THE WORLD BANK OPERATIONS EVALUATION DEPARTMENT

The Prototype Carbon Fund

Addressing Challenges of Globalization: An Independent Evaluation of the World Bank's Approach to Global Programs

Case Study

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This paper is available upon request from OED.

2004
The World Bank
Washington, D.C.

ENHANCING DEVELOPMENT EFFECTIVENESS THROUGH EXCELLENCE AND INDEPENDENCE IN EVALUATION

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Abbreviations and Acronyms

OED	Operations Evaluation Department
AAU	Assigned Amount Unit
BioCF	BioCarbon Fund
CDCF	Community Development Carbon Fund
CDM	Clean Development Mechanism
CDM-EB	CDM Executive Board
CER	Certified Emission Reduction
CSA	Country Assistance Strategy
EETS	European Emissions Trading System
EIT	Economy in transition
ENV	World Bank's Environment Department
ENVCF	World Bank's Carbon Finance Group
ER	Emission Reduction
ERPA	Emission Reduction Purchase Agreement
ERU	Emission Reduction Unit
ERUPT	Dutch Government Program
EU	European Union
GEF	Global Environment Facility
GHG	Greenhouse gas
IPCC	Intergovernmental Panel on Climate Change
JI	Joint Implementation
LULUCF	Land-use/land-use change/forestry
NCDF	Netherlands Clean Development Facility
NGO	Nongovernmental organization
PCF	Prototype Carbon Fund
UNFCCC	United Nations Framework Convention on Climate Change
WBI	World Bank Institute

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Acknowledgements

This case study was prepared by Lauren Kelly and Jeff Jordan under the direction of Uma Lele with input from Saeed Rana and Kavita Mathur. The team thanks Ken Newcombe, Johannes Heister, Veronique Bishop, Chandra Sinha, and Franck Lecocq as well as stakeholders and participants, including members of the Fund Management Committee, Denis Clarke, Sr. David Freestone and Henk Busz; legal advisors Charlotte Strek, Sophie Smyth and Tom Duvall; host country representatives Juan Pedro Searle, Bwango Apuuli, Jan Pretel, Alberto Gonzales, Mauricio Ayala, Luis Santos, Paulo Manso, and Ana Bianchi.

The study benefited from information provided by the Bank's regional contacts for PCF, particularly Neeraj Prasad (EAP contact for PCF).

Special thanks are also extended to Grace Akumu of the Climate Network Africa, Kenya, and Grace Wong of Conservation International for very fruitful discussions.

Preface

The global programs evaluation and its case studies. At the request of the World Bank's Executive Board, the Bank's Operations Evaluation Department (OED) has conducted an evaluation of the Bank's involvement in global programs. The Phase 1 Report, entitled *The World Bank's Approach to Global Programs,* focused on the strategic and programmatic management of the Bank's global portfolio of 70 programs in five Bank Networks (a cluster of closely related sectors) and was presented to the Committee on Development Effectiveness (CODE) on June 12, 2002. This case study is one of 26 (see list on the following page) and derives additional lessons for the Bank's strategic and programmatic management of global programs as well as lessons for the design and management of individual programs. OED reports typically contain recommendations only in those reports presented to the Bank's Board or its committees such as the Committee on Development Effectiveness (CODE). While the case studies that underlie OED's Phase 2 Report were not presented to CODE individually, they were distributed in draft to program partners to obtain their feedback, which was taken into account in the final versions of each report before being disclosed to the public.
Each case study follows a common outline and addresses four major evaluation issues, which correspond to the four major sections of each report:

- The overarching global relevance of the various global programs
- Outcomes and impacts of the programs and their sustainability
- Organization, management, and financing of the programs
- The World Bank's performance as a partner in the programs

These four issues correspond roughly to OED's evaluation criteria of relevance, efficacy, efficiency, and Bank performance, appropriately interpreted and expanded for the case of global programs.

Each case study also addresses 20 evaluation questions related to these four evaluation issues (Annex A, Table A.1) that have been derived from OED's standard evaluation criteria (Table A.2), the 14 eligibility and approval criteria for global programs that have been endorsed by the Development Committee and established by Bank Management (Table A.3), and the 8 eligibility criteria for grant support from the Bank's Development Grant Facility (Table A.4). Twenty out of the 26 case study programs and about two-thirds of the Bank's total portfolio of 70 global programs have received DGF grants.

Global programs are defined as "partnerships and related initiatives whose benefits are intended to cut across more than one region of the world and in which the partners (1) reach explicit agreements on objectives, (2) agree to establish a new (formal or informal) organization, (3) generate new products or services, and (4) contribute dedicated resources to the program" (OED, *The World Bank's Approach to Global Programs: Phase 1 Report*, p. 3).

List of 26 Case Studies in Phase 2 of OED's Evaluation of the Bank's Involvement in Global Programs

Acronym/ Short Form	Full Name	Operational Start Date	Size (US$ millions)[1]
Environment & Agriculture			
1. CGIAR	Consultative Group on International Agricultural Research	1972	395.0
2. GEF	Global Environment Facility	1991	387.53
3. MLF	Multilateral Fund for the Implementation of the Montreal Protocol	1991	158.6
4. ProCarbFund	Prototype Carbon Fund	2000	6.5
5. CEPF	Critical Ecosystem Partnership Fund	2000	20.19
6. GWP	Global Water Partnership	1997	10.25
7. GIF	Global Integrated Pest Management Facility	1996	1.3
Health, Nutrition & Population			
8. TDR	Special Programme for Research and Training in Tropical Diseases	Dec 1975	47.5
9. Global Forum	Global Forum for Health Research	Jan 1997	3.07
10. UNAIDS	Joint United Nations Programme on HIV/AIDS	Jan 1996	95.0
11. RBM	Roll Back Malaria	Nov 1998	11.4
12. Stop TB Partnership	Stop TB Partnership	July 1999	20.8
13. GAVI	Global Alliance for Vaccines and Immunization	Oct 1999	124.1
Infrastructure & Private Sector Development			
14. WSP	Water and Sanitation Program	March 1978	12.4
15. ESMAP	Energy Sector Management Assistance Programme	Jan 1982	7.58
16. CGAP	Consultative Group to Assist the Poorest	August 1995	12.67
17. infoDev	The Information for Development Program	Sept 1995	6.07
18. PPIAF	Public-Private Infrastructure Advisory Facility	Dec 1999	15.61
19. CA	Cities Alliance	Dec 1999	13.25
Social Development & Protection			
20. PostConFund	Post-Conflict Fund	1998	10.6
21. UCW	Understanding Children's Work	2000	0.56
Trade & Finance			
22. IF	Integrated Framework for Trade-Related Technical Assistance	1997	2.71
23. FSAP	Financial Sector Assessment Program	May 1999	10.46
24. FIRST	Financial Sector Reform & Strengthening Initiative	July 2002	4.64
Information & Knowledge			
25. GDN	Global Development Network	Dec 1999	8.67
26. World Links	World Links for Development	1998	6.5

/1 FY04/CY03 expenditures. For the following cases updated, audited data was not readily available so the previous fiscal or calendar year expenditures were used: Global Integrated Pest Management Facility, Water & Sanitation Program, Integrated Framework for Trade-related Technical Assistance.

Executive Summary

Portrait of a Global Program: Prototype Carbon Fund	
Established:	Board approved in July 1999
Objectives:	1) Show how project-based GHG emission reductions transactions can promote sustainable development and lower the cost of compliance with Kyoto 2) Provide parties to the UNFCCC, private sector, etc., with learning-by-doing opportunities to develop policies and processes for achieving ERs under Kyoto's market mechanisms (3) Demonstrate how the Bank can partner with the public and private sectors to mobilize *new* resources to address global environmental problems through market-based mechanisms
Key activities:	Serve as intermediary for project-based (renewable energy, energy efficiency, waste management, land-use/forestry) emission transactions; support CDM/JI market development; disseminate lessons learned
FY04 DGF allocation:	Not applicable
Governance model:	Housed and managed by World Bank; Oversight conducted by WB and participants
Location:	World Bank, Washington, D.C.
Administering agency:	Word Bank, as trustee
Latest program-level evaluation:	None

1. *Genesis, objectives, and activities*. The Prototype Carbon Fund (PCF) is a public-private partnership whose mission is to pioneer a market for project-based greenhouse gas emission reductions within the framework of the Kyoto Protocol to the United Nations Framework Convention on Climate Change (UNFCCC). Housed and managed in the Bank's Carbon Finance Group in the ESSD vice presidency, PCF seeks to show how project-based greenhouse gas emission reduction transactions can lower the cost of compliance with Kyoto, promote sustainable development, and mobilize new resources for Bank clients.

2. Recognizing the global environmental benefits of emissions reductions regardless of location, Kyoto allows industrialized countries and firms to offset certain obligations through the purchase of lower-cost emission reductions (ERs) in developing and in-transition countries. After verification and certification, ERs may be purchased or traded in the form of Emission Reduction Units. PCF leverages this provision by supporting the creation of *carbon assets* – that is, verified and certified ERs – which are produced by PCF-funded projects vis-à-vis a defined baseline scenario to ensure additionality. It makes use of two flexible Kyoto mechanisms – the Clean Development Mechanism, used in developing countries, and Joint Implementation, for in-transition economies – to facilitate industrialized-world investment in overseas projects. Projects focus on renewable and alternative energy technologies, including wind, small-hydro, biomass, waste-to-energy conversion, and energy efficiency investments. By investing in cleaner technologies in developing countries and transition economies, the Fund aims to reduce their greenhouse gas emissions. These independently verified and certified emissions reductions are transferred to Fund contributors in the form of emissions reduction certificates. The reductions may eventually be used to offset industrialized countries' commitments to reduce greenhouse gas emissions.

3. Bank President James Wolfensohn announced the establishment of a carbon fund at the United Nations General Assembly Special Session in June 1997, following up on approval of the Global Carbon Initiative. After consultation with the

Bank's regions, Legal Department, and Senior Management, as well as the International Finance Corporation (IFC), and the support of investors, client countries, and nongovernmental organizations (NGOs), PCF was approved by the Bank's Board in July 1999 and formally launched in January 2000. It is structured as a closed-end mutual fund serving as a new source of financing for projects in sustainable development in the energy, industrial, waste management, land rehabilitation, and clean technologies, with investment operations expenses entirely funded by participants' annual contributions and PCF investment income. Although originally envisaged as a $100 to $110 million fund, PCF closed in April 2000 with $135 million in subscriptions from 6 public and 15 private entities. In October 31, 2000, two additional private sector participants entered into Participation Agreements with PCF. In May 2000, the Bank's board raised its cap to $180 million based on perceived demand. By December 2002, the Fund reached its current fully subscribed level.

4. *Design and implementation*. PCF answers to two constituencies: the Bank and participants who "own" the Fund. Its structure has evolved in response to investors, with changes incorporated as amendments to its Board-approved instrument (Resolution No. 99-1). PCF uses funds made available by its 23 participants – 6 governments and 17 companies – represented through a Participants' Committee that clears PCF project decisions. A Fund Management Committee (consisting of three Bank sector managers and one Chief Investment Officer from the IFC, and chaired by the PCF Fund Manager) and a Fund Management Unit form the operating layer. The Carbon Finance Steering Committee, chaired by the Vice-President of ESSD and comprised of sector directors from the anchors and regions for infrastructure and energy, was established in May 2003. Host countries are represented through the Host Country Committee. With more than 50 members, it has faced collective action problems, leading to a general sense among members that developing countries are left out of decision-making and governance. To address this, the committee now elects a 12-person steering committee with regional representation to streamline participation.

5. With the completion of PCF's investment phase drawing near, the Bank has developed new carbon-transaction mechanisms to respond to the market's need for further stimulus, particularly in its less marketable segments. These mechanisms include the Netherlands Clean Development Facility, a Bank/Dutch government effort to purchase €140 million in ERs in developing countries; the $100 million Community Development Carbon Fund, which facilitates small-scale carbon transactions that often fail to attract investors due to the high cost and risk relative to size; and the BioCarbon Fund, a $30 million fund to demonstrates credible forestry/agriculture "sink" activities that became operational in May 2004. The Bank is also discussing ways to support intermediate carbon purchases for OECD public and private entities on a bilateral and multilateral basis, for an annual aggregate volume that could top $200 million. Recent carbon-market regulatory changes include approval of the EU Emission Trading Scheme (EU-ETS), which contributes to the development of an appropriate framework for managing and pricing carbon.

