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Sharing the Global Climate Finance Effort Fairly with Limited Coordination

Jonathan Pickering, Frank Jotzo, and Peter J. Wood

Abstract

Mobilizing climate finance for developing countries is crucial for achieving a fair and effective global climate regime. To date, developed countries retain wide discretion over their national contributions. We explore how different degrees of international coordination may influence the fairness of the global financing effort, and we present quantitative scenarios, for both the metrics used to distribute the collective effort among countries contributing funding, and the number of contributing countries. We find that an intermediate degree of coordination—combining nationally determined financing pledges with a robust international review mechanism—may reduce distortions in relative efforts as well as shortfalls in overall funding, while reflecting reasonable differences over what constitutes a fair share. A broader group of contributors may do little to improve adequacy or equity unless it can converge on credible measures of responsibility and capacity. Our analysis highlights the importance of building common understandings about effort sharing.

Climate finance remains one of the main unresolved issues in global climate change negotiations. Mobilizing finance to address climate change will be crucial for engaging developing countries in global efforts to cut greenhouse gas emissions. Funding commitments by wealthy countries may promote equity in global climate governance by ensuring a fairer distribution of the costs of reducing emissions and adjusting to the impacts of rising temperatures, and by demonstrating good faith on the part of developed countries. Conversely, if wealthy countries fail to fulfill the commitment they made in 2009 to mobilize \$100 billion a year in climate finance by 2020, the climate regime's credibility will suffer lasting damage. Even if countries achieve the commitment, this is likely to meet only a portion of developing countries' financing needs.¹ Although developed countries have pledged over \$10 billion to a new UN Green Climate Fund, overall levels of funding remain insufficient to assure poorer countries that wealthy countries are on track to meet the 2020 target.² These concerns are likely to

1. Gupta et al. 2014, 1210.

2. Green Climate Fund 2014a; UNFCCC 2012.

intensify as countries negotiate on a more ambitious global response to climate change beyond 2020.

The challenge is to raise enough funding to meet the collective commitment without disproportionately burdening some countries and demanding too little of others. Despite having agreed on a collective financing target, developed countries have not formalized arrangements for sharing the financing effort. Governments of contributing countries retain wide discretion over the size and sources of their national contribution. Meanwhile, some countries not formally obligated to contribute to climate finance—including Korea, Mexico, and several Latin American countries—have announced voluntary pledges to the Green Climate Fund, but debate persists over whether and how the pool of contributors should expand further.

Would a greater degree of international coordination enhance the fairness of effort-sharing arrangements in climate finance? This question speaks to a broader debate in global environmental governance about ways in which different degrees of international coordination may affect various measures of institutional evaluation, including equity and legitimacy.³ We frame this article's analysis in terms of a spectrum commonly invoked in climate governance, ranging from highly coordinated or centralized ("top-down") to uncoordinated or highly decentralized ("bottom-up") approaches.⁴

Nuanced evaluation of top-down and bottom-up approaches has been hampered by caricatured distinctions, rather than recognizing that a variety of intermediate approaches combining bottom-up and top-down elements may be possible.⁵ Climate finance also raises distinct distributive issues that analyses of national mitigation (i.e., reducing greenhouse gas emissions) do not fully encapsulate, not least because finance encompasses adaptation (i.e., adjusting to the impacts of climate change) as well as mitigation.⁶ Our analysis seeks to advance understanding of these underdeveloped areas of the literature through a finer-grained evaluation of coordination plus the perspective of equity. Our analysis points to considerable commonalities between national mitigation and finance on these aspects, but we highlight important differences between them, including the relationship between aggregate and national targets, and the role of prior commitments in informing expectations about current pledges. Accordingly, the degree of coordination required for financing may not necessarily be the same as that for mitigation.

We begin by outlining equity considerations relevant to climate finance and applying findings regarding how different degrees of coordination may affect equity. Then we explore the implications of differing degrees of coordination along two important dimensions of the effort-sharing problem: the criteria

3. Biermann et al. 2009; Eckersley 2012.

4. Stavins et al. 2014, 1021.

5. Dubash and Rajamani 2010.

6. Cipler et al. 2013, 53.

and metrics used to apportion efforts among the countries contributing to the global effort, and the number of contributing countries. For each dimension, we present quantitative analysis to illustrate how the distribution of effort may shift according to different coordination scenarios. We complement the quantitative analysis with qualitative analysis of recent initiatives to raise multilateral environmental finance.

We find that, compared to present arrangements, a greater degree of coordination on both dimensions of effort sharing will be essential for securing adequate, fair funding. However, formulaic or highly top-down approaches to determining the size of the contributing group or the distribution of national efforts are likely to encounter resistance from developing and developed countries. We argue that a hybrid approach—combining nationally driven financing pledges with a robust review mechanism that helps to build common understandings about effort-sharing criteria—is best suited to promoting equity, adequacy, and feasibility.

