulnerability. Although the AFB considered whether the Least Developed Countries (LDCs) and Small Island Developing States (SIDS) should be given priority access (assuming that such a status is a good proxy for generally higher vulnerability), and whether non-ODA countries should be excluded, neither option has been implemented (AFB, 2011c).

The criteria guiding AF allocation also do not specify any consideration of the AFB regarding population level of eligible countries. Thus, a country such as Indonesia can access a similar level of funding as a relatively small SIDS country, which translates into a highly differential per capita funding level. Instead, the current conception of equity that appears to influence AFB priority setting and resource allocation is equality, i.e. more or less equal lump sums for all eligible countries regulated by the national funding caps.

Considering the rationale of subnational equity, there is no operationalized definition of ‘particular vulnerability’ at project level, so no allocation rule of systematic proportionality is applied. Instead, it is up to project proponents to justify why there is a high level of vulnerability, using definitions and possible indicators of their choice, and to describe how ‘special attention’ has been given to the ‘particular needs of the most vulnerable communities’ within the specific country (see AFB, 2012c, Annex 1, para. 8). Concern has been expressed in civil society regarding the implementation of this latter priority (Chandani, Harmeling, & Kaloga, 2009; Harmeling, Bals, Windfuhr, & Hirsch, 2008; Harmeling & Kaloga, 2010). As described above, there is no requirement to estimate the number of beneficiaries of a proposed project according to a standard methodology, so proportionality is also excluded from this variable. In effect, subnational equity as equal lump sums appears to apply, although the cap has been set on a national basis rather than as a maximum amount per project. This suggests that equity between countries takes priority over equity between those communities targeted by projects.

Overall, it appears that international equity in terms of equal country lump sums has so far been the dominant rationale behind formulating priorities and criteria for the allocation of AF funds. To a large extent, the criteria and guidelines leave it to project proponents to justify why they should be awarded
AF funding. As long as the justification satisfies the PPRC, technical quality is satisfactory, and total national funding does not exceed the national cap, it appears that projects are approved. If the PPRC were to assess proposals against the criteria to guide allocation in a more systematic and elaborate way, the current restrictions caused by the lack of transparency would prohibit any conclusions reached in this way from informing current and future project proponents. Despite the fact that there have been improvements in transparency with the publication of technical reviews, these have still not addressed the issue of relative allocation.

5. Analysis of project proposals and approval decisions

It has been argued that international equity in terms of equal country lump sums has so far been the dominant rationale in the formulation of priorities and criteria for the allocation of AF funds. Is this reflected in actual project approvals by the AFB? By AFB 18, two years after proposals were first accepted, 48 proposals had been submitted and 25 projects approved (see online Annex II in the supplemental files at http://dx.doi.org/10.1080/14693062.2013.879514). The review of all the proposals suggests that more than half of the projects target the agriculture and water sectors, followed by coastal management and disaster risk reduction (see also AFB, 2011a). The AF has so far prioritized concrete adaptation measures over e.g. analytical work.

Figure 2 shows the regional distribution of proposals and approved projects. Figure 2a shows the AFB Secretariat’s proposed regional allocation (which was not adopted) when the number of countries and regional population are weighted equally (AFB, 2011b). Figure 2b shows the number of proposals from each region. It is clear that African, Latin American, and Caribbean countries had by June 2012 submitted relatively more proposals than Asian and Pacific countries. Eligible European and BASIC (Brazil, South Africa, India, and China) countries had not submitted proposals (with the exception of India, whose proposal was rejected). Figure 2c shows the number of successful proposals per region. This suggests that Asian, Pacific, and Latin American and Caribbean countries have been particularly successful with their proposals, whereas African countries have been less so. If the level of

![Figure 2](Image)

**Figure 2.** Regional allocation of AF resources (as of June 2012). (a) Possible regional allocation according to the AFB Secretariat (in percent) (AFB, 2011b). (b) Regional allocation of submitted proposals. (c) Approved AF projects according to region (number of proposals).
funding approved is considered, Latin American and Caribbean projects have been awarded relatively slightly more. Overall, it appears that regional allocation has been fairly balanced.

