

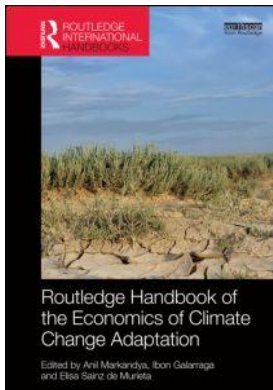
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### **International Cooperation on Adaptation to Climate Change**

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# 3

## INTERNATIONAL COOPERATION ON ADAPTATION TO CLIMATE CHANGE

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### 3.1 Introduction

Since the benefits of adapting to the adverse impacts of climate change will accrue primarily (albeit not exclusively) to individual countries and communities within them, the task of adaptation is often considered to require primarily domestic policy responses. As such, adaptation seems to stand in contrast to mitigation, where the necessity of international cooperation to protect global atmospheric stability is clearer.

Nevertheless, efficient and equitable adaptation may require a significant degree of international cooperation, not least due to the fact that many of the countries most vulnerable to climate change do not have access to sufficient financial resources or information to adapt to wide-ranging but uncertain climatic impacts and thus require international support. Similarly, international support for adaptation may play an important part in the political economy of multilateral climate change negotiations by building trust among parties and encouraging greater participation by developing countries in global mitigation efforts.

In this chapter, we focus primarily on intergovernmental cooperation on adaptation, which encompasses support through financing, technology transfer and capacity building, typically from developed to developing countries. Whereas in the earlier years of international climate change negotiations adaptation was relatively marginal compared to mitigation, adaptation has become an increasingly prominent issue in recent sessions (Mertz et al. 2009). Notably, industrialized countries have pledged as a group to mobilize climate finance to developing countries covering both adaptation and mitigation reaching US\$100 billion per year by 2020. Nevertheless, as we elaborate in the chapter, significant research gaps remain in the field of international cooperation on adaptation (Heuson, Gawel, et al. 2012: 62).

In this chapter, we proceed as follows: in Section 3.2, we discuss potential rationales for countries' contributions to international adaptation funding. In Section 3.3, we describe the

role of the international climate change regime in governing cooperation on adaptation. In Section 3.4, we review policy considerations and selected proposals for raising funds for international adaptation support. In Section 3.5 we highlight policy and economic considerations relevant to the delivery of adaptation finance. Section 3.6 concludes.

## 3.2 Rationales for international cooperation on adaptation

### 3.2.1 A conceptual framework

International adaptation finance may be provided by private or public (i.e., government) entities. While our focus in this chapter will be on public international adaptation finance, we mention first several brief points about rationales for private international adaptation finance. Private entities may be motivated to become involved in this field by either commercial or philanthropic interests. Philanthropic adaptation finance provided by entities such as nongovernment organizations tends to strive primarily to help the poor or vulnerable, while remittances – which represent considerably larger flows to developing countries than aid – may assist household-level adaptation at a range of income levels (Stern 2007: 561). Non-philanthropic private capital flows predominantly serve investors' profit maximization objectives. While helping poor countries to adapt is not the main motivation of commercial investors in providing funds, it represents a co-benefit of these investments (see Atteridge 2011: 27). Public entities could exploit such co-benefits through initiating public investments or regulatory measures that in turn leverage private investments yielding adaptation benefits. While domestic capital and foreign direct investment may provide an important source of adaptation finance for upper-middle-income countries, international public flows are likely to remain important for lower-income countries (Stern 2007: 561).

We now turn to analyzing the rationales for public entities' involvement in international adaptation finance. Here we draw substantially on R.A. Musgrave's theory of public finance. As Musgrave (1956: 333) stresses, the public sector serves three major budget functions, each of which is addressed by a different fiscal branch or department in his stylized model of government:

- providing for the satisfaction of public wants through the efficient allocation of resources (*allocation branch*),
- providing for adjustments in the distribution of income in order to attain the desired or proper distribution of income and wealth (*distribution branch*), and
- contributing to economic stabilization, i.e., securing price-level stability and full employment (*stabilization branch*).

Government intervention would be justified when market forces alone do not suffice to achieve these objectives. Although R.A. Musgrave's original concept paid little attention to the international sector, it can be comfortably included into this concept, as P.B. Musgrave (2008: 343) argues. That is, individual national governments may also intervene internationally (e.g., by offering transfers) in order to pursue their goals under the three branches.

Stern (2007: 411) states that there are three reasons why market forces are unlikely to achieve efficient adaptation to climate change: (i) uncertainty and imperfect information; (ii) missing and misaligned markets, including underprovision of public goods; and (iii) financial

constraints. Although the first two reasons are common reasons for public intervention to improve allocative efficiency, the presence of financial constraints more properly concerns the distribution branch. The stabilization branch does not play a major role in the adaptation context (also see Aakre and Rübbelke 2010a), since stabilization policy should not be pursued by modifications of the levels of public expenditures on goods and services, but should take place in a distribution-neutral way (Musgrave 1959). Nevertheless, adaptation measures may exert positive effects on economic stability (Aakre and Rübbelke 2010b: 769), for example by raising employment levels. In the remainder of this section we will discuss the distributive and allocative rationales for international cooperation on adaptation.

### **3.2.2 Distributive rationales: Assisting the poor and addressing harm**

Financial constraints to adaptation are most intensely perceived by the poor, rendering them more vulnerable to climate change than the rich (World Bank 2009: 42). The greater vulnerability of the poor will in turn worsen their financial situation as climatic impacts materialize. Such negative distributional consequences are widely considered undesirable by the global community. Thus there is a role for the distribution branch in mobilizing adaptation finance.

