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Climate Change and Poverty Reduction—Where Does Official Development Assistance Money Go?

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Abstract

There is an urgent need to mainstream the key challenges of climate change into sector and development planning and decision making processes to create sustainable long-term development. Mainstreaming is seen as making more efficient and effective use of financial and human resources. It is implementing and managing climate change policy holistically, which sustains development, rather than undertaking piecemeal activities. This involves building mitigation and adaptation capacity in both micro and macro economic development. Climate change is not only a national phenomenon but also a global phenomenon that requires the participation of both the public and private sectors. The importance of private sector participation is highlighted by the magnitude of the investment needed to manage climate change, and the fact that market mechanisms seem to be more effective in addressing climate change than does the public sector. Public sector involvement—such as grants, overseas development assistance (ODA), and funding from other countries—is equally important in mitigation and adaptation projects.

Empirical results in this study emphasize that more caution is needed in directing ODA towards climate change mitigation and adaptation due to the links between various macroeconomic variables related to growth and poverty reduction. This implies that ODA given to other important causes related to achieving the Millennium Development Goals should not be reduced. The results show that energy efficient transfer of technology to developing countries should accompany any efforts towards directing ODA towards mitigation. Without that, ODA directed towards mitigation may have adverse effects on the pace of poverty reduction in developing countries. Thus, involvement of the private sector becomes crucial for energy efficient technological innovation and transfer.

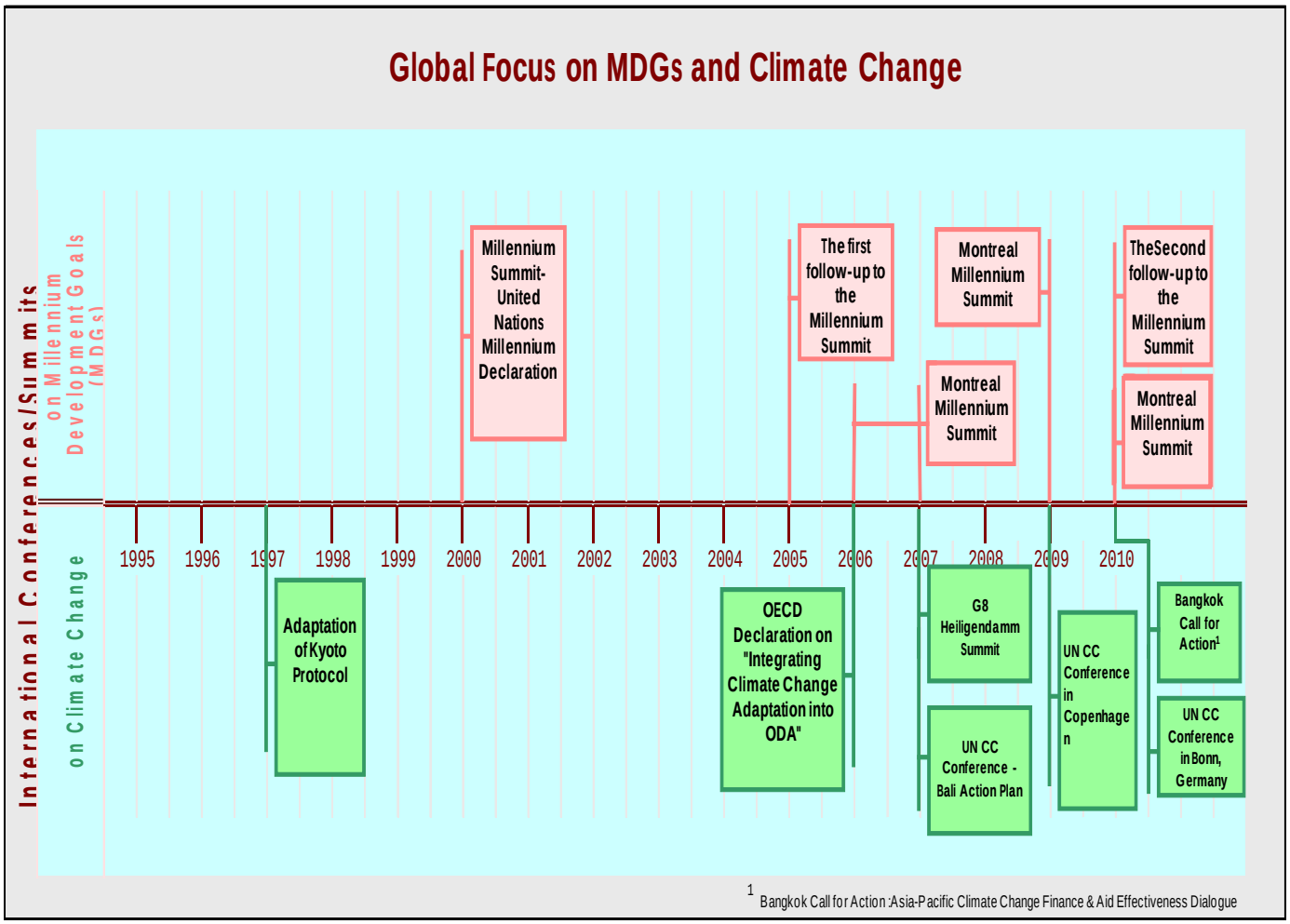
JEL Classification: F35, P33, Q56, O19

Contents

1. INTRODUCTION

The Millennium Development Goals (MDGs) and targets come from the Millennium Declaration, signed by 189 countries in September 2000 to achieve a better world with less poverty, hunger, and disease; greater survival prospects for mothers and their infants; better-educated children; equal opportunities for women; a healthier environment; and an integral relationship between developed and developing countries. Achievement of MDGs has been slowed by climate change, especially as the negative impact of climate change is greatest on the poorest countries which rely more on natural resources. As shown in Figure 1, global initiatives addressing the causes of climate change have significantly increased in recent years because mitigation and adaptation to climate change are keys to achieving sustainable development through the MDGs.

Figure 1: Millennium Development Goals and Climate Change



Source: Bangkok Call for Action on Asia-Pacific Climate Change Finance & Aid Effectiveness Dialogue.

After the Millennium Summit held in 2000, United Nations (UN) summits were held in 2005 and 2010 to assess the progress made in achieving the MDGs. As an important first step towards environment sustainability, the Kyoto Protocol was adopted in Kyoto, Japan in 1997 and entered into force in 2005 with the aim of reducing greenhouse gas emissions in 37 industrialized countries and the European Community. There has been extensive global focus on climate change during 2005–2010, including integrating climate change into Official Development

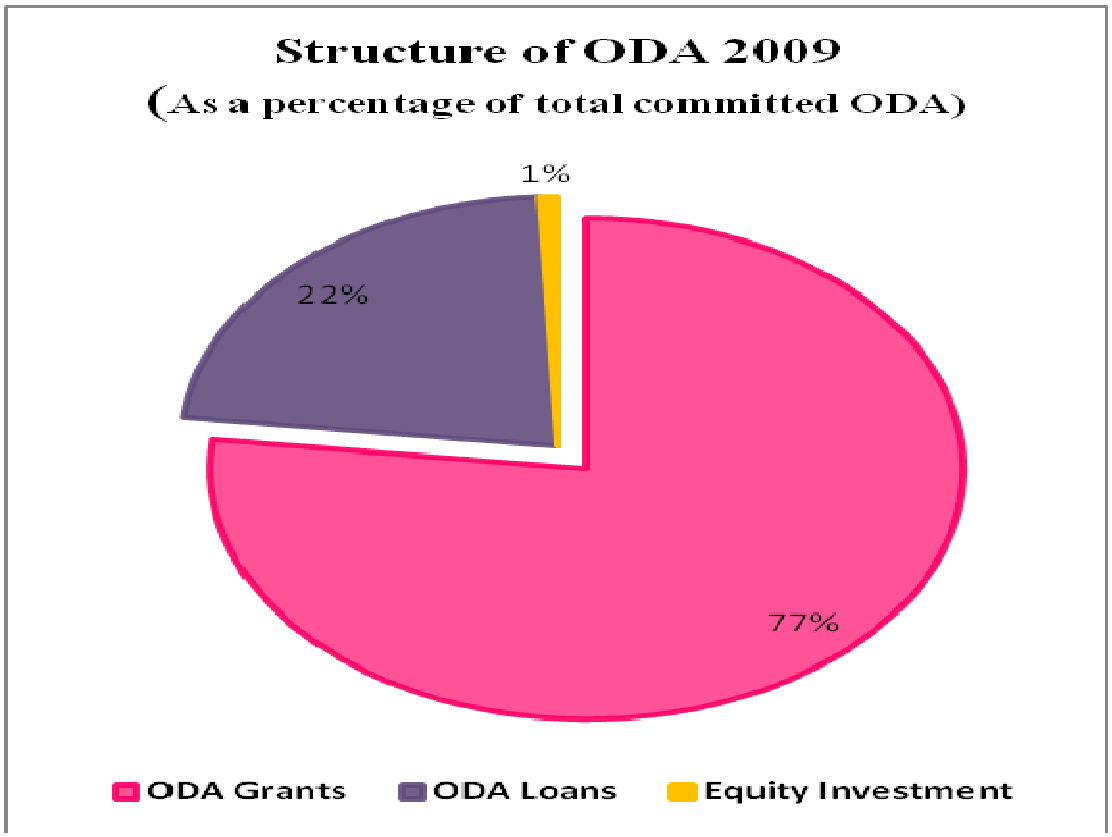
Assistance (ODA).[1] In 2006, Organisation for Economic Co-operation and Development (OECD) ministers and heads of agencies, together with OECD member environment ministers, identified that climate change is a serious and long-term challenge that has the potential to affect every part of the globe. In view of that, the 2006 OECD declaration was on Integrating Climate Change Adaptation into Development Co-operation, which mainly focuses on adaptation to climate change through development cooperation (OECD 2009b). The G8 summit is one of the international leading forums[2]; it is held annually to discuss global issues. In 2007, the G8 Heiligendamm summit emphasized that all G8 states need to make a serious contribution to tackling climate change issues, mainly through strengthening climate change adaptation capacities in developing countries.

As a result of these global initiatives, since 2002 there has been an increasing trend of committing ODA to the developing world as the main vehicle for promoting economic and welfare development. According to the OECD (2010a), least-developed countries and other low- and lower-middle-income countries have received ODA more than US$81 billion in 2008, which accounted for around 63% of net ODA disbursements to all developing countries in 2008. A higher proportion of ODA went to the developing world as grants for the same disbursements in 2009 (77% in 2009, Figure 2).

[1] ODA can be broadly divided into bilateral aid, in which assistance is given directly to developing countries, and multilateral aid, which provides assistance through international organizations. This can be in the form of technical assistance for human capacity building (non-cash-flow), and financial assistance consisting of grant and concessional loans (cash flow). ODA is defined as the flows to countries and territories on the Development Assistance Committee of the Organisation for Economic Co-operation and Development (OECD-DAC) list of ODA recipients and multilateral development institutions, on the condition that (i) assistance is provided by official agencies, including state and local governments, or by their executing agencies; (ii) each transaction is administered with the promotion of economic development and welfare of developing countries as its main objective; and (iii) assistance is concessional in character and carries a grant element of at least 25% (World Bank 2010c). Accordingly, the main objective of ODA is to increase economic development and decrease poverty by achieving MDGs in developing countries.

[2] The G8 member countries are: Canada, France, Germany, Italy, Japan, Russia, United Kingdom, and United States.