With regard to rationales reflected in AFB funding decisions, the levers at the AFB’s disposal are approval decisions and decisions on the level of funding to approved projects (within the national cap). A detailed analysis of how benefits of efficiency rationales are described and quantified is beyond the scope of this article (AFB, 2011a; Stadelmann et al., 2013). However, it is clear that global benefits have not been taken into account in proposals, consistent with the lack of such a requirement. Economic, social, and environmental benefits at community, local, or national level are generally identified in the proposals but often described qualitatively. When they are described quantitatively, diverse metrics are used, prohibiting a comparative assessment of projects. Therefore, neither of the efficiency rationales is dominant because the information to inform such allocations is missing. Finally, a review of PPRC recommendations to the AF Board as documented in the meeting reports of AFB 10 to 18 suggests that the description of benefits, cost–effectiveness, and identification of alternative options are among the most common weaknesses of proposals. The PPRC’s comments also suggest that their attention to these issues has increased over time.

As a possible but crude indicator of the extent to which the proposed adaptation provides public benefits, the review of proposals here suggests that the number of beneficiaries ranges from around 400 households up to 10.2 million (inhabitants in the target region). This means that funding per beneficiary also varies significantly.

It is clear that the lack of an operational definition prohibits a formal evaluation of vulnerability in the context of the rationale of international equity. However, the decisions can be contrasted with existing vulnerability indices that have been developed by independent scholars and institutes (see also Stadelmann et al., 2013). Four indices are compared in Figure 3a–d by mapping out, for each of them, the tertiles or quartiles scored by countries that have submitted proposals and/or have had funding approved (Barr et al., 2010; Buys et al., 2009; Global Adaptation Institute, 2011). The first three indices (Figure 3a–c) measure impact vulnerability and all include indicators for projected change in agricultural yield and population or gross domestic product (GDP) when exposed to sea-level rise. Health impacts and population sensitivity to disasters appear in two indices.9 Barr et al. (2010) have also constructed an ‘adaptive capacity’ index.10 As this is something that should be ‘taken into account’ when allocating AF resources (AFB, 2012c, Annex 1, para. 16), their composite index of impact vulnerability and adaptive capacity is compared in Figure 3d with decisions taken.

Before discussing the results, some limitations need to be recognized. First, no analysis or comment is made here on the general appropriateness of the indices regarding whether they adequately capture what vulnerability or indeed ‘particular vulnerability’ should consist in nor whether appropriate indicators are used (see Hinkel, 2011; Klein, 2009). Tertiles and quartiles are compared (rather than absolute scores) based on the assumption that they are more robust. Second, the coverage of countries by the indices varies. Two of the indices are global and include developed countries (Buys et al., 2009; Global Adaptation Institute, 2011). Thus AF-eligible countries can be expected to be over-represented in the more vulnerable quartiles or tertiles. The two indices by Barr et al. (2010) are reported only for developing countries but for a somewhat smaller group (n = 131) than comprise the AF-eligible countries. Note that some index scores and rankings are missing for some AF countries (marked as ‘n/a’ in Figure 3a–d).
Figure 3. Comparison of submitted proposals and approved projects against country indices for vulnerability and adaptive capacity. (a) Comparison based on the Buys et al. (2009) impact vulnerability index ($n = 169$). (b) Comparison based on the Global Adaptation Index (2011) for vulnerability ($n = 187$). (c) Comparison based on the Barr et al. (2010) impact vulnerability index ($n = 131$). (d) Comparison based on the Barr et al. (2010) overall vulnerability index (impact vulnerability and adaptive capacity) ($n = 131$).
Figure 3a and b together show that the majority of both applicant and successful countries have been in the most vulnerable tertiles and quartiles, respectively. The over-representation in the most vulnerable tertiles and quartiles is consistent with the statement of ‘particular vulnerability’ (see Section 2), but the question is if this should imply even stronger (or exclusive) targeting of the countries in the most vulnerable tertile/quartile. It should also be noted that two of three countries with approved projects in the least vulnerable tertile/quartile are different across the two indices, suggesting the sensitivity of the indices to indicator choice.