Distributive justifications for adaptation support for developing countries can largely be split into two components: a) assisting the poor and b) preventing and remedying the imposition of harm on others (compare Moore 2012b: 38). We consider each aspect in turn. First, much research highlights the close links between adaptation and development. The World Bank, for example, has argued that “economic development is perhaps the best hope for adaptation to climate change: development enables an economy to diversify and become less reliant on sectors such as agriculture that are more vulnerable to the effects of climate change” (World Bank 2010: 6; see also Stern 2009: 68). On this basis, some regard international support for adaptation to climate change in poor developing countries as a form of foreign assistance supporting sustainable development (Donner et al. 2011). As discussed below, the idea that adaptation finance should be counted as aid remains controversial and has met strong resistance from developing countries. Nevertheless, it is plausible that altruistic rationales that influence the provision of aid may also play a part in motivating the provision of adaptation finance (Harris and Symons 2010).

Second, harm-based justifications provide a further important distributive rationale for providing adaptation finance. Although precise attribution of causal responsibility for climatic impacts is a complex task, it is nevertheless the case in general that the industrialized world’s emissions-intensive economic development has been the main historical driver for global warming (Rive et al. 2006: 192; Höhne et al. 2011). At the same time, as noted above, developing countries tend to be most vulnerable to climate change while having less responsibility for cumulative emissions. Even though developing countries’ share of current emissions has now surpassed that of developed countries (Olivier et al. 2012) – and in time developing countries’ share of cumulative emissions will also do so (Botzen et al. 2008) – it remains the case that present adaptation needs are the product of cumulative emissions up to the present. Moreover, since per capita emissions in many developing countries are (and will remain) lower than those of many developed countries, there may be grounds for treating emissions required to meet “subsistence” needs as incurring less moral responsibility than those produced for nonessential purposes (Shue 1993; Vanderheiden 2008). Consequently, it could be argued that in addition to their responsibility to prevent future harm through timely mitigation, industrialized countries also have a responsibility to protect developing countries from the negative consequences of

their previous and ongoing greenhouse gas emissions (Roberts 2009; Grasso 2010; Pickering and Barry 2012). In this sense, the motivation for providing adaptation assistance would differ from that for providing development assistance.

Whether industrialized countries could be held liable under international law for providing adaptation finance – on the basis, for example, of a breach of obligations of due diligence to avoid transboundary environmental harm – remains a contentious and unsettled question (see Verheyen 2005; Birnie et al. 2009; Faure and Peeters 2011). However, the threat of international liability could strengthen industrialized countries' incentives to seek a negotiated resolution (Gupta 2007: 85), which in turn could provide the basis for more substantial adaptation finance.

### **3.2.3 Allocative rationales: Public goods and influencing cooperation on mitigation**

From an allocative point of view, it is frequently argued that international support for climate change mitigation could help to raise efficiency, since mitigation is a global public good (in that its benefits are non-excludable and non-rival worldwide; see e.g., Buchholz and Peters 2005, Arrow 2007, and Kotchen 2013). Due to non-excludability, the benefits of mitigation can be enjoyed globally regardless of where the mitigation activity takes place. Thus, to achieve an efficient outcome, mitigation should be undertaken in those places where it can be achieved at least cost. International transfers allow industrialized countries to exploit low-cost mitigation options in developing countries so that the former have to invest less in high-cost domestic emissions reductions in order to attain a given national mitigation target.

In contrast to mitigation, adaptation is generally not considered to provide a global public good.<sup>1</sup> Instead, adaptation primarily provides private and public goods at a national or sub-national level. Private goods may include higher agricultural yields due to water efficiency measures or lower damage to buildings from extreme weather events due to better quality construction, while local public goods could include transport infrastructure that is better able to withstand temperature extremes. To that extent, industrialized countries do not gain directly by helping developing countries to adapt to climate change (Barrett 2008). Consequently, from an allocative point of view, the question arises as to why industrialized countries support adaptation internationally.

As Rübberke (2011) and Pittel and Rübberke (2013) argue, there may be indirect allocative benefits of adaptation support. First, by improving developing countries' perceptions of the fairness of a global agreement, adaptation support may increase their willingness to contribute to international mitigation efforts. This in turn tends to enhance the total level of the global public good of mitigation that is generated through international negotiations. This effect is enhanced by the current consensus-based decision-making practice of the United Nations Framework Convention on Climate Change (UNFCCC; or "the Convention"), which would allow a relatively small group of vulnerable but economically less powerful states to obstruct major decisions (Eckersley 2012).

Second, some direct or indirect benefits of adaptation could also be enjoyed globally. Stern (2007: 568) notes several global public goods that international adaptation funding could provide directly, including: better monitoring and prediction of climate change; improved modeling of climatic impacts; research to improve drought- and flood-resistant crops; and new methods of addressing land degradation. More indirect effects of measures helping regions to adapt to climate change may include, for example, prevention of the displacement of populations from regions

seriously affected by climate-induced drought or extreme weather events, as well as reduced transmission of infectious diseases whose prevalence is exacerbated by higher temperatures (IPCC 2007). Finally, some measures may also simultaneously provide adaptation and mitigation benefits, for example reducing emissions from deforestation and forest degradation (REDD+), which may also help to protect watersheds and biodiversity from climatic impacts.

Abadie et al. (2013) discuss further reasons beyond global public good argumentation that may explain the bias of climate finance towards mitigation. By distinguishing the motivations of public and private sector actors, they note that public sector actors may more readily catalyze private investment in mitigation by creating regulated markets for mitigation, whereas (for reasons discussed in Section 3.5 below), market-based mechanisms to stimulate adaptation are likely to be difficult to establish. Developed countries' governments may have a special interest in mobilizing private finance for mitigation purposes so that their countries can in turn capture benefits from global mitigation efforts.