Fairness in Climate Finance: Concepts and Criteria

Under the 2009 Copenhagen Accord, developed-country parties to the United Nations Framework Convention on Climate Change (UNFCCC, or “the Convention”) committed to provide climate finance approaching US\$30 billion between 2010 and 2012 (“fast-start finance”) and to mobilize long-term finance of US\$100 billion a year by 2020.⁷ Since the UNFCCC has not reached an agreed definition of what should count as climate finance, we take as our starting point the broad definition set out by the Intergovernmental Panel on Climate Change (IPCC): “financial flows whose expected effect is to reduce net [greenhouse gas] emissions and/or to enhance resilience to the impacts of climate variability and the projected climate change.”⁸ Given our focus on fulfilling existing multilateral commitments, we limit our analysis to a subset of total climate finance—namely finance for mitigation and adaptation invested in developing countries that is mobilized by developed countries.⁹

An emerging body of literature has sought to identify principles for evaluating the fairness of institutions for governing climate finance.¹⁰ We use the term “fairness” to refer to even-handed, proportionate, or non-arbitrary treatment of persons and groups in the distribution of goods or the satisfaction of moral claims.¹¹ Although some research assigns a narrower meaning to the term “equity” than to “fairness,” it is common to employ the two terms interchangeably.¹² We take fairness and equity to have two features in common: a substantive dimension

7. UNFCCC 2009, Paragraph 8.

8. Gupta et al. 2014, 1212; see also UNFCCC 2014, 5.

9. Gupta et al. 2014, 1212.

10. See, e.g., Ballesteros et al. 2010; Ciplest et al. 2013; Schalatek 2012.

11. Compare Rawls 1999, 5.

12. Kolstad et al. 2014, 259.

relating to the fairness of the outcome of the institution or policy in question, as well as a procedural dimension relating to the fairness of the associated decision-making and implementation processes.¹³

Scholarly analysis of substantive fairness in climate finance commonly invokes the principle contained in the Convention of Parties' "common but differentiated responsibilities and respective capabilities" for protecting the climate system.¹⁴ According to this principle, national governments should contribute climate finance in accordance with their responsibility for causing the problem of climate change and their economic capacity to raise funds.¹⁵ Substantive fairness in effort sharing requires not only fairness among the contributing countries, but also arrangements that do not either unduly shift the burden of raising funds onto recipient countries or divert other resources (such as development assistance) that contributors have pledged for recipient countries. Substantive fairness in climate finance extends beyond effort sharing to questions of the fair allocation of funding among and within recipient countries, but detailed analysis of this allocation is beyond the scope of this article.¹⁶

Although our analysis focuses primarily on substantive fairness, pursuing this goal may give rise to trade-offs with other important criteria for institutional evaluation, including procedural fairness, effectiveness, and feasibility. We take *procedural fairness* to require at a minimum that effort-sharing arrangements are transparent and accountable; represent the interests of the affected parties, including those of both the contributing and recipient countries; and are reached through authentic deliberation—that is, deliberation that is truthful, mutually respectful, and noncoercive.¹⁷

At the level of climate policy overall, *effectiveness* is often interpreted in terms of environmental outcomes, such as the ability of a given policy to avoid dangerous climate change.¹⁸ In the context of effort-sharing arrangements for climate finance (if not the environmental outcomes of financed activities), effectiveness is best understood in terms of "adequacy."¹⁹ That is, effort-sharing arrangements should fulfill the agreed-on collective funding targets and should also be sufficient to address the unmet climate-related financing needs of developing countries. Understood this way, adequacy is not altogether separable from fairness, since adequate financing contributes to the fair distribution between developed and developing countries of the overall costs of addressing climate change.

13. Shelton 2007, 640–641.

14. UNFCCC 1992, Article 3.1.

15. Cipler et al. 2013, 55; Dellink et al. 2009.

16. See Cipler et al. 2013.

17. See Biermann and Gupta 2011; Schalatek 2012, 961–963; Stevenson and Dryzek 2014, 25.

18. Stavins et al. 2014, 1009.

19. UNFCCC 2009, Paragraph 8.

Finally, we take *feasibility* to refer to whether a particular institutional arrangement is capable of being implemented, given economic, practical, or political constraints such as finite resources, organizational path dependence, or public acceptability.²⁰

Evaluating Top-Down and Bottom-Up Approaches to Climate Governance

Recent scholarship has employed a number of contrasts to frame debates about international coordination in global environmental governance, including top-down versus bottom-up approaches, multilateral versus “minilateral” approaches, and fragmented versus integrated governance.²¹ Typically each pair of terms refers to the ends of a spectrum rather than to a binary contrast. Since our analysis focuses primarily on the degree of international coordination needed to achieve fairness in achieving an agreed multilateral target, we set aside some broader aspects of debates on coordination, including the potential for national or subnational actors to act on climate change in the absence of a multilateral framework²² or the division of labor among international organizations in the climate regime.²³

International climate agreements may be top-down or bottom-up on a variety of dimensions.²⁴ The dimensions most relevant to our analysis are the objectives or targets for action, oversight standards, the range of countries participating, and the metrics for effort sharing. A top-down approach would involve uniform or centralized approaches to some or all of these dimensions, whereas under a bottom-up approach, national governments would retain discretion to determine these policy settings unilaterally.

Applying these dimensions to climate finance, the size of each country’s national financing effort will depend on (1) the size of the collective funding target (if any), (2) the types of funding that may be counted toward a national government’s share of the collective target, (3) the size of the contributor group, and (4) the method of distributing shares among the contributor group. We briefly review arguments in relation to each dimension, before exploring dimensions 3 and 4 in greater detail.