The ‘climate change impact’ index of Barr et al. (2010) only covers developing countries and therefore offers a better basis for comparison of proposals with approved projects. Comparing the quartiles for proposals in Figure 3c, it is clear that countries in their two most vulnerable quartiles have been slightly more active in submitting proposals to the AF, especially countries in the most vulnerable quartile. However, there are many factors other than vulnerability that may influence decisions to submit proposals (e.g. interest and support from MIEs, access to adaptation finance from other sources). Regarding approval decisions, it is clear, however, that the AFB has not prioritized countries from the most vulnerable quartile and indeed has approved relatively more countries from the least vulnerable quartile. This raises a concern as to whether a country’s relative level of vulnerability is influencing decisions at all.

Figure 3d compares proposals and accepted projects according to Barr et al.’s (2010) composite index of impact vulnerability and adaptive capacity and suggests that (compared with the categorization of countries in Figure 3c) countries with low adaptive capacity have been more active in submitting proposals. A slight positive bias for approving projects in countries with lower adaptive capacity also appears to have been introduced by the AFB.

On a methodological note, the fact that countries are categorized as belonging to different quartiles or tertiles depending on the index used suggests that they do not offer a unified measurement of vulnerability. The scoring and ranking of countries is sensitive to the particular indicators included and hence the assumption that rankings are robust is questionable. That said, no exclusive or consistent prioritization of the one or two most vulnerable quartiles of developing countries (assuming that this adequately reflects the statement of ‘particular vulnerability’) is observed across the three indices considered. To the extent that national-level vulnerability influences funding decisions by the AFB, the reviewers either consider other vulnerability indicators or none at all. Thus, it is questionable whether the foundational principle of the AF to assist developing countries that are particularly vulnerable is being fulfilled in practice, whether through a top-down assessment by the AFB against some index or a bottom-up assessment via the requirement for a more systematic and transparent justification by project proponents that the relevant country is indeed particularly vulnerable.

Although LDC and/or SIDS status has not been included in the allocation criteria (see Section 4), it provides a useful reference point: 48% of all non-Annex I countries are LDCs, SIDS, or both, and 52% of AF proposals have come from such countries. Proposals from countries with LDC and/or SIDS status have been slightly more successful with 56% of approved projects located in such countries, than proposals from countries without such status. However, it is unclear whether this is due to an intentional prioritization or whether the proposals have simply been of higher quality relative to the others. Another relevant comparison is with the level of human development, often seen as an important determinant of vulnerability. Compared with the classification of country scores on the 2011 United Nations Development Programme (UNDP) Human Development Index, 21% of AF proposals have
come from countries with a low level of human development, 50% from those with a medium level, and 25% with a high level. These proportions are almost equal if approved projects are considered, so there is no particular bias. However, targeting countries with a low level of human development again appears non-existent or weak. Recent results show that it is clear that the performance on various vulnerability and development indicators varies with new decisions (Stadelmann et al., 2013).

The second variation of the proposed ‘international equity’ rationale was to provide funding proportional to national population. Even if two extreme outlier proposals at both ends (India and the small island state of Niue) are removed, there is still a significant divergence in per capita funding requested: the mean is $11 per capita and the median value is $0.92. Countries that request above-average per capita funding are generally SIDS countries with smaller populations. Among approved projects, awarded per capita funding ranged between $275 and $0.02. Thus, there is no evidence to suggest that the AFB applies this form of rationale to its allocation decisions either.

Regarding subnational equity, an evaluation of the local level of vulnerability in relation to average national vulnerability to determine whether special attention has been paid to the most vulnerable communities would require not only a qualitative assessment of existing justifications in the proposals, but also knowledge about local conditions, which is beyond the scope of this article. Regarding the proportion of population affected, the proposals have estimated a highly diverse number of beneficiaries. Hence, requested funding per beneficiary has ranged from around $3,500 to less than $1. Both of these considered proposals were approved and as yet there is no clear pattern of equal funding per beneficiary.

In summary, it is not clear why approval has been granted in many respects, beyond a judgement by the PPRC on the technical quality of projects. This review of proposals and approval decisions suggests that the dominant approach is more or less equal lump sums per country. While the lack of a precise definition and operationalization of particular vulnerability raises doubts over the implementation of this foundational principle of the AF, it is clear that the AFB is an institution devoted to learning-by-doing and evaluation. Improvements have been made with regard to required reporting on benefits and beneficiaries, which may potentially facilitate efficiency considerations in the future. There is also more guidance on adaptation reasoning, i.e. how to demonstrate that proposed adaptations are concrete and different from normal development projects (see AFB, 2012b). Finally, there is also an active dialogue with civil society on how to implement special attention to the ‘particular needs of the most vulnerable communities’.