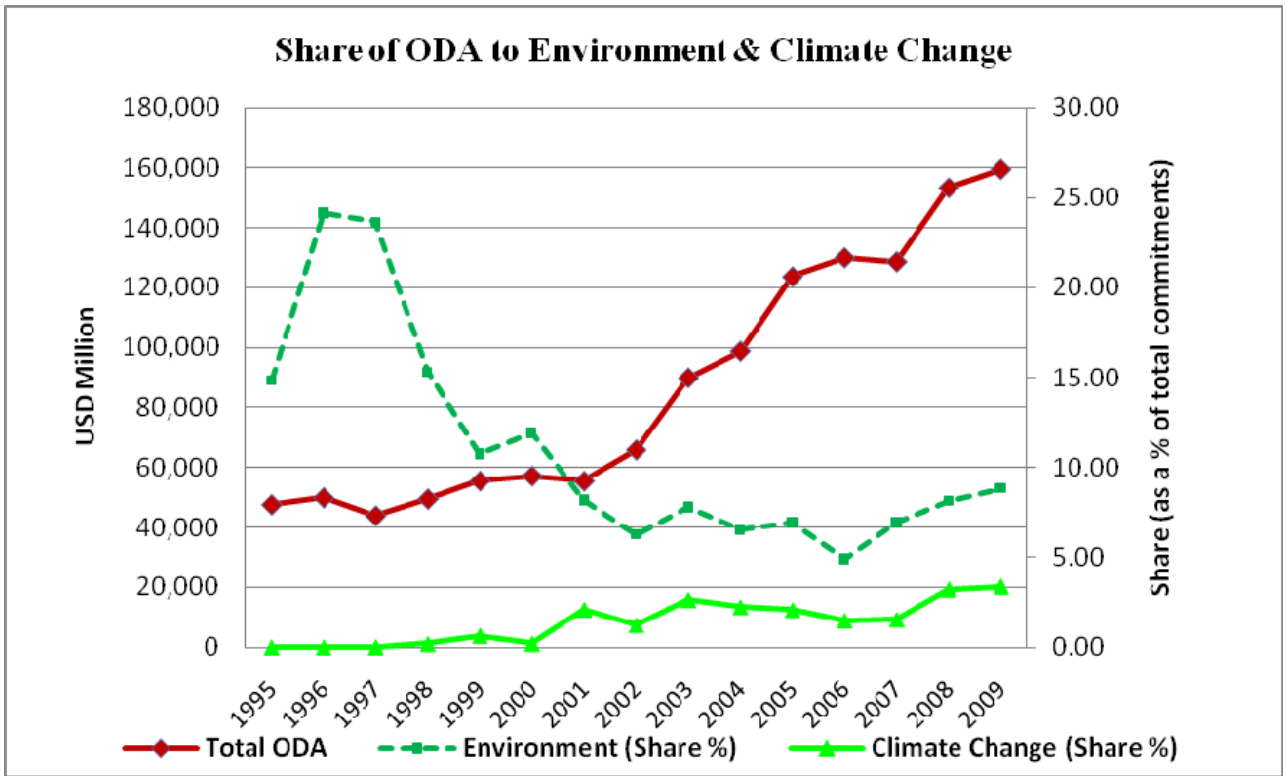
Figure 2: Structure of Overseas Development Assistance



Source: Based on CRS/ OECD Data.

Similarly, the committed ODA to the developing world for the environment is around US$12.5 billion, and out of that nearly US$4.9 billion was committed for climate change in 2008 (OECD CRS online database). Moreover, ODA committed to climate change as a proportion of total ODA was less than 1% in 2000, but this had increased to around 3% by 2009 (Figure 3).

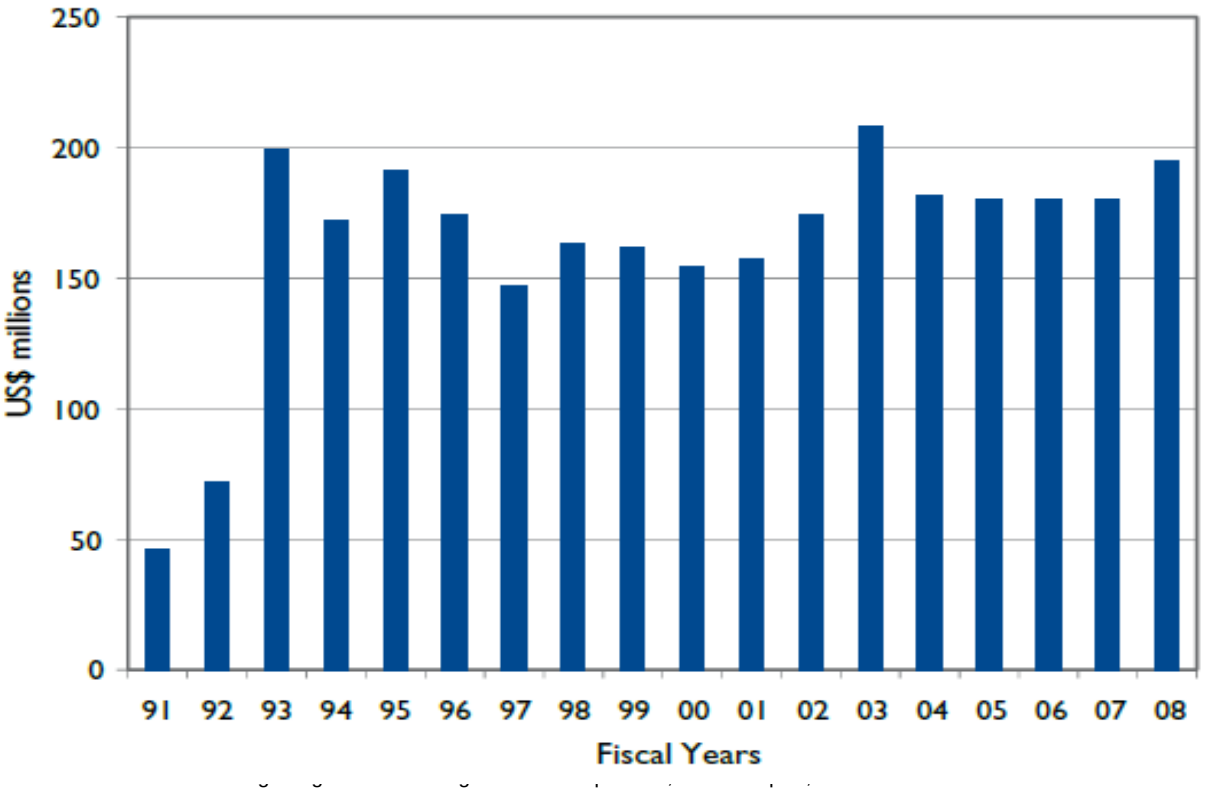
Figure 3: ODA-Environment—Climate Change Nexus



Source: Authors' calculations based on CRS/OECD data

The main bilateral and multinational agencies have taken steps to support sustainable development and poverty reduction in developing countries by linking climate risks and climate-related economic opportunities to their ODA. The United States Agency for International Development (USAID) is the largest donor agency, providing nearly US$24 billion of ODA to developing countries in 2008 (OECD 2010a). It has undertaken the Global Climate Change Initiative under the three pillars of adaptation, clean energy, and sustainable landscapes. USAID has committed around US$195 million each year from 2008 to support development activities related to climate change in more than 40 developing and transition countries around the world (Figure 4).

Figure 4: US Commitments to Address Climate Change in Development Assistance



It is expected that the United States (US) with other contributor nations will mobilize around US$30 billion for climate-related activities in developing countries under the "fast start" climate financing during 2010–2012 (European Union, 2010). The US input to fast-start financing in FY2010 was US$1.7 billion , while the European Union (EU) contributed €2.2 billion (grants around 48%, loans and others 52%) (European Union 2010), to support developing countries in their climate change mitigation and adaptation efforts. Japan is expected to contribute to the fast-start finance program by providing US$15 billion from 2008 up to 2012 (Japan International Cooperation Agency [JICA] 2010).

Japan has adopted a co-benefit approach to climate change, including both mitigation and adaptation measures in its cooperation assistance to developing countries. JICA has been conducting case studies of its climate change mitigation projects. Consequently, it will provide guidance for the buildup of appropriate cooperative measures which will benefit sustainable development in developing countries by addressing climate change (JICA 2007a). In 2007 the Government of Japan adopted the Cool Earth 50 proposal, a new ODA loan scheme (Climate Change Japanese ODA Loan [Cool Earth Loan]) established with special interest rates (JICA 2008). Under the Cool Earth partnership, Japan will provide funds of around US$10 billion over the next 5 years from 2008. These funds are expected to provide around US$2 billion for adaptation and improved access to clean energy, and nearly US$8 billion for assistance with mitigation (JICA 2008).

As major multinational agencies, the World Bank and Asian Development bank (ADB) have also taken steps to provide support for sustainable development and poverty reduction in developing

countries by linking climate risks and climate-related economic opportunities to their ODA. Accordingly, the road map for the World Bank climate actions for 2009–2011 were identified in its Strategic Framework on Development and Climate Change (World Bank 2010a). ADB, has also paid special attention to climate change-led programs in its long-term strategic framework in the areas of clean energy, sustainable transport and urban development, carbon sequestration, and climate-resilient development (ADB 2008b).

Although all international donor agencies incorporate climate change into their ODA, the current financing for adaptation and mitigation is less than what may be needed annually in future. The cost for developing countries to adapt to climate change between 2010 and 2050 is estimated at US$70 billion–US$100 billion a year at 2005 prices (World Bank 2010c). This amounts to about only 0.2% of the projected gross domestic product (GDP) of all developing countries in the current decade and, at the same time, to as much as 80.0% of total ODA disbursements (World Bank 2010c).

An important question that arises in this context is whether the amount of ODA going into socioeconomic development under the MDGs will be affected by ODA targeted at climate change. In this context, the announcement in the Copenhagen Accord that developed countries will provide US$30 million during 2010–2012 in addition to the 0.7% of ODA target towards climate finance is worth noting (JICA 2011). The EU has agreed to raise ODA levels, which includes climate change finance limited to a specified percentage. It also agreed to increase non-ODA climate change financing, however. Thus, the main concern is that ODA climate change funding should not come at the cost of funding to other important MDGs.

The challenge ahead is how to increase financing for this new issue while keeping on track with MDGs. It is necessary to mainstream climate change into ODA to meet development goals universally. Since all sectors of the economy are threatened by climate change, the challenge is to achieve global development without incorporating the cost of climate change into the universal development agenda. For this, collective action is needed from all stakeholders. Recent literature indicates that the challenge is likely to be met through several measures, such as collective actions from all stakeholders, innovative financing, and incorporating climate risks into development planning.

Given that international development funds account for the large international flows to less-developed countries, ODA could play an important role in increasing the link between climate change and sustainable development in less-developed countries. In fact, international agencies could account for the climate change activities in their funding criteria, thereby mainstreaming climate change into ODA activities. It is expected that private funding for adaptation and mitigation activities will be limited and only focused on activities that are “bankable”. In developing countries, the lack of awareness of climate change and lack of resources are the key reasons for not incorporating climate change activities into the planning and development strategies of national governments. In this case, ODA could play an important role in internalizing climate change issues into the mainstream activities of governments.

2. ANALYTICAL QUESTIONS

The objective of this study is to answer the following important questions concerning the relationship between climate change mitigation and adaptation, and ODA:

1. Can ODA be used effectively towards promoting climate change mitigation and adaptation?
2. How effective is the nexus between poverty reduction, climate change mitigation and adaptation, and ODA across countries?

3. What policy measures can be effective in strengthening the nexus between poverty reduction, mitigation and adaptation, and ODA across countries?

Section 3 presents a brief critical review of the effectiveness of the use of ODA towards climate change mitigation and adaptation across countries. The nexus between poverty reduction, mitigation and adaptation, and ODA is analyzed in section 4 in a simultaneous equation framework involving climate-sensitive sectors, such as water and carbon dioxide (CO_2) emissions, as major variables using cross-country panel data. Several case studies are presented to examine the climate change-ODA nexus more closely. Section 5 outlines the policy actions needed to make the nexus between climate change mitigation and adaptation and ODA effective across nations.