6. This review focuses solely on PCF and does not explore subsidiary issues related to the Bank's new carbon funds. The review does not evaluate the activities of the IFC-Netherlands Carbon Facility – an arrangement under which the IFC will purchase $47 million worth of greenhouse gas emission reductions for the benefit of the Government of the Netherlands. However, it does identify Bank comparative advantage-related issues, as well as the issues raised by competition between the Bank and IFC in carbon finance.

OED FINDINGS

Relevance: Are the Program's Objectives Right?

7. *A strong international consensus supports global collective action.* The Bank's activities in carbon finance respond to a broad international agreement, embodied by the UNFCCC and supported by accumulating scientific evidence, that climate change poses a serious environmental and socio-economic threat, particularly for the developing world, which could suffer a 5 to 9 percent loss in GDP over the next 10 to 20 years. Kyoto signals global recognition of the need for collaborative, cost-effective mechanisms to reduce greenhouse gas emissions. With a limited timeframe to qualify for Kyoto's first commitment period, the Bank correctly judged its involvement was needed to ensure its clients benefited from the emerging carbon market and the Protocol when ratified and formally in force.

8. *Provision of global public goods*. PCF operates on the premise that carbon finance has a variety of public goods characteristics and can provide powerful support for development, especially given its potential to mobilize new private funds for Bank clients, while transferring technology to address climate change. This contributes to sustainable development while freeing up limited development assistance for other purposes. Of the 26 programs OED reviewed, it is one of the few programs that brings completely new sources of funding to provide a global public good, and the only one that brings completely new private commercial sources of funding. The demand on PCF to provide national public goods in information, knowledge, and capacity strengthening is growing among the Bank's client countries, distinguishing it from a purely commercial program of the type that the IFC or the private sector would operate. PCF's activities are in line with the Bank's commitment to implement the 7th and 8th Millennium Development goals to ensure environmental sustainability and develop global partnerships. The Bank's 1999 Environmental Strategy for the Energy Sector singles out PCF as an efficient market-based mechanism to strengthen capabilities to address global climate change. Its 2001 Environment Strategy, *Making Sustainable Commitments*, commits to helping clients manage climate change in three key areas: mitigation of greenhouse gas emissions; reduced vulnerability and adaptation to climate change; and capacity building. PCF helps achieve the first and third objective. With its development focus, the Bank can continue addressing client unwillingness to borrow for adaptation, a role the private sector will not fill.

9. *Meets MD eligibility criteria.* PCF meets all four Managing Director Eligibility Criteria: it is a multi-country program using highly coordinated approaches to provide global public goods, supports international advocacy for reform, and mobilizes incremental resources for development. It produces global public goods by catalyzing the creation of a market protecting the environmental commons, by mobilizing incremental funds for climate change mitigation, and by supporting knowledge creation and dissemination (see box).

PCF-Delivered Global Public Goods

- Supports reduction in greenhouse gases; mitigation of global climate change
- Mobilizes new resources for developing countries
- Promotes a national public good via host country training and learning-by-doing in carbon market procedures and analysis, including asset creation, valuation, transaction structuring, and market rules and procedures
- Develops institutional capacity in public/private partnering both globally and in host country governments
- Establishes baseline and ER calculation methodologies, certification processes and standards, monitoring and evaluation protocols, accreditation procedures, and CDM Registries
- Develops and refines environmentally friendly energy technologies and applications
- Creation of a learning network among PCF stakeholders to implement political agreements and international obligations

Efficacy: Has PCF Achieved Stated Objectives?

10. PCF was originally envisaged as a portfolio of 12 to 15 large projects. However, it has evolved into a 30-to-35-project-program – with individual projects smaller than originally intended – resulting in some $160 million in Emission Reduction Purchase Agreements. A review shows that unanticipated demand for funding during its early stages of development resulted in a redistribution of investment across a greater number of smaller projects. While a revised portfolio strategy has allowed PCF to diversify learning by country and technology, the resulting smaller-than-average deal size has increased transaction costs. PCF has successfully diversified its regional distribution, moving away from a concentrated deal flow in the Latin America and Caribbean region to portfolio development in East Asia. Yet other regions – notably, sub-Saharan Africa – have largely been bypassed. In addition, a portfolio review reveals an over-exposure to renewables, coupled with inadequate coverage of energy efficiency, based on the Fund's target ratio. Overall, though, due to its ownership by Fund investors as well as the program's need to meet international standards, it has a strong results orientation.

11. Because the Fund is housed in the Bank, developing countries have a strong expectation that it will perform a variety of national public goods functions they would not expect from the private sector – for instance, information and knowledge sharing, training, and institutional capacity building. Thus, although PCF was not designed as a capacity-building program, the Bank's clients expect institutional capacity building to address specific CDM needs, increased private sector awareness, negotiating capacity building, and regional synergy development. PCFplus, a training and research program funded from investment income by Fund participants, was created to supplement PCF capacity-building activities. A new umbrella for capacity building, CF Assist, has been designed to coordinate the capacity-building efforts of individual carbon fund programs. However, developing country demand for training, particularly for training of trainers to improve national uptake of carbon finance

capacity, continues to exceed supply and is limited by the amount of investment income allocated for such activities. This has led to some disconnect between investor and host country expectations. The realization that host countries and local intermediaries will require long-term assistance to tap into the carbon market has also led to a debate within the World Bank Group about which body, the Bank or the IFC, is best suited to assist its clients in a broader market development context.

12. The creation of new funds like CDCF and BioCF provides a vital opportunity for Bank clients to benefit from CDM – for example, through sinks development in agro forestry, reforestation, and watershed management. However, these initiatives have generated some controversy. Civil society is often cautious about programs seen as allowing industrialized countries to shift the burden of reducing emissions to the developing world. Specifically, environmental NGOs have been opposed to the inclusion of land use and forestry projects in the CDM, which are still under discussion. In the case of the BioCarbon Fund, environmental NGOs worry it will promote mono-cropping of tree species, shifting attention away from preserving old-growth forests, with their vital biodiversity. There are also complex issues related to the determination of incrementality and the sustainability of generated benefits, adding to the risks of investments in carbon finance.

13. PCF seems to be well aware of these controversies and risks, and it appears to manage them well. The program has well-established procedures for individual investments for independently verifying and certifying sequestered carbon, although the program as a whole has not yet undergone a complete independent external evaluation. That fact, coupled with limited information on prices and quantities of carbon traded as well as the evolving state of the global carbon market, makes it difficult to measure PCF's overall impact. In itself, PCF is too small to exert a measurable change in atmospheric greenhouse gas concentrations – but it plays an important demonstration role in catalyzing markets for emission reductions. It has reduced barriers to participation and increased transaction efficiencies by standardizing documentation and pioneering the use of intermediaries to cost-effectively bundle smaller transactions. Its development of methodological baselines has translated into a global standard on carbon asset creation, making it one of the few programs to actively influence the evolution of global standards. PCF has benefited Bank clients by mobilizing significant incremental resources. For the past two years, only 13 percent of private carbon purchases have come from developing countries. PCF and ERUPT accounted for 70 percent of these, as well as almost all trade with economies in transition. As the primary means of "crowding in" the private sector to participate in Kyoto, PCF is unique in its efforts to provide independently verifiable evidence of support for sustainable development involving developing countries, particularly outside of Latin America. Its increased subscriptions demonstrate that, if an institution like the Bank is managing investment risks in small projects in developing countries, and if risks are managed well across a portfolio as they appear to be, then the Bank is in a unique position to manage both project and regulatory risks. This is one reason why risk management by the Bank will remain crucial to Fund success.

Risks and Risk Management

14. OED had identified several types of risks associated with global programs:

- *Alignment risks* involve the possibility of a misalignment of Bank-supported global programs with the Bank's strategic priorities. This is not a risk in the case of PCF since the program is producing global public goods, although there are issues of conflicts of interest of host countries and investors that need to be managed.

- *Non-performance risks* relate to the possible failure to achieve program or individual project objectives. PCF manages the political and economic risks of investing in developing countries by diversifying ER purchases across regions and limiting investment in any one country. It seems to well manage project-specific risks by undertaking comprehensive due diligence, baseline preparation, and monitoring. Longer-term risks associated with the ratification of the Kyoto Protocol have been mitigated by Russia's recent recommitment. But even so, the primary purchasers (Japan, Europe, Canada) had committed themselves to meeting targets regardless of final ratification, and PCF participants have committed to purchasing ERs.

- *Risks of unfair advantage* tend to be associated with public-private partnerships. Interviews with host country representatives for this study revealed a sentiment shared by some countries that investor preferences trump development objectives in project selection and price setting. The joint participation of investors and countries with opposing concerns suggests that PCF may have reached a balance, however, while contributing to sustainable development. This is a complex issue, particularly with regard to pricing and quantities, for which information is still limited and difficult to access in the public domain. This issue deserves receive attention in a future evaluation.

- *Fiduciary risks* associated with the management of trust funds. PCF's funds are well managed, independently audited, and reported in their annual reports.

- *Conflict of interest risks*. As it answers to two masters, PCF faces a risk in the form of the diverging interests and expectations of the investors it represents in a fiduciary capacity and the Bank clients it represents in an institutional capacity, which is often most salient in the price PCF pays for ERs. However, developing countries have identified an additional risk, namely, that in-country expertise and expertise from developing countries is being bypassed in the emerging verification and certification business at the global level. While it is necessary for the PCF to follow the standards and screening criteria that are set by the Parties to the UNFCCC and administered by the CDM Executive Board, the Bank's carbon finance business group agrees that current criteria mitigate against host country capacity and are therefore exploring with potential partners how operational entity capacity in developing countries can be developed.

- *Institutional risks.* The establishment of PCF and similarly structured funds runs the risk of being perceived as a proliferation of "mini-banks" housed and managed within the Bank – but whose primary accountability resides *outside* the Bank Group structure. This poses a risk of fundamentally changing the character of the Bank, unless the national public goods aspects of the emerging carbon market and the participation of developing countries in emerging carbon market processes are well handled over time.

Bank Performance

15. At the time of writing, statistics show that carbon market volume is growing steadily. A total of 64 million metric tons of carbon dioxide equivalent (tCO2e) was traded through projects from January to May 2004. Given that total 2003 carbon trading stood at 78 million metric tons, this suggests a doubling of the market by the end of 2004. In fact, the vast majority of carbon market activity has taken place via project-based transactions – mostly within the context of compliance with Kyoto – through bilateral programs, particularly with the Government of the Netherlands (via intermediaries like IFC and IBRD) and through PCF. The Bank has played a catalytic role in developing a market for greenhouse gas emission reductions through PCF. But, as trustee and intermediary, it is exposed to conflicting interests, as noted above. Participants see it as a mechanism for prototype carbon trading and proprietary knowledge generation within a fund they own. Countries see it as a Bank initiative to meet training, capacity building, and market information needs and support high prices and sequestered carbon volumes. While there are many private voluntary transactions, particularly involving Japan, 90 percent of these are confined to industrialized economies. Whether PCF is fully established as a credible, unbiased authority to bridge the buyer-seller gap involving developing countries, particularly the poorest among them, is too early to assess and will require a thorough independent external evaluation in due course.

16. PCF was initially designed to purchase carbon mostly through Bank-funded projects. The Bank's Global Overlays Program was expected to generate the project pipeline along with its National Strategy Studies (NSS) Program – designed to enable developing countries to formulate their own carbon policies and supported by donors in 30 countries – as well as through a review of Bank-IFC project assistance. But the Bank's energy sector lending declined precipitously, from 1990 to 2003, and only one project emerged from the NSS Program. To date, just 20 percent of PCF's portfolio includes underlying Bank or IFC investments. The Government of Netherlands, which also supports a separate carbon facility in the Bank, was responsible for encouraging the IFC to get into the carbon finance business, creating a separate fund in IFC. This has increased competition between the Bank and the IFC in carbon trading while influencing the terms of Bank agreement with the Bank-Netherlands Facility. At the same time, it has made the issue of the appropriate home for carbon finance more complex at the strategic level, calling for increased cooperation between the Bank and the IFC. Interviews with PCF's team reveal a belief that task managers have yet to make effective use of carbon financing to complement traditional Bank resources. Recently, however, the East Asia and Pacific Region (EAP) Vice

Presidency has requested that task managers systematically screen projects for carbon finance opportunity. It is unclear if this request will be replicated in other Bank regions. The lack of Bank engagement is tied to the precipitous decline in energy sector lending, although the PCF is highly regarded for its efforts to pursue renewable energy projects.