### **3.2.4 Comparison with other evaluative criteria**

The allocative and distributive rationales outlined above bear important resemblances to other criteria used to evaluate adaptation, as discussed for example by Adger et al. (2005). Their approach includes criteria of effectiveness, efficiency, equity and legitimacy of adaptation. As outlined above, efficiency is applicable to the allocation branch, while equity is related to the distribution branch. If effectiveness is understood as the ability of a policy measure to solve a given problem, the criterion could apply to each branch individually or (if values associated with individual branches could be ranked or weighted) to all branches together (Heuson, Gawel, et al. 2012: 29).<sup>2</sup> Legitimacy – understood as the extent to which the exercise of authority is accepted as justified (see Biermann and Gupta 2011; Pickering et al. 2013) – is relevant to policymaking under all branches. The potential for tradeoffs between rationales is discussed further in Section 3.5.

## **3.3 Governing adaptation in the international climate regime**

### **3.3.1 Overview**

For most of the period since the adoption of the Convention in 1992, adaptation has received much less attention than mitigation. At the time of drafting the Convention, parties generally saw mitigation as the more urgent priority, since many were confident that effective mitigation would diminish the need for adaptation, and significant uncertainty prevailed about the timing and nature of the impacts of climate change (Schipper 2006: 86; Gupta 2010: 642). Some countries were also concerned that focusing on adaptation would provide a perverse incentive for countries to channel less effort into the main task of mitigation (Pielke et al. 2007).

The status of adaptation in the text of the Convention is contested. As outlined below, the UNFCCC sets out clear substantive obligations on adaptation for all parties (Mace 2005: 225). However, the Convention does not define adaptation, nor does it devote any single article to adaptation (Schipper 2006: 89). As a result, in the early years of the Convention's operation it proved difficult to locate adaptation on negotiating agendas (Yamin and Depledge 2004: 213).

Nevertheless, adaptation has grown in prominence in recent negotiations. This has occurred to a large degree as a result of improved scientific understanding and increasing international awareness of current impacts and adaptation needs (Liverman 2011: 404), which have grown

while progress on mitigation has remained inadequate (Ciplet et al. 2013). The increased prominence of adaptation finance is also consistent with the concurrent rising urgency of ambitious mitigation in developing as well as developed countries, since (as discussed above) adaptation finance may play an indirect role in encouraging developing countries' willingness to mitigate through enhancing the perceived fairness of the negotiating process. The degree to which the discourse on adaptation has changed since the Convention's adoption is reflected in a recent UNFCCC decision, which provides that adaptation "must be addressed with the same priority as mitigation" (UNFCCC 2011, para. 2(b)). The remainder of this section provides an overview of funding commitments under the UNFCCC, followed by a brief discussion of other aspects of cooperation on adaptation in the international climate regime.

### **3.3.2 Funding commitments and institutions**

Among references to adaptation in the text of the Convention, the funding provisions are among the most explicit. Under Article 4.3, developed countries are required to provide financial resources and transfer of technology needed by developing countries to meet the "agreed full incremental costs" of measures undertaken by developing countries to implement their commitments under the Convention. These commitments include planning and preparation for adaptation and mainstreaming climate change concerns into national decision-making (see Article 4.1). Under Article 4.4, developed countries must also "assist the developing country Parties that are particularly vulnerable to the adverse effects of climate change in meeting costs of adaptation to those adverse effects". Despite both provisions being couched in mandatory rather than voluntary language ("shall" rather than "should"), the absence of any specific amounts or timeframes for the provision of assistance limited their practical effect in the early years of the Convention's operation (Yamin and Depledge 2004: 217–218). In addition, the provision on adaptation finance (Article 4.4) is weaker than Article 4.3 in that it lacks a reference to "agreed full" or "incremental" costs (Yamin and Depledge 2004: 234). One analysis of historical adaptation finance suggests that it comprised less than one percent of total development assistance for most of the period between the early 1970s and mid-1990s (Michaelowa and Michaelowa 2012: 45), although in the absence of consistent coding practices (as discussed below), historical estimates are subject to considerable uncertainty.

Article 11.1 defines a mechanism for providing financial resources under the Convention. The Global Environment Facility (GEF) has for most of the Convention's life functioned as the sole operating entity of the financial mechanism. The Facility channels funds from industrialized countries to meet the "agreed incremental costs" of climate-change related measures in developing countries to achieve "global environmental benefits" (GEF 2011, para. 2). Both the incremental cost and global benefit requirements have impeded the Facility's ability to deliver adaptation funding. Not only is it difficult to establish a baseline against which the incremental costs of adaptation measures can be assessed, but (for reasons outlined above) many adaptation measures may not provide direct global benefits (Mace 2006: 64).

Developing countries' dissatisfaction with existing adaptation finance arrangements and low levels of development assistance channeled towards adaptation led to an expansion of sources under the 1997 Kyoto Protocol and the 2001 Marrakesh Accords (Yamin and Depledge 2004: 232). The Marrakesh Accords agreed to the establishment of three funds dedicated primarily towards adaptation: the Least Developed Countries Fund (LDCF); the Special Climate Change Fund (SCCF); and the Adaptation Fund, financed primarily through a share of proceeds on



credits from the Clean Development Mechanism (CDM) established under the Kyoto Protocol. The GEF administers both the LDCF and the SCCF with the World Bank acting as trustee. A major role of the LDCF has been funding the preparation of “National Adaptation Programmes of Action” (NAPAs) to identify urgent and immediate adaptation needs. Following a period during which the GEF’s broader climate change focal area supported pilot and demonstration projects on adaptation, all of the GEF’s adaptation-related work will be financed solely through the LDCF and SCCF until at least 2014 (GEF 2010). The Adaptation Fund (AF) is governed by a dedicated Board directly accountable to parties to the Kyoto Protocol. The Board was established in 2007 and the Fund itself became fully operational in 2010.