3. FINANCING CLIMATE CHANGE MITIGATION AND ADAPTATION: THE EFFECTIVENESS OF OVERSEAS DEVELOPMENT ASSISTANCE

The preceding historical data on ODA flows and their portfolio allocations assumes that all ODA is used effectively, so that only "needs" matter in deciding the volume and allocation of aid. However, this is precisely the main issue. Anecdotal evidence abounds on ODA being essentially wasted, either through inefficient management of the projects it is supposed to fund, or by ending up in the private hands of local or national political leaders. Our statistical analysis across countries does not yield strong results on the relationship between aid and growth, or between aid and MDG-type development indicators, which are more closely identified with poverty reduction (Kalirajan and Singh 2009). Of course, this does not mean that ODA is systematically ineffective, but that its effectiveness is hard to assess. The allocation of ODA also reflects more selectivity by donors with respect to the quality of institutions in recipient countries and their needs as measured by GDP per capita. This increase in selectivity is relatively recent and appears to correspond to the change in attitude towards ODA that took place following the Rio Conference on Environment and the UN Millennium Declaration (Williamson 2010).

It is logical to argue that lack of aid effectiveness is one of the main obstacles to the development of a deeper partnership between donors and recipient countries in the pursuit of protecting the environment and achieving MDGs. Because of the ambiguity surrounding the effective use that can be made of aid, the international community may find itself in some kind of perverse "low-level equilibrium." In donor countries some "aid fatigue" with regard to climate change has developed because progress appeared too slow in relation to the aid given in the past, and because of evidence available on the misuse of aid in some particular instances. As a result, aid volumes subsequently decreased. However, at the same time effectiveness appears also to have declined as donors seek to exert more control on the aid being given, independently of the way in which recipient countries manage the money they received. Here are a few issues:

1. The presence of several donors in the same developing country raises the issue of coordination and harmonization of actions. The 2005 Paris conference aimed at making progress in this area. However, results have been limited so far,[3] although the

[3] See the interesting evaluation series that was initiated by the EU heads of evaluation for external cooperation and which looked at the EU's performance in the areas of improving coordination, complementarity, and coherence of the EU's development cooperation. More information can be found at http://www.three-cs.net.

September 2008 meeting in Accra reiterated and increased the commitments on this front.

2. The lack of predictability of ODA is another source of ineffectiveness. Despite present commitments, recipient country uncertainty about future aid flows leads governments to systematic revisions of their climate policies and MDG strategies.
3. Donors are increasingly allocating aid through specialized global funds. The so-called Monterey compact was supposed to give recipient countries as much responsibility as possible in the use of aid funds, provided that they could demonstrate ownership through poverty reduction strategies and responsibility through international agreements for tackling climate change, such as the Kyoto Protocol. Yet, the current move towards more allocation of aid through specialized global funds is, in some sense, a move away from this new model of ODA.

These sources of ineffectiveness, or the lack of results they lead to, may reinforce the feeling in donor constituencies that spending on ODA for climate change is indeed ineffective, thus making donors more hesitant to increase aid and to lift controls on how it is used. The way out of this vicious circle of low level and therefore low effectiveness of aid is to increase the effectiveness of aid and provide clear evidence of it.

Developed countries can also contribute to improving effectiveness towards combating climate change and MDG achievement in poor countries through non-aid instruments, even though these instruments sometimes come with aid itself, or as a condition for ODA. The support for better governance is an example of one such non-aid instrument and, at the same time, a condition for more or better aid in the future.[4] Diplomatic and military interventions aimed at keeping peace in particular countries or regions should also be mentioned. Preventing conflicts, or helping early resolution, may contribute more to development than huge aid flows.

3.1 Alignment

To improve effectiveness, it is necessary to concentrate on circumstances within recipient countries, highlighting how considerable scope remains for making "traditional" ODA more effective. First, it is now understood but not yet fully taken into account that, in some circumstances, channeling ODA to poor countries in the form of project finance makes little sense since resources are fungible, so that the effect of aid may be to support a government activity that differs radically from the project appraised, approved, and evaluated by the donor. While this criticism is by now widely accepted and it is recognized that aid should be mostly channeled as budget support when possible, much aid continues to be provided as project finance and, increasingly, as climate change and MDG-related project finance in fields such as energy and water sanitation. Parts of the bilateral ODA programs and much of the activities of the donors might usefully be reconsidered in this light. In its starkest form the policy question is, if one does not trust a government enough to give budget support, why does one expect project finance to produce the intended results. The traditional answer is that project finance provides more scope for effective control. This is not completely convincing except in particular circumstances when it can be ascertained that aid-funded projects would not have been undertaken and completed without donor intervention or that of a third party such as an established nongovernment organization (NGO).

[4] The vigorous campaigns by some donors for free presidential elections in Africa and elsewhere in the 1990s was based on the threat of reduced future aid. With hindsight, it has been rather effective, even though in several countries it is unclear whether it contributed to improving governance or to progress in economic development. The same is true of the accountability principles pushed forward by donors as part of the conditions to fully benefit from the Heavily Indebted Poor Countries (HIPC) initiative.

3.2 Aid to Generate a Virtuous Cycle through Improvement in Governance

ODA cannot be effective in all countries; that ODA aid can be effective only where there is a good policy environment has become widely accepted, in spite of the econometric controversies that still surround the evidence for this position.[5] The recognition is halfhearted in two ways. Although the allocation of ODA depends more on the quality of institutions and policies than ever before, donors are still reluctant to withhold aid from countries with a poor policy and/or institutional environment. This reluctance reflects the incentive structure in donor agencies (e.g., where careers are based on disbursing rather than withholding money), reinforced by the belief of policy makers that strict selectivity would mean abandoning poor people who had the bad luck to live in countries with poorly functioning institutions. It is true that, in some instances, well-managed climate change adaptation aid in fragile states is considerably less effective than it would be elsewhere, but it is still able to reach vulnerable people. However, recent debates on donor policies for fragile states such as Pacific island countries have also made it clear that donors have other options than giving aid in situations where it is most unlikely to work effectively.

There is another reason for the donors' lack of enthusiasm for selective aid allocations that favor well-functioning institutions. Selectivity seems to force donors to concentrate aid in those countries that need it least in the sense that, if the policy environment is so good as to make aid effective, these countries have good development perspectives. This could also possibly offer better access to the international capital market. Thus, from the donors' point of view, aid would therefore become superfluous or, at least, less needed than in other countries.

In practice, however, access to the international capital market remains problematic. Improvements in the policy environment can facilitate a country's prospects of accessing commercial loans, but the process is very slow.[6] In the 1990s, for example, Cambodia radically improved its policy environment but obtained only a very modest improvement in its credit rating and was for a long time unable to access the international capital market. Various such experiences suggest that there may be an extended period during which ODA can be highly effective.

3.3 Striking a Balance between Fragility of Recipients and the Type of Aid Program

The lesson that traditional advance conditionality does not work has not been fully absorbed yet. It is still insufficiently appreciated that ODA aimed at long-term development (as opposed to, e.g., humanitarian aid) is an appropriate instrument for only a subset of poor countries. As a result, donors continue to engage in aid relationships where they justifiably feel that full ownership may lead to undesirable outcomes. While it might be advisable to end such aid relationships or to invent new relationships, the common approach is to fall back on these traditional mechanisms of donor control, which can make things worse. The combination of the rhetoric of ownership and occasional heavy-handed paternalism gives conflicting signals to the recipient government. We would argue that donors need to be more selective in their ODA allocations, using aid in the form of budget support only in countries where relying on ownership seems appropriate. This is not to say that ODA has no role in other types of countries, but rather

[5] For a survey of this literature see, e.g., Clemens et al. 2004.

[6] See, e.g., Collier and Gunning 1999.

that budget support is not always appropriate. For example, in some fragile small states there is no state apparatus able to deliver climate services. In such circumstances it may well be effective for donors to provide those services directly or through contracts with reasonably reliable service delivery organizations.

Such principles are the logic behind the contracts allocated under the form of budget support by the European Commission to well-performing countries. In countries where performance is worse, the decision to move to budget support depends on the level of confidence in the recovery process, on the confirmation of a positive economic stabilization trend, and on the willingness of the authorities to carry out reforms. Note, however, that budget support in this kind of situation often is of a short-run nature.[7]

The reluctance to fully accept country ownership is reflected in the continued practice of combining development finance and technical advice in a single package in what is, in effect, a form of tied aid. The expertise and experience in the international financial institutions, regional development banks, and bilateral donor agencies needs to remain available to developing countries. However, the finance-cum-advice package should be unbundled, i.e., recipient governments should be free to decide where to hire the technical expertise. In this case the government could still turn to the donor, not because the advice came as part of a package but rather because that source of advice had proved itself in competition with other agencies.[8] This would also improve accountability and provide a powerful signal that the government, rather than the donor, is responsible for the climate policy that is more related to meeting the MDG targets.

3.4 Timely Evaluation Based on Well-Defined Results-Based Conditionality or Intermediate Goals

Finally, there has been little explicit evidence of results-based ODA. The aid flows in the energy and water sectors since the late 1990s made it clear that tying aid to promises of policy changes could not work in theory and certainly did not work in practice. Results-based aid, or ex post conditionality, would link disbursements to progress achieved towards targets agreed in advance. Such a system clearly provides strong incentives for recipient governments to get as close as possible to preset targets in terms of climate change mitigation or attaining poverty reduction goals. However, several major issues arise in disbursing aid based on observed results. The first issue is that the results of a climate program may take time to materialize, and yet recipient countries need aid money precisely to finance a particular program. For example, what happens when a government has no time to establish a track record? A second major issue is that results may be influenced by factors beyond the government's control, such as oil price shocks or natural disasters, that are closely related to emissions and adaptations.

There are no easy answers to these issues. The benefit of the doubt must necessarily be given to recipient governments in the first phase of results-based ODA,[9] and then ODA can become conditional on a set of indicators. Those indicators may include not only actual outcomes (such as carbon emissions, access to water, etc.) but also inputs into climate policies and poverty

[7] See Commission of the European Community (2007).

[8] A very encouraging development is that donors are beginning to collaborate intensively—with each other and with governments—in the area of evaluations. Joint evaluations of sector programs are rapidly becoming more common. This should contribute directly to the effectiveness of development or MDG policies in recipient countries, and indirectly to the effectiveness of foreign aid.

[9] See Collier et al. 1997.

reduction programs that are most likely to lead to favorable outcomes (e.g., renewable energy promotion in rural areas, which is likely to lead to better learning achievements, or access to safe water, which can lead to a drop in infant mortality). This description includes some features of the MDGs, which in some sense may appear not only as intermediate goals within the climate policy process but also as the basis for measuring results in some given period. An approximate result indicator could also include institutional features within developing countries that are known to favor adequate policy choices to achieve predetermined goals. The big difference with the old conditionality model here is that those indicators should not include the policies themselves—as implicit in the so-called Washington consensus. Indeed, the key point is that the choice of policies should be left to recipient country governments.[10] Efforts are already being made in this direction; the process used by several international financial institutions to monitor their aid programs has some features of this new aid scenario.

Is more and faster progress in this area possible? Donors are obviously reluctant to make open-ended long-term commitments with uncertain disbursements. However, the more important reason for their unwillingness to design clear results-based aid contracts seems to be rather different. Important targets, such as greenhouse gas emission cuts, typically take a very long time to achieve. Donors are hesitant to commit to providing aid for a long period, during which time the policy environment may change drastically. This is understandable, however the response is not to abandon results-based lending but rather to distinguish between measures of results (such as poverty) and monitoring of variables (such as measures of institutional quality). Aid contracts should be written in terms of the measurable results but it would be quite legitimate if donors used the measures of institutional quality as possible "show stoppers." For example, a significant worsening of a governance indicator could be a legitimate show stopper, leading to cessation of a regular aid program. Barring such extremes, the program would continue, and future aid levels would be tied to results at the end of an agreed period. The use of monitoring variables as show stoppers might well overcome the reluctance of donors to move further towards results-based aid.[11]

Regular ODA programs built on the preceding principles and aimed at achieving long-term objectives, such as greenhouse gas mitigation, would be an appropriate form of assistance only in those developing countries that are relatively well governed. Of course, the problem is that those countries may not be the most important ones in terms of need. Donors are understandably more concerned about other developing countries, notably the fragile states, where standard conditional and tightly monitored ODA programs are probably more appropriate. Innovations are needed, such as using technical assistance rather than project financing in such situations. It is also necessary in those vulnerable states that the alignment and coordination of donors promoted by the 2005 Paris conference are adopted. In nonfragile emerging economies, there is much less need for such coordination among donors if more use is made of budget support and common criteria can be defined for results-based aid.