17. PCF will end in December 2012. Although participants can unanimously continue Fund business after this, PCF's Board-approved proposal states it does not intend to remain a major player in the carbon market so as not to crowd out the private sector. The Bank is considering the case for long-term engagement in certain segments of the market, as investors are likely to otherwise avoid Bank client countries to reduce cost and risk. The Carbon Finance Unit (now known as the Carbon Finance Business) has undertaken initiatives to build on lessons learned and address market weaknesses. Board-approved programs lack guidance in the absence of an overall Bank Group carbon finance strategy – including delineation of the Bank's role vis-à-vis the IFC, an issue currently under discussion. A Board-approved strategy is a needed precursor to further Bank involvement in this line of business.

18. In May 2004, Russia recommitted itself to Kyoto ratification, a breakthrough that clears the way for the treaty to enter into force. While this is good news in terms of PCF's long-term sustainability, the program's current effectiveness is limited by its size, investment scope, time horizon, and increasingly strained staff capacity. There is a need for the Bank's continued presence in capacity building to help developing countries develop regulatory and negotiating capacity to gain from the carbon finance business.

Lessons

- The Prototype Carbon Fund is an example of how new and emerging market win-win opportunities for developed and developing countries can be exploited through imaginative public and private sector partnerships. If well conceived, such partnerships can mobilize new resources to address global environmental problems through market-based mechanisms, while contributing to the Bank's goal of sustainable development.

- Private investments can help develop incentives for delivering concrete, credible results. Results are enhanced by innovative design, streamlined processes, adherence to international standards of performance, and professional technical staff.

- While important tools for resource mobilization, public-private partnerships pose challenges for managing investor interests and those of developing countries. The Bank is in a unique position to balance these interests, given its development credentials and the public goods function of information, knowledge, and capacity building that developing countries expect from it.

- For public-private partnerships, long-term success and replicability can depend on political circumstances and other factors beyond a program's

control. For PCF, scaling up efforts and achieving a significant impact on climate change hinges on a continued market for project-based ERs through emissions trading regimes in the EU and others open to CDM/JI equivalent assets. Implementation of the Kyoto Protocol would make these results more likely.

- Having demonstrated what can be achieved through PCF, the Bank Group needs to formulate a strategy for carbon finance to reflect lessons and address implications for the Bank, the IFC, and MIGA. Such a strategy can ensure that the predictability, stability, and professional quality of carbon finance activities continue to deliver benefits to investors and developing countries.

1. Introduction and Context: Global Challenges in the Sector

1.1 According to the 2003 World Development Report, global climate change is one of the most serious environmental issues facing the world today. The Intergovernmental Panel on Climate Change (IPCC), whose work serves as the scientific basis for the UNFCCC predicts that average global temperatures will rise in the next 100 years at a higher rate than over the past 10,000 years. Much of this is believed to be caused by human-induced increases in atmospheric greenhouse gas (GHG) concentrations. Although impact may vary across countries, the harmful effects of climate change are expected to fall most heavily on developing countries, reversing development gains achieved and hampering development for generations to come. According to experts, climate change could have a profound environmental and socio-economic impact on these countries, leading to a 5 to 9 percent loss in GDP over the next 10 to 20 years. For example, Africa and Asia are already experiencing droughts with increased frequency and intensity, while other areas face the risk of flooding due to increased rainfall. With millions depending on climate-sensitive agriculture, livestock, forestry and fisheries for their livelihood, the economic effects could be catastrophic. In addition, a climate change-related rise in sea levels could increase flooding: a 40-centimeter rise would increase the worldwide at-risk coastal population from 75 to 206 million, with 90 percent in Africa and Asia.[1]

1.2 Despite the clear global impact, climate change remains a hotly debated political issue, as governments try to allocate responsibility for the costs of mitigation. According to the IPCC, the energy-led development of industrialized countries has been the cause of about 75 percent of cumulative GHG emissions over the past 150 years, resulting in per capita emissions that are five times those in developing countries. While industrialized countries are concerned with the high marginal costs of domestic GHG abatement, developing countries are facing an even greater challenge: protecting the environment while simultaneously pursuing their development agendas.[2]

A Call for Global Collective Action

1.3 The international community has codified its consensus to combat climate change through the UNFCCC, signed in Rio de Janeiro in 1992. Parties to the UNFCCC committed "to achieve stabilization of atmospheric concentrations of greenhouse gases at levels that would prevent dangerous anthropogenic interference with the climate system," in accordance with the principle of "common but differentiated responsibility." The latter recognizes developed countries' historical responsibility for greenhouse gas emissions, developing countries' development priorities and resource constraints, and the disproportionate impact that climate

[1] World Bank 2003.

[2] World Bank 2001, p. 173.

change is expected to exert on the developing world's poor, who are geographically, institutionally, and economically more vulnerable to its effects.

1.4 The UNFCCC's Kyoto Protocol, signed in 1997, establishes short-term targets for emission reductions according to this principle. Specifically, developed countries must reduce greenhouse gas emissions by an average of 5 percent below 1990 levels during the first commitment period (2008-2012); developing countries do not face this target. It also calls for long-term initiatives by industrialized countries to address their own emissions as well as for providing financial and technological resources to developing countries. Recognizing the global environmental benefits of emissions reductions, regardless of location, the Kyoto Protocol allows industrialized countries and firms to offset certain obligations through the purchase of relatively lower-cost emission reductions (ERs) in developing and in-transition countries. As such, those with higher marginal abatement costs can comply with Kyoto without putting their economies at peril. Offsets may be purchased in three ways:

(1) *Joint Implementation* allows an Annex B party (industrialized country) to purchase Emission Reduction Units generated by a project that reduces or sequesters carbon emissions in the territory of another Annex B party;

(2) *Clean Development Mechanism* allows an Annex B party to purchase Certified Emission Reductions generated by a project that reduces or sequesters carbon emissions in the territory of a non-Annex B (developing) country. According to Clean Development Mechanism rules, the project must also carry a sustainable development impact, as defined by the host country;

(3) *Emissions Trading* allows Annex B parties to purchase excess Assigned Amount Units from other Annex B countries that possess surplus emission rights. Certified Emission Reductions and Emission Reduction Units may also be traded.

The Bank's Response: The Prototype Carbon Fund

1.5 The Prototype Carbon Fund (PCF) is a $180 million mutual fund for project-based carbon emission reductions formed by the World Bank in response to the Kyoto Protocol. The Fund, owned by a group of 6 public sector and 17 private sector participants, is housed and managed within the Bank's Carbon Finance Group within the ESSD vice presidency. The Fund is exclusively engaged in the two project-based Kyoto mechanisms, the Clean Development Mechanism (CDM) and Joint Implementation (JI), described above. Specifically, PCF intermediates first-of-a-kind CDM/JI transactions between fund participants and host countries during the markets pilot phase so that parties can gain knowledge, build confidence, reduce risks, and develop capacity to fully participate once Kyoto ratification is complete. While not a formal implementing arm of the Kyoto Protocol, the Prototype Carbon Fund is *de facto* facilitating the implementation of the Protocol by serving as an intermediary for prototype transactions in advance of Kyoto's effectiveness.

2. Program Alignment with Global Challenges and Bank Priorities

Overview of Program's Genesis, Mission, Objectives, and Activities

2.1 PCF was approved by the Bank's Board in July 1999 and formally launched in January 2000. However, as early as 1996, the Bank's Environment Department had proposed establishing a $100 million Carbon Investment Fund to facilitate project-based carbon trading (anticipated under Kyoto). Bank President James Wolfensohn approved the development of a Global Carbon Initiative (GCI) on the recommendation of the New Products Committee in February 1997 and the Bank's Environmental Department received $3.2 million in New Products funding under the Strategic Compact for design and marketing.

Box 1: PCF Activities

- Serving as intermediary in ER transactions to reduce investors' risks and costs and ensure private sector participation in market
- Increasing the base of available knowledge on all aspects of ER transactions by pursuing first-of-a-kind transactions in countries, sectors, and technologies where CDM or JI transactions have yet to occur
- Disseminating knowledge broadly and building capacity in host countries, fund participants and other stakeholders, through the training and research activities of PCFplus
- Sharing key lessons learned in implementing CDM and JI projects with policymakers involved in the evolving Kyoto framework
- Enhancing efficiency by working to streamline business processes, standardize carbon asset creation procedures, and, when possible, use intermediaries to bundle smaller transactions

Source: www.prototypecarbonfund.org

2.2 The Bank received positive feedback from donors and clients throughout the concept phase. Based on this, President Wolfensohn announced the impending launch of a carbon fund in June 1997 at the UN General Assembly Special Session. This announcement was followed by a period of extensive consultations with stakeholders and interested parties, including regional and senior Bank management, prospective fund participants, and Bank clients to work out issues of fund design, governance structure, rights and responsibilities, project identification, and portfolio criteria. Discussions with members of the nongovernmental organization community also added value to the development of PCF, particularly in the form of advice on transparency and public outreach. Finally, to ensure synergy and avoid competition with the Global Environment Facility, the official financing mechanism for the UNFCCC, the Facility's secretariat was represented on PCF's Fund Strategy Committee, which directed PCF's development.

2.3 The gap between conception and launch of this program was most notably due to the fact that official operations were delayed by Board and NGO concerns that the

program's rapid pace should not preempt the anticipated outcomes of the 4th Conference of the Parties to the UNFCCC.

2.4 PCF's mission is to "pioneer the market for project-based greenhouse gas emission reductions within the framework of the Kyoto Protocol and to contribute to sustainable development." Housed and managed in the Bank's Carbon Finance Group in the ESSD vice presidency, PCF seeks to show how project-based greenhouse gas emission reduction transactions can lower the cost of compliance with Kyoto, promote sustainable development, and mobilize new resources for Bank clients.

2.5 The Fund is based on Kyoto's incorporation of market-based mechanisms to reduce carbon emissions. Under the Protocol, industrialized countries and firms can purchase carbon off-sets in the form of lower-cost ERs achieved in developing and in-transition countries. Once properly verified and certified, ERs can be purchased or traded in the form of Emission Reduction Units.

2.6 Under PCF, carbon assets – verified, certified ERs – are produced as part of Fund-selected and -funded projects, using a well-defined baseline scenario to ensure ER additionality. It makes use of two flexible Kyoto mechanisms – the Clean Development Mechanism, used in developing countries, and Joint Implementation, for in-transition economies – to facilitate industrialized-world investment in overseas projects. Projects focus on renewable and alternative energy technologies, including wind, small-hydro, biomass, waste-to-energy conversion, and energy efficiency investments. After certification, ERs are transferred to the Fund, which distributes them to participants according to their pro rated investment and can be used to offset their emission reduction commitments.

2.7 Its development objectives are two-fold: 1) To support all aspects of the development of a market for project-based greenhouse gas emission reductions that will leverage private and public resources towards achieving the global good of climate change mitigation as well as sustainable development in Bank client countries, and 2) to build supply- and demand-side capacity to promote effective participation in the market for project-based greenhouse gas emissions reductions. PCF aims to achieve these objectives through a three-pronged strategy:

- *High-Quality Emission Reductions:* PCF demonstrates how project-based greenhouse ER transactions can promote and contribute to sustainable development and lower the cost of compliance with the Kyoto Protocol.

- *Public-Private Partnerships:* PCF demonstrates how the Bank can work in partnership with both the public and private sectors to mobilize new resources for its borrowing member countries while addressing global environmental problems through market-based mechanisms.

- *Learning by Doing:* PCF provides the Parties to the UNFCCC, the private sector, governments, NGOs, and any other interested parties with an opportunity to learn by doing in the development of policies, rules and business processes for the achievement of ERs under JI and CDM.