The establishment of new funding mechanisms during the 2000s coincided with rising attention to adaptation. Michaelowa and Michaelowa (2012: 44) observe that the share of global aid used for adaptation rose particularly since the early 2000s. However, it was not until COP 13 in Bali in 2007 that significant momentum arose for a large increase in adaptation funding in tandem with a greater emphasis on mitigation in developing countries. Subsequently, at COP 15 in 2009, the COP took note of the Copenhagen Accord, which included a commitment by developed countries to provide funding approaching US\$30 billion in the period 2010–2012 (“fast-start finance”) and to mobilize US\$100 billion annually by 2020 to support developing countries in their climate change efforts, conditional on the latter’s progress on mitigation and transparency, with balanced allocation between adaptation and mitigation.<sup>3</sup>

At a first glance, the 2020 commitment looks remarkably high, especially when it is compared with the only slightly higher net Official Development Assistance (ODA; hereafter “aid”) amounting to US\$134 billion in 2011 (OECD 2013; see also Pickering and Wood 2011). However, as discussed below, there is no agreement as yet as to how much aid could be counted towards meeting the overall commitment (see Section 3.4), nor the proportion of the overall commitment that will be dedicated to adaptation (see Section 3.5). Moreover, financing needs may be considerably higher than likely adaptation flows under the commitment. For example, recent analysis has estimated the cost for developing countries of adapting to 2 °C warming by 2050 alone to be in the range of US\$70–100 billion a year between 2010 and 2050 (World Bank 2010: 19). Estimates of financing needs may vary considerably due to methodological differences (Narain et al. 2011). In particular, estimates of adaptation needs typically cover only the (i) incremental costs of adaptation (compared with a baseline without climate change) without taking into account funding deficits in adapting to existing climatic variability and (ii) costs of planned adaptation by the public sector (that is, excluding autonomous adaptation by private actors) (Narain et al. 2011; Moore 2012a). These reasons contribute to the view of many developing countries that the US\$100 billion pledge will be inadequate for meeting overall financing needs.

Current flows of adaptation funding are hard to estimate (let alone to compare with estimates of need on an equivalent footing), in part due to the absence of uniform institutional arrangements and monitoring methodologies. A wide-ranging survey of climate finance estimated that around \$4.4 billion a year flowed to adaptation during 2009 and 2010 (mostly in the form of public finance), compared with \$92.5 billion a year for mitigation (mostly in the form of private capital; Buchner et al. 2011: 8 – see Table 3.1). However, the apparent absence of commercial finance for adaptation should not be taken for granted, since (due to a lack of fine-grained data) the study simply stipulated that all commercial climate finance was directed to mitigation (Buchner et al. 2011: 44).

The OECD subsequently produced a significantly higher estimate of US\$9.3 billion for 2010 using an updated marker for tracking aid flows dedicated to adaptation (OECD 2011).



Table 3.1 Composition of annual flows of international climate finance for developing countries, 2009–2010

USD billion	Adaptation	Mitigation	Total
Public – bi-/multilateral	4.2	35.4	39.6
Offsets (CDM)	0.0	2.3	2.3
Private – philanthropic	0.2	0.2	0.5
Private – commercial	0.0	54.6	54.6
Total	4.4	92.5	96.9

Source: Buchner et al. 2011: 8

This estimate may also need to be treated with some caution, as donors’ processes for classifying aid activities as climate-related may be inconsistent and may considerably overestimate funding primarily directed towards adaptation (Michaelowa and Michaelowa 2011; Junghans and Harmeling 2012).

Recent momentum on climate finance has led to the creation of a range of new funding institutions.<sup>4</sup> Of greatest significance for the longer term is likely to be the Green Climate Fund (GCF), whose establishment was agreed upon at COP 16 in Cancún in 2010. While the GCF will fund both mitigation and adaptation needs, it is expected to channel a significant share of new multilateral funding for adaptation (UNFCCC 2011, para. 100). At COP 17 in 2011, parties agreed on a governing instrument for the Fund (see UNFCCC 2012). According to the instrument, the Fund will finance the “agreed full and agreed incremental costs” of activities including adaptation (UNFCCC 2012, para. 35). As of mid-2013, the board of the GCF had held four meetings but was yet to agree upon modalities for funding. Beyond the UNFCCC framework, countries have also established the Pilot Program for Climate Resilience (PPCR), which forms part of the World Bank-managed Climate Investment Funds. To date, the PPCR has attracted a larger share of adaptation funding than any other multilateral funds (see Figure 3.1). This reflects several reasons, including: contributing countries’ preference for mainstreaming adaptation into development assistance rather than establishing discrete adaptation projects (as the AF does); their greater confidence in the effectiveness of World Bank institutions compared with UN funds; as well as the innovative but controversial governance structure of the Adaptation Fund Board, as discussed in Section 3.5 below (Harmeling and Kaloga 2011; Seballos and Kreft 2011).

