



HARVARD Kennedy School
JOHN F. KENNEDY SCHOOL OF GOVERNMENT

The Harvard Project on International Climate Agreements

ISSUE BRIEF

November 2009
Issue Brief 09-02

Climate Finance

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Prepared by
The Harvard Project on International Climate Agreements

THE HARVARD PROJECT ON INTERNATIONAL CLIMATE AGREEMENTS

The goal of the Harvard Project on International Climate Agreements is to help identify and advance scientifically sound, economically rational, and politically pragmatic public policy options for addressing global climate change. Drawing upon leading thinkers in Australia, China, Europe, India, Japan, the United States, and other countries, the Project conducts research on policy architecture and key design elements of a post-2012 international climate policy regime. The Harvard Project also provides insight and advice regarding countries' domestic climate policies, especially as these policies relate to the prospects for meaningful international action. The Project is directed by Robert N. Stavins, Albert Pratt Professor of Business and Government at the Harvard Kennedy School.

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Acknowledgements

Major funding for the Harvard Project on International Climate Agreements has been provided by a grant from the Climate Change Initiative of the Doris Duke Charitable Foundation. Additional support has been provided by Christopher P. Kaneb (Harvard AB 1990); the James M. and Cathleen D. Stone Foundation; Paul Josefowitz (Harvard AB 1974, MBA 1977) and Nicholas Josefowitz (Harvard AB 2005); the Enel Endowment for Environmental Economics at Harvard University; the Belfer Center for Science and International Affairs at the Harvard Kennedy School; and the Mossavar-Rahmani Center for Business and Government at the Harvard Kennedy School.

Citation Information

The Harvard Project on International Climate Agreements "Climate Finance" Issue Brief 2009-2, Cambridge, Mass.: Harvard Project on International Climate Agreements, November 2009.

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Climate Finance^{*}

EXECUTIVE SUMMARY

The finance of climate mitigation and adaptation in developing countries represents a key challenge in the negotiations on a post-2012 international climate agreement. Finance mechanisms are important because stabilizing the climate will require significant emissions reductions in both the developed and the developing worlds, and therefore large-scale investments in energy infrastructure. The current state of climate finance has been criticized for its insufficient scale, relatively low share of private-sector investment, and insufficient institutional framework. This policy brief presents options for improving and expanding climate finance. These options include:

- (1) reforming the Clean Development Mechanism (CDM) offset market to leverage large-scale foreign direct investment in emission-reducing activities in developing countries, most importantly in technology transfer;
- (2) allocating emissions allowances in an international cap-and-trade scheme such that developing countries are (partly) compensated for their emission reductions;
- (3) establishing an international greenhouse gas charge or other mechanism in major developing countries that creates domestic streams of revenue;
- (4) reforming energy subsidies to free funds for government expenditure for climate mitigation and adaptation;
- (5) employing export credit agencies to leverage foreign direct investment in climate-related activities;
- (6) increasing bilateral and multilateral official development assistance for climate-related projects; and
- (7) providing large-scale financing for incremental costs contingent on implementation of emission-reduction policies in developing countries.

BACKGROUND

Financial mechanisms under the United Nations Framework Convention on Climate Change (UNFCCC) and the Kyoto Protocol include the Clean Development Mechanism (CDM) and official development assistance (ODA).

^{*} The Harvard Project would like to thank Jonas Meckling, Project Postdoctoral Fellow, for his contributions to this Brief.

The CDM has emerged as the main vehicle for private-sector investment in carbon mitigation in developing countries. The value of the primary CDM market has been growing steadily since the inception of the market, with the exception of 2008, when the financial crisis affected the price of CDM credits. In 2008, financial flows in the primary CDM market reached \$6.5 billion; combined with the secondary market, investment in the CDM totaled \$33 billion (Capoor and Ambrosi 2009).

Multilateral and bilateral ODA represents the second major existing pillar of climate finance for developing countries. The Global Environmental Facility (GEF), the largest source of multilateral climate-related ODA, has invested \$3.3 billion in climate-related projects since 1991, leveraging an additional \$14.4 billion of co-financing from the private sector, recipient countries, and bilateral donors (UNFCCC 2007). Other funds under the UNFCCC include the Special Climate Change Fund for financing capacity-building and adaptation, the Least Developed Countries Fund, and the Adaptation Fund. Additional funds exist in other institutional settings, including the World Bank's climate investment funds (Porter et al. 2008).

ISSUES AND CHALLENGES

Critics have argued that the existing system of climate finance, including carbon markets and ODA, requires substantial reform and expansion. Concerns relate in particular to the scale of financial flows, the relative role of public and private actors in investment, and the institutional architecture of climate finance.