Rationale for Bank Involvement in Climate Change Mitigation

2.8 The Bank's activities in carbon finance respond to an international consensus, as embodied by the UNFCCC, that climate change poses a serious environmental and socio-economic threat, particularly to the developing world. During the 1997 UN General Assembly Special Session and the Kyoto negotiations, the Bank acknowledged that mitigating the effects of climate change would be in critical in addressing its core objectives of poverty alleviation and sustainable development. Kyoto signaled global recognition of the need for collaborative, cost-effective mechanisms to reduce greenhouse gas emissions. With a limited timeframe to qualify for Kyoto's first commitment period, the Bank correctly judged its involvement was needed to ensure its clients benefited from the Protocol while demonstrating to industrial countries that the cost of meeting domestic obligations can be reduced by international trading. Several industrial countries provided finance to help developing countries draft national strategies so that PCF project funding could be undertaken.

2.9 Development of CDM and JI projects involves complex methodologies to determine additionality; furthermore, many of these projects involve complicated transaction structures. Developing countries often lack the capacity to facilitate this trade and adequately represent their interests in transactions. At the same time, the private sector faces numerous investment risks in developing countries. Without the Bank's involvement, many of its clients would either be bypassed by this emerging market due to their weak capacity and perceived risks, or would be in a poor position to negotiate with the private sector depriving them of potentially significant incremental revenues. By the same token, without the establishment of internationally acceptable standards, procedures and practices and reduction of risks, industrial countries would not be willing to invest in developing countries.

Alignment With Global Public Goods and Corporate Advocacy Priorities

2.10 *Making Sustainable Commitments: An Environment Strategy for the World Bank* lists as a primary development objective the protection of the quality of the regional and global commons. In addressing issues of the global commons – the strategy recommends the following goals: (i) help countries benefit from global public goods, (ii) help countries address local, national, and regional environmental priorities in a manner that also results in global benefits, (ii) enhance countries' capacity to participate in global environmental conventions, (iv) enhance capacity in countries to reduce vulnerability to natural disasters and impacts of climate change, and (v) help client countries access markets for global public goods.[3]

2.11 PCF addresses the global public good of protecting the environmental commons and of helping to develop an international market by mobilizing funds for climate change mitigation and through its efforts to help devise and implement rules of the game. Without the Bank's involvement, the development of the Clean

[3] Ibid, p. xxxii.

Development Mechanism/Joint Implementation market seems less likely, given the capacity constraints and investment risks.

2.12 *Alignment with sector and Country Assistance Strategies.* A special section on climate change (Annex F), *Making Sustainable Commitments: An Environment Strategy for the World Bank* commits the Bank to mainstreaming greenhouse gas mitigation and vulnerability/adaptation into its country operational work while balancing national development with global environmental priorities. The Bank's strategy concentrates on three key areas: (i) mitigation of greenhouse gas emissions, (ii) reduction of vulnerability and adaptation to climate change, and (iii) capacity building. PCF is a key part of the Bank's strategy to mobilize financing for climate-change mitigation while addressing poverty and development. Additionally, PCF contributes to country-level capacity building through its technical assistance program in PCFplus, and through the knowledge it is creating and disseminating.

2.13 PCF contributes to the Bank's enviro-energy strategy in the short run by mobilizing private sector resources to effect greenhouse gas emission reductions pursuant to the Kyoto market mechanisms. Moreover, the strategy commits the Bank to participate in the development phase of the carbon finance market: the Bank "will act as an intermediary, foster the establishment of a predictable market price for carbon offsets and credits, stimulate market growth through increasing participation and trading, help reduce transaction costs, and encourage competition in the carbon reduction business."[4] PCF hopes to catalyze and lend long-term viability to this market by undertaking transactions in every geographic region, financing a diversity of technologies and building capacity in market participants on both sides of transactions.

2.14 By taking advantage of enviro-economic win-wins created by Kyoto's combination of emission targets and market-based mechanisms, PCF complements Bank activities to integrate environmental considerations into energy lending by channeling funds toward incremental emission reductions that are incremental to those otherwise achieved in underlying projects. At times, PCF's carbon financing has played a crucial role in enabling the underlying project to obtain needed financing. Indeed, of the 26 programs OED is reviewing, it is one of the few programs that brings completely new sources of funding to provide a global public good, and the only one that brings completely new private commercial sources of funding.

Assuming a Larger Role in Carbon Finance

2.15 The Bank is now assuming a larger role in carbon finance. With the near completion of PCF's investment phase, and in response to the need for further stimulus to the CDM market, particularly in some of its less marketable segments, the Bank has developed new carbon-transaction mechanisms. It launched the Netherlands Clean Development Facility (NCDF), a bilateral program with the Dutch government

[4] World Bank 2000, pp. 80-81.

to purchase €140 million in emission reductions from projects in developing countries; a $100 million Community Development Carbon Fund (CDCF) to purchase emission reductions from smaller projects in smaller countries (where high investment risks and transaction costs relative to project scale have hampered investment). In May 2004, the Bank's $30 million BioCarbon Fund (BioCF) became operational; the fund demonstrates credible forestry/agriculture "sink" activities. In addition, IFC has a separate $47 million equivalent of the Bank's €144 Netherlands Clean Development Mechanism with a similar objective of creating cost-effective Emission Reductions for the benefit of the Government of the Netherlands. The Bank-Netherlands and IFC-Netherlands arrangements have made explicit the higher costs of supporting capacity building and negotiating skills in borrowing countries. Subsequently, the Government of Netherlands has also acknowledged the Bank's role in this function by mandating that other intermediaries follow Bank methodologies for baseline assessment; by asking the Bank to purchase for shortfalls across the entire CDM portfolio; and by the Ministry of Economy in Netherlands' entering into an agreement with the Bank and IFC to buy in JI on behalf of Netherlands in transition economies under a joint Bank/IFC/Netherlands/Central Asia agreement currently under negotiation.

2.16 The Government of Netherlands' action to work with the Bank and the IFC in the carbon business has increased competition between the Bank and the IFC, reducing the terms on which Bank-Netherlands Facility was negotiated and resulting in an explicit discussion of the role the Bank can play in the host countries in the carbon market. Yet, in the absence of an overall Board-approved carbon strategy, these individual agreements have increased the number of funds and raised the issue of how the Bank and IFC will cooperate in the future at the strategic level, topics that are under discussion currently. This review focuses solely on PCF and does not evaluate the activities of the IFC-Netherlands Carbon Facility. Nor does it explore subsidiary issues related to the Bank's new funds.

2.17 The creation of new funds like CDCF and BioCF similarly provides a vital opportunity for Bank clients to benefit from CDM – for example, through sinks development in agro forestry, reforestation, and watershed management. At the same time, an issue raised in OED interviews was the perception that PCF and similarly structured programs represent a proliferation of "mini-banks," housed and managed within the Bank. These are funds whose primary accountability resides outside the Bank Group structure, exposing the Bank to additional risks. While the Bank's long-term engagement in certain segments of the carbon market has the potential to deliver increased private capital flow to enhance the Bank's work in rural development and poverty alleviation, an overall board-approved strategy is currently lacking concerning the increased accountability risks associated with the newly created funds and the consequences (for its clients) of the Bank's continued presence and/or exit from the market.

The Bank's Strategy for Future Impact in Carbon Finance

2.18 Stakeholder surveys suggest strong demand and interest in taking part in carbon transactions, validating the need for the Bank's continued participation in

carbon market development. The Bank's Carbon Finance Group has prepared a carbon finance strategy for presentation to the Board of Directors to outline the Bank's medium-term engagement in developing this market. The strategy aims to address market weaknesses identified through the experience of PCF and NCDF in four key areas, as described below.

Support for Carbon Market Development

2.19 As the end of PCF's investment phase approaches, the window of opportunity for undertaking projects prior to the first commitment period is closing fast. With host country requests and apparent private sector interest in continued Bank participation, the Bank is considering the case for long-term engagement in certain segments of the market to help developing countries equip themselves to trade emissions reductions and mitigate their emissions. In addition to the CDCF and BioCF, the Bank is in discussions with other groups of OECD public and private sector investors to undertake on a bilateral and multilateral basis further first-of-a-kind transactions and "benchmark" the creation of quality carbon assets in different technologies and sectors for an aggregate volume that could top $200 million annually. Recent regulatory changes that can assist carbon-market growth include the approval of the EU Emission Trading Scheme (EU-ETS). The implementation of the ETS has begun with the approval of national allocation plans for European emission allowances. The approval of national allocation plans significantly contributes to the development of an appropriate framework for managing and pricing carbon. However, since the current plans appear too generous, there is currently somewhat less than expected purchasing interest from the industry in the market.[5]

2.20 By continuing the experience, the Bank aims to further reduce risks and increase buyer-seller confidence, ultimately leading to increased capacity and direct buyer-seller engagement in the market. PCF's objective remains to enable to private sector to begin originating and structuring its own carbon transactions. As a condition of its ongoing engagement, the Bank is limiting the duration of its services to investors to three years; during this time, each firm must see to it that someone has been trained to take the lead in project development once the Bank's involvement has expired.[6]

Extend Carbon Finance to Least Developed Countries and to Poor Communities in All Developed Countries

2.21 The Bank created the CDCF to ensure Clean Development Mechanism access for its poorest clients. By assisting the private sector with its expertise in investing in developing countries and capitalizing on efficiencies in developing smaller Clean

[5] Lecocq 2004.

[6] Interviews with PCF management. Developing countries have, however, not only stressed the need for much more training but also the need for an improved strategy toward training, away from *ad hoc* training of eligible individuals in a country transaction to a more institutional approach involving training of trainers in government agencies, a strategy that could lead to a broader spill-over effect for training.

Development Mechanism projects, the Bank seeks to overcome the barriers of risk and transaction costs that have stifled growth in this segment. In addition, the achievement of certifiable community-level benefits in each transaction should enhance the Fund's appeal to investors and host countries alike. However, it is highly unlikely that a viable market will exist for CDCF-type projects over the near term.

Demonstrate Carbon Finance for Carbon Sinks for Sustainable Natural Resource Use, Conservation, and Sustainable Livelihoods

2.22 The Bank launched BioCF to capitalize on the opportunities under the Clean Development Mechanism to support poverty alleviation and sustainable development through carbon sequestration projects. As many developing countries lack the energy and transport infrastructure to offer significant carbon investment opportunities, sequestration may be their primary means of leveraging resources, through Clean Development Mechanism, to address poverty. In launching this fund, the Bank also hoped to demonstrate the development significance of sinks and expand the Clean Development Mechanism allocation for sinks, which is currently limited to 1 percent of each party's 1990 emissions. Even so, this fund faces all the challenges involved in developing financially sustainable biodiversity projects under GEF, in addition to challenges related to poverty reduction.

Strengthen Capacity Building for Mitigation and Adaptation

2.23 The Bank is creating a new umbrella for capacity building called CF Assist to fully offshore technical assistance/capacity-building functions from the transaction side of the business. CF Assist is housed in the Bank's Climate Change Unit in ESSD, allowing the Carbon Finance Unit to focus exclusively on transactions and fund management. The Bank will be able to provide transaction-based technical assistance without cannibalizing carbon finance staff time or using grant resources from each carbon fund plus program.

2.24 However, reflecting the ambivalence, the Bank's new carbon strategy is not clear on the issue of scaling up the upstream capacity-building efforts so vital to enabling the least developed countries to participate. There is also no mention of a strategy for building institutional capacity for Clean Development Mechanism/Joint Implementation participation outside the context of transactions.

2.25 The World Bank strategy for carbon finance lays out a clear rationale for the Bank's continued engagement in the carbon market, given the need for its assistance to "crowd in" the private sector. Contrary to the number of funds the Bank is establishing, it has stated that it will not remain a major player in the carbon finance market and will not compete with the private sector, remaining engaged only until the market functions adequately. At the same time, there are no clearly defined mechanisms for ensuring the private sector develops sufficient capacity to manage developing country and CDM/JI-specific risks in middle-income countries. As a consequence, the Bank risks becoming an indispensable partner – rather than a catalyst – for ensuring private sector involvement in the carbon market.

2.26 The Bank clearly appears to intend to grow the business in the near term – and to accommodate projected growth in the carbon business, the Bank will need to add staff to the carbon finance unit. But a potential casualty of the Bank's indecision with regard to carbon finance is the sustainability of the carbon finance unit at current staffing levels. PCF management contends that the Bank can manage two or three new funds. The unit's staff faces capacity constraints at its current level of activity. Given the technical complexity of the business, development and promotion of internal staff are essential to supporting growth. However, PCF staff members argue that the Bank's tentative approach to carbon finance may have been accompanied by policies that prohibit staff promotions within the carbon finance unit, increasing the risk of attrition of highly trained, specialized staff members. As such, the carbon finance group's ability to grow is constrained by the difficulty of recruiting knowledgeable staff from outside the Bank.