### 3.3.3 Other aspects of the UNFCCC’s work on adaptation

Since the early 2000s, other aspects of international cooperation on adaptation have also become more prominent in the UNFCCC. For the most part, these aspects represent “soft” forms of governance aiming to promote functions such as information exchange and networking (Persson 2011: 5), but some have the potential to evolve into more substantive mechanisms or commitments. In 2005, the UNFCCC launched a five-year initiative known as the Nairobi Work Programme on Impacts, Vulnerability and Adaptation to Climate Change (NWP), which aims to assist primarily developing countries in improving their understanding and assessment of impacts, vulnerability and adaptation, and in making informed decisions on adaptation. At COP 16 in 2010, parties established a Cancún Adaptation Framework aimed at enhancing action on

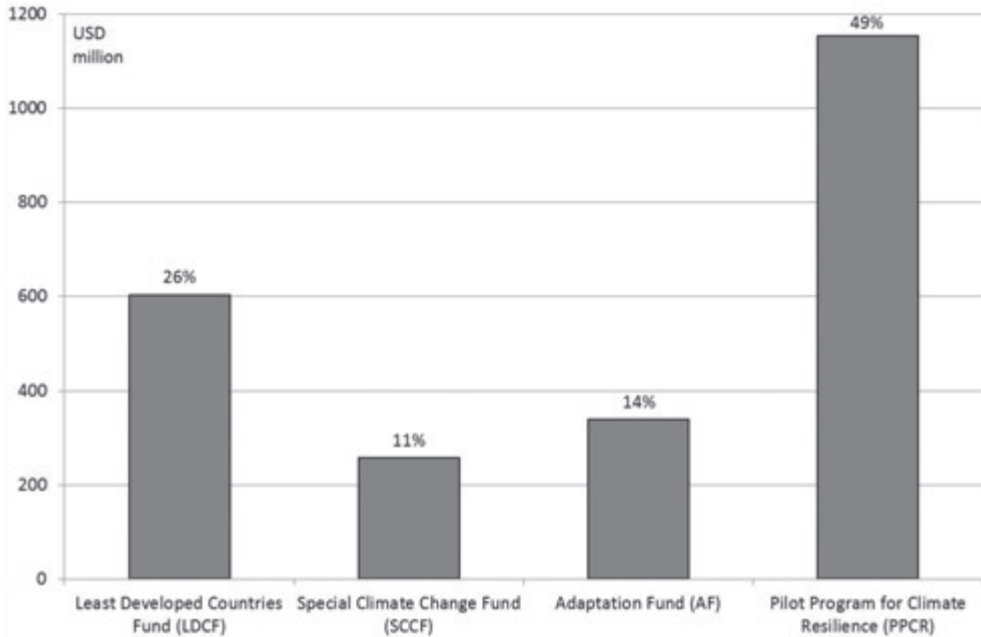


Figure 3.1 Funding pledged to dedicated multilateral adaptation funds

Sources: Adaptation Fund: Adaptation Fund Board 2013, (includes pledged donations and proceeds from CDM levy; other funds: Climate Funds Update 2013 [current as of 6 September 2013])

adaptation under the Convention. This includes the formation of an Adaptation Committee tasked with promoting coherent implementation of enhanced action through functions such as technical support and guidance and information exchange (UNFCCC 2011, para. 20). In addition, at COP 18 in 2012, decided to establish at COP 13 “institutional arrangements, such as an international mechanism” to address “loss and damage” associated with climate change impacts (UNFCCC 2013, para. 9). Such arrangements may inform the development of future mechanisms for insuring against extreme weather events (see also Section 3.5 below).

### 3.4 Generating international adaptation funding

The analytical framework outlined in Section 3.2 could also be applied to the analysis of potential sources of adaptation finance. Thus we could enquire how particular sources compare from the point of view of their allocative efficiency (that is, whether they distort economic incentives or help to reduce existing distortions) and their distributional impacts (that is, whether the burden or “incidence” of the sources falls heaviest on the wealthy and high-emitting or the poor and low-emitting groups in society). Related criteria specifically relevant to the analysis of adaptation financing sources include: adequacy, reliability or predictability, additionality, technical feasibility, political acceptability and transparency and accountability (see Hof et al. 2011; Bowen 2011; Pickering et al. 2013).

### **3.4.1 Existing sources of adaptation funding**

Most adaptation funding to date has been sourced from industrialized countries' aid budgets, one prominent exception being the CDM levy for the Adaptation Fund discussed below. Both sources of funding have proved controversial, and we briefly discuss each in turn.

Developing countries argue that adaptation funding should be additional to – and separate from – aid budgets, and have expressed concerns about the diversion or double-counting of aid to meet climate finance commitments (Stadelmann et al. 2011; Ciplet et al. 2013). Arguments for distinct treatment of adaptation finance are based on several premises, largely grounded in distributional concerns. First, for the reasons discussed in Section 3.2, developing countries argue that adaptation finance is in principle different from aid. Second, developing countries argue that it is inappropriate to divert funding from one commitment (the UN target of providing 0.7 percent of Gross National Income in aid) to meet another (the UNFCCC climate finance commitments). By contrast, many developed countries – most of whom fall short of the 0.7 percent target – have observed that the UN target is not binding on countries that have not individually committed to meet it (compare Clemens and Moss 2007), and have pointed out the synergies between adaptation and development objectives (World Bank 2009: 17–18). As Stadelmann et al. (2011) argue, alternative baselines could address concerns of diversion without necessarily requiring that climate finance be entirely separate from aid.