3.5 Aid Effectiveness Scorecard

Several reports highlight the lack of coordination between donor agencies and national governments in addressing climate change activities. After several high-level forums on aid

[10] For a short discussion of these issues see Bourguignon and Sundberg 2007.

[11] Anecdotal evidence suggests that recipient governments have a pretty clear idea of the circumstances that would induce donors to stop an aid program. In that sense, the aid contract is clear. However, it is not clear that those circumstances are at all optimal in terms of maximizing recipient country incentives.

harmonization—in 2003 in Rome, in 2005 in Paris, and in 2008 in Accra—coordination between aid agencies and national governments appears to have improved. For example, the Global Fund measures progress in delivering effective aid against the 2010 targets set to track achievement of the Paris Principles, as laid out in the Paris Declaration on Aid Effectiveness. Baseline measures were established in 2005 and followed up in 2007 and 2009 (for the 2008 fiscal year) by employing processes and methodology developed by the OECD.[12] The scorecard given in Table 1 shows progress on 13 aid effectiveness targets that the Global Fund established in consultation with the OECD for 2010. The scorecard indicates that the majority of targets have been achieved.

[12] http://www.theglobalfund.org/en/performance/effectiveness/aideffectiveness/measuring/ Accessed 11 March 2011.

Table 1: The Global Fund Aid Effectiveness Scorecard

Paris Declaration Principle	Indicator	2005 results (n=32) (%)	2007 results (n=54) (%)	2008 results (n=54) (%)	2010 targets (%)	2008 progress in relation to 2010 targets
Ownership and Alignment	Monitorable performance frameworks	15	23	29	85	Lagging behind
	Grant Aid recorded in national budgets*	62	62	74	90	On track
	Grants aligned with country cycles	39	39	42	59	On track
	Aid using public financial management systems*	33	56	87	55	Target met
	Aid using national procurement systems*	16	13	0	5	Target met
	Countries with parallel implementation units*	90	95	106	95	Target met
Aid is predictable and untied	Actual/expected disbursements	16	30	29	60	Lagging behind
	Aid recorded as scheduled*	100	100	100	100	Target met
	Untied aid	74	68	79	66	Target met
	Aid provided in support for program-based approaches	15	14	14	40	Lagging behind
Harmonization with partners	Joint missions with other donors	50	22	33	50	On track
	Joint analytic reports with other donors	100	100	100	100	Target met
Managing for results and accountability	Grants aligned to national M&E system	73	82	84	90	Target nearly met

Notes:

Monitored for grants provided to government recipients only.

n refers to number of observations (countries)

M&E refer to monitoring and evaluation

Source: 2005 and 2007 data collected as part of the OECD Paris Declaration monitoring rounds; 2008 data collected through the 2009 Global Fund Portfolio Survey.
http://www.theglobalfund.org/en/performance/effectiveness/aideffectiveness/measuring/

4. POVERTY REDUCTION—THE NEXUS BETWEEN CLIMATE CHANGE MITIGATION AND ADAPTATION AND OVERSEAS DEVELOPMENT ASSISTANCE: EMPIRICAL TESTING

ODA is provided to developing countries to increase the pace of poverty reduction directly through various socioeconomic programs. The recent trend and emphasis of using part of ODA,

additional to ODA given towards achievement of MDGs, for climate change issues is expected to indirectly contribute to poverty reduction. Whether such a perception is a reality or myth across countries is examined in this section by using developing country data from the World Bank dataset, including world development indicators over different years.[13] The concern for environmental protection through carbon mitigation has global developmental costs. Distressed poverty in this study is measured by the head count ratio of people surviving on less than US$1.25 per day. The pace of reduction in this head count requires faster development in terms of GDP growth, and efficient and cost-effective use of energy and natural resources.

Drawing on the literature, we start this analysis with a deductive selection of variables that are most likely to reduce poverty. Given the objective of this study, we conjecture that CO_2 emissions, ODA per capita, the poverty ratio in earlier periods, and growth rates to be important variables in increasing the pace of poverty reduction (several other variables are discussed later). All variables are described in Appendix 2.

The decisive factors of production in improving the welfare of poor people are not space, energy, and crop land but they are the improvement in population quality and advances in knowledge (Schultz 1981). Thus, low basic education attainment is an impediment to strengthening the link between growth and poverty reduction because it limits the ability of poor people to participate in opportunities generated in agricultural and industrial production. Therefore, the literacy rate, defined as the annual change in the percentage of literate population in total population of a country between 2001–2008 (LIT0108) and 1993–2000 (LIT9300), is another potential variable to explain variations in poverty reduction across countries through growth. ODA is expected to influence poverty reduction directly and indirectly through structural changes in the economy in terms of changes in environmental variables such as CO_2 emissions and renewable water resources. ODA in this study is measured as the net ODA received per capita in current US dollars. Other structural changes are proxied by manufacturing growth (MFG) and the share of agriculture in GDP (AGRZ). However, these variables are used as instrumental variables in the estimation process.

CO_2 emission is alleged to be generated from agriculture, industrial activities, transport, and other services. Therefore, we postulate it to be a close proxy of such activities. A positive relationship between CO_2 emission per capita and the pace of poverty reduction has wide-ranging implications for global development and the position of the developed world in forcing developing countries to reduce emissions.

CO_2 emission is directly related to (i) energy use per capita and therefore increases in energy generation, which results in the well-being of people that cannot be undermined; and (ii) change in available renewable water resources. However, efficient energy generation and use is a precondition for faster growth. High energy-intensive countries grow at a slower rate due to higher input costs. Therefore, supply- and demand-side management of energy is equally important. This is more important given that GDP growth helps in reducing poverty, as do other activities that generate CO_2.

Diminishing water resources is a bigger problem than increasing CO_2 emission. A positive relationship between CO_2 emission and depleting renewable water resources means increasing pressure on agriculture and fresh drinking water. This brings better water management into the forefront of poverty reduction programming.

The impact of foreign direct investment (FDIZ) on poverty reduction depends on many factors, such as the sector in which the investment is undertaken, the type of investment (e.g., export oriented or import substituting), links of foreign affiliates with the host economy, and the

[13] http://data.worldbank.org/

socioeconomic and political conditions in the host country. Generally, the channel through which foreign direct investment would help reduce poverty is economic growth. Drawing on the above arguments, the model that explains the variation in poverty reduction between 1993 and 2005 across countries in a simultaneous equation framework along with the details of the variables and a flow diagram is given in Appendix 2.

This system of equations contains endogenous regressors and correlations of disturbance terms across equations, which necessitates the application of the three-stage least squares (3SLS) estimation. Also, our objective of examining the channels through which ODA influences poverty reduction necessitates the use of three-stage least squares estimation in this study. The instrumental variables used for estimating the above system of equations are given in Table 2 under each equation. These instrumental variables are completely exogenous to the dependent variables, including (i) DPVT1D, which is the per-year deviation of poverty head count ratio between 1993 and 2005 for the country concerned; (ii) GY9305, which is the annual growth rate between 1993 and 2005; (iii) CO2PC9305, which is the annual CO_2 per capita generation between 1993 and 2005; and (iv) DWTRPCO208, which is the per capita availability of renewable fresh groundwater in 2008. Also, none of the instrumental variables are included in the equation for DPVT1D, which is consistent with econometric theory of estimation. Model 2 differs from model 1 in the sense that ODA appears in all equations in model 2. Lagged ODA appears in relevant equations to capture the reality. For example, the annual growth rate between 1993 and 2005 (GY9305) is expected to be dependent more on ODA between 1993 and 2000 rather than ODA between 2001 and 2005.

Table 2: Three-Stage Least Square Estimates of Poverty Reduction, Climate Change, Official Development Assistance Nexus

System: Model 1				
Estimation Method: Three-Stage Least Squares				
Total system observations: 93				
Linear estimation after one-step weighting matrix				
	Coefficient	Std. Error	t-Statistic	Prob.
C(1)	(2.006)	0.438	(4.58)	0.00
C(11)	0.027	0.007	3.72	0.00
C(12)	0.003	0.002	1.333	0.18
C(13)	0.298	0.076	3.91	0.00
C(15)	0.276	0.119	2.33	0.02
C(2)	(29.499)	11.017	(2.68)	0.01
C(21)	0.240	0.162	1.49	0.14
C(22)	0.004	0.001	4.70	0.00
C(23)	0.577	0.161	3.59	0.00
C(24)	0.290	0.120	2.41	0.02
C(25)	0.895	0.982	0.91	0.37
C(26)	0.079	0.059	1.34	0.19
C(27)	(0.410)	0.400	(1.02)	0.31
C(3)	(0.838)	0.338	(2.48)	0.02
C(31)	0.002	0.000	10.78	0.00
C(32)	0.026	0.013	2.09	0.04
C(34)	0.001	0.000	1.86	0.07
C(4)	43.923	78.906	0.56	0.58
C(41)	18.953	19.811	0.96	0.34
C(42)	(5.624)	2.565	(2.19)	0.03
C(43)	(0.008)	0.003	(3.05)	0.00
C(44)	0.007	0.021	0.32	0.75
Determinant residual covariance		376.15		
Equation: DPVT1D = C(1)+C(11)*PVT1DVIN+C(12)*ODAPC0105+C(13)*GY9305+C(15)*CO2PC9305				
Instruments: ARLANDPC9300 GY9300 MFGZ9300 AGRZ9300 FDIZ9300 WTRPC02 PVT2DVIN ODAZ9300 RNDZ9305 RDPAVZ9305 TEMOBL C				
R-squared	0.66	Mean dependent var		0.61
Adjusted R-squared	0.59	S.D. dependent var		1.02
S.E. of regression	0.65	Sum squared resid		9.37
Equation: GY9305 = C(2)+C(21)*(LIT0108-LIT9300)+C(22) *ENGYPC9305+C(23)*POP15649305+C(24)*GGFCF9305+C(25) *GPOP9305+C(26)*ODAPC9300+C(27)*FDIZ9300				
Instruments: ARLANDPC9300 GY9300 MFGZ9300 AGRZ9300 FDIZ9300 WTRPC02 PVT2DVIN ODAZ9300 RNDZ9305 RDPAVZ9305 TEMOBL C				
R-squared	0.75	Mean dependent var		4.83
Adjusted R-squared	0.45	S.D. dependent var		2.12
S.E. of regression	1.58	Sum squared resid		14.93
Equation: CO2PC9305 = C(3)+C(31)*ENGYPC9305 + C(32)*INDZ9305+C(34)*DWTRPC0208				
Instruments: ARLANDPC9300 GY9300 MFGZ9300 AGRZ9300 FDIZ9300 WTRPC02 PVT2DVIN ODAZ9300 RNDZ9305 RDPAVZ9305 TEMOBL C				
R-squared	0.93	Mean dependent var		2.03
Adjusted R-squared	0.92	S.D. dependent		1.53

		var		
S.E. of regression	0.44	Sum squared resid		3.98
Equation: DWTRPC0208 = C(4) +C(41)*CO2PC9305+C(42) *(FOREST9305)+C(43)*WTRPC02+C(44)*YIELD9305				
Instruments: ARLANDPC9300 GY9300 MFGZ9300 AGRZ9300 FDIZ9300 WTRPC02 PVT2DVIN ODAZ9300 RNDZ9305 RDPAVZ9305 TEMOBL C				
R-squared	0.70	Mean dependent var		(171.92)
Adjusted R-squared	0.64	S.D. dependent var		227.53
S.E. of regression	136.13	Sum squared resid		407,696.80