Collective Targets

Numerous commentators consider multilateral coordination to be more capable of effectively addressing collective action problems such as climate change mitigation than are loosely coordinated or unilateral approaches. Thus, Bill

20. Gilabert and Lawford-Smith 2012; Pickering et al. 2012.

21. See, respectively, Hare et al. 2010, Eckersley 2012, Biermann et al. 2009.

22. Hoffmann 2011; Ostrom 2010.

23. Keohane and Victor 2011; Zelli and van Asselt 2013.

24. Hare et al. 2010, 601.

Hare and colleagues argue that only top-down approaches to mitigation can circumvent the problem of free riders, thereby promoting both adequacy and substantive fairness.²⁵ Proponents of bottom-up approaches argue that transnational competition for clean technology investment may stimulate innovation through experimentation and a “race to the top.”²⁶

Mobilizing global climate finance likewise involves a collective action problem and is therefore vulnerable to the risk that some countries will free-ride on the pledges of others.²⁷ Moreover, when a contributor’s pledges primarily benefit other countries (some of whom may be economic competitors), the argument of a “race to the top” may be less plausible, at least as long as countries’ interests in enhancing their international reputation are weaker than their economic interests. For these reasons, multilateral coordination of a common financing goal is strongly preferable.

Oversight Mechanisms and Standards

The case for coordinated oversight (what the UNFCCC calls measurement, reporting, and verification) is likewise strong for both climate finance and national mitigation efforts, and it attracts support from advocates of both top-down and bottom-up approaches.²⁸ Coordinated oversight typically involves centralized institutional mechanisms for reporting on and reviewing progress, as well as agreed multilateral standards for conducting those tasks. An important rationale for coordinated oversight arrangements for finance and national mitigation is that both those who bear the costs and those who benefit have an interest in knowing how much effort governments are expending and whether that effort is producing the desired results. Thus, even in the absence of agreed benchmarks for effort sharing, coordinated oversight may promote substantive fairness (by detecting and deterring free riding) as well as procedural fairness (by promoting transparency and accountability, thereby facilitating deliberation).²⁹

Ongoing disagreement between developed and developing countries over whether and how certain types of flows should count toward the overall commitment illustrates the risks associated with an uncoordinated approach to setting oversight standards.³⁰ The Copenhagen Accord gave wide discretion to national governments over how they would fulfill their commitments, by stipulating that longer-term funding would be drawn “from a wide variety of sources, public and private, bilateral and multilateral, including alternative sources of finance.”³¹ In practice, contributors have adopted widely different approaches

25. Hare et al. 2010, 604.

26. Hoffmann 2011; Keohane and Victor 2011; Ostrom 2010.

27. Bayer and Urpelainen 2013.

28. Bodansky 2011; Hare et al. 2010, 604, 607–608.

29. Hare et al. 2010, 607–608.

30. Ciplet et al. 2013.

31. UNFCCC 2009, Paragraph 8; UNFCCC 2011a, Paragraph 99.

to accounting for public and private sources. This has prompted concerns from developing countries that contributors may divert aid funding from purposes that may be of greater immediate benefit for developing countries,³² or may take credit for private finance that would have flowed to developing countries even in the absence of the funding commitment.³³ For these reasons, intensive coordination will be necessary to develop credible standards for determining the eligibility of sources and how they should count toward the collective target.

The Effort-Sharing Puzzle

Even if the case for coordinated goal setting and oversight is strong, the case for coordinated effort sharing is more contested. Developing countries have argued for a more systematic or coordinated approach to burden sharing as well as goal setting, by proposing that commitments be based on a fixed percentage of each developed country's national income.³⁴ Developing countries' arguments to this effect are often coupled with the idea that, due to the impacts of developed countries' historical emissions on developing countries, climate finance is a matter of entitlement (or obligation) rather than of "charity," and the discretion of contributors must therefore be constrained.³⁵

Wealthy countries—notably the US—have emphasized that they should be entitled to a substantial degree of discretion in how they raise funds, and have encouraged those beyond the existing group of contributors to make funding pledges.³⁶ The EU, although apparently open to a more formulaic approach to effort sharing, has emphasized its "fiscal sovereignty" in its choices about funding sources.³⁷ The idea of fiscal sovereignty not only reflects more general notions of national sovereignty in international relations, but also embodies the view that taxation and expenditure arrangements form part of the domestic social contract between governments and their citizens.³⁸ Accordingly, states may be reluctant to cede discretion over how much they contribute to a substantial funding effort, because doing so may inhibit their ability to adjust budgetary allocations to respond to changing domestic priorities.

The funding that developed countries raised under the UNFCCC's "fast-start" finance commitment from 2010 to 2012 at first appears to provide little support for the importance of coordinating shares within the contributing group. Contributors announced their individual fast-start commitments in an apparently ad-hoc fashion at the Copenhagen conference and in the months

32. Stadelmann et al. 2011.

33. Stadelmann et al. 2013.

34. South Centre 2011, 11.

35. UNFCCC 2011b.

36. Haites and Mwape 2013, 163; UNFCCC 2011c.

37. European Commission 2011; European Commission 2013.

38. Dietsch 2011.

thereafter. As it happened, individual pledges were sufficient to cover the collective fast-start commitment (although a substantial proportion of funds pledged had not yet flowed through to recipient countries by the end of the fast-start period).³⁹ On this basis, a bottom-up approach to effort sharing may appear to be sufficient for securing adequate funding, because some countries may have reputational motivations for unilaterally making up for shortfalls in the overall commitment, as Japan and Norway did.⁴⁰ In addition, the collective financing pledges at Copenhagen fixed an overall distribution of the multilateral financing effort between developed and developing countries. Because all contributing countries were wealthy, ensuring fair shares within the contributing group was arguably less important than if the group's members had widely varying incomes. By contrast, under the Copenhagen Accord both developed and developing countries put forward national mitigation pledges in the absence of a fixed division of labor between the two groups.