The primary source of Adaptation Fund resources is a 2 percent levy on the issuance of CDM credits. Some have criticized the levy on the basis that it constitutes a tax on a good – namely mitigation facilitated through the CDM – when it would be preferable to rely on a Pigouvian tax on a bad, such as a levy on emitting activities (Fankhauser and Martin 2010; Bowen 2011: 1028). In addition, the costs of the levy may not fall exclusively on buyers of credits in developed countries. Fankhauser and Martin (2010: 360) have estimated that unless constraints are placed on the proportion of developed country emissions that can be offset through the CDM, sellers of credits in developing countries may shoulder up to two-thirds of the levy's tax burden. Several studies have demonstrated that even if the levy rate were increased, it would cover at most a limited portion of total adaptation financing needs (Hof et al. 2009; Fankhauser and Martin 2010; Eisenack 2012). At COP 18 in 2012, parties decided to retain the current levy rate, but to extend the levy's coverage to the issuance of Assigned Amount Units (AAU) and Joint Implementation under the Kyoto Protocol (UNFCCC 2013a, para. 21). However, given the smaller group of countries with mitigation commitments in the Protocol's second commitment period, this may not be sufficient to radically affect the adequacy of multilateral funding for adaptation. For these reasons, there is considerable value in considering alternative sources for adaptation funding.

### **3.4.2 Proposals for generating adaptation funding**

The Copenhagen Accord envisages that long-term climate finance will come from “a wide variety of sources, public and private, bilateral and multilateral, including alternative sources of finance” (para. 8). Developing countries, researchers and civil society organizations have put forward a wide range of proposals for raising adaptation funding. Many sources could be applicable to mitigation finance as well, or indeed purposes other than climate finance. However, adaptation is often a prominent focus for proposals to raise new public funding, since it is widely recognized that market-based approaches are more readily suited to raising funds for mitigation rather than adaptation (Bowen 2011: 1022).

In 2010, a UN High-Level Advisory Group on Climate Change Financing (AGF) evaluated a range of financing proposals against many of the criteria outlined above. The AGF supported recourse to a mix of sources rather than relying on any one instrument. It emphasized the dual benefits of carbon pricing and markets in generating finance while also reducing emissions (AGF 2010: 5). Public revenue from carbon pricing could be earmarked for adaptation purposes through measures such as: domestic carbon taxes or emissions trading schemes, international schemes such as the auctioning of Assigned Amount Units (AAUs) under a future multilateral climate agreement or levies on specific emitting sectors such as international shipping and aviation. Germany, for example, has earmarked a portion of its EU Emissions Trading Scheme auction revenues towards its climate finance commitment (Vieweg et al. 2012). Savings from reduced domestic subsidies or tax exemptions for fossil fuel production or use could also be channeled towards adaptation finance. The AGF also supported use of other sources such as private capital and leveraging the resources of multilateral development banks, and indicated that an unspecified amount would likely need to be sourced through developed countries' national budgets.

Each source may have a range of implications for allocative efficiency and distribution. Here we briefly highlight some major issues (see also Pickering et al. 2013). First, the earmarking (or hypothecation) of specific revenue streams for particular purposes is controversial. Theories of public finance generally do not encourage hypothecation, since mismatches may arise between expenditure needs and the revenue-raising capacity of particular sources (Stern 2007: 560). However, others have argued that hypothecation can improve the adequacy and predictability of funding for particular priorities (see Müller 2008: 14). Earmarking may be more politically viable in the case of sources generated at the international level, since such funding is less vulnerable to the "domestic revenue problem", whereby funding raised at the domestic level is susceptible to claims from competing local constituencies (Hof 2011: 616). Hypothecation of international sources for climate-related purposes is likely to remain challenging where the activity is not closely connected to greenhouse gas emissions (as with a global financial transaction tax, which could be claimed for purposes such as reducing poverty or promoting global financial stability). Even where revenue is raised from a source of emissions such as international transport, other constituencies – notably airline and shipping industries – could raise competing claims for a share of funds to offset their adjustment costs. For this reason, most estimates of revenue for such sources assume that only a portion of total revenue will be dedicated to climate finance in developing countries (see e.g., World Bank 2011).

Second, some international fundraising schemes may bring about inefficient outcomes if their coverage is not comprehensive. This is a key concern for funding levied on transactions that could readily be relocated, such as currency transactions (in the case of a financial transaction tax) or refueling (in the case of levies on international shipping) (AGF 2010: 29, 31).

Third, sources may vary in their distributional effects, particularly if the incidence of the source falls on lower-income countries or poorer residents of developed countries. This concern has been prominent in debates about proposals to raise funds by regulating international transport emissions. Distributional concerns could be addressed in this context either by introducing exemptions for smaller emitters or measures to rebate funds to developing countries (Miola et al. 2011; Scott and Rajamani 2012). Earmarking a particular source for adaptation may also help to overcome residual distributional concerns on the part of developing countries since, for reasons outlined in Section 3.2, funding for adaptation is more likely to build developing countries' trust than funding for mitigation. One of the few proposals for generating

funding specifically for adaptation – the International Air Travel Adaptation Levy (IATAL) – notes this beneficial aspect of earmarking (Hepburn and Müller 2010: 837).

### **3.5 Delivering international adaptation funding**

A major political and technical challenge in designing institutions for delivering adaptation finance is striking an appropriate balance between the interests and needs of contributors and recipients of funding. Here we discuss four areas of policy choice in delivery, highlighting questions of balance in each area: funding entities responsible for delivering climate finance, relative balance between adaptation and mitigation finance, approaches to prioritizing the allocation of adaptation finance and financial instruments for delivering adaptation finance. In each area, different policy choices may emphasize effectiveness/efficiency or distributive aims, with contributors often focusing greater attention on the former aim and recipients focusing more on the latter (although as noted above, contributors may also have distributive reasons for providing funding).<sup>5</sup>

#### ***3.5.1 Governance of funding institutions***

The current institutional architecture for delivering adaptation finance is highly fragmented, encompassing not only the dedicated multilateral funds surveyed in Section 3.3 but also the bilateral development agencies of contributing countries as well as multilateral development institutions (Persson et al. 2009; Stadelmann, Brown, et al. 2012). This degree of fragmentation reflects in part the necessity of delivering fast-start finance through existing institutions given the time required to establish new ones. However, it also reflects to a significant extent the interests of contributors of climate finance in retaining control over the use of funds. Accordingly, contributors tend to prefer channeling funds through national development agencies or multilateral agencies that they consider to be more closely aligned with their interests – such as the World Bank – rather than existing UN funds (Harmeling and Kaloga 2011).