It has been argued that the current scale of financial flows for mitigation and adaptation activities in developing countries is insufficient. The International Energy Agency (IEA) estimates that the stabilization of global emissions at 2005 levels by 2050 would require an additional \$10.3 trillion of cumulative investment in non-Organisation for Economic Co-operation and Development (OECD) countries by mid-century, in addition to \$7.3 trillion of investment in OECD countries (IEA 2008). More stringent emission-reduction targets could require as much as \$27 trillion of additional investment in non-OECD countries. According to the UNFCCC, total climate-related financial flows would have to reach 0.3 to 0.5 percent of global gross domestic product (GDP) in 2030 and 1.1 to 1.7 percent of global investment in 2030 (UNFCCC 2009). In the context of global investment, these numbers are relatively small, but they imply a very significant increase from current levels of climate-related investment.

The second challenge relates to the relative contributions of the public and private sectors to climate mitigation and adaptation. The private sector contributes 86 percent of overall global investment and financial flows (UNFCCC 2007). In the climate field, the private sector has not assumed such a key role. Private-sector investment in climate mitigation and adaptation could be leveraged by scaling up carbon markets and by use of co-financing mechanisms. Challenges relate to reform of the CDM to attract more private-sector investment and to the employment of government expenditure to leverage private-sector financial flows, including foreign direct investment (FDI).

The third concern raised by critics relates to the institutional architecture of climate finance, in particular the institutional framework of the CDM. The CDM has been criticized for its lengthy and expensive project approval procedures, its exclusion of many categories of potentially important mitigation activities, and its methodologies for calculating whether projects actually reduce greenhouse gas emissions (Harvard Project on International Climate Agreements 2009). Furthermore, the institutional framework of existing and newly proliferating multilateral climate funds requires improvement and reform (Porter et al. 2008).

In addition to these three main concerns, some analysts have noted other possible problems with the current system of climate finance, such as the geographical distribution of FDI under the CDM. The majority of CDM investment flows to major emerging economies, while the least developed countries, such as those in sub-Saharan Africa, attract very limited investment.

POLICY OPTIONS

To scale up and enhance climate finance, a diverse set of researchers working under the auspices of the Harvard Project on International Climate Agreements have proposed a variety of options. Most of these options focus on carbon markets as the key mechanism for climate finance, most notably through CDM reform. These proposals are summarized in the *Issue Brief* “Options for Reforming the Clean Development Mechanism” (Harvard Project on International Climate Agreements 2009). Other proposals consider a number of domestic and international mechanisms for generating financial flows for climate mitigation and adaptation. This section describes many of these policy options:

➤ **Leverage private-sector investment in emission-reducing activities through an improved CDM.**

In general, it appears clearly that the only way that a large degree of finance can be made available for emissions reduction in developing countries is through private-sector investment, with public-sector incentives for such investment provided by carbon markets, whether a multinational cap-and-trade system or an offset (emission-reduction-credit) system, such as the CDM.

To increase the demand for CDM offsets, industrialized countries could be encouraged to increase the use of CDM credits to meet their emission reduction targets (Michaelowa 2007; Keeler and Thompson 2008; Aldy and Stavins 2009). If a number of key industrialized countries allowed for the import of a significant amount of CDM credits, the CDM could emerge as the main mechanism linking national and regional cap-and-trade systems (Jaffe and Stavins 2008). This, in turn, would strengthen the CDM’s role in the global carbon market.

As for the supply side, CDM credits could be awarded for the implementation of broader sets of policies that “create real progress,” including renewable energy portfolio standards and energy efficiency standards (Michaelowa 2007; Hall et al. 2008; Keeler and Thompson 2008). Moreover, an international fund could be created that is authorized to sell credits upfront to then invest in a wide range of mitigation activities in developing countries, which would reduce transaction costs (Keeler and Thompson 2008). To ensure real long-term emission reductions, CDM credits could only be awarded for projects and policies that result in technology transfer (Teng et al. 2008).

Another proposal suggests that developing countries that decide to accept an economy-wide emission reduction target be allowed to keep their CDM credits as an incentive to join an international cap-and-trade scheme (Michaelowa 2007). Finally, the right to sell CDM credits could be subject to participation in an international climate agreement that requires developing countries to implement emission-reducing policies (Karp and Zhao 2008). Such measures would help expand the CDM market, while ensuring the quality of emission reductions under the CDM.