System: Model 2				
Estimation Method: Three-Stage Least Squares				
Total system observations: 93				
Linear estimation after one-step weighting matrix				
	Coefficient	Std. Error	t-Statistic	Prob.
C(1)	(1.974)	0.448	(4.402)	0.000
C(11)	0.027	0.007	3.668	0.001
C(12)	0.013	0.008	1.625	0.150
C(13)	0.302	0.076	3.957	0.000
C(14)	0.265	0.120	2.208	0.031
C(2)	(29.653)	11.019	(2.691)	0.009
C(21)	0.244	0.162	1.508	0.136
C(22)	0.004	0.001	4.667	0.000
C(23)	0.578	0.161	3.599	0.001
C(24)	0.290	0.120	2.414	0.018
C(25)	0.887	0.982	0.903	0.370
C(26)	0.078	0.059	1.316	0.193
C(27)	(0.409)	0.400	(1.021)	0.311
C(3)	(0.908)	0.371	(2.451)	0.017
C(31)	0.003	0.000	10.627	0.000
C(32)	0.026	0.013	2.034	0.046
C(33)	0.001	0.000	1.951	0.055
C(34)	0.003	0.002	1.333	0.172
C(4)	20.772	97.870	0.212	0.833
C(41)	18.342	20.248	0.906	0.368
C(42)	(5.528)	2.580	(2.143)	0.036
C(43)	(0.009)	0.003	(3.055)	0.003
C(44)	0.014	0.025	0.566	0.573
C(45)	0.263	0.203	1.310	0.182
Determinant residual covariance		381.1717		
Equation: DPVT1D = C(1)+C(11)*PVT1DVIN+C(12)*ODAPC0105 +C(13)*GY9305+C(14)*CO2PC9305				
Instruments: ARLANDPC9300 GY9300 MFGZ9300 AGRZ9300 FDIZ9300 WTRPC02 PVT2DVIN RNDZ9305 RDPAVZ9305 TEMOBL ODAZ9300 C				
R-squared	0.659	Mean dependent var		0.611
Adjusted R-squared	0.597	S.D. dependent var		1.024
S.E. of regression	0.650	Sum squared resid		9.290
Equation: GY9305 = C(2)+C(21)*(LIT0108-LIT9300)+C(22)*ENGYPC9305+C(23)*POP15649305+C(24)*GGFCF9305+C(25)*GPOP9305+C(26)*ODAPC9300+				

C(27)*FDIZ9300				
Instruments: ARLANDPC9300 GY9300 MFGZ9300 AGRZ9300 FDIZ9300 WTRPC02 PVT2DVIN RNDZ9305 RDPAVZ9305 TEMOBL ODAZ9300 C				
R-squared	0.745	Mean dependent var		4.832
Adjusted R-squared	0.448	S.D. dependent var		2.125
S.E. of regression	1.578	Sum squared resid		14.941
Equation: CO2PC9305 = C(3)+C(31)*ENGYPC9305 + C(32)*INDZ9305+C(33)*DWTRPC0208+C(34)*ODAPC9300				
Instruments: ARLANDPC9300 GY9300 MFGZ9300 AGRZ9300 FDIZ9300 WTRPC02 PVT2DVIN RNDZ9305 RDPAVZ9305 TEMOBL ODAZ9300 C				
R-squared	0.929	Mean dependent var		2.035
Adjusted R-squared	0.915	S.D. dependent var		1.525
S.E. of regression	0.445	Sum squared resid		3.966
Equation: DWTRPC0208 = C(4) +C(41)*CO2PC9305+C(42)*(FOREST9305)+C(43)*WTRPC02+C(44)*YIELD9305+C(45) *ODAPC0105				
Instruments: ARLANDPC9300 GY9300 MFGZ9300 AGRZ9300	WTRPC02 PVT2DVIN RNDZ9305 RDPAVZ9305 TEMOBL FDIZ9300			
ODAZ9300 C				
R-squared	0.698	Mean dependent var		-171.919
Adjusted R-squared	0.626	S.D. dependent var		227.534
S.E. of regression	139.114	Sum squared resid		406408.300

Note: All the above variables are defined in Appendix 2.

Source: Authors' calculations.

Table 2 shows the 3SLS estimates of the above system of equations. The R-square of individual equations is also presented in Table 1, which shows reasonably good fits. The results have several interesting findings, with policy implications with respect to the pace of poverty reduction, as discussed below.

The interesting results from models 1 and 2 that are similar and consistent are as follows:

The pace of poverty reduction (equation 1 in models 1 and 2) is positively related to ODA, growth, initial level of poverty, and CO_2 emission. This means that the higher the initial level of poverty, the higher is the pace of poverty reduction, which implies the "convergence" hypothesis—growth influences poverty reduction directly and significantly. CO_2 influences the speed of poverty reduction positively through growth because CO_2 is significantly and positively influenced by energy consumption (equation 3), which also influences growth directly (equation 2). This means that reduction in CO_2 emission has the potential to reduce growth and thereby reduce the pace of poverty reduction. When these results of energy consumption and growth are combined, one can argue that such a growth pattern is not appealing to developing countries. What is needed for sustained and green growth is growth with less and efficient energy consumption.

ODA influences CO_2 positively, though not significantly. Thus, ODA aimed at direct climate change mitigation, such as reduction in CO_2 emission in developing countries, may not be effective unless new technologies that consume less and efficient energy are introduced. This highlights the urgent need for transfer of energy saving technologies from developed countries and for investing in more research and development on such technologies across countries.

Thus, ODA given to developing countries to causes other than climate change issues should not be reduced.

The positive association between ODA and per capita availability of fresh groundwater is not statistically significant and indicates that ODA's potential to mitigate the negative effects of climate change is not effective for the given levels. These results tend to support the argument for more ODA for climate change mitigation. It is imperative to examine whether ODA has been effective in the context of climate change adaptation. As it is difficult to identify a proper measure for adaptation, we have analyzed a few published case studies.

Case study 1: Ancient system of water conservation as climate change adaptation

In Tamil Nadu in south India, the drought-prone Gundur River basin supplies water to Madurai and its surrounding areas. With climate change the rains have become unpredictable and, when it does rain, it does so intensively leading to floods and related disasters. To cope with this situation, villagers were recommended to follow the old traditional system of tanks in which seasonal rainwater is collected for use later. Tamil Nadu's granitic rock-base provides an ideal leakproof base for storage. The Dhan Foundation, a nongovernment organization (NGO) working in 12 Indian states is

> working with local communities and the government to repair and reuse these ancient storage systems that have served for almost a millennium in water conservation to adapt to drought conditions. … So far, 400 of Madurai district's 2,000 tanks have been repaired and are in use again. (http://www.bhoogyan.net/fromthegrassroots/rural-communities-turn-to-traditional-climate-mitigation)

To repair and use all tanks would take 5–7 years and needs proper funding. ODA will be more appropriate, along with other government schemes.

Case study 2: Drought and climate change in Ethiopia

The project in Ethiopia, partially supported by the Climate Change Fund of the Global Environment Facility (GEF), aims to develop a range of projects that help farmers to adapt to climate shocks. The project aims to provide assistance for farmers to (i) cope with drought, (ii) receive information and early warning systems to cope with climate change, (iii) improve their drought preparedness, and (iv) adopt best practices towards the management of negative climate shocks (GEF 2005).

Case study 3: Drought and climate change adaptation in Kenya

In the arid and semi-arid areas in Kenya, drought has become a permanent feature in the agricultural system since the 1980s. Climate change has intensified the decline of river flows and rainfall over the years. The International Institute for Sustainable Development and Centre for Science and Technology Innovations undertook a pilot project in Sakai in Mbooni East District in 2006 to demonstrate how an integrated approach—combining weather information, improved agricultural practices, and use of appropriate inputs such as drought-tolerant seeds—can be used to strengthen the capacity of rural Kenyans to cope with drought in the long-term. The project was driven initially by 40 farmers who were linked with technical support. By 2007, 80% of the households in Sakai had adopted the agricultural practices promoted through the project. Thus, the project, which was funded by the Canadian Coalition on Climate Change and Development (a group of more than 15 development and environmental organizations in Canada), has demonstrated that farmers in Sakai have significantly adapted to reduce the vulnerability of their agricultural outputs to climate change. The project outcome has awakened policy makers and worked to influence the content of Kenya's draft National Disaster

Management Policy and its revised policy on the sustainable development of arid and semi-arid lands. (Source: http://www.iisd.org/climate/vulnerability/adaptation.asp)

Case study 4: Indigenous technology in Bolivia and climate change adaptation

The lowland communities of Bolivia have been familiar with unpredictable rains, warmer temperatures, and an increase in extreme weather over the last two decades. Agricultural production has been severely constrained by the annual cycle of floods and droughts in different areas due to Bolivia's biodiversity. The devastating flood in lowland Beni in 2007 and 2008 influenced local communities to seek the help of Oxfam to initiate a project called *camellone*s (camel humps or raised fields) to achieve a sustainable solution to flooding and climate change. The camellones system was last used 3,000 years ago. Nevertheless, communities in this jungle region of Bolivia are now reviving the system, which uses agricultural practices, to save crops from increased floods. The ancient camellones were built by hand using primitive materials and construction methods. The new ones are constructed based on modern scientific knowledge of agro-hydrology using tractors and earthmoving equipment.

> The land in Beni has been usually considered suitable for slash-and-burn agriculture, though the poor quality soil is often exhausted after 2 to 3 years. In contrast, the complex system of water management used in the camellones can provide more nutrients to the soil, supporting more sustainable agriculture. The camellones built in 2007 survived the 2008 flooding reasonably well. Women are leading the way in experimenting with ways of adapting to the changes in the climate. The camellones project offers a promising example of poor women using ancient technologies to find a way of improving food security, adapting to flooding and reducing deforestation. (http://www.pembina.org/pub/2056)

5. CONCLUSIONS

The United Nations Framework Convention on Climate Change (UNFCCC) identifies two key directions to address climate change—mitigating climate change by reducing greenhouse gas emissions, and increasing adaptation to the impacts of climate change. Mitigation policy consists of all human activities aimed at reducing the emissions of greenhouse gases such as CO_2, methane, and nitrous oxide. Adaptation refers to any adjustments that take place in natural or human systems in response to actual or expected impacts of climate change by moderating the harm or exploiting the opportunities.

Increasingly the links between climate change and development are recognized as an important component in reducing poverty and improving the living standards of the poor. Human-induced greenhouse gas emissions are driven by socioeconomic development patterns, and these patterns are driven by economic growth, technology adoption, governance, and population growth. These economic developments in turn affect the vulnerability of the poor to climate change in terms of the greenhouse effects and their capacity for mitigation and adaptation, thereby increasing poverty.

In developing countries, the other key challenges that are an immediate development priority are food security, water supply, sanitation, education, and health care. Thus, there is an urgent need to mainstream the key challenges of climate change into sector and development planning and decision making processes to create sustainable long-term development. Mainstreaming is seen as a way of making more efficient and effective use of financial and human resources in implementing and managing climate change policy holistically, rather than undertaking piecemeal activities. This involves building mitigation and adaptation capacity at both the micro and macro economic development levels.

Climate change is a global phenomenon that requires the participation of both the public and private sectors. The importance of private sector participation is indicated by (i) the magnitude of the investment needed to manage climate change, and (ii) the fact that market mechanisms seem to be more effective in addressing climate change than does the public sector. In fact, it is perceived that the private sector adopts least-cost solutions to environmental problems that are efficient and effective when compared with the public sector. Though there is potential to generate revenue, several climate change projects are not still considered bankable. In fact, the market mechanism is an essential part of the Kyoto Protocol that serves as the basis for carbon trading.

Public sector involvement in the form of grants, ODA, and funding from other countries are equally important in mitigation and adaptation projects. There are several projects that provide strong social returns but few private returns. Such projects are unlikely to be undertaken by the private sector but have large social benefits. In such cases, the government, nonprofit organizations, and donor agencies are required to lower the risk of investment and provide incentives for private sector investment. Communities do have a role to play in adaptation, which can be seen from the case studies cited in this paper.