3. Outcomes, Impacts, and Sustainability

Program Monitoring

3.1 PCF was originally envisaged as a portfolio of 12 to 15 projects but has evolved into a 30-to-35-project program, with typical project size smaller than originally expected. Three years into its allocation phase, PCF had reviewed over 420 potentially eligible projects, for about $160 million in Emission Reduction Purchase Agreements. Of these, about 52 projects had been presented to the PCF Participants' Committee and received its approval. PCF was actively developing 43 of these projects, with a total proposed emission reduction purchase value of $247 million.[7]

Program Evaluation

3.2 *Evaluations carried out to date.* Given the newness of the fund, it has not yet undergone external or independent monitoring or evaluation of its activities. Its success to date can only be measured through PCF's Annual Report, fund formal reporting to its two primary constituencies – the Bank's Board of Directors and fund participants[8] – and comments received from stakeholders through surveys and interviews.

3.3 PCF Financial Statements for FY00, FY01, FY02, and FY03 have been independently audited by Deloitte and Touche Tohmatsu (international firm) and are available to the general public on the program's web site.[9] Following FY01, PCF's independently audited financial statements can be found attached to their publicly available annual report.

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[7] Prototype Carbon Fund 2003b.

[8] PCF submits its semi-annual report on implementation to the board of directors. It also provides fund participants with an annual report on progress in implementation, as well as an annual business plan and budget. PCF's published annual report is available to the general public.

[9] Financial and project data in this case study are based on PCF's 2003 Annual Report, found on the program's web site at http://www.prototypecarbonfund.org.

3.4 *Findings on program outcomes and impacts.* As a prototype for carbon trading with limited objectives, while slightly falling behind in its business volume goals, PCF appears to be accomplishing the other objectives it has set out for itself. If anything, it may have suffered from its own success, as the program's scale and resources have been inadequate to meet the demand for the Bank's market intermediation and capacity building by potential buyers and sellers of project-based carbon offsets. PCF's experience has also exposed areas requiring additional Bank support if the carbon market is to materialize as hoped. In launching various new carbon funds, the Bank is attempting to meet this demand for increased scale while also capturing some of the lessons of PCF implementation. In the section below, program outcomes and impacts are reviewed in relation to PCF's three main objectives.

Objective 1: High-Quality Emission Reductions

3.5 At the end of fiscal year 2003 (June 30, 2003), PCF had completed the third full year of its investment phase. During this period, fund resources were committed to agreed terms of purchase for emission reductions from projects independently validated as eligible for generating emission reductions under Kyoto. PCF considers its pursuit of high quality in the emission reductions it purchases a crucial element of its investment activity, since the environmental credibility of reductions forms the basis of their acceptance by the UNFCCC's designated approval authority, the Clean Development Mechanism Executive Board. As such, the environmental credibility of project-assisted emission reductions is crucial to the carbon offset market. UNFCCC parties agreed on many of the rules governing Clean Development Mechanism/Joint Implementation in the 2001 Marrakech Accords, allowing the market to become, for all intents and purposes, operational. The Clean Development Mechanism Executive Board is reviewing individually submitted baseline methodologies for determining a project's environmental additionality.[10] Given the uncertainties that still surround the acceptance of emission reductions for individual projects as valid offsets under Kyoto, PCF takes a meticulous approach to the preparation of project baselines and their subsequent independent validation.[11] However, some developing countries, such as Costa Rica, argue that established baseline information that can equally be used to determine additionality already exists, and that developing country experts should not

[10] According to the Marrakech Accords, projects must lead to real, measurable, and long-term benefits related to climate-change mitigation, in the form of emission reductions or carbon removals that are additional to any that would have occurred without the project. The baseline is represented by either historical emissions, based on actual or comparable experience, or the emissions that would occur under a most-likely investment scenario without carbon finance. In the case of the latter, this can be determined based on an analysis of projected costs, investment returns, risks, technological barriers, or the business-as-usual scenario for the proposed investment.

[11] PCF's approach to baseline determination has led to some disagreements with some host countries as well, particularly those with well-established technical capacity of their own. In some instances, countries have objected to PCF's use of U.S.-based consultants for baseline determination instead of using and building local capacity in this important area. PCF's response is that this is a highly technical operation that is vitally important to establishing the credibility and value of the underlying emission reduction asset. The question of who does the work is just as important as the actual baseline work, for the time being.

be bypassed in favor of international consultants. Furthermore, Costa Rica would be an ideal candidate for advanced capacity enhancing efforts – efforts that could concentrate on sharing and developing baseline methodologies more directly linked to implementation. PCF, however, believes that its efforts in the long run will be vindicated by eventual approval by the Clean Development Mechanism Executive Board, resulting in methodologies that can be more easily replicated in future projects. In fact, at the time of writing, the Bank's Carbon Finance Business had submitted 13 methodologies used in 10 demonstration projects, of which 3 have received final Executive Board approval and are being published as "approved methodologies." Only one methodology has not been accepted in the presented form. All the others are on track for approval or at various stages of consideration by the CDM Methodology Panel and Executive Board. The original IFC and bilateral Dutch program (CERUPT) submissions were rejected. Those OED interviewed stressed that the PCF is recognized as the global leader in carbon asset creation.[12]

3.6 PCF investments are made according to project selection and portfolio-allocation criteria developed in close collaboration with fund participants. Individual projects are selected based on compliance with current and future Kyoto rules and regulations; coherence with the host country's development agenda, as articulated by the host country and in the Bank's Country Assistance Strategy; complementarity with the Global Environment Facility;[13] ability to provide local and national environmental benefits; and extent to which they promote PCF's objective of achieving emission reductions that contribute to sustainable development and provide learning-by-doing opportunities. In addition, PCF projects must result in an "equitable distribution of the benefits generated by them" between the participants and host countries.

3.7 To maximize the number of first-of-a-kind transactions and ensure the broad distribution of transaction benefits and experience, PCF's portfolio-allocation criteria seek a balance in the number of projects undertaken in developing countries (Clean Development Mechanism) and economies in transition (Joint Implementation), as well as a limit of 25 percent of fund assets invested in any particular technology. The portfolio is also diversified by project (no more than 10 percent of assets in any one project) and by country (no more than 20 percent in any one country) for purposes of risk management as well as for experience sharing. As technology transfer is a key component of PCF activities, the fund emphasizes renewable energy projects,[14] but it

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[12] CERUPT has since revised its overall approach to CDM methodology and submitted successful candidates.

[13] While PCF and Global Environmental Facility may fund similar projects and technologies for climate-change mitigation, the two represent very different financial approaches. Whereas PCF mobilizes public and private capital to fund emission-reduction projects, yielding carbon offsets for buyers and resource rents for sellers, GEF funding is provided as concessional grants to cover the incremental costs of climate-change projects that would otherwise be economically unfeasible. Furthermore, GEF is largely focused on longer-term strategic approaches to climate-change mitigation, including the removal of barriers for new, unproven technologies. PCF will only fund cost-effective, verifiable, and certifiable emission-reduction projects that will yield Kyoto-compliant emission credits.

[14] Fund management and participants subsequently quantified this guideline to a 3:2 ratio between renewable-energy, and energy-efficiency projects. (Prototype Carbon Fund 2002a, p. 23.)

also allocates up to 10 percent of the portfolio for land-use/land-use change/forestry sector projects.

3.8 PCF's pipeline reflects a well-diversified portfolio across a number of renewable energy technologies, but with room for growth in both energy efficiency and land-use/land-use change/forestry sector. In terms of regional distribution, project pipeline development moved most rapidly in Latin America at the start of implementation, but is starting to show greater balance, with outreach and consultation with countries in South and East Asia beginning to show results in late 2002, especially in India, Indonesia, and Vietnam.[15] However, PCF is still lagging behind its goal for Joint Implementation investment in Eastern Europe and may not reach its target by the close of the investment phase. PCF is facing institutional constraints in that region, as many countries have forestalled participation in Joint Implementation and embarking on the institutional measures necessary to do so. This is due to the remaining regulatory uncertainties for Joint Implementation under the forthcoming European Emissions Trading System and the potential greater profitability – lower cost – of generating carbon cash-flow through the sale of excess emission allowances, or "hot air."[16] The economic decline suffered by most countries in the region in the 1990s led to current emission levels that are below Kyoto targets, leaving these countries with excess emission rights to sell. As such, a number of countries prefer to seek the highest price for their emission allowances and intend to wait until the market yields a more precise price signal before committing to Joint Implementation project development.

3.9 A review of the Fund's implementation experience reveals that strong demand for funding during the early stages of the Fund's development resulted in a revised portfolio strategy – a move that redistributed investment across a greater number of smaller funded projects. While the revised strategy has enabled PCF to further diversify its learning experience by country and by technology, the smaller-than-average deal size has resulted in an unforeseen increase in fixed transaction costs. At the Fund's first Participants' Meeting in April 2000, Participants agreed on a portfolio development strategy which aimed at achieving a 3:2 ratio between renewable energy and energy efficiency and a 3:2 ratio between CDM and JI. To date, the project portfolio has reflected an over-exposure to renewables, and an inadequate coverage of energy efficiency, based on this target ratio. Program staff have indicated that PCF should be able to achieve its goal of a 30 percent portfolio share for projects involving energy efficiency if the projects currently under development – including geothermal and bagasse cogeneration efforts involving efficiency upgrades – do, in fact, result in signed ERPAs.

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[15] Prototype Carbon Fund 2003b.

[16] JI credits can be earned only beginning in 2008. Separately, the linking of the JI (and CDM) system with the European Emission Trading System (ETS) is still under development. The ETS itself is not final yet and faces remaining regulatory uncertainty. Major emission sources in EU accession countries are also covered by the ETS.

3.10 At its onset, the Fund's Project Portfolio was in danger of experiencing an over-concentration of projects in the LAC region because governments in the EAP region (India, China, Philippines) were critical of the CDM during the ongoing negotiation phase. Meanwhile, investors insisted that a meaningful PCF exercise must include China. PCF developed an implementation strategy towards portfolio development for China, earmarking up to $10 million in resources for its participation.[17] In 2003, PCF filled the East Asia gap in its portfolio with the inclusion of Indonesia, the Philippines, and Vietnam, as well as a watershed agreement with China. East Asia now accounts for a third of the total $247 million of potential emission reduction purchases from projects under preparation in the PCF portfolio. However, other regions, most notably Sub-Saharan Africa, are largely being bypassed. Nor have Joint Implementation projects in the Eastern European region developed as quickly as anticipated, particularly in key countries such as Russia and the Ukraine, due to past uncertainty related to the European emissions trading proposal and other issues, including the absence of strategies and policies and political commitment. Overall, though, due to its ownership by Fund investors as well as the program's need to meet international standards, it has a strong results orientation.

3.11 The issue of price continues to be controversial. Host countries have consistently regarded PCF transaction prices as too low. Indeed, with a range of $3 to $4.20 per ton, PCF transactions are priced below those of the other major Clean Development Mechanism/Joint Implementation carbon buyer, the Dutch Government's ERUPT/CERUPT program, which pays $4.20 to $5 per ton. Moreover, prices have remained well below PCF participants' stated willingness to pay (up to $5.60 per ton inclusive of all PCF-related costs). But prices are difficult to evaluate given both the project and country related risks and the values ascribed to them over time that enter into pricing, such as administration costs over the life of the Fund, costs of dropped projects, allowance for under delivery of carbon across the portfolio, through failed or poor project performance, and dropped projects early in preparation. As an intermediary for these transactions, the Bank faces a difficult challenge in mediating the divergent interests of the buyer, whom it represents in a fiduciary capacity, and the seller, whom it represents as a development partner. The Bank's position is made all the more difficult by limited data on prices, supply, and demand in this embryonic market, making it hard to determine the true market price of carbon emission reductions.