6. Conclusions

Understanding the experience so far of the Adaptation Fund (AF) regarding the allocation of funds is important for informing the design of future international adaptation funding, regardless of the specific role of the AF in the future. Considering the time required to operationalize the Green Climate Fund (GCF), it is likely that the AF will continue to play an important role for some time, as long as complementary revenue sources to the sale of emission reduction credits (CERs) are found. In particular, the lessons learnt regarding direct access will be useful.

Based on the review of criteria and priorities of the AF, and project proposals and approval decisions up to June 2012, it can be concluded that addressing ‘international equity’ (as defined in the proposed
analytical framework) has been the dominant rationale. Efficiency considerations have not been feasible given the lack of detailed guidance on the estimation of costs and benefits and the fact that the review process is not set up as a comparative assessment between or within countries. Equity in the AF context has been associated with some kind of proportionality in relation to vulnerability. However, the AFB has opted not to operationalize any such criterion and approval decisions have not prioritized the most vulnerable countries when they are measured against the current vulnerability indices. Given that per capita concerns do not play any obvious role, it can be concluded that the particular interpretation of international equity as equal lump sums to countries has been dominant to date. As mentioned in Section 3, such an equality approach can be seen as inequitable.

Regarding the limitations of this study, it should be emphasized that the use of purely quantitative vulnerability indices is not being advocated, although some were included here for illustrative purposes. Meaningful ways to characterize and compare vulnerability across settings are needed for the future if adaptation funding becomes scarce. The research community could be mobilized for this task, possibly under the United Nations Environment Programme-led Programme of Research on Climate Change Vulnerability, Impacts and Adaptation (PROVIA) initiative. Furthermore, the analysis provides a snapshot of proposal review and decisions over a limited time period. Practices for allocating funds from the AF are evolving fast and the AF Board (AFB) has introduced a learning approach to their decision making.

For now, however, it is noted here that projects are treated on a first-come-first-served basis, which may not be the most desirable approach for either the AF in the future or the GCF if adaptation needs and competition over scarce funds increase. To develop current AF practices we see a number of possible options. First, one way to address the different needs of countries with different vulnerability profiles and reduce competition between highly different countries and projects would be to introduce more funding windows with set budgets. Prioritization would still be required when budgeting such windows, but evaluation criteria could potentially become more specific and hence make it easier for prospective applicants. Another alternative would be to have more long-term and predictable cycles of funding, so that latecomers are not disadvantaged. However, this would also require a long-term and predictable inflow of new funds, which clearly is an issue for the Conference of the Parties rather than the AFB.

Second, while top-down and uniform measurement of either vulnerability (in the form of an index) or net benefits may not be desirable nor feasible, AFB guidance could ask for even more systematic justification of proposals. It would also be timely to have a compilation of best practices from approved projects for proponents to consider.

Third, further enhanced transparency in the review process would also clarify priorities of the AFB for future and current project proponents. The step to make technical reviews of each project available to the public in advance of a funding decision is a positive step. A further improvement in transparency could also be made by opening meetings of the PPRC to the public.

Finally, considering the predicted growth needs for adaptation finance in the future and the observation here that funding per capita differs greatly, it is questionable whether country-based funding is useful and whether national governments need to play a central role. Although challenging national sovereignty will surely challenge political acceptability, a more fundamental rethink of multilateral adaptation funding may be required in the future.
Supplemental data

Supplemental information for this article can be accessed in the online version [http://dx.doi.org/10.1080/14693062.2013.879514].

Notes

1. Advantages and disadvantages of this new revenue stream have been discussed extensively in the literature (see e.g. Eisenack, 2012; Fankhauser & Martin, 2010; Schulz, 2012). One advantage of the CDM levy is that it is independent of fiscal transfers from governments (ODA), which to this day have not met the relevant governments' own commitments (Schulz, 2012). However, it has been argued that although it raises substantial amounts of revenue, this revenue stream will be insufficient to meet global adaptation needs (Fankhauser & Martin, 2010) and will mainly redistribute transfers within the group of non-Annex I countries (Eisenack, 2012).