Thus, climate change mitigation and adaptation financing is likely to be addressed via several measures, such as collective actions from all stakeholders, innovative financing, and incorporating climate risks into development planning. Firstly, one possible innovative financing method is to pay attention to equity, efficiency, and effectiveness when dealing with climate change (World Bank 2010a). Mitigation costs can be reduced by increasing efficiency through mobilizing mitigation finance to the countries where mitigation costs are lowest and by directing adaptation finance to where the needs are greatest (World Bank 2010a). Secondly, there is a need to establish strong links between mitigation and development policy and between adaptation and development policy, as well as identifying some desirable level and mix of climate policy and development policy. Such links are keys to addressing climate change in development planning (Klein et al. 2005). The OECD recently suggested that the application of strategic environment assessment (SEA) can play a key role in identifying the sectors—such as health, poverty alleviation, and sustainable economic development—that are least prepared to address climate change (OECD 2010c). For that, focus of ODA in terms of SEA is also crucial in providing assistance to developing countries, e.g., to support pilot SEAs.

There is another aspect of ODA that is worth highlighting, especially because, despite its obvious implications for effectiveness, it is seldom emphasized in either the academic or the more policy-oriented literature. It has to do with donor involvement in insurance mechanisms, where donors have started to play an important role in assisting poor countries in coping with risk. Climate risk management, for example, allows farmers to effectively buy crop price insurance and rainfall insurance. Consider the case of rainfall insurance: a drought often affects a large part of a country, so that risk pooling at the national level is an inadequate response. Such risks require reinsurance, so that risk can be pooled at a higher (up to global) level. Multinational insurance companies are well aware of this but are poorly placed to offer insurance contracts to, say, peasants in an Indian village. By contrast, microfinance institutions are able to reach these target groups at low costs but are usually unable to pool risk sufficiently. Linking the two—microfinance institutions and multinational insurance companies—is feasible. Until this is done and run efficiently, ODA can play an important role, providing reinsurance directly or, possibly, as an intermediary between countries and multinational companies.

The potential contribution of donors is not just limited to the provision of crop price insurance. ODA can also play a part in smoothing the macroeconomic effects of fluctuations in the price of commodities and the terms of trade, thereby reducing the vulnerability of developing countries to exogenous shocks. Evidence is accumulating that the absence of insurance has a

remarkably strong negative effect on investment and growth. Hence the payoff (in terms of climate change, economic growth, and ultimately poverty reduction) from interventions related to coping with risk might well be underestimated.

However, empirical results in this study emphasize that more caution is needed in directing ODA towards climate change mitigation and adaptation due to the interlinks between various macroeconomic variables related to growth and poverty reduction. This implies that ODA given to other important causes concerning MDGs should not be reduced. The results show that energy efficient transfer of technology to developing countries should accompany any efforts of directing ODA towards mitigation. Without that, the impact of ODA on mitigation may have an adverse effect on the pace of poverty reduction in developing countries. Thus, the involvement of the private sector becomes crucial for energy efficient technological innovation and transfer. In this context, Japan's approach of providing ODA and funding for official collaboration with the private sector is a good model for other developed countries to emulate. This necessitates an increased level of empirical research within and across countries.

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APPENDIX 1

Global Climate Change Adaptation and Mitigation Funding

Donor/ Initiative	Countries	Focus/Projects	Website
African Development Bank Group (AfDB)	African countries	In 2006, the AfDB initiated a climate adaptation and risk management (CRM) program with interventions in policy, capacity and project level	http://www.afdb.org/portal/page?_pageid=473,30670406&dad=portal&schema=PORTAL
Asian Development Bank (ADB) —*Asia Pacific Carbon Fund, Technical Support Fund and the Credit Marketing Fund*	Developing member countries of ADB	ADB established a Carbon Market Initiative (CMI) under which it manages three projects: The Asia Pacific Carbon Fund (APCF) provides upfront carbon co-financing against future carbon credits until 2012 to enable clean energy projects to meet their financing gap to implementation. The APCF also provides upfront cofinancing to CDM projects in ADB's Developing Member Countries (DMCs) for future delivery of certified emission reductions. The Technical Support Facility (TSF) provides support for CDM projects. CMI will provide targeted technical support to project developers and sponsors in the following levels: 1) upstream support in project preparation and 2) downstream support in project execution and commercialization. The Credit Marketing Facility (CMF) assists sponsors to market additional credits generated beyond those that have been sold upfront to APCF.	http://www.adb.org/Clean-Energy/cmi.asp http://www.adb.org/Documents/Others/Asia-Pacific-Carbon-Fund.pdf
Australian Government—*AusAID*	Developing countries near Australia; Indonesia and Papa New Guinea	Climate Change adaptation: Australia will invest $150 million over three years to meet high-priority climate adaptation needs in vulnerable countries. The primary geographic emphasis of the program will be Australia's neighboring island countries, but targeted policy and technical assistance will also be available for other countries. Climate Change Mitigation: Australia's International Forest Carbon Initiative (IFCI) aims to demonstrate that reducing emissions from deforestation can be part of an effective international response to climate change. Total funding allocated for the initiative to date is $200 million over five years, focused on Indonesia and Papua New Guinea. Within the framework of the Indonesia-Australia Forest Carbon Partnership, Australia will support Indonesia in the development of its national framework for avoided deforestation and in the implementation of the Kalimantan Forests and Climate Partnership. Through the PNG-Australia Forest Carbon Partnership, Australia will assist Papua New Guinea to develop its avoided deforestation policies, forest carbon measurement system, and demonstration activities to enable Papua New Guinea's participation in future international forest carbon	http://www.ausaid.gov.au/keyaid/mitigation.cfm; http://www.ausaid.gov.au/keyaid/adaptation.cfm; http://www.climatechange.gov.au/international/publications/fs-ifci.html

		markets. Credible accounting of changes in forested areas is essential for such participation, so as a first step Australia will support Papua New Guinea in the development of a rigorous forest carbon measurement and accounting system.	
Belgian Development Cooperation (BCD)		On 10 September 2008, Professor Jean-Pascal Van Ypersele submitted a report with recommendations for Belgian Development Cooperation to Minister for Development Cooperation Charles Michel. The report is entitled "Climate change and the Belgian development cooperation policy: Challenges and opportunities." On 7 March 2008, Belgian Development Cooperation organized a conference on "Climate Change, a new Challenge for Development Cooperation?" The BCD has also organized a panel discussion on avoided deforestation in DR Congo to combat climate change.	http://www.dgcd.be/en/topics/index.html http://www.biodiv.be/news/avoided-deforestation-dr-congo-combat-climate/
Canadian International Development Agency (CIDA)	Developing countries	In 2006, CIDA provided CAD$1,025,000 in untied technical assistance to the Inter-American Development Bank (IADB) for a joint work program to promote renewable energy, energy efficiency, and carbon finance projects in Latin America and the Caribbean; As of 2005, the Canada Climate Change Development Fund had supported projects in more than 50 countries, in addition to making a $10 million contribution to the Least Developed Countries Fund (LDCF) managed by the United Nations and the GEF. The Adaptation to Climate Change in the Caribbean project is funded by CIDA and focuses on strengthening the technical capacity of national and regional institutions.	http://www.acdi-cida.gc.ca/CIDAWEB/acdicida.nsf/En/JUD-4189500-J8U; http://www.cimh.edu.bb/curprojs.htm
Caribbean Development Bank (CFB)	Caribbean countries	CDB provided financing for the Caribbean Community Climate Change Center toward the establishment of an information clearinghouse. The clearinghouse will support the scientific research component of the Center's work program and improve access to scientific knowledge resources and tools necessary to support sound decision making concerning climate change and sustainable development.	http://www.caribank.org/titanweb/cdb/webcms.nsf/AllDoc/1586ABF7D17E68D8042574E4004C6492?OpenDocument
Danish Development Agency (DANIDA)	Vietnam	Capacity Development for National Climate Change Focal Point in Vietnam: This project aims to strengthen human resources and institutional capacity of Vietnam for effective negotiation, policy analysis, and coordination of climate change activities. The capacity for managing climate risks, including seasonal forecasting, early warning systems, disaster preparedness, mitigation, and relief, needs to be improved for the region as a whole.	http://www.ambhanoi.um.dk/nr/exeres/2fb21c2d-d094-437f-af37-245e5ffdd16b,frameless.htm?nrmode=published
Deutsche Gesellschaft fur Technische Zusammenarbeit (GTZ)—*Climate Protection Program*	Developing countries	The current objective of the Climate Protection Program is to mainstream climate protection activities within German Development Cooperation. This includes measures to reduce and prevent greenhouse gas emissions, and measures to foster adaptation to the adverse effects of climate change. The Climate Protection Program thus assists	http://www.gtz.de/en/themen/umwelt-infrastruktur/umweltpolitik/4158.htm

		developing countries in meeting their commitments under the UNFCCC, and involves these countries in Kyoto Protocol implementation. Activities focus on building and expanding institutional and human resource capacities, and on carrying out individual projects to serve as models in the field of climate protection. The Climate Protection Program provides ongoing support to a range of individual projects through: 1) National and regional climate studies. 2) Training measures and workshops. 3) Conceptual and methodological studies on fundamental issues of climate protection in developing countries. 4) Policy studies on long-term climate protection.	
European Bank for Reconstruction and Development (EBRD) — *Climate Investment Funds*	Developing countries	EBRD's Climate Investment Funds will enable a dynamic partnership between multilateral development banks and developing countries to undertake investments that achieve a country's development goals through a transition to a climate-resilient economy and a low carbon development path. The EBRD has also established the following carbon funds: Netherlands Emissions Reductions Co-Operation Fund: buys Joint Implementation Carbon Credits from its 13 countries of operations eligible for this mechanism Multilateral Carbon Credit Fund: is designed to develop the carbon market in countries in transition and to help EBRD and European Investment Bank shareholders and other parties to meet their mandatory or voluntary emission reduction targets. Became operational in 2006. The fund will buy carbon credits from investments under the European Union scheme as well as the Protocol's JI and CDM. It will also aim to facilitate the direct trading of carbon credits between some of its shareholders (so-called Green Investment Schemes). Donor Funding: The Bank can help governments and companies in its region of operations overcome obstacles in emission trading by providing technical advice funded by donor governments. For example, as part of the Bank's Early Transition Countries Initiative for its poorest countries of operation, donors have approved funding to help in development of complex CDM projects.	http://www.ebrd.com/country/sector/energyef/carbon/index.htm
European Commission (EC)—*EU Action Plan on Climate Change and Development*	Developing countries	The EU action plan on climate change and development ensures that climate change is incorporated into all aspects of EU development policy. It will help developing countries implement the UNFCCC and the Kyoto Protocol, and support more research into tackling climate change. Its four priorities are raising the political profile of climate change, support for adaptation in developing countries, support for mitigation and sustainable development paths, and developing administrative capacity in vulnerable countries. The action plan is funded through the Commission's geographical programs for countries and regions, and its program for the environment and sustainable management of natural resources.	http://ec.europa.eu/development/policies/9interventionareas/environment/climate/climate_en.cfm