3.12 While host countries cite the high abatement costs that buyers would otherwise face as justification for a higher price, fund participants see numerous low-cost sources of emission reductions available in Clean Development Mechanism/Joint Implementation countries. In this early phase of the market – when competition in

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[17] Until 2003, China had been conspicuously absent from PCF's pipeline; meanwhile, India has just two (albeit large) projects in the PCF pipeline. Both countries have been hesitant to host projects in the early phase of the Clean Development Mechanism, based on concerns over current low prices in the market. Also, as both countries are relatively coal-dependent, the exclusion of clean-coal projects from PCF's portfolio has limited investment opportunities in each. Given their size, anticipated economic growth, and current environmental significance as large-scale carbon emitters, the participation of China and India is essential if the Clean Development Mechanism is to have a long-run global impact on climate change.

Clean Development Mechanism/Joint Implementation transactions is still limited and host countries are still developing the capacity to adequately represent themselves – buyers have relatively more power over pricing. In addition, transaction prices are highly conditional on such factors as project risks, project sponsor creditworthiness, structure of the purchase contract, and upfront transaction costs, factors that are all recaptured in negotiated prices. However, several projects to date have also yielded a price premium for certifiable "non-carbon" sustainable development attributes. An example of such a structure is the Colombia Jepirachi project.[18]

3.13 As PCF strives to be an honest broker, it differentiates itself from other Clean Development Mechanism/Joint Implementation buyers, including ERUPT/CERUPT, in several ways. While representing its investors in transaction negotiations, PCF provides as much information as possible to host countries through market research that it makes public and through transaction-based technical assistance. In addition, to effect a more equitable sharing of benefits from carbon transactions, which, according to management, includes factors beyond price, it works to "claw back" contract terms to the benefit of host countries. For example, PCF contracts do not contain the standard penalties for under delivery of emission reductions. PCF also contracts to pay for projects' emission reductions regardless of whether or not they will be registered as CDM or JI projects and can be used for compliance with mitigation targets under the rules of the Kyoto Protocol. In partial mitigation of the low prices paid during this early phase of the market, PCF only purchases a portion of a project's emission reductions, leaving host countries with residual emission reductions that they can later sell after prices have increased. This "equitable sharing of benefits" also includes the sustainable development impact that PCF seeks to achieve in each project.

3.14 Even so, host countries think investor preferences have apparently dictated project selection. Several host countries indicated in interviews that the projects PCF chose for development in their countries were not their first choices, nor were they the most sensible, given countries' development priorities. PCF responds by indicating that all project proposals go through a thorough screening by a committee and only those with the highest probability of successful outcomes are selected for preparation. When an external evaluation occurs, it should assess this issue further.

Objective 2: Knowledge Generation and Dissemination

3.15 A central component to PCF's strategy for catalyzing the carbon market is generating knowledge through the experience of "first of a kind" transactions. Many of those interviewed both inside and outside the Bank agreed that PCF's experience has been instrumental in providing the information needed to help sustain the market through its early phase. With this information, PCF has been able to influence evolving Clean Development Mechanism/Joint Implementation rules and modalities through dynamic interaction with the Clean Development Mechanism Executive Board and bring efficiencies to the market through the development of standardized

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[18] Lecocq and Capoor 2002.

transaction documentation and streamlined investment processes. In addition, PCF uses its web site to disseminate the program's market research as well as lessons learned from transactions, information on specific transactions, and training materials.

3.16 As far as specific transactions are concerned, PCF discovered early on that most Clean Development Mechanism/Joint Implementation countries lacked institutional arrangements for authorizing transactions, and administrative procedures and technical skills for clearing potential projects and negotiating transactions. Thus, PCF began to provide upstream technical assistance, including pre-negotiation workshops and consultations with legal counsel and brokers on carbon finance transactions. However, PCF's ability to provide such services at the level requested by clients has been constrained by its own limitations in human and financial resources, as PCF staff must increasingly divide time between transaction work and technical assistance.

3.17 PCFplus was created to supplement PCF knowledge and capacity-building activities, primarily by offering training seminars aimed at carbon-asset creation. It also provides intensive, individualized training for stakeholder representatives working at PCF headquarters as PCF Fellows. In partnership with DEC, it also carried out research on the carbon market and the technical aspects of project development. In fiscal year 2003, PCFplus sponsored training events, in partnership with the World Bank Institute, totaling more than 2,400 training days, for over 700 people from some 30 countries.[19] However, according to host country representatives interviewed, the training efforts to date have been inadequate to satisfy the growing demand, particularly among developing countries, for assistance in preparing competitive project proposals. Seminars are usually regional in scope and focus on the preparation of specific projects in the countries represented. However, they tend to be short (4 to 5 days) and available to only a small number of representatives from each country. Many of those surveyed indicated that the seminars lacked the depth needed to enable training participants to successfully navigate the complexities of preparing winning projects and that no opportunities have been provided for follow-up or individual, country-based training.

3.18 Several developing country representatives indicated that PCF's capacity-building program presents a Catch 22 scenario. The regional seminars are insufficient to enable them to develop a marketable project – but the only way to gain full access to PCF's transaction-based assistance is to have submitted a proposal that PCF is actively pursuing. As such, country representatives have suggested that PCF begin a training-of-trainers program so that they can deliver country-based training with the level of frequency and depth needed to build the required institutional capacity.

3.19 While the PCF Fellowship program facilitates more in-depth training for those who participate,[20] several PCF host countries have expressed concern that the expertise remains concentrated in one individual; as a result, acquired knowledge can

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[19] Prototype Carbon Fund 2003a, p. 3.

[20] At the time of writing, there had been 21 PCF Fellows, including 12 from host countries, NGOs, and other partner institutions, and 9 from PCF participants.

take a long time to institutionalize. Others have mentioned that the program gives little "bang for the buck," given that the resources are expended on training a single person. Moreover, it requires a certain level of institutional capacity for a developing country to let a key person – in many cases, the lead interface with the UNFCCC for the country's climate-change effort – leave his or her post and work in Washington for up to three months.

3.20 PCF management and the Bank's Carbon Finance Unit appear to be aware of the need for improved capacity-building activities. But, in addition to human and financial resource constraints, a particular challenge for the PCFplus/World Bank Institute training program has been the volatile regulatory environment in which carbon finance currently operates. It has been difficult to structure in-depth seminars that give adequate weight to all carbon finance complexities when rules and information might change. In PCF's view, the Fellowship program is of substantially greater value in building capacity, since it offers participant dynamic interaction with the carbon business. At the same time, the Bank is working to bring improvements to the training seminars as well: the World Bank Institute has prepared a strategy for carbon finance training and PCFplus has undertaken a training-of-trainers program in Colombia as well as a country-level program in Uganda aimed at building institutional capacity for Clean Development Mechanism participation.[21]

3.21 The Bank is attempting to capture some of these lessons with the creation of CF Assist, its new umbrella program for capacity building. The purpose of CF Assist is to "offshore" capacity building from the transaction side of the business, enabling the Bank to dedicate staff to each. CF Assist's activities will be funded by a donor trust fund as well as by investment income from carbon investors that is channeled through each carbon fund's "plus" program (PCFplus, CDCFplus, etc.). By coordinating the activities of each "plus" program and scaling up the Bank's carbon finance capacity-building operation, CF Assist will be able to help clients assess their vulnerability to climate change, take necessary measures to adapt to its adverse effects, and achieve maximum benefit from opportunities afforded by Clean Development Mechanism and Joint Implementation. The latter will include assistance with project identification and development of institutional capacity.

Objective 3: Public-Private Partnership to Mobilize Resources for Sustainable Development While Addressing Global Environmental Problems

3.22 PCF is an innovative partnership between the Bank and the public and private sectors. Although the resources mobilized through PCF are small in comparison to the global public good of climate-change mitigation, it is an important demonstration of the kind of strategic collaboration that is needed to effectively address the issue. In this sense, the claim of PCF plus unit, namely that PCF is to Kyoto implementation what Kyoto is to global climate policy may be warranted. If carefully monitored and independently evaluated routinely, it may help to determine what works and what needs adjustment. Its true value added is in the knowledge it is beginning to provide,

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[21] Interview with PCF management.

albeit not on the scale either demanded or needed.[22] PCF's success in achieving this objective could perhaps be measured by the requests by other OECD public and private sector entities for Bank assistance and partnership as they enter the Clean Development Mechanism/Joint Implementation market, as discussed later.

Sustainability of Program Impact

3.23 It is too early to determine PCF's overall impact on the project-based carbon market. PCF is too young to have exerted a measurable impact, nor can it be said that a formal carbon market exists. Rather, the market consists of a loose collection of diverse transactions through which quantities of greenhouse gas emission reductions are exchanged and is characterized by limited information, particularly on prices.[23] Clean Development Mechanism/Joint Implementation market development has been constrained by a number of risks and uncertainties. But PCF has made important contributions to reducing barriers to participation, created transaction efficiencies, and provided information to the market in its formative phase. It has also been instrumental in channeling private sector investment to the fledgling Clean Development Mechanism/Joint Implementation market.

3.24 PCF's transaction experience has allowed it to contribute to the evolving rules and modalities governing Clean Development Mechanism/Joint Implementation transactions. PCF advised Clean Development Mechanism Executive Board and its expert panel on opportunities to streamline procedures for smaller projects that might otherwise be excluded from carbon finance due to high transaction costs. At the time of writing, it had submitted 13 methodologies in 10 projects for determining environmental additionality in carbon finance projects to the Clean Development Mechanism Executive Board. Carbon Finance Business staff have served as desk reviewers and as resource persons for the UNFCCC Secretariat, the CDM Executive Board and Methodology Panel and the Convention Parties. PCF is also bringing efficiencies to transaction preparation by developing standardized carbon finance documentation and contracts. It has also pioneered the use of intermediaries to carry out cost-effective bundling of smaller transactions.

3.25 PCF has played a key role in keeping the Clean Development Mechanism/Joint Implementation market alive despite numerous uncertainties, which have slowed the development of this emerging market. In May 2004, Russia's recommitted itself to Kyoto ratification, clearing the way for the treaty to enter into force.[24] Although this decision helped put to rest widespread uncertainty vis-à-vis Kyoto's eventual enactment, there are other factors with the potential to wield a major impact on global carbon market development, both now and after the targets have become effective. On the demand side, the expected future global demand for carbon

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[22] Lecocq 2002.

[23] Lecocq and Capoor 2002.

[24] To take effect, Kyoto must be ratified by countries producing at least 55 percent of the world's greenhouse gases. The United States backed out of the treaty in 2001, leaving Russia, with its 17 percent share, as the only country left that could put it over the top.

offsets was significantly reduced when the U.S. withdrew from Kyoto. On the supply side, Russia and Eastern European economies in transition have large volumes of excess emission rights allowances to sell.[25] It is possible that the demand for emission credits by Kyoto parties may be fully met by available Russian and Eastern European hot air allowances, but this is likely to be politically unacceptable. These uncertainties – along with a lack of information for efficiently setting prices in the carbon market and scant data on the marginal abatement costs facing Annex B countries – have led many potential carbon buyers and sellers, particularly in Eastern European economies in transition, to adopt a wait-and-see posture vis-à-vis carbon trading.

3.26 The European Emissions Trading System, scheduled to commence operations in 2005, could benefit the market by providing it with a valuable signal of marginal mitigation costs and pressures that Annex B countries will face to purchase carbon offsets elsewhere. However, this system is also contributing to uncertainty, as the European Commission is currently discussing rules that would disallow trading of credits for Clean Development Mechanism/Joint Implementation projects until 2008, place a cap on the amount of credits allowed, and perhaps exclude carbon sinks as eligible projects for tradable credits.[26]

3.27 Clean Development Mechanism/Joint Implementation market development also faces barriers related to the inherent difficulties and risks that exist at the project level. As previously noted, the technical complexity of establishing additionality under the evolving Kyoto modalities has led to a lengthy and expensive project cycle. High transaction costs relative to revenues can inhibit potential carbon sellers, while the difficulties and risks of these transactions may drive potential buyers to look to the less complex option of over-the-counter emissions trading. In addition, as with any type of foreign direct investment, potential buyers of project-based offsets may be dissuaded by the perceived risks in undertaking transactions in developing countries. At the same time, market development has stalled, as Clean Development Mechanism host country administrations still face capacity constraints in developing and negotiating carbon deals.