The design of new funds under the multilateral framework of the UNFCCC has offered the opportunity to reconfigure the balance between contributors and recipients. The Adaptation Fund Board is unique among multilateral climate funds in that developing countries hold the overall majority of seats. Some had hoped that this would provide a precedent for the Green Climate Fund. However, it appears that the Adaptation Fund is considered exceptional since its funding is primarily derived outside aid channels that are fully controlled by donors (Horstmann 2011: 1089; Harmeling and Kaloga 2011: 25). Instead, the board of the Green Climate Fund (like that of the Climate Investment Funds) has an equal number of developed and developing countries, which still gives developing countries considerably greater influence than they have under many existing channels for development finance.

#### ***3.5.2 Ensuring “balanced” allocation between adaptation and mitigation***

The Copenhagen Accord requires “balanced” allocation between adaptation and mitigation finance but provides no guidance as to the standards against which the degree of balance should be measured. Developing countries and civil society organizations have argued that balanced allocation requires *equal* allocation between adaptation and mitigation; that is, half of all financing commitments should be allocated to adaptation (Stadelmann, Brown, et al.

2012: 124). However, the vagueness of the Copenhagen Accord wording combined with the decentralized nature of climate funding institutions has meant that contributing countries may largely determine what they see as the requisite degree of balance. In practice, only around 20 percent of fast-start finance has been pledged for adaptation (Stadelmann, Brown, et al. 2012: 121). This trend is consistent with the theoretical claims outlined above that contributing countries' governments will generally favor funding that yields a global rather than local good, and the relative ease of mobilizing private sector for mitigation in contrast to adaptation (see also Abadie et al. 2013 and Table 3.1).

Several options could help to address the issue of balance. First, a plausible view would be that balance between two objectives does not always require an even split between them, but will depend on the level of need for financing the two objectives. Consequently, improved assessments of global financing needs for mitigation and adaptation could help to determine developing countries' overall needs and the proportion of those needs that should be covered by financing commitments. Second, the newly established Standing Committee on Finance under the UNFCCC – which has a mandate to assist the COP in strengthening the coherence and coordination of overall flows (UNFCCC 2011, para. 112) – could make recommendations on how balance could be improved. Third, the adoption of suitable allocation policies within major multilateral funds (such as the Green Climate Fund) could help to improve the balance of overall flows, possibly by counterbalancing the mitigation bias in other sources of global climate finance.

### ***3.5.3 Criteria for allocating adaptation finance***

Parties to the UNFCCC have agreed that adaptation finance should be prioritized towards the most vulnerable developing countries (Copenhagen Accord, para. 8). However, there are significant challenges in determining how vulnerability should be measured and whether other factors should also enter into consideration when allocating adaptation finance.

Despite several references to vulnerability, the Convention provides little guidance on which countries are particularly vulnerable (Yamin and Depledge 2004: 227). More recent COP decisions have singled out a smaller list of country groups, such as LDCs, Small Island Developing States (SIDS) and Africa (Copenhagen Accord, para. 3). While the LDCF restricts eligibility to LDCs, other funds have struggled to specify more precise eligibility criteria. Thus under the Adaptation Fund, all developing country parties to the Kyoto Protocol are in principle eligible for funding (Horstmann 2011: 1091).

Evidence-based assessments of vulnerability may help to inform decisions about eligibility for and prioritization of adaptation funding. Researchers generally define vulnerability to climate change as a product of three factors: (i) exposure and (ii) sensitivity to climate impacts, and (iii) the capacity to adapt to those impacts (Adger 2006: 269). Researchers have developed a range of indices to quantify each of these factors for the purposes of resource allocation (see for example Adger et al. 2004; Barr et al. 2010; Wheeler 2011). However, several challenges must be addressed in order to justify using such indices for allocating international finance. First, estimates of exposure and sensitivity are subject to considerable empirical uncertainties. Second, while a country's low adaptive capacity will increase its vulnerability, it is also likely to limit its ability to use funds cost-effectively. In this sense, allocating adaptation finance raises a dilemma similar to that in development assistance, namely whether to allocate funding according to need (whether measured by vulnerability or poverty) or according to capacity for cost-effective use



of funds (frequently measured according to indicators of good governance) (Barr et al. 2010: 844). In terms of the conceptual framework outlined above, this could be understood as a tension between distributive and allocative objectives. Some analysis has shown that international allocations will vary considerably depending on how these factors are taken into account (Barr et al. 2010; Wheeler 2011). Little analysis is available on existing patterns of allocation of adaptation finance, but some initial findings from the Adaptation Fund suggest that cost-effectiveness (measured in terms of economic benefits) has been a more prominent factor than the level of vulnerability or poverty (Stadelmann, Persson, et al. 2013).

Since contributors and recipients may have widely varying views on how to construct such an index, multilateral agreement on this issue may be impossible. However, a more ad hoc approach to allocation may be problematic where those determining the allocation (typically contributors and managers of funding) do not have the best information about appropriate means to adapt. Principal-agent problems may therefore arise, causing allocative inefficiencies and/or undesired redistribution of wealth (see e.g., Gibson et al. 2005; Abadie et al. 2013). The managers or contributors (the principals) of funds do not know all individual characteristics that are relevant for delivery decisions, since these characteristics are only known privately to recipients (the agents) of adaptation funding, i.e., developing countries hosting supported adaptation projects.