2. It should be emphasized that the proposal review practices of the AFB have changed over past years and it is likely that they will continue to do so. While this article discusses allocation under the AF, due to predicted growing adaptation needs it can be expected that principles to allocate scarce funds will be increasingly needed also for other funding mechanisms.

3. By the end of March 2012, cumulative net funding decisions amounted to $130.2 million (AFB, 2012a). At the 18th AFB meeting in June 2012, an additional $50.7 million in project funding was approved (AFB, 2012d, July 3).

4. In a recent meeting (‘Adaptation to climate change for the most vulnerable – lessons learnt from the Adaptation Fund and beyond’) on 2 July 2013 in Bonn, organized by the AF NGO Network and Germanwatch, the AF Secretariat and Board raised concerns regarding the revenue stream. Due to the low price of carbon there is currently very limited income from CDMs, which means the AF is more dependent on donations.

5. This of course assumes that the concept of additionality can be adequately defined.

6. Note that ‘adaptation cost curves’ with which the cost/benefit ratios of individual adaptation measures are compared have been developed by the Economics of Climate Adaptation Working Group (2009).

7. The introduction of country caps (as a temporary measure) at the 13th meeting of the AFB was motivated by the considerable uncertainty in the projections of available funds, especially by 2012 (AFB, 2010b, p. 2) and the concern that larger countries with more capacity would submit larger projects and programmes and ‘eat up’ the limited resources (Kaloga & Harmeling, 2009). The AFB is currently considering how regional programmes, which are eligible for AF funding, should be accommodated within national caps.

8. The AF operates a two-stage submission approach such that ‘project concepts’ can first be submitted and endorsed (or not) by the AFB before the submission of ‘full proposals’ for approval or rejection (AFB, 2012c).

9. The ‘climate change impact’ index of Barr et al. (2010) includes four indicators (equally weighted): (1) agriculture – inverse percentage of crop yield change (wheat, rice, soybean) by 2050; (2) disasters – percentage of population killed by disasters; (3) health – percentage of additional deaths; (4) coastal zones – percentage of population impacted by a 1 m sea-level rise. The ‘impact vulnerability’ index by Buys et al. (2009) includes the (equally weighted) percentage impact on agricultural yield, exposure of GDP to 3 m of sea-level rise, and percentage of population expected to suffer damage from five types of weather-related events. The ‘vulnerability’ index by the Global Adaptation Institute (2011) is composed of 24 indicators (equally weighted) categorized according to two dimensions: by sector (water, food, health, infrastructure, transport) and by exposure, sensitivity and capacity.

10. The ‘adaptive capacity’ index of Barr et al. (2010) includes the following indicators: age dependency ratio, domestic credit to private sector, Gini coefficient, World Governance Indicator, literacy, and primary completion rate (female).
References

Aakre, S., & Rübbelke, D. T. G. (2010). Adaptation to climate change in the European Union: Efficiency versus equity considerations. *Environmental Policy and Governance, 20*, 159–179.

Adams, J. (1965). Inequity in social exchange. *Advances in Experimental Social Psychology, 62*, 335–343.

AFB. (2010a). *Report of the tenth meeting of the Adaptation Fund Board* (Report AFB/B.10/7/Rev.1). Washington, DC: Adaptation Fund Board.

AFB. (2010b). *Initial funding priorities* (Report AFB/B.11/5). Washington, DC: Adaptation Fund Board. Retrieved October 17, 2012, from https://www.adaptation-fund.org/system/files/AFB.B.11.5.Initial%20Funding%20Priorities.final_.pdf

AFB. (2011a). *The Adaptation Fund project review process: Lessons learned* (Report AFB/PPRC.7/3). Washington, DC: Adaptation Fund Board.

AFB. (2011b). *Initial funding priorities* (Report AFB/EFC.4/8). Washington, DC: Adaptation Fund Board.

AFB. (2011c). *Report of the thirteenth meeting of the Adaptation Fund Board* (Report AFB/B.13/6). Washington, DC: Adaptation Fund Board.