Nevertheless, there are two reasons why the experience of the fast-start finance period may not provide a sufficient guide for future financing efforts. First, when the stakes are considerably higher—as in the long-term finance commitment, which requires a ten-fold increase in annual nominal amounts relative to the fast-start period—it is less likely that countries will be able to rely upon some countries' unilateral action to bridge a substantial shortfall in collective funding. Second, as we discuss below, expanding the contributing group to include a wider range of countries could enhance the adequacy of fundraising efforts, but as the group becomes larger and more diverse, equity considerations regarding relative shares within the group once again come to the fore.

Measuring Fair Shares

We now compare different degrees of coordination in effort sharing. Existing research in this area has typically focused on the choice of effort-sharing metrics but has not explicitly incorporated different coordination scenarios.⁴¹

Initially we take as fixed the existing list of countries with responsibilities to provide climate finance under the UNFCCC, namely the Annex II (“developed”) parties. In the next section we investigate the implications of varying the size of the contributor group. Our analysis is applicable not only to the \$100 billion commitment but also to a subset thereof (such as the share of public finance in the overall commitment, or contributions to the Green Climate Fund) or to a larger collective target. Our analysis is also neutral as to whether national contributions are drawn from development assistance budgets or other sources. However, holding the size of a national effort constant, a pledge

39. Nakhooda et al. 2013.

40. See Ciplet et al. 2012, 2.

41. See, e.g., Dellink et al. 2009; Petherick 2014.

that redirects other funding intended for developing countries will diminish its overall substantive fairness.

Scenarios for Metrics and Coordination

We begin by introducing a range of possible indicators that could guide decisions about effort sharing. Table 1 shows illustrative shares for Annex II contributors, disaggregated by the five largest contributors of fast-start finance. We use a range of indicators based on the UNFCCC principle of parties' "common but differentiated responsibilities and respective capabilities," measured in terms of national emissions and income. We also include several indicators based on countries' previous shares of funding for international purposes, because some contributors used these indicators as a guide to their fast-start finance contributions.⁴²

For parsimony, we excluded from the presentation of results a number of variations on the indicators outlined above. For the present analysis, we tested a number of variations for emissions (e.g., excluding emissions from land use) and income (e.g., market exchange rates), but found that these modifications resulted in limited differences in the overall trends. Extending the time frame for historical emissions to periods before 1990 increases developed countries' share of global emissions, but the differences are moderate for most countries, since around a third of cumulative global emissions between 1850 and 2010 occurred since 1990.⁴³

We use the indicators outlined in Table 1 as a basis for developing three hypothetical scenarios for different degrees of coordination in effort sharing, shown in Figure 1. In the "high-coordination" scenario (first column), contributing countries agree on a common formula for sharing the entire effort based on the indicators of responsibility (R) and capacity (C) in Table 1. The combination of metrics under this scenario resembles several existing top-down proposals for sharing mitigation and financing efforts, albeit in a simpler form.⁴⁴ In the "moderate-coordination" scenario (second column), countries may base their share on any one of the three responsibility or capacity indicators listed in Table 1. We assume that each country, motivated by short-term self-interest, would choose the indicator that minimizes its own contribution. Finally, in the "low-coordination" scenario (third column), countries have complete discretion over which indicator they use to estimate their share of the total effort. As under the moderate-coordination scenario, we assume that countries would choose the indicator that requires them to pay the smallest amount.

The results indicate that under a low-coordination scenario, the sum of pledges would fall considerably short, with only half of the aggregate funding target being fulfilled. The main reason is that the existing pledges of two large

42. Pickering et al. 2015, 155.

43. Dellink et al. 2009, 416; den Elzen et al. 2013.

44. See, e.g., Baer et al. 2008; Dellink et al. 2009; Petherick 2014.

Table 1
 Illustrative Indicators for Sharing the Climate Finance Effort Among Annex II Countries: Percentage of Each Country or Group's Share of the Annex II Total

	EU Annex II					Other Annex II
	Australia	Member States	Japan	Norway	US	
Responsibility (GHG Emissions)						
Emissions (2008–2011)	4.8%	28.4%	9.1%	0.2%	50.0%	7.6%
Emissions (1990–2011)	4.2%	29.7%	9.5%	0.2%	49.4%	7.0%
Capacity (Income)						
GDP (2008–2011, PPP)	2.4%	37.3%	12.2%	0.7%	42.2%	5.1%
Existing Pledges or Contributions						
Global Environment Facility (GEF-5)	1.8%	54.8%	14.9%	1.7%	17.0%	9.7%
Fast-Start Finance	1.9%	22.1%	42.8%	6.6%	22.2%	4.5%
UN Scale of Assessment (2012)	2.5%	46.5%	16.0%	1.1%	28.1%	5.9%

Notes: Numbers in bold show the indicator that yields the lowest contribution for each country or group. Data sources: greenhouse gas (GHG) emissions: World Resources Institute 2015, carbon dioxide equivalents, including emissions from land use; GDP: International Monetary Fund 2011, reported at purchasing power parity (PPP); Global Environment Facility: GEF 2010, showing actual shares of GEF's fifth replenishment (GEF-5); fast-start finance: Nakhlooda et al. 2013; UN Scale of Assessment: United Nations 2011.