In response to these concerns, some funds – notably the Adaptation Fund – have experimented with more demand-responsive modes of accessing funds, including enabling domestic institutions in recipient countries “direct access” to some funding rather than requiring them to receive funds through international intermediaries. National adaptation planning – which recent UNFCCC decisions have sought to strengthen (see UNFCCC 2011, para. 15) – can provide a credible basis for identifying adaptation investment priorities and attracting international finance.

Despite the value of demand-driven approaches, they may also have some disadvantages. For example, limited information about adaptation needs may in fact be a by-product of low adaptive capacity; in addition, agents could exploit their discretion to attract higher levels of international funds towards less effective adaptation projects. In either case, scarce international resources would be wasted. For these reasons, international assistance should at a minimum prioritize support vulnerable countries in building their capacity to identify adaptation needs and to access and manage adaptation finance (compare Fankhauser and Burton 2011). Others have emphasized that, in the presence of uncertainty about climatic risks and the close connection between adaptation and development, funding should prioritize reducing societal vulnerability to a broader range of economic and social risks (Khan and Roberts 2013). Moreover, these reasons may suggest the value of a mixed approach combining demand-driven allocation of funding while ensuring coherence in overall funding trends by reference to global indices of vulnerability.

### ***3.5.4 Financial instruments for delivering adaptation finance***

Considerable debate exists over the appropriate financial instruments for delivering adaptation finance. Developing countries have argued that adaptation funds should be delivered in the form of grants rather than repayable loans. This argument is based both on the view that payments made to remedy harm – by analogy with compensation payments – should not be repayable as a matter of principle (Schalatek 2011: 82), as well as the view that many adaptation

investments will not generate commercial returns. To date, most international adaptation finance has been delivered in the form of grants (Stadelmann, Brown, et al. 2012: 125). However, researchers have proposed some alternative modes of delivery, one of which we briefly outline here: the idea of results-based funding for adaptation, where funding amounts are attached to specific measurable targets and payment is provided once those targets are reached.<sup>6</sup>

The general concept of results-based financing for development has a number of appeals, including promoting greater transparency and incentives for performance (Birdsall and Savedoff 2009), and could be used as a means of delivering public adaptation finance. An alternative results-based approach could involve the creation of market mechanisms for adaptation finance. This would involve commoditizing certain aspects of adaptation, either by restricting the supply of certain adaptive “bads” (such as building permits in high-risk coastal zones), or facilitating the supply of adaptive goods, such as wealth or lives saved (Michaelowa et al. 2012: 190; see also Schultz 2011). Both market- and non-market-oriented results-based funding would present a range of practical hurdles, including establishing reliable measurement of adaptation outcomes, and developing baselines (or “business as usual” scenarios) against which progress would be measured. Both outcome measurement and baseline setting would be complicated by uncertainty about long-term impacts as well as natural climatic variability (Michaelowa et al. 2012: 201).

In addition, market-based mechanisms face a number of political hurdles. A key challenge – and arguably one that limits the feasibility of these mechanisms in the foreseeable future – is how to define adaptation units in such a way as to facilitate trading in a uniform commodity while not undermining efforts to mainstream adaptation into broader development practice (Persson 2011). Michaelowa et al. (2012: 191), while more positive about prospects for adaptation markets, have queried whether a market-based scheme that involved substantial transfers to developing countries – assuming that lower-cost adaptation options are located there – would be politically acceptable to developed countries.

### **3.6 Conclusions**

Our chapter has sought to demonstrate that both allocative and distributive goals should be taken into account in analyzing international support for adaptation. Developing countries’ perceptions that climate change burdens are being distributed unfairly may impede their willingness to contribute to international climate protection. Perhaps most importantly, without broad participation of developing as well as developed countries a global agreement cannot be reached, and most developing countries demand adaptation support as a prerequisite for their consent.

Many different agencies and institutions are currently involved in the international adaptation finance arena. This may be due partly to the fact that individual donors tend to prefer those agencies that are more closely aligned with their own interests. The scaling up of climate finance towards 2020 and accompanying efforts to design new institutions such as the Green Climate Fund now offer opportunities to reconfigure the balance between donors and recipients and to make consensus in climate change negotiations – both on mitigation and adaptation – more likely. In designing mechanisms to generate and deliver adequate adaptation funding, policymakers will need to ensure that both allocative and distributive considerations are suitably addressed.

There is still much scope for further research in international adaptation finance. Among the high priority areas for research emerging from our analysis are the evaluation of the geographical

distribution of the disbursement of adaptation funds and its possible motivations as well as the identification of feasible innovative sources of adaptation finance.

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### Notes

- 1 An alternative perspective is taken by Seo (2010), who considers adaptation as a global public good. However, his perspective seems to be overly generalized, at least for the purposes of this chapter.
- 2 The related consideration of “cost-effectiveness” is arguably best seen as a form of efficiency, in the sense of attaining a policy goal at least cost, which is in turn a condition for attaining broader economic efficiency with limited resources (compare with Sterner 2003: 136; Black et al. 2009).
- 3 The Cancún Agreements at COP 16 the following year formalized these commitments as a COP decision.
- 4 For an analysis of strategic implications of different modes of funding climate policies in developing countries, see Heuson, Peters, et al. 2012.
- 5 Compare Andresen and Hey (2005: 213), who argue (in relation to global environmental governance) that: “ensuring effectiveness has tended to be the more important concept and goal for the strong and powerful, while securing legitimacy has been more important for the weaker actors”.
- 6 Another modality is insurance against climate impacts such as extreme weather events (see Chapter 21 on disaster risk management and adaptation to extreme events).

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