- **Allocate emission allowances in international emissions trading in such a way that developing countries are (partly) compensated for their mitigation efforts.**

If developing countries participate in an international cap-and-trade scheme, the initial allocation of allowances could help determine the scale of implicit financial transfers from developed countries to developing countries (Frankel 2008; Jacoby et al. 2008). Allowances would have to be allocated in such a way that developed countries are required to purchase allowances from developing countries.

However, if developing countries were fully compensated for their mitigation activities in the period up to 2050 (with a global reduction target of 50 percent), the required financial transfers would amount to \$400 billion/year in 2020, rising to \$3 trillion in 2050. Partial compensation of developing countries would still require an unprecedented scale of wealth transfers from developed countries to developing countries. While allowance allocation on an equal *per capita* basis has popular support, some researchers argue that it would not result in fair outcomes (Jacoby et al. 2008; Posner and Sunstein 2008).

- **Establish an international greenhouse gas charge that creates domestic streams of revenue in major developing countries.**

An international carbon charge could—in principle—be an alternative to an international cap-and-trade scheme (Cooper 2008). It would create domestic revenues, as opposed to immediate international financial transfers. The geographic coverage of the charge could be as broad as possible, and the level of the charge set by international agreement. Major developing countries such as China and India would have to participate in the agreement for the arrangement to be cost-effective. Each country would retain the collected revenues from the carbon charge. This revenue stream could be returned to economies as government expenditure on energy efficiency measures, which in turn could enhance economic growth. For China and India, the revenue from a charge of \$15 per ton of CO₂ would be over 1 percent of GDP in 2015. This would result in estimated revenues of \$104 billion.

- **Reform energy subsidies to free funds for financing low-carbon energy technologies.**

Reform of energy subsidies could significantly reduce emissions and provide new funding for low-carbon energy investments in developed and developing countries alike. Total annual energy subsidies in non-OECD countries amount to \$220–280 billion, most of which is directed to fossil fuels (Hall et al. 2008). In comparison, energy subsidies in OECD countries total \$20–30 billion, which is mostly outweighed by taxes on fuels. Subsidies to fossil fuels act as a “negative tax” on carbon emissions, thus encouraging carbon-intensive energy production. The elimination of subsidies for transport fuels in China, for example, would be equivalent to an \$11 per ton CO₂ tax on gasoline (Hall et al. 2008).

- **Employ international trade finance to leverage foreign direct investment for mitigation and adaptation activities.**

Export credit agencies could be key levers to ensure that international trade finance and FDI contribute to climate policy goals, notably to technology transfer (Newell 2008). Export credit agencies currently provide the largest source of public finance of international trade and FDI. They

offer insurance, guarantees, favorable loan terms, and direct finance for export and overseas investment. Export credit agencies often leverage significant FDI from the private sector.

The funding practices of export credit agencies could be aligned with climate policy goals through the implementation of environmental standards. Such standards were agreed upon by OECD countries in 2007, but need implementation and continuous review. Moreover, these standards need also to be adopted by export credit agencies in non-OECD countries. Furthermore, to increase FDI in climate-related activities in developing countries, complementary measures such as regulatory reform could be necessary.

➤ **Increase bilateral and multilateral official development assistance for climate mitigation and adaptation.**

While ODA is only 1 percent of total global investment, it amounts to 6 percent of investment in the least developed countries of the world (UNFCCC 2007). Against this backdrop, bilateral and multilateral ODA could play an important role in finance for climate mitigation and adaptation, especially as a lever for private-sector investment (Newell 2008). To date, the GEF has been the major source of multilateral funding for climate-related activities. The current debate on climate-related ODA has focused extensively on creating new multilateral funds (Porter et al. 2008). An alternative would be for developed countries to provide funding to developing countries as part of climate accession deals (Victor 2008), whereby developed countries would provide funding and other incentives to developing countries that have agreed to implement policies that reduce emissions and meet domestic interests.

➤ **Provide large-scale financing for incremental costs contingent on implementation of emission-reduction policies in developing countries.**

One proposal suggests creating a new Carbon Mitigation Fund (CMF) that would cover the incremental cost of the deployment of low-carbon technologies in major-emitter developing countries (Gallagher 2009). Funds would only be given to those countries that implement domestic greenhouse gas-reduction policies. While the size of the CMF depends on estimates of the need for investment, a low-end estimate assumes that \$82 billion per year would be required.

CONCLUSION

Climate finance will be an important element of an effective post-2012 international climate arrangement. The policy challenges are many, including scaling up climate-related investment, leveraging private-sector activity, and reforming the institutional framework of the CDM. Given the magnitude of the challenge, a mix of policy measures addressing carbon markets, ODA, and domestic sources of finance may be required. The ideas presented in this *Issue Brief* reflect a number of innovative approaches that could constitute an important part of the mix.

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