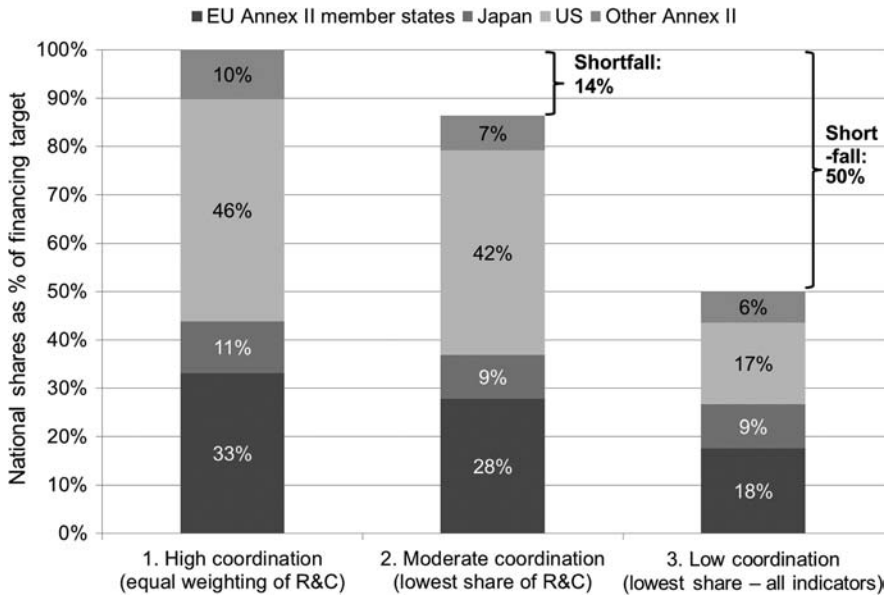


Figure 1
Comparing Degrees of Coordination in Effort Sharing

Abbreviations: R, responsibility; C, capacity. Responsibility shares for the high-coordination scenario are based on the average of current (2008–2011) and cumulative (1990–2011) shares of Annex II emissions. Under the moderate- and low-coordination scenarios, EU Annex II member states choose their lowest indicator individually, rather than as a bloc.

contributors (i.e., the EU share of fast-start finance, the US shares of fast-start finance, and the Global Environment Facility’s fifth replenishment [GEF-5]) are significantly lower than their responsibility and capability shares. However, if countries can only choose between measures based on capacity and responsibility, the sum of pledges falls short of the target by considerably less (about 14 percent). This is because national income and emissions levels are correlated, so the scope for minimizing each country’s contribution is limited.⁴⁵

Evaluating the Coordination Scenarios

These scenarios illustrate the risk that an uncoordinated approach to effort sharing could result in a significant shortfall in funding. The broader the range of metrics from which countries can choose, the larger the shortfall if countries seek to minimize their contributions. As noted above, the larger the absolute size of the funding target, the larger the absolute size of the shortfall under a

45. Bassetti et al. 2013.

given scenario, and the less feasible it will be for individual countries to do more than their fair share to bridge the gap. Accordingly, moderate or high coordination appears necessary to secure adequate funding.

How do the scenarios fare on the criteria of procedural and substantive fairness? Beginning with the low-coordination scenario, one could argue that allowing countries to base their shares on prior pledges is procedurally fair, since those pledges constitute a precedent previously accepted by other contributors as credible. Thus, one might argue that prior pledges confer “source-based legitimacy” as to a country’s share—that is, legitimacy that derives from the source or origin of an institution or decision.⁴⁶

However, prior pledges are not robust indicators of substantive fairness, because a country’s willingness to pay may fall short of more objective measures of its responsibility or capacity to pay. In addition, replenishment negotiations typically treat as a precedent only a country’s “basic share” of the total funding required, rather than the actual share that they pledge for a given replenishment.⁴⁷ During its first replenishment the GEF set basic shares at around 90 percent of required funding to allow contributors to make further contributions. However, over time some countries reduced their shares without corresponding increases in those of other countries. By the time of GEF-5, all countries’ basic shares only added up to 73 percent.⁴⁸ For this reason, basic shares have become increasingly inadequate as a guide for future funding efforts.

A broader concern about low coordination relates to the ability of countries to choose from a diverse range of indicators. One could argue that the low-coordination scenario ranks better than the others on procedural fairness, since it gives each country greater ownership over how it frames its share. However, such an approach fares poorly on other aspects of procedural fairness, including transparency and quality of deliberation among countries, since each country may simply choose its own metric without justification.

By narrowing down the possible metrics to a more objectively justifiable range, the moderate- and high-coordination scenarios improve on the substantive fairness of the low-coordination scenario. As Figure 1 shows, the high-coordination scenario fares better than the moderate-coordination scenario on adequacy. But a major challenge for the high-coordination scenario is whether such an approach is politically feasible, given the resistance of many countries to formulaic approaches.

Scales of contribution have been adopted for several other multilateral funding mechanisms—including the UN budget for peacekeeping and core operations, the UNFCCC’s operating budget, and contributions to the Ozone Fund.⁴⁹ However, these approaches generally apply to situations in which the

46. Bodansky 1999, 612.

47. Global Environment Facility 2013, 3.

48. GEF 2013, 3, 10.

49. Haites and Mwape 2013, 163.

size of the collective funding effort is substantially smaller. The UN peace-keeping budget for fiscal year 2014–2015, for example, is approximately US \$7 billion.⁵⁰ The larger the proportion of a country's income that a scale of contribution covers, the more likely it is that countries will raise concerns about their fiscal sovereignty. Thus, while a larger collective target makes some degree of coordination more important, it may also make a high degree of coordination more politically vexed.

Policy Options

These observations suggest that the moderate-coordination scenario, despite resulting in a limited shortfall, may nevertheless be preferable to the high-coordination scenario, because it is more politically feasible while also faring reasonably well on substantive fairness.

A moderate-coordination scenario could be implemented in a number of ways. Under Benito Müller's "preference score" approach, which other researchers have applied to pledges for the Green Climate Fund, countries vote on their preferred effort-sharing indicator (assumed to be the indicator that minimizes a country's own contribution).⁵¹ The votes for each indicator, weighted by the population of each country, are then tallied up to obtain the weighting of each indicator in the overall effort-sharing metric.