AFB. (2012a). *Adaptation Fund Trust Fund: Financial report prepared by the Trustee (as at 31 March 2012)* (Report AFB/EFC.9/8). Washington, DC: Adaptation Fund Board.

AFB. (2012b). *Instructions for preparing a request for project or programme funding from the Adaptation Fund*. Washington, DC: Adaptation Fund Board. Retrieved October 17, 2012, from http://www.adaptation-fund.org/sites/default/files/REVISED%20INSTRUCTIONS%20FOR%20PREPARING%20A%20REQUEST%20FOR%20PROJECT%20FUNDING.pdf

AFB. (2012c). *Operational policies and guidelines for parties to access resources from the Adaptation Fund*. Washington, DC: Adaptation Fund Board.

AFB. (2012d). *Adaptation Fund Board approves $50.7 million in Grant Funding, including one Direct Access Project in Jamaica*. Washington, DC: Adaptation Fund Board. Retrieved from https://www.adaptation-fund.org/media/adaptation-fund-board-approves-507-million-grant-funding

AFB. (2012e). *Report of the seventeenth meeting of the Adaptation Fund Board* (Report AFB/B.17/6). Washington, DC: Adaptation Fund Board.

Adger, N., Arnell, N., & Tompkins, E. (2005). Successful adaptation across scales. *Global Environmental Change, 15*, 77–86.

Barnett, J., & O’Neill, S. (2010). Maladaptation. *Global Environmental Change, 20*, 211–213.

Barr, R., Fankhauser, S., & Hamilton, K. (2010). Adaptation investments: A resource allocation framework. *Mitigation and Adaptation Strategies for Global Change, 15*, 843–858.

Biesbroek, G. R., Klostermann, J. E. M., Termeer, C. J. A. M., & Kabat, P. (2011). Barriers to climate change adaptation in the Netherlands. *Climate Law, 2*, 181–199.

Buys, P., Deichmann, U., Meisner, C., Ton That, T., & Wheeler, D. (2009). Country stakes in climate change negotiations: Two dimensions of vulnerability. *Climate Policy, 9*, 288–305.

Chandani, A., Harmeling, S., & Kaloga, A. O. (2009). The Adaptation Fund: A model for the future? (Briefing). London: International Institute for Environment and Development. Retrieved October 17, 2012, from www.iied.org/pubs/display.php?o=17068IIEED

Dellink, R., van den Elzen, M., Aiking, H., Bergsma, E., Berkhout, F., & Dekker, T. (2009). Sharing the burden of financing adaptation to climate change. *Global Environmental Change, 19*, 411–421.

Dovers, S. (2009). Normalizing adaptation. *Global Environmental Change, 19*, 4–6.

Economics of Climate Adaptation Working Group. (2009). *Shaping climate-resilient development: A framework for decision-making*. A report of the Economics of Climate Adaptation Working Group. Climate Works Foundation, Global Environment Facility, European Commission, McKinsey & Company, The Rockefeller Foundation, Standard Chartered Bank and Swiss Re. Retrieved July 28, 2013, from http://mckinseysociety.com/downloads/reports/Economic-Development/ECA_Shaping_Climate%20Resilient_Development.pdf

Eisenack, K. (2012). Adaptation financing in a global agreement: Is the adaptation levy appropriate? *Climate Policy, 12*, 491–504.
Eisenack, K., & Stecker, R. (2012). A framework for analyzing climate change adaptations as actions. *Mitigation and Adaptation Strategies for Global Change, 17*, 243–260.

Eriksen, S. H., & Kelly, P. M. (2007). Developing credible vulnerability indicators for climate adaptation policy assessment. *Mitigation and Adaptation Strategies for Global Change, 12*, 495–524.

Fankhauser, S., & Burton, I. (2011). Spending adaptation money wisely. *Climate Policy, 11*, 1037–1049.

Fankhauser, S., & Martin, N. (2010). The economics of the CDM levy: Revenue potential, tax incidence and distortionary effects. *Energy Policy, 38*, 357–363.

Fankhauser, S., Smith, J. B., & Tol, R. S. (1999). Weathering climate change: Some simple rules to guide adaptation decisions. *Ecological Economics, 30*, 67–78.