		Global Climate Change Alliance (GCCA) - will spend €60m in 2008-10 to create awareness and jointly address climate change between the EU and the most vulnerable developing countries (typically least developed countries and small island developing states). The alliance will be based on improved dialogue on addressing climate change, feeding into the discussions on a post-2012 agreement under the UNFCCC; concrete support for adaptation and mitigation measures and the inclusion of climate change in development strategies and programs. Support will be given to five priorities: 1) adapting to climate change; 2) reducing emissions from deforestation, while preserving livelihoods and ecosystems; 3) enhancing participation in the global carbon market through the Clean Development Mechanism; 4) promoting disaster risk reduction; and 5)integrating climate change into poverty reduction efforts. Existing funding for climate change and environmental issues will also contribute to the goals of the alliance—and EU governments have been asked to provide more funds for it. Coordination with other donors - The Commission participates actively in the vulnerability and adaptation resource group. This is a forum for debate, consisting of a core group of bilateral and multilateral donors, with a broader range of groups (academia, research institutes, and other interest groups) invited to join the discussions, depending on the issue. The group has produced two papers: 1) 2003 Poverty and Climate Change: Reducing the Vulnerability of the Poor through Adaptation in 2003 2) 2006 Synthesis Report	
European Investment Bank (EIB)	Developed and developing countries	Global Authorization Mechanism: a simplified and accelerated process for the financing of small- and medium-scale projects (public or private) outside the EU aimed at promoting climate change mitigation and adaptation investments, with special emphasis on carbon credit generating projects. The €5 million Climate Change Technical Assistance Facility (CCTAF) provides advance funding for activities associated with the development of project-based carbon credits under the JI and CDM mechanisms of the Kyoto Protocol on a conditional loan basis. Carbon Finance: 1. Multilateral Carbon Fund (see EBRD) 2. Carbon Fund for Europe: co-managed by the World Bank, the fund has at its disposal €50m. It is designed to help European countries and companies in the EU ETS meet their Kyoto commitments. It helps developing countries achieve sustainable development by fostering investment in clean technology projects. The fund can also buy carbon credits generated after the end of the Kyoto commitment period in 2012—up to a limit of 40%. 3. The EIB/Kreditanstalt für Wiederaufbau (KfW)	http://www.eib.org/projects/topics/environment/climate-change/

		Carbon Programme, a risk sharing arrangement between the EIB and KfW, focuses on helping EU-based small- and medium-sized enterprises to access carbon credits for voluntary or statutory compliance purposes. 4. The Post 2012 Carbon Credit Fund is designed to support environmentally beneficial projects from 2012 onwards and is the first dedicated facility of its kind. The fund will exclusively purchase and trade Post 2012 credits, thereby supporting the development of projects that help the environment by extending their carbon-based revenue stream. A consortium composed of Conning Asset Management (Europe) Limited and First Climate has been selected as fund manager.	
Fonds Français pour l'Environnement Mondial (FFEM)		The FGEF encourages projects that reduce the consumption of fossil or organic carbon through: 1) Improved energy efficiency. 2) Renewable energy and substitution by energy sources producing fewer CO2 emissions. 3) Carbon sequestration in forests and soils.	http://www.ffem.fr/jahia/Jahia/site/ffem/lang/en/pid/3569
Global Environment Facility (GEF)	Less-developed countries	Climate change adaptation: GEF supports projects that reduce or avoid greenhouse gas emissions in the areas of renewable energy, energy efficiency, and sustainable transport. Recently, the UNFCCC asked the GEF to support pilot and demonstration projects in the field of adaptation. Under its strategic priority, Piloting an Operational Approach to Adaptation, the GEF supports projects that provide real benefits and may be integrated into national policies and sustainable development planning. In addition, the GEF supports adaptation activities through the Least Developed Country Fund and the Special Climate Change Fund. Climate change mitigation: GEF supports interventions that increase resilience to the adverse impacts of climate change and vulnerable countries, sectors, and communities.	http://www.gefweb.org/interior.aspx?id=232
Inter-American Development Bank (IADB)	Developing countries	Adaptation for Climate Change and Disaster Mitigation in the Caribbean: a study to evaluate the possibilities and comparative advantages for the countries of the region of carbon sequestration and renewable energy development, with the aim of taking advantage of the innovative financial mechanisms of the protocol of the CDM and the Global Environment Facility, which can lead to new development and capital flow opportunities.	http://www.iadb.org/projects/project.cfm?id=TC0002034&lang=en
France—Interministerial Taskforce on Climate Change		France finances grants to specialized funds, various multilateral organizations, or within a bilateral framework. It increases its development assistance every year in the field of climate change. On the whole, French development assistance for climate change reached €400 million in 2006. Beyond research, France also supports actions including adaptation, biological sequestration of carbon, and climate monitoring. France also supports Kyoto protocol mechanisms, specifically through the signature of bilateral agreements aiming at the promotion and completion of projects under the CDM or JI.	http://www.effet-de-serre.gouv.fr/lacooperationinternationale

International Finance Corporation (IFC)—*Carbon Finance Unit*		IFC's Carbon Finance Unit (CFU) develops new products for the carbon market, including a Carbon Delivery Guarantee and monetization of forward contracts, both for qualified sellers of Certified Emission Reductions (CERs). The Unit advises on investments to provide flexible financing, including equity, to carbon-rich projects, and is considering targeting debt facilities with local banks that will lend to sponsors of emission reduction projects. CFU products and services include: 1) Carbon Delivery Guarantee. 2) Monetization of future cash flows from sales of carbon credits. 3) Debt and equity for carbon-rich products and businesses. 4) Work with Financial Intermediaries and municipalities to help aggregate carbon credits from their various investment operations.	http://www.ifc.org/ifcext/sustainability.nsf/Content/CarbonFinance
International Fund for Agricultural Development (IFAD)	Developing countries	Mitigation: IFAD currently supports reforestation projects in the Himalayas and Yemen. An IFAD-supported program in China is setting up solar power systems to help poor households get energy from the abundant sunlight in the area. A biogas project in China is turning human and animal waste into a mixture of methane and carbon dioxide gases that can be used for lighting and cooking. Finance: IFAD is expanding its grant and loan portfolio for projects that reward poor people for ecosystem services. Since 2001, IFAD has supported a grant program in Southeast Asia that has had a significant impact on secure access to land, watershed protection and biodiversity conservation. A grant program focusing on Africa will address carbon emissions and avoided deforestation. Technology: IFAD supports research institutes and other bodies to test, adapt and disseminate technology to help climate-proof agriculture.	http://www.ifad.org/climate/ifad.htm
International Monetary Fund (IMF)	Member countries	The IMF can provide advice, through its discussions with member countries, and through its technical assistance work, on appropriate fiscal and other macroeconomic policies to mitigate climate change and adapt to its consequences. In addition, the Fund can provide financial assistance to member countries in response to a range of macroeconomic disturbances, including natural disasters, for example through the exogenous shock facility for low-income countries.	http://www.un.org/climatechange/pdfs/bali/imf-bali07-11.pdf
Japan Bank for International Cooperation (JBIC)	Developing countries; Asia	JBIC provides proactive support for environmental conservation and improvement projects, offering favorable loan terms for such projects. In April 2008, JBIC established the Facility for Asia Cooperation and Environment (FACE) to enhance its support for climate change mitigation measures in developing countries, as well as to provide assistance for Asia.	http://www.jbic.go.jp/en/about/role-function/pdf/JBICRole%20and%20FunctionE.pdf
Japan: Ministry of Foreign Affairs (MOFA) —*Cool Earth Partnership*	Developing countries	Starting this year, Japan will provide funds amounting approximately to US$ 10 billion (¥1,250 billion) in aggregate over the next five years. Assistance will be provided to developing countries that are making efforts to reduce GHG emissions and achieve economic growth in a compatible way, on the basis of policy consultations between Japan and those countries.	http://www.mofa.go.jp/policy/economy/wef/2008/mechanism.html

		Assistance for adaptation to climate change and improved access to clean energy (~ US$2 billion): Grant aid, technical assistance and aid through international organizations will be provided to address the needs in developing countries. A new scheme of grant aid, "Environment Program Grant Aid,"will be created as a component of this package. In the context of improved access to clean energy, feasibility study on rural electrification projects with geothermal energy and "co-benefit" projects that address climate change will be conducted. Assistance for mitigation of climate change (~ US$ 8 billion): "Climate Change Japanese ODA Loan" with preferential interest will be created to provide loans amounting to ¥500 billion for the purpose of implementing programs to address global warming in developing countries. Through capital contribution and guarantee by JBIC (JBIC Asia and Environment Facility), trade and investment insurance by NEXI, and government support (projects to be implemented through NEDO), together with private funds, up to ¥500 billion will be provided for projects to reduce GHG emissions in developing countries. In this context, the Asian Clean Energy Fund (at ADB) will also be used to promote energy conservation in the Asian-Pacific region. Japan aims to create a new multilateral fund together with the United States and the United Kingdom, calling for participation from other donors as well.	
Japan International Cooperation Agency (JICA)	Developing countries	JICA assists capacity development programs through technological cooperation under ODA (Japanese Government's Official Development Assistance) for sustainable development in developing countries. JICA uses a "co-benefits approach," which includes both adaptation and mitigation measures. Types of activities include: Mitigation measures: Cooperation activities which contribute to reduce emissions and enhance removals of GHGs, such as cooperation in rural electrification using renewable energy, prevention of deforestation, and afforestation/reforestation. Clean Development Mechanism (CDM): Cooperation such as capacity development and support to the implementation of CDM. Adaptation measures: Cooperation that leads to improving adaptation capacity, such as improvement of water supply and irrigation facilities, introduction of crop varieties for arid regions, and disaster management. Cooperation that is effective for both adaptation and mitigation measures, such as mangrove afforestation/reforestation activities, which both enhance CO2 removals and address sea-level rise.	http://www.jica.go.jp/english/publications/reports/study/topical/climate1/pdf/cli02.pdf
Kreditanstalt feur Wiederaufbau (KfW)	Developing countries	KfW Entwicklungsbank is responsible for financial cooperation with developing countries The KfW group has instituted a climate protection fund on behalf of the German government that should make it easier for business enterprises to acquire Certified Emission Reductions (CERs) generated by CDM projects. As a result, private financial	http://www.bmz.de/en/issues/energie/klimaschutz/kyotoprotokoll/index.html

		resources will be mobilized for sustainable development in partner countries. The EIB/Kreditanstalt für Wiederaufbau (KfW) Carbon Program: see EIB	
Multilateral Investment Guarantee Agency (MIGA)	Developing countries	MIGA focuses on supporting green infrastructure investments in developing countries that build renewable energy capacity, encourage resource conservation and distribution efficiency, improve sanitation, and offset GHG emissions. Since FY90, MIGA has provided guarantees for 59 green infrastructure projects in all regions of the world. These guarantees represent half of MIGA's cumulative issuance in the infrastructure sector—or $2.5 billion. MIGA's added value in green infrastructure development includes: 1. Mitigation of risks and dispute resolution, often at the subsovereign level, keeping investments on track. 2. Support for projects that address resource scarcity and waste issues in middle-income countries such as China, where the prospect of working with untested local governments often inhibits investment. 3. Longer loan tenors and reduced costs, including for projects in frontier markets.	http://www.miga.org/documents/MIGAclimatechangebrief07.pdf
Netherlands Development Cooperation		The Netherlands' development policy aims to: 1. Help countries offset climate change (adaptation). This is necessary because negative effects of climate change, such as hurricanes or droughts, can seriously affect economies. Equally, climate change makes poverty reduction more difficult and more expensive. 2. Take climate hazards into account in terms of development programs and projects in order to avoid investments being damaged, yielding less than planned or, even unintentionally increasing people's vulnerability. 3. Give more people in developing countries access to modern energy (electricity, gas, sustainable energy such as solar and wind power). This generally reduces the emission of GHGs. 4. Build up developing countries' capacity to use the CDM. The objective is to help formulate projects that produce less CO2 while also contributing to poverty reduction and sustainable development. 5. Pursue active involvement in the international climate debate, for example at UN and EU level. The objective is to exchange adaptation experiences with other donors, look for coherence and, where possible, act in concert.	http://www.minbuza.nl/en/themes,environment/environment-themes/environment-themes/climate/What-is-the-Netherlands-doing-.html
New Zealand AID (NZAID)	Pacific region	The Pacific Regional Environment and Vulnerability Program currently allocates NZ$6.5 million a year for regional programs designed to protect and enhance the Pacific region's natural resource base for sustainable development and poverty elimination. Separate assistance of approximately NZ$10 million a year is provided to Pacific Regional	http://www.nzaid.govt.nz/programmes/r-pac-environment.html