Although this approach is elegant and arguably procedurally fair in giving each citizen of a contributing country equal representation in determining the distribution of national efforts, it still requires countries to agree on an integrated formula. Introducing a limited degree of choice may not be sufficient to overcome the resistance of countries that are reluctant to adopt a formulaic approach on principle.

An alternative—and in our view more promising—option would be to adopt a broader deliberative approach to guiding effort-sharing decisions. Countries would report on their projected share of the financing effort as well as the basis on which they calculated their share. A review mechanism would compare and aggregate the national pledges, then report on their adequacy and fairness in terms of a range of credible effort-sharing indices. Countries falling well short on credible measures of effort would be encouraged to increase their level of effort.

Such an approach would complement and build on recent moves toward a more robust "pledge-and-review" process for negotiating mitigation commitments under the UNFCCC. Strengthening existing requirements for reporting on climate finance could help build common understandings in the short term, and a review of longer-term financing pledges could be incorporated into the

50. United Nations 2015.

51. Müller 1999; see also Cui et al. 2014.

review of “Intended Nationally Determined Contributions” under a post-2020 agreement.⁵²

This approach could enhance the transparency of national decision-making, open up space for deliberation on credible measures of effort, and “name and shame” those that are doing less than their fair share. A common approach to both finance and mitigation efforts could also help to achieve a more comprehensive picture of the overall climate policy effort pledged by each country. However, there is no guarantee that such an approach would goad laggard contributors into boosting their efforts, although the use of compliance measures such as border tax adjustments could increase the costs of shirking while also helping to bridge funding gaps.⁵³

Importantly, under a moderate-coordination scenario it is unlikely that deliberation at the multilateral level alone will be sufficient to build clear expectations about credible shares of finance. Deliberation at the national level is also important, whether through independent government authorities that review each country’s level of climate policy effort or through independent analysis that informs national debates.⁵⁴

Expanding the Pool of Contributors

So far we have assumed a fixed size for the group of contributors, namely the Annex II countries. However, there are both normative and empirical reasons for exploring the implications of variations in the size of the contributing group. Many commentators agree that the UNFCCC’s Annexes are rigid and outmoded.⁵⁵ The composition of Annex II was originally based on membership of the OECD at the time of the Convention’s adoption in 1992, and its composition has changed very little since that time, despite large increases in global emissions and income and substantial changes in their global distribution.⁵⁶ As we have argued elsewhere, there are strong reasons of fairness for expanding the contributing group to include non-Annex II countries with high per capita emissions and income.⁵⁷

Moreover, some non-Annex II countries have already begun to make pledges of climate finance. Korea, Indonesia, Mexico, and several Latin American countries, for example, have announced pledges to the Green Climate Fund.⁵⁸ In addition, the BASIC bloc of large emerging economies (Brazil,

52. See Haites et al. 2014, 8–9.

53. Grubb 2011.

54. Stevenson and Dryzek 2014, Chapter 7. For examples of independent analysis of national efforts, see Houser and Selfe 2011 (US), Jotzo et al. 2011 (Australia), and Kehler Siebert 2013 (Sweden).

55. See, e.g., Depledge 2006; Garnaut 2008.

56. Depledge 2009, 274.

57. Jotzo et al. 2011, 18, 51; Pickering et al. 2012.

58. Green Climate Fund 2014b.

South Africa, India, and China) have contributed to replenishments of the GEF.⁵⁹

Scenarios for Expanding the Contributor Group

Table 2 shows a range of possible scenarios for expanding the contributor group (in ascending order of group size) using selected indicators from the previous analysis. Group A (which we refer to as the “updated Annex II” group) comprises all countries whose per capita income is higher than the Annex II country with the lowest income (Portugal, with around \$23,000 per capita annually over 2008–2011).⁶⁰ In Group B (the “high capacity and responsibility” group), membership is based on a combination of responsibility and capacity. We have used for our emissions threshold the Annex II country with the lowest per capita emissions (Sweden, with around four tons of carbon dioxide per capita annually over 2008–2011). However, since it would be unreasonable to expect poorer countries to contribute finance even if their emissions were comparable with those of Annex II, countries must also exceed the World Bank’s threshold for high-income countries (gross national income per capita of \$12,746 in 2013) to be included in the group.⁶¹ Although the emissions threshold is below the global average (around six tons per person in 2008–2011), raising the threshold to the global average makes little difference to the size of the group, since most high-income countries have above-average per capita emissions. Group C (the “self-selected” group) comprises countries that have contributed to major recent international climate funding efforts (GEF-5 and fast-start finance or the Green Climate Fund). Again, the scenarios aim to provide an illustrative but not definitive range of plausible groupings.