Füssel, H.-M. (2010). How inequitable is the global distribution of responsibility, capability, and vulnerability to climate change: A comprehensive indicator-based assessment. *Global Environmental Change, 20*, 597–611.

Füssel, H.-M., Halleghatte, S., & Reder, M. (2012). International adaptation funding. In O. Edenhofer, J. Wallacher, H. Lotze-Campen, M. Reder, B. Knopf, & J. Müller (Eds.), *Climate change, justice and sustainability: Linking climate and development policy* (pp. 311–330). Dordrecht: Springer.

Global Adaptation Institute. (2011). *Global Adaptation Index*. Retrieved November 9, 2011, from [http://gain.globalai.org/](http://gain.globalai.org/)

Grasso, M. (2010a). *Justice in funding adaptation under the international climate change regime*. Dordrecht: Springer.

Grasso, M. (2010b). An ethical approach to climate adaptation finance. *Global Environmental Change, 20*, 74–81.

Harmeling, S., Bals, C., Windfuhr, M., & Hirsch, T. (2008). *Making the Adaptation Fund work for the most vulnerable people*. Stuttgart: Germanwatch/Bread for the World. Retrieved August 10, 2012, from [http://germanwatch.org/klima/adfund08.pdf](http://germanwatch.org/klima/adfund08.pdf)

Harmeling, S., & Kaloga, A. O. (2010). *Adaptation fund under the KP: Mature for concrete implementation of projects and direct access* (Policy Report). Oxford: European Capacity Building Initiative (ecbi). Retrieved August 10, 2012, from [http://germanwatch.org/klima/af-kp-e.pdf](http://germanwatch.org/klima/af-kp-e.pdf)

Hinkel, J. (2011). Indicators of vulnerability and adaptive capacity: Towards a clarification of the science–policy interface. *Global Environmental Change, 21*, 198–208.

Horstmann, B. (2011). Operationalizing the Adaptation Fund: Challenges in allocating funds to the vulnerable. *Climate Policy, 11*, 1086–1096.

IPCC. (2007). *Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change* [M. L. Parry, O. F. Canziani, J. P. Palutikof, P. J. van der Linden, & C. E. Hanson, (Eds.)]. Cambridge: Cambridge University Press.

Kaloga, A. O., & Harmeling, S. (2009). *The Adaptation Fund: Maturing on the way to Copenhagen* (Briefing on the outcomes of the 8th Meeting of the Adaptation Fund Board). Bonn: Germanwatch. Retrieved August 10, 2012, from [http://germanwatch.org/klima/afb2009-11r.pdf](http://germanwatch.org/klima/afb2009-11r.pdf)

Kaloga, A. O., & Harmeling, S. (2011). *2011 as the implementation year* (Report on the 13th Meeting of the Adaptation Fund Board). Bonn: Germanwatch. Retrieved August 10, 2012, from [http://germanwatch.org/klima/afb2011–03r.pdf](http://germanwatch.org/klima/afb2011–03r.pdf)

van Kerkhoff, L., Ahmad, I. H., Pittock, J., & Steffen, W. (2011). Designing the Green Climate Fund: How to spend $100 billion sensibly. *Environment, 53*(3), 18–30.

Klein, R. J. (2009). Identifying countries that are particularly vulnerable to the adverse effects of climate change: An academic or a political challenge? *Carbon and Climate Law Review, 3*, 284–291.

Klein, R. J., & Möhner, A. (2011). The political dimension of vulnerability to the adverse effects of climate change. *IDS Bulletin, 42*(3), 15–22.

Klein, R. J., & Persson, Å. (2008). *Financing adaptation to climate change: Issues and priorities* (ECP Report No. 8, October). Brussels: The Centre for European Policy Studies.

McGray, H., Hammill, A., Bradley, R., Schipper, E. L. F., & Parry, J.-E. (2007). *Weathering the storm: Options for framing adaptation and development*. Washington, DC: World Resources Institute. Retrieved August 10, 2012, from [http://www.wri.org/publication/weathering-the-storm](http://www.wri.org/publication/weathering-the-storm).
Mendelsohn, R. (2000). Efficient adaptation to climate change. *Climatic Change, 45*, 583–600.

Moser, S. C., & Ekstrom, J. A. (2010). A framework to diagnose barriers to climate change adaptation. *Proceedings of the National Academy of Sciences of the USA, 107*, 22026–22031.