3.28 The market for project-based carbon offsets has shown resilience in spite of these obstacles. Demand for offsets is increasing as more buyers enter the market, particularly in Europe and Japan, in anticipation of having to meet Kyoto obligations. The market is expected to grow. Canada, Japan, and the EU have each committed to meeting their Kyoto targets regardless of treaty ratification. In many of these places, and even in some U.S. states, governments are starting to regulate emissions and establish targets. Finally, in recognition of the importance of emission reductions in efforts to mitigate climate change, many firms have undertaken "greening" initiatives to demonstrate responsible behavior to their stakeholders.

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[25] Due to Russia's post-communist economic downturn, its emissions are significantly below 1990 levels. Canada, Japan, and the European Union have expressed interest in buying its excess quota.

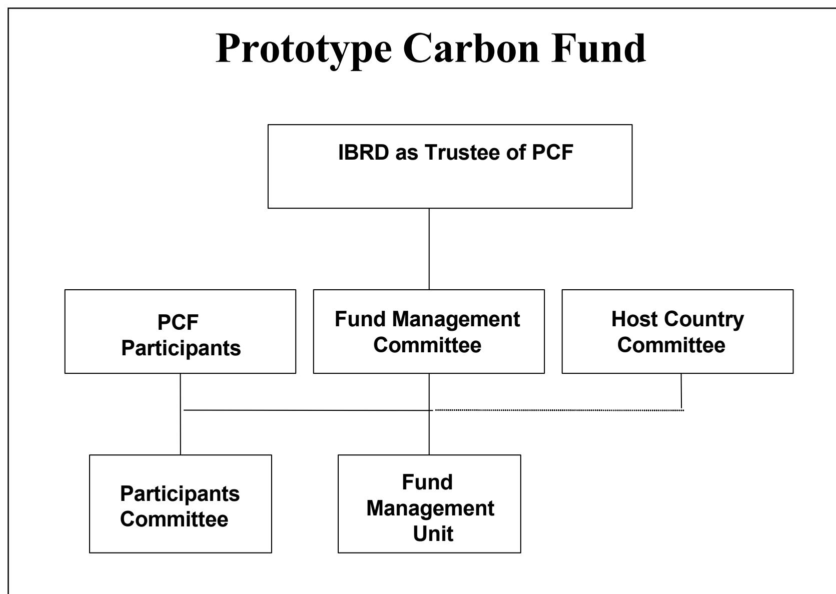
[26] "Draft EU projects directive proposes cap on credits," Environmental Finance Online News, June 13, 2003, http://www.environmental-finance.com/onlinews/13juncdm.htm.

3.29 Still, PCF remains crucial to Clean Development Mechanism/Joint Implementation market development. Based on volume of carbon traded, the carbon market grew significantly in 2002, with about 85 percent of the volume in project-based transactions. The market's growth has continued: 78 million metric tons of carbon dioxide equivalent was exchanged in 2003, while 64 million tons were exchanged from January to May 2004, suggesting a possible doubling of the market by the end of 2004. Asia is now the largest supplier of emission reductions, followed by Latin America, developed economies, and Eastern Europe. Five countries – India, Brazil, Chile, Indonesia, and Romania – now represent two-thirds of the supply in terms of volume.[27] Clean Development Mechanism and Joint Implementation together comprised less than half of project-based carbon finance, and PCF remains dominant in both. The bulk of Joint Implementation transactions from 2001 through the first half of 2002 were undertaken by PCF and ERUPT.

3.30 The private sector has been particularly reticent about investing in developing country projects, the majority of which go to public-private partnerships such as PCF. In fact, for the same time period, PCF accounted for over 70 percent of Clean Development Mechanism transactions. Smaller developing countries in Africa and elsewhere have been largely bypassed due to perceived risks, transaction lead times, and costs, as well as an overall slowdown in foreign direct investment.[28]

4. Organization, Management, and Financing

Organization and Administration of the Program



Source: Prototype Carbon Fund Annual Report 2002.

[27] Lecocq and Capoor 2004.

[28] Lecocq and Capoor 2003.

4.1 PCF is formally accountable to two constituencies. It is authorized by the Bank's Board of Directors and reports to the ESSD vice presidency. But its true accountability is to the participants that own the fund, pay staff salaries, and maintain ultimate responsibility over its budget and project selection.

4.2 Administered by the Bank, which serves as trustee, PCF operations are conducted by the Fund Management Group within the Bank's Carbon Finance Group (ENVCF) in ESSD. The Senior Manager for ENVCF serves as fund manager as well as chairman of the Fund Management Committee, a body comprised of four other IBRD and IFC energy sector managers that screens projects prior to their submission for approval by participants.[29] Yet, apart from regular reports to the Board of Directors, there is little operational oversight of PCF within the Bank. PCF's activities have yet to be mainstreamed with the Bank's normal country assistance operations.

4.3 *Program governance.* Fund operations are conducted in close consultation with a Participants' Committee, elected to advise the Bank on PCF operation and approve project selection. As investors in the fund, participants closely monitor PCF's performance in meeting business targets and securing high-quality emission reductions for a low price. The committee is made up of seven annually elected members, three representatives from public sector participants in the program and four from the private sector, alternating annually. Voting is carried out on a majority basis.

4.4 PCF participants provide general guidance on policy and strategic matters and approve PCF's annual budget, which is funded entirely by fund participants, and propose amendments to the fund's project selection and portfolio criteria. At their annual meeting, participants may also vote to pay the Bank a performance-linked payment of up to $100,000, based on the Fund Management Unit's management of the fund and its effectiveness in creating carbon assets. Each participant is entitled to one vote per dollar contributed to the fund up to the value of the original contribution.[30] Staff costs and expenses are recovered in full by the Bank from the Fund.

4.5 *Role of host country representatives*. PCF operations include the participation of a Host Country Committee, which consists of all countries hosting current or potential projects under PCF or the new funds created by ENVCF, including NCDF

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[29] In addition to overseeing operations of the fund, PCF's Fund Management Committee (i) approves project proposals prior to their review by the Participants' Committee, (ii) reviews and decides whether or not to pursue a project after receiving approval from the Participants' Committee, (iii) reviews and approves project agreements after their negotiation by the Bank (as trustee) with the host country and project entity, (iv) approves annual business plans and budgets prior to their submission to the participants at the annual meeting, and (v) approves fund expenses that exceed the annual budget by more than 10 percent, if deemed necessary for the fund's operations.

[30] As such, each public sector participant has twice the voting weight of each private sector participant, although the private sector has more total voting weight. The participants agreed that voting weights would not be changed to reflect incremental contributions when the fund was increased to $180 million.

and CDCF. The committee provides general advice to the Bank on Fund development and implementation. However, it does not advise on individual projects, as individual host countries are responsible for approving PCF projects.[31] With activities coordinated by an elected chairman, Host Country Committee members are represented at Participants' Committee meetings by one elected observer and by three elected observers at participants' meetings.

4.6 A number of host country representatives interviewed for this study voiced the view that host countries are underrepresented in PCF's governance, as PCF fund management's primary responsibility is to its investors. However, with over 50 members, the Host Country Committee has faced collective action problems particular compared to the smaller, more efficient Fund Management Committee and Participants' Committee. Several host country representatives interviewed for this study expressed the sentiment that the size of the Committee was less of an obstacle than ineffective communication via previous Host Country Committee leadership, which had not kept host countries adequately informed on fund developments.

4.7 Meanwhile, an interview with the Host Country Committee Chairman revealed that overall host country participation in PCF's Host Country Committee has been lacking. While this is partly due to the fact that many host country representatives are burdened with domestic climate-change responsibilities, it also seems to demonstrate a reluctance to actively promote host country interests through this body.

4.8 The PCF has taken note of the need for greater host country involvement in program development and governance. The Host Country Committee chairman has been allocated an increased budget under PCFplus to facilitate the work of the steering committee. The Bank's carbon finance business is also seeking greater HCC participation in the design of its new carbon funds as well as its proposed umbrella program for capacity building, CF Assist. In addition, a 12-member steering committee with regional representation was recently created to streamline host country participation in PCF governance and to advise the Fund Management Unit and the Participants' Committee.

4.9 Until fiscal year 2002, there was a Technical Advisory Group through which nongovernmental organizations provided input, but it was discontinued due to its reported outmoded usefulness. Feedback from these organizations is now sought on the PCF web site via comments solicited for pending projects – an information-gathering arrangement that is more passive than proactive. Opposition from some quarters of the NGO community remains strong on grounds carbon trading gets OECD countries off the hook on emission reductions at home and may harm the

[31] UNFCCC rules require host country endorsement and approval for each project undertaken to generate carbon credits. In the case of CDM projects, the country must also certify that the project satisfies the requirement of providing a sustainable development benefit. As emission reductions are sovereign assets, they require government approval for transfer, even when created within the host country's private sector.

environment in the host countries by, among other things, the mono-cropping of forest species, with its adverse impacts on biodiversity and soils.

4.10 *Institutional development impact.* PCF began operations without a formal program for capacity building, research, and outreach. Its model for knowledge generation was predicated upon learning by doing. But it soon became apparent that developing countries needed additional support in developing potential projects and in representing themselves once they had entered transaction negotiations. Using investment income from the prepaid contributions of four PCF participants,[32] PCFplus was created in November 2000.

4.11 PCFplus supplements PCF's work by providing developing countries with transaction-based technical assistance and training in emission reduction project development. It is also responsible for disseminating information and lessons learned through PCF's experience and for conducting research on carbon market trends, regulations, and technical aspects of project preparation. PCFplus offers fellowships, in which stakeholder representatives work in PCF's offices to gain first-hand experience with the evolving carbon finance business. Given the program's modest scale, PCF-generated knowledge has been more important than the amount of resources transferred under the program, with PCF pursuing first-time carbon emission transactions across a variety of climate-friendly technologies[33] in each geographic region served by the Bank.

Financing of the Program

4.12 *Investment in the Fund.* PCF has been very well received by public and private sector investors. Although it was originally envisaged to be a $100-110 million fund, PCF was launched in January 2000 and it closed in April 2000 with $135 million in subscriptions by 6 public and 15 private sector entities. In May of the same year, based on perceived demand, the Bank's board raised PCF's cap to $180 million, and two more private sector entities joined, increasing the fund size to $145 million. In June 2002, several PCF participants increased their contributions to bring the fund to its fully subscribed level.[34]

4.13 PCF prepares and submits an annual business plan and budget at the annual participants' meeting. PCF's expenses are entirely funded by participants' annual contributions to the fund and investment income earned on these contributions. Each

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[32] Governments of Canada, Sweden and Finland, and Deutsche Bank.

[33] These have included hydro, wind, biomass, geothermal, waste management, energy efficiency, and land use/forestry.

[34] PCF subscriptions were initially priced at $10 million for public sector participants and $5 million for private sector participants. However, the final round of contributions up to $180 million did not occur and begin generating emission-reduction credits. For FY03, PCF expects to disburse $983,000 under ERPAs, versus a budgeted $2,583,000. This variance is attributable to longer-than-expected project lead times that are the result of complex baseline methodology and monitoring protocols for the assets being created.

year, the participants are assessed an annual contribution amount based on their individual pro rata interests in the fund to cover forecasted expenses.

4.14 *Disbursements and expenses.* As depicted in the following table, the majority of PCF's expenses are for project preparation, including baseline preparation and validation and *ERPA documentation and negotiation*. Disbursements under ERPAs will constitute a growing proportion of project-related expenses going forward as projects are implemented.

Table 1. PCF Annual Expenses ($000s)

	FY01	***FY02***	***FY03***	***FY04 budget***
Project-related expenses	967	2,978	2,429	6,597
Administrative expenses	1,291	1,661	1,664 (estimate)	1,874
Performance-linked expenses	90	90	100	n/a

Sources: Prototype Carbon Fund Annual Report 2002, Annual Report to the Participants on Fund Implementation, Fiscal Year 2003, and other PCF documentation.

4.15 PCF's main administrative expenses are staff salaries, overhead expenses, and contracted services, such as non-project legal expenses and development of risk assessment and portfolio management tools. PCF anticipates realizing administrative efficiencies in the future as projects mature, staff continue to climb the learning curve, and the fund capitalizes on the benefits of knowledge gained in carbon document creation and regulatory interaction. Also, the creation of new funds brings economies of scale, as office space and staff can be shared and associated costs allocated accordingly.