The results reveal a number of interesting features. First, and perhaps most strikingly, the lowest Annex II share emerges when the group is self-selected and national shares are based on a responsibility indicator. This is mainly because a number of emerging economies with high absolute emissions (notably China and India) contributed to GEF-5. Second, using a capacity indicator reduces the Annex II share by less than using a responsibility indicator does, because several non-Annex II countries have relatively high per capita emissions but relatively low per capita incomes. Third, the Annex II shares vary barely at all across scenarios if the “existing pledges” indicator is used. This is due to the fact that even though a number of non-Annex II countries have pledged funds to the GEF, most have not taken up “basic shares” and typically contribute very small shares of overall funding. In most cases, their contribution is pegged at the minimum amount required to maintain voting rights in the GEF (around US

59. GEF 2010; GEF 2013.

60. See also Houser and Selfe 2011.

61. See Garnaut 2008, 222.

Table 2

Effort Sharing Under Different Indicators as the Contributor Group Expands: Country's Share of Each Indicator as a Percentage of the Group (A, B, or C) Total

	A. Updated Annex II			B. High Capacity and Responsibility			C. Self-Selected		
	Resp'ty	Capacity	Existing Pledges	Resp'ty	Capacity	Existing Pledges	Resp'ty	Capacity	Existing Pledges
US	43%	37%	17%	36%	34%	17%	23%	25%	16%
EU (Annex II States)	26%	33%	54%	22%	30%	54%	14%	22%	53%
Other Annex II	18%	18%	28%	15%	17%	28%	10%	12%	27%
<i>Annex II Subtotal</i>	88%	88%	99%	73%	81%	99%	46%	58%	97%
China	N/A	N/A	N/A	N/A	N/A	N/A	20%	16%	0.4%
India	N/A	N/A	N/A	N/A	N/A	N/A	6%	6%	0.3%
Russia	N/A	N/A	N/A	14%	5%	0.3%	9%	4%	0.3%
Other New Contributors	12%	12%	0.9%	14%	14%	0.7%	19%	16%	2%
<i>New Contributors Subtotal</i>	12%	12%	0.9%	27%	19%	1.0%	54%	42%	3%

Notes on indicators: Responsibility (Resp'ty): 1990–2011 emissions (including land use, land-use change, and forestry); Capacity: 2008–2011 GDP per capita (PPP); Existing pledges: Contributions to GEF's fifth replenishment.

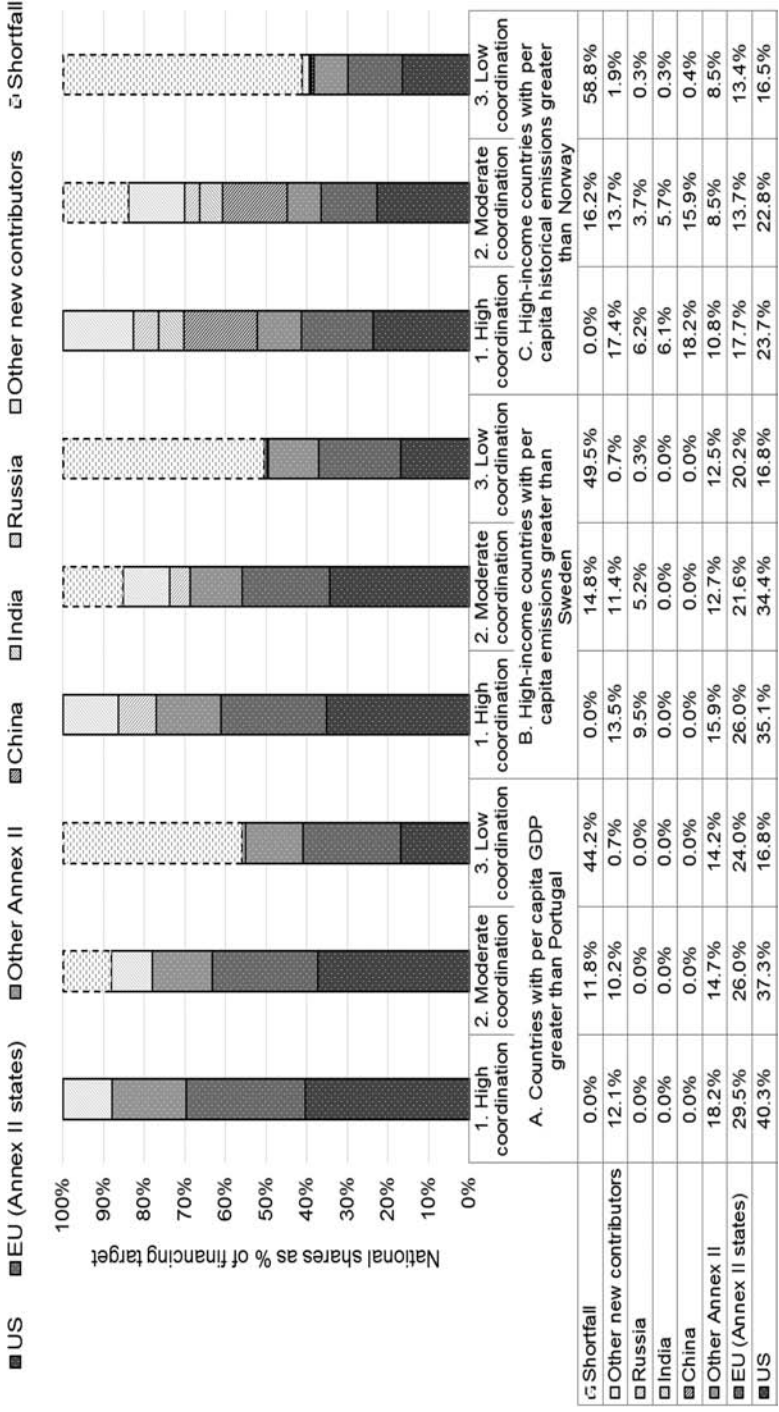


Figure 2 Effort Sharing Under Different Coordination Scenarios as the Contributor Group Expands: Country or Group's Share as a Percentage of the Total Required Financing Effort

\$6 million). The BASIC countries and Russia, for example, each pledged less than 0.5 percent of the total GEF-5 replenishment.⁶²

Figure 2 uses the indicators from Table 2 to extend the three sets of coordination scenarios outlined above to the expanded groupings.