		Organizations that also deliver on sustainable natural resource management, disaster risk reduction, renewable energy, and climate change.	
Nordic Development Fund (NDF)	Honduras	In 2004, Honduras and the NDF signed a €6 million loan to support Pro-Bosque, a multiphase sustainable development program aimed at increasing the economic, social and environmental benefits generated by the Honduran forestry sector.	http://www.portofentry.com/site/root/resources/industrynews/2223.html
Nordic Investment Bank (NIB)		Post 2012 Carbon Credit Fund: see European Investment Bank	http://www.eib.org/projects/topics/environment/climate-change/
Norway Ministry of Foreign Affairs (ODIN)	Tanzania	Norway granted NOK 500 million to Tanzania over a period of five years, for a partnership agreement to enhance forest and climate efforts.	http://www.regjeringen.no/en/dep/smk/Press-Center/Press-releases/2008/nok-500-million-to-forest-and-climate-ef.html?id=508504
Norwegian Agency for Development Cooperation (NORAD)		To contribute to reaching the goals of the CDM, NORAD has established a support mechanism to enable eligible entities to prepare the necessary documentation for submission of CDM projects to the Designated National Authority and the CDM Executive Board. Developing new CDM methodologies or adapting existing methodologies can also be supported. The guidelines for support to CDM project development give an overview of criteria for support, eligible costs, and projects, and describe how to apply for support.	http://www.norad.no/default.asp?VITEMID=1750
Organization of the Petroleum Exporting Countries (OPEC) Fund for International Development	Developing Countries	The OPEC fund provides public sector financing, private sector financing, grant operations, and trade finance operations. In 2001, OPEC released a landmark environmental report that provides international investment agencies and investors with data indicating baseline carbon dioxide emissions needed for responsible economic development to protect the global environment. Entitled "Climate Change: Assessing our Actions," the report urges investors to report emissions from their projects and encourages the use of renewable energy sources. The OPEC fund also provides research grants to groups such as the International Dryland Development Commission for climate change research.	www.opecfund.org http://www.opecfund.org/projectsoperations/commitments2008.aspx
Swiss Agency for Development and Cooperation	Vietnam	Sustainable forest management in Vietnam - contribution to mitigation of climate change: In view of the challenges of sustainable forest management, SDC has been supporting the Forest Sector Support Partnership in Vietnam since 2001, with the aim to maximize the efficient and effective use of all resources applied in the forest sector. In addition, a Trust Fund for Forests has been created that prioritizes poverty alleviation, sustainable forestry management, and economic growth. Through this support, Switzerland gives long-lasting and important support to a sector that is crucial for mitigation of climate change, and thus contributes to the global agenda.	http://www.deza.ch/en/Dossiers/DossierAnnualDevelopmentCooperationConference2008/ClimatechangeintheMekong_Region

United Kingdom Department of International Development (DFID)	Developing countries	International Environmental Transformation Fund: DFID with the UK Department for Environment, Food and Rural Affairs (DEFRA) will work to support development and poverty reduction through better environmental management, and help developing countries respond to the realities of climate change. The UK is providing £800 million (announced in 2007 budget). DFID will also expand and diversify its research as part of a wider effort to tackle climate change across the UK government. DFID's research strategy report also states that DFID will research climate science, especially in Africa; how to tackle climate change in national and international policy; strategies for adapting to climate change; and mitigation and low carbon growth. DFID will establish an International Climate Change network to provide in-country research and advisory services. Climate Change Adaptation in Africa (CCAA) research and capacity development program: a joint program of the International Development Research Centre, Canada, and DFID. The program aims to improve the capacity of African countries to adapt to climate change in ways that benefit the most vulnerable. Building on existing initiatives and past experience, the CCAA program works to establish a self-sustained skilled body of expertise in Africa to enhance the ability of African countries to adapt. A number of the first projects seek to increase the resilience of agricultural systems	http://www.dfid.gov.uk/news/files/climate-etf.asp ; http://www.dfid.gov.uk/default.asp ; http://www.idrc.ca/ccaa/
United Kingdom Ministry of Foreign Affairs: *Strategic Programme Fund*	22 countries	The Strategic Programme Fund (SPF) program directly supports delivery of the objective to promote a low-carbon, high-growth global economy. It is the result of a merger of the old Climate Change and Energy and Economic Governance programs. The program supports delivery of the following outcomes: 1) A visible and accelerated shift in investment initiated in the major economies toward low carbon; 2) Political conditions created for an equitable post-2012 agreement at the UNFCCC COP in Copenhagen in December 2009 of sufficient ambition to avoid dangerous climate change; 3) Risks to UK and EU energy security managed through more diverse and reliable external sources of supply and more efficient global consumption; and 4) Increased international commitment to an open, stable and equitable low carbon global economy delivering higher standards of living.	https://fco-stage.fco.gov.uk/en/about-the-fco/what-we-do/funding-programmes/strat-progr-fund/strat-prog-fund-climate
United Nations Development Program - *Millennium Development Goal Carbon Facility (The "Facility")*	Developing countries	UNDP offers project development services, including performing due diligence, providing technical assistance for CDM or JI project approval, and establishing the monitoring system for the project's emission offsets. As a development organization, UNDP does not seek to generate profits from the Facility, however UNDP will apply a flat-rate cost-recovery fee in order to recover its direct costs. In providing its services, UNDP will leverage its proven expertise in environmental project development, its extensive local presence and its in-depth understanding of each country's sustainable development goals.	http://www.undp.org/mdgcarbonfacility/index.html http://cdm.unfccc.int/NairobiFramework/index.html

		Nairobi Framework: Initiated by the United Nations Development Programme (UNDP), United Nations Environment Programme (UNEP), World Bank Group, African Development Bank, and the Secretariat of the United Nations Framework Convention on Climate Change (UNFCCC) with the specific target of helping developing countries, especially those in sub-Sahara Africa, to improve their level of participation in the CDM.	
United Nations Framework Convention on Climate Change - *Adaptation Fund*	Developing countries that are parties to the Kyoto Protocol	The Adaptation Fund was established to finance concrete adaptation projects and programs in developing countries that are parties to the Kyoto Protocol. The Fund is to be financed with a share of proceeds from CDM project activities and receive funds from other sources. (The share of proceeds amounts to 2% of CERs issued for a CDM project activity.)	http://unfccc.int/cooperationandsupport/financialmechanism/adaptationfund/items/3659.php
Agency for International Development (USAID) —*Global Climate Change Program*	Developing and transition countries	USAID's Global Climate Change Program is active in more than 40 countries and, since 2001, has dedicated more than $1 billion to promote: 1) Clean energy technology. 2) Sustainable land use and forestry: USAID is not only promoting activities that preserve carbon stocks but is also helping to develop methodologies for measuring changes in carbon stocks in USAID's land use and forestry projects. 3) Adaptation to climate change. 4) Climate science for decision-making. USAID places particular emphasis on partnerships with the private sector and on working with local and national authorities, communities, and nongovernmental organizations to create alliances that build on the relative strengths of each. Bringing together a diverse range of stakeholders helps avoid unnecessary duplication and lays the foundation for a sustained, integrated approach. Through training, tools, and other means of capacity building, USAID helps developing and transition countries address climate-related concerns as a part of their development goals. USAID has recently published, "Adapting to Climate Variability and Change: A Guidance Manual for Development Planning, Aug 2007."	http://www.usaid.gov/ourwork/environment/climate/
World Bank - *Carbon Finance Unit (CFU)* and *Climate Investment Funds*	Middle-income and low-income countries	The Carbon Finance Unit (CFU) uses money contributed by governments and companies in OECD countries to purchase project-based greenhouse gas emission reductions in developing countries and countries with economies in transition. The emission reductions are purchased through one of the CFU's carbon funds on behalf of the contributor, and within the framework of the CDM or JI. The CFU does not lend or grant resources to projects, but rather contracts to purchase emission reductions similar to a commercial transaction, paying for them annually or periodically once they have been verified by a third-party auditor. Climate Investment Funds: agreement between multilateral development banks (MDBs) and countries to bridge the financing and learning gap for climate change efforts. MDBs will provide additional grants and concessional financing to	http://carbonfinance.org/Router.cfm?ItemID=3&Page=Funds www.worldbank.org/cif

		developing countries to address urgent climate change challenges.	

Source: USAID, Financing Climate Adaptation and Mitigation in Rural Areas of Developing Countries, 2009

APPENDIX 2

Variable List (All data collected from World Bank Resources available in CDROM and Net)	
LIT9300	Average literacy rate, adult total (% of people ages 15 and above) during 1993-2000
LIT0108	Average literacy rate, adult total (% of people ages 15 and above) during 2001-08
CO2PC9305	Average CO2 emissions (metric tons per capita) during 1993-05
GY9300	Average annual percentage growth in real GDP during 1993-2000
GY9305	Average annual percentage growth in real GDP during 1993-2005
GGFCF9305	Average annual percentage growth in gross fixed capital formation during 1993-2005
FOREST9305	Average Forest area as percentage of land area during 1993-2005
FDIZ9300	Average Foreign direct investment, net inflows as per cent of GDP during 1993-2000
ENGYPC9305	Average Energy use (kg of oil equivalent per capita) during 1993-2005
YIELD9305	Average Cereal yield (kg per hectare) during 1993-2005
ARLANDPC9300	Average Arable land (hectares per person) during 1993-2000
AGRZ9300	Average Agriculture, value added as percentage of GDP) during 1993-2000
INDZ9305	Average Industry, value added as percentage of GDP) during 1993-2005
MFGZ9300	Average Manufacturing value added as percentage of GDP during 1993-2000
POP15649305	Average Population with ages 15-64 as percentage of total during 1993-2005
GPOP9305	Annual percentage population growth during 1993-2005
R&DZ9305	Research and development expenditure as percentage of GDP during 1993-2005
RDPAVZ9305	Roads, paved as percentage of total roads during 1993-2005
TEMOBL	Average Mobile and fixed-line telephone subscribers (per 100 people) during 1993-2005
DWTRPC0208	Average annual change in renewable internal freshwater resources per capita (cubic meters) during 2002-2008
WTRPC02	Average Renewable internal freshwater resources per capita (cubic meters) during 2002
PVT1DVIN	Poverty headcount ratio at $1.25 a day (PPP) as percentage of population) during initial period of two periods available between 1993 and 2008
PVT2DVIN	Poverty headcount ratio at $2.00 a day (PPP) as percentage of population) during initial period of two periods available between 1993 and 2008
DPVT1D	Average change in poverty headcount ratio at $1.25 a day (PPP) as percentage of population) during two periods available between 1993 and 2008
ODAPC9300	Average Net ODA received per capita (current US$) during 1993-2000
ODAPC0105	Average Net ODA received per capita (current US$) during 2001-2005
ODAZ9300	Average Net ODA received as percentage of national income during 1993-2000

Model 1:

DPVT1D = C(1)+C(11)*PVT1DVIN+C(12)*ODAPC0105+C(13)*GY9305+C(15)*CO2PC9305
GY9305 = C(2)+C(21)*(LIT0108-LIT9300)+C(22)*ENGYPC9305+C(23)*POP15649305
+C(24)*GGFCF9305+C(25) *GPOP9305+C(26)*ODAPC9300+C(27)*FDIZ9300
CO2PC9305 = C(3)+C(31)*ENGYPC9305 + C(32)*INDZ9305+C(34)*DWTRPC0208
+C(34)*DWTRPC0208
DWTRPC0208 = C(4) +C(41)*CO2PC9305+C(42) *(FOREST9305)+C(43)*WTRPC02
+C(44)*YIELD9305

Model 2.

DPVT1D = C(1)+C(11)*PVT1DVIN+C(12)*ODAPC0105+C(13)*GY9305+C(15)*CO2PC9305

GY9305 = C(2)+C(21)*(LIT0108-LIT9300)+C(22)*ENGYPC9305+C(23)*POP15649305
+C(24)*GGFCF9305+C(25) *GPOP9305+C(26)*ODAPC9300+C(27)*FDIZ9300

CO2PC9305 = C(3)+C(31)*ENGYPC9305 + C(32)*INDZ9305+C(34)*DWTRPC0208
+C(34)*ODAPC9300

DWTRPC0208 = C(4) +C(41)*CO2PC9305+C(42) *(FOREST9305)+C(43)*WTRPC02
+C(44)*YIELD9305+C(45)* ODAPC0105

Flow Diagram of Estimated Equations