Müller, B. (2008). *International adaptation finance: The need for an innovative and strategic approach*. Oxford: Oxford Institute for Energy Studies.

OECD. (2008). *Economic aspects of adaptation to climate change: Costs, benefits and policy instruments*. Paris: Organisation for Economic Co-operation and Development.

Paavola, J., & Adger, N. (2006). Fair adaptation to climate change. *Ecological Economics, 56*, 594–609.

Paterson, M. (2001). Principles of justice in the context of climate change. In U. Luterbacher & D. Sprinz (Eds.), *International relations and global climate change* (pp. 119–126). Cambridge, MA: MIT Press.

Persson, Å., Klein, R. J., Kehler Siebert, C., Atteridge, A., Müller, B., & Hoffmaister, J. (2009). *Adaptation finance under a Copenhagen agreed outcome*. Stockholm: Stockholm Environment Institute.

Ratajczak-Juszko, I., & Feaver, D. (2011, January). *International climate finance: The equitable allocation of adaptation funding* (Discussion Paper). Melbourne: RMIT University.

Rübbelke, D. T. G. (2011). International support of climate change policies in developing countries: Strategic, moral and fairness aspects. *Ecological Economics, 70*, 1470–1480.

Schultz, K. H. (2012). Financing climate adaptation with a credit mechanism: Initial considerations. *Climate Policy, 11*, 187–197.

Smith, J. B., Dickinson, T., Donahue, J. D., Burton, I., Haites, E., & Klein, R. J. (2011). Development and climate change adaptation funding: Coordination and integration. *Climate Policy, 11*, 987–1000.

Stadelmann, M., Persson, Å., Ratajczak-Juszko, I., & Michaelowa, A. (2013). Equity and cost-effectiveness of multilateral adaptation finance: Are they friends or foes? *International Environmental Agreements: Politics, Law and Economics, 1*, 1–20.

Stadelmann, M., Roberts, J. T., & Michaelowa, A. (2011). New and additional to what? Assessing options for baselines to assess climate finance pledges. *Climate and Development, 3*, 175–192.

Thomas, D. S. G., & Twyman, C. (2005). Equity and justice in climate change adaptation amongst natural-resource-dependent societies. *Global Environmental Change, 15*, 115–124.

Tompkins, E. L., & Eakin, H. (2011). Managing private and public adaptation to climate change. *Global Environmental Change, 22*, 3–11.

UN. (1992). *United Nations Framework Convention on Climate Change*. New York, NY: United Nations. Retrieved May 29, 2013, from http://unfccc.int/files/essential_background/background_publications_htmlpdf/application/pdf/conveng.pdf

UN. (1998). *Kyoto Protocol to the United Nations Framework Convention on Climate Change*. New York, NY: United Nations.

UN. (2010, November 5). *Report of the Secretary-General’s High-Level Advisory Group on Climate Change Financing*. New York, NY: United Nations.

UNFCCC. (2002). *Report of the Conference of the Parties on its Seventh Session, held at Marrakesh from 29 October to 10 November 2001. Part Two: Action Taken by the Conference of the Parties at its seventh session. Vol. I (UNFCCC/CP/2001/13/Add.1)*. Bonn: UNFCCC Secretariat.

UNFCCC. (2007). *Report of the Conference of the Parties serving as the meeting of the Parties to the Kyoto Protocol on its third session, held in Bali from 3 to 15 December 2007. Decisions adopted by the Conference of the Parties serving as the Meeting of the Parties to the Kyoto Protocol (UNFCCC/KP/CMP/2007/9/Add.1)*. Bonn: UNFCCC Secretariat. Retrieved May 29, 2013, from http://unfccc.int/resource/docs/2007/cmp3/eng/09a01.pdf

UNFCCC. (2006). *Report of the Conference of the Parties serving as the Meeting of the Parties to the Kyoto Protocol on its first session, held at Montreal from 28 November to 10 December 2005. Addendum. Part Two: Action taken by the Conference of the Parties serving as the Meeting of the Parties to the Kyoto Protocol at its first session (FCCC/KP/CMP/2005/8/Add.4)*. Bonn: UNFCCC Secretariat.