Evaluating the Coordination Scenarios as the Contributing Group Expands

The results highlight important interactions between the size of the group and differing degrees of coordination. As with the Annex II scenario, all of the high-coordination scenarios result in adequate funding when the group is larger, whereas the low-coordination scenarios produce the greatest shortfall. The larger the group, the greater the shortfall from less coordination, since each country's lowest indicator falls as the group size increases.

How does group size affect the fairness of the coordination scenarios? At the very least, the updated Annex II grouping appears substantively fairer than the current Annex II grouping, because it does better at treating comparably capable countries alike. Whether the self-selected group is fairer again is open to debate. This group rates relatively well on procedural fairness and political feasibility, since it involves a voluntary decision by countries to contribute funding for similar purposes. But whether it is substantively fairer depends on the effect of the interaction between group size and coordination on effort-sharing measures. One objection in this regard is that, whereas countries such as India and China made pledges to the GEF as symbolic gestures of solidarity on global environmental problems,⁶³ this should not be taken as an indication that they are prepared to take on funding responsibilities similar to those of wealthier countries. This objection has particular force under the high- and moderate-coordination scenarios, in which the Annex II share of the total is lower than the non-Annex II share.

Given that a more diverse group of contributors is likely to have more divergent conceptions of fairness,⁶⁴ the low-coordination scenario may seem preferable. But any gains to substantive fairness would come at a large cost to adequacy. For this reason, it may be preferable to explore moderate-coordination scenarios that recalibrate relative contributions in a more nuanced way—for example, by using more progressive indicators (e.g., emissions or income above a given per capita threshold, as distinct from total income or emissions)⁶⁵ or by applying effort-sharing measures to domestic as well as international flows of climate finance that all parties—whether developed or developing—mobilize or receive.⁶⁶

62. GEF 2010, 148, 150.

63. Sjöberg 1994, 30.

64. Roberts and Parks 2007.

65. See, e.g., Baer et al. 2008.

66. Haites et al. 2014, 7.

Options for Expanding the Group

Here we turn briefly to the degree of coordination required to increase group size. The fact that the membership of the Annex II group is so firmly entrenched in the fabric of the climate regime will make it difficult to secure multilateral consensus on a formal expansion of the pool of contributors.⁶⁷ In these circumstances, unilateral pledges by governments that do not yet have formal obligations may hold the best prospects of securing a fairer distribution of the financing burden in the near future. Such an approach would complement recent trends in mitigation efforts, in which pledges by developing countries have diminished the practical importance of the Annexes, although the formal groupings remain unchanged.

Still, as we have shown, merely increasing the group size without coordinating effort-sharing measures may do little to increase adequacy or equity. This situation highlights the need for deliberation between new and existing contributors—as well as within the group of new contributors—to build common expectations about credible measures of effort. As an interim measure, some emerging economies could also informally opt out of receiving international climate finance in order to enhance access to funding for poorer countries.

Conclusion

Our analysis of effort sharing in global climate finance shows that, to secure fairness and adequacy, top-down coordination will be essential to set a collective goal and establish multilateral oversight standards and mechanisms. However, our modeling of effort-sharing metrics suggests that a combination of top-down and bottom-up approaches to determining national efforts will be necessary. Moderate coordination may reduce distortions in relative efforts as well as shortfalls in overall funding resulting from a bottom-up approach, while still allowing countries a degree of discretion that reflects reasonable differences of perspective on what constitutes a fair share, thus offering greater political feasibility than top-down scenarios.

We have also highlighted the distinctive role that prior pledges play in the financing context—a dynamic less clearly evident in mitigation negotiations. Although previous financing pledges arguably have some value as accepted precedents, they often diverge considerably from more credible measures of capacity and responsibility. Giving countries wide discretion to base new pledges on past levels of effort may exacerbate rather than narrow an unfair distribution of resources.⁶⁸

Our analysis of the interaction between different coordination scenarios and the size of the contributing group has shown that expanding the group at least to

67. Depledge 2006.

68. Raupach et al. 2014.

countries with incomes comparable to Annex II countries would enhance substantive equity. In the interim, expanding the group is likely to depend on bottom-up, unilateral pledges rather than on a coordinated attempt to redefine the contributing group. However, broadening the group much further may make little difference to adequacy or equity unless the considerably more heterogeneous group of contributors deliberates in order to arrive at credible measures of effort. Thus, both stages of the analysis highlight the importance of building common understandings around effort sharing. In this regard, our findings complement other recent analysis on the importance for the climate regime's legitimacy in forming "shared understandings" of principles such as "common but differentiated responsibilities and respective capabilities."⁶⁹

In focusing on effort sharing, we have isolated one of many elements of fairness in climate finance, albeit a crucial one. Other relevant policy choices include the sources from which funding is drawn and how funding is allocated among recipient countries. Further research could explore how these choices interact; test a wider range of effort-sharing parameters and group sizes; and incorporate game-theoretic modeling into the coordination scenarios. In addition, further research will be required to ascertain whether and how private flows—which are expected to comprise a growing proportion of longer-term climate finance—could be attributed to individual countries and could inform assessments of relative effort.

Our findings reinforce other research indicating that each degree of coordination gives rise to difficult trade-offs regarding equity, adequacy, and feasibility. Nevertheless, by distinguishing institutional elements that require a top-down approach from those for which a hybrid approach may be preferable, analysis of the kind presented here may help negotiations to strike a wise balance, ensuring that contributors do their fair share in helping poorer countries and safeguarding the credibility of the global climate regime.

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69. Brunnée and Toope 2010.

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