4.16 *PCFplus funding and expenditures.* PCFplus is funded by the investment income generated by the pre-paid PCF contributions of four fund participants: Deutsche Bank and the governments of Canada, Sweden, and Finland. Its annual budget of approximately $1.5 million was allocated as follows in FY03:

Table 2. FY03 Expenditure Allocation

Activity	***Amount***
Outreach and capacity building	$550,000
Research	$400,000
Training	$560,000
Total	$1,510,000

4.17 Expenditures on outreach and capacity building cover the costs of the PCF Fellowship program, Host Country Committee and Host Country Steering Committee meetings and consultations between PCF management and the Host Country Committee Chairman, country-specific capacity building such as the current initiative in Uganda, and other related expenses for consultations, materials, Bank staff time, and travel. FY03 budgeted research expenses cover several new and continuing studies and projects on baseline standardization, methodologies, and market research. Meanwhile, whereas the French have traditionally paid the salary of the head of PCFplus's research activities, the PCFplus unit must now pay 2/3 the salary requirements of the Development

Economics & Chief Economist Department (DEC) researcher (DEC pays the remainder).

4.18 PCFplus-budgeted training expenses cover a series of regional carbon finance training workshops, a distance learning course in Africa, development of new training modules to incorporate PCF's experience to date, and Bank staff time for such activities. In addition, PCFplus pays the salary of the World Bank Institute's senior climate change training specialist, from Canada's PCF Holding Trust Fund income, and the salary of a new World Bank Institute junior climate change training specialist. Relevant overhead costs for these two WBI staff are paid by WBI.[35]

5. Risks and Risk Management

Immediate Risks

5.1 *Host country risks*. PCF manages the political and economic risks of investing in developing countries by diversifying ER purchases across different regions and limiting the amount invested in any one country.

5.2 *Project underperformance risks*. PCF faces project-specific risks of technical or financial underperformance, resulting in the under-delivery of emission reductions. To manage project-related risks of underperformance, PCF undertakes comprehensive project due diligence, baseline preparation, and monitoring and verification as the project is implemented. Additionally, each Emission Reduction Purchase Agreement includes a set of milestones, including at least one that occurs before the end of PCF's investment phase (June 2004), so that if PCF recognizes that the projects are not delivering in accordance with the milestones, it could give notice to the project entity and (if the default is not remedied) reallocate PCF funds elsewhere.

5.3 A range of other risk mitigation tools are used, including putting projects through regional review directed by regional task teams (consistency with CAS; economic analysis; financial due diligence; integrated safeguards data sheet) culminating in Country Director signoff on PAD. This is an important tool to ensure that client country development objectives are met.[36]

Longer-Term Risks

5.4 *Kyoto-related risks*. PCF operates in a policy vacuum, as Kyoto is not yet ratified and its rules are still evolving.[37] However, the primary purchasers of ERs

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[35] Prototype Carbon Fund 2002b.

[36] Other tools employed for risk management within the transaction structure (in addition to due diligence) include over-collateralization and risk sharing. Across transactions, options contracts are used to ensure availability of low-cost ERs to replace those from projects that under-deliver.

[37] Russia's May 2004 recommitment to ratifying Kyoto has substantially reduced a previous risk that the treaty could fail to win enactment in its current form.

(Japan, the EU, and Canada) have committed to meeting targets regardless of final ratification. Also, PCF has been conservative in ensuring the credibility of ERs pursuant to Kyoto's evolving framework. PCF participants have committed to purchase the ERs regardless of their final acceptance under the Kyoto Framework. Moreover, Russia's recent recommitment to Kyoto ratification has substantially increased the odds that the treaty will enter into force. The fact that Kyoto ratification seems to be finally at hand greatly reduces implementation risks and increases credibility for PCF.

5.5 *Conflicting interests and expectations*. PCF faces conflict in the form of the diverging interests and expectations of the investors it represents in a fiduciary capacity and the Bank clients it represents in an institutional capacity, which is often most salient in the price PCF pays for ERs. PCF's prices are subject to participants' stated willingness to pay as well as transition-specific risks. PCF avoids the appearance of investor-client conflict, managing risk by providing as much information as possible to all parties during negotiations. PCF management's priority is to arrange bankable, environmentally credible deals and let the market determine prices. The joint participation of investors and countries with opposing concerns suggests that PCF may have reached a balance, however, while contributing to sustainable development. This is a complex issue, particularly with regard to pricing, and should receive attention in a future evaluation.

5.6 PCF's increased subscriptions demonstrate that, if an institution like the Bank is managing investment risks in small projects in developing countries, and if risks are managed across a portfolio, the Bank is in a unique position to manage both project and regulatory risks. This is one reason why risk management by the Bank will remain crucial to Fund success.

6. Findings and Lessons

Relevance: International Consensus

6.1 The Bank's activities in carbon finance respond to an international consensus, as embodied by the UNFCCC, that climate change poses a serious environmental and socio-economic threat, particularly to the developing world. PCF operates on the premise that carbon finance can be a powerful tool for development. The most significant development impact of carbon finance is that it frees valuable overseas development assistance for other development purposes. CDM and JI represent a historic opportunity to leverage private sector finance and transfer technology to simultaneously address climate change and contribute to sustainable development. While PCF is not large enough to exert a measurable change in atmospheric greenhouse gas concentrations through its activities, it is playing an important role in catalyzing the market for project-based greenhouse gas emission reductions.

6.2 PCF's activities are in line with the Bank's commitment to implement the 7th and 8th Millennium Development goals of ensuring environmental sustainability and developing global partnerships. PCF enhances the Bank's environment strategy for the energy sector by channeling funds toward emission reductions that are

incremental to those otherwise achieved in underlying projects. It has also exceeded the enumerated expectations of the Bank's newly revised environment strategy, especially in its capacity-building efforts.

Efficacy

6.3 While it is too early to measure PCF's overall impact on the project-based carbon market – PCF is providing potential investors and countries with a prototype of the operational mechanics and commercial viability of carbon trading, demonstrating the feasibility of carbon markets on a global scale.

6.4 As a prototype for carbon trading with limited objectives, PCF appears to be accomplishing the objectives it has set out for itself. If anything, it may be a victim of its own success, as the program's scale and resources have been inadequate to meet the demand for the Bank's market intermediation and capacity building by potential buyers and sellers of project-based carbon offsets. PCF's experience has also exposed areas requiring additional Bank support if the carbon market is to materialize as hoped. In launching various new carbon funds, the Bank is attempting to meet this demand for increased scale while also capturing some of the lessons of PCF implementation.

6.5 Given the newness of the fund, it has not yet undergone any external evaluation of its activities. Yet, despite the uncertainties surrounding the emerging market, PCF has made important contributions to reducing barriers to participation. For example, it has increased efficiencies to transaction preparation by developing standardized documentation and contracts and has pioneered the use of intermediaries to achieve cost-effective bundling of smaller transactions. Its conservative development of methodological baselines has translated into a global standard on carbon asset creation. In fact, with its increasingly efficient streamlined procedures, PCF is one of the few global programs at the Bank that is actively influencing the evolution of standards at the global level.

Value Added

6.6 To date, PCF has been the primary means of "crowding in" the private sector to participate in Kyoto's mechanisms for carbon-friendly investment in developing and transitioning countries. PCF has gone beyond Kyoto's basic requirements of simply procuring a Host Country letter of approval related to a project's sustainable development benefits by itself identifying local and other global benefits, and where feasible, monitoring and certifying them. This concept is what led to the design of the Community Development Carbon Fund. No other fund or project developer in the carbon market has sought to verify and certify local community benefits or biodiversity benefits from their projects. PCF is unique in trying to provide tangible, independently verifiable evidence that its projects support sustainable development.

6.7 Capacity building through the program's CF Assist Facility is highly valued by Host Countries who recognize PCF as the first program to facilitate capacity

building in response to their expressed needs during the past six years of climate negotiations.

Bank Performance

6.8 The World Bank has played a catalytic role in developing the market for greenhouse gas emission reductions through PCF. The Bank has leveraged its (newly organized) comparative advantage in carbon finance expertise, knowledge of developing country investment environments, and credibility as a neutral, relatively unbiased authority to bridge the gap that existed between buyers and sellers in this market. Interviews have revealed that PCF has developed unrivaled expertise in intermediation of a market between developed and developing countries. Meanwhile, PCF is contributing to the Bank's sustainable development objectives, as carbon finance may enable countries to pursue low-carbon development paths and therefore investment in clean technologies.

6.9 PCF was designed to purchase carbon primarily through Bank-funded projects – which would act as vehicles for PCF operations. The project pipeline was expected to be generated by the Bank's Global Overlays Program, along with its National Strategy Studies (NSS) Program – designed to enable developing countries to formulate their own carbon policies and supported by donors in 30 countries – as well as through a review of Bank-IFC project assistance. But the Bank's energy sector lending declined precipitously, from 1990 to 2003, and only one project emerged from the NSS Program. To date, just 20 percent of PCF's portfolio includes underlying Bank or IFC investments. Although carbon finance is a strategic priority for the Bank's energy and environmental sectors, task managers have yet to make effective use of carbon financing to complement traditional Bank resources. PCF, like the Bank's Multilateral Fund operations, is often referred to as a "boutique operation" within the Bank: it bypasses the Bank's traditional means of engagement with clients. Meanwhile, while the Bank and the GEF have created an informal GEF-Bank consultation process to avoid competition between GEF and PCF operations – it is evident that potential synergies between them remain untapped.

6.10 Carbon finance has the potential of introducing incremental revenue streams to developing countries, mitigating country and currency risks, and rendering climate-friendly technologies profitable. However, the development of Kyoto's market mechanisms involves complex methodologies to determine additionality, and the intangible characteristics of generated emission-reduction assets give rise to complicated transaction structures. Most developing countries lack the capacity to facilitate this trade and adequately represent their interests in transactions. Meanwhile, the private sector has avoided developing countries as places to acquire emission reduction credits to fulfill their commitment under OECD emissions trading regimes. It is likely that, without Bank intermediation, trading would be limited to traditional foreign direct investment recipients like China, India, Mexico, and Brazil.

6.11 Despite the fact that PCF was not designed as a capacity-building program, (its model for knowledge generation was predicated upon the "learning by doing" experience), the Bank's client countries expect the Bank to supplement the program

with institutional capacity building to address specific CDM needs, private sector awareness and regional synergies. PCFplus, a training and research program funded out of investment income generated by four Fund participants, was created to supplement PCF's capacity building activities due to the realization that "first of a kind" carbon finance transactions must go hand in hand with technical assistance and capacity building. A new umbrella for capacity building, CF Assist, has been designed to coordinate the efforts of each carbon fund's parallel capacity building programs (e.g., PCFplus, CDCFplus). While person-training days in carbon finance increased from 800 in 2002 to over 2,400 in 2003, resources dedicated to these efforts cannot possibly be commensurate with the assistance needed to enable many developing countries to navigate the complexities of CDM/JI project development.

6.12 PCF will terminate in December 2012. Participants can unanimously continue the business of the Fund after this date, but the Bank does not intend to remain a major player in the carbon finance market to avoid 'crowding out' private sector entrants. At the same time, the Carbon Finance Unit at the Bank has undertaken further initiatives aimed at building on the lessons learned from PCF to address weaknesses in the carbon market. However, these new programs, while Board approved, have been implemented with considerable ambivalence as to the Bank's role and without overall guidance from a Bank Group-wide strategy on Carbon Finance. While the Fund should be credited for responding to client demand through proliferation of funds, board approved overall policy should precede deepening Bank involvement in this new line of Bank business. At the time of writing, PCF was in the midst of discussing the Bank's carbon finance strategy with the Board. While there is a case to be made for the Bank's long-term engagement in certain segments of the carbon market, especially considering that carbon investors will avoid the high transaction costs and risks associated with doing business in the Bank's smallest and poorest client countries, the funds' effectiveness is limited by their size, investment scope, time horizon, and PCF's already strained staff capacity and ambiguity about the Bank's public goods role vis-à-vis that of IFC.

References

Corbera, Esteve. 2002. “Forestry for Carbon Sequestration: Whose Opportunities?” University of East Anglia, Norwich.

Environmental Finance Online News. 2003. “Draft EU projects directive proposes cap on credits,” June 13, 2003. <http://www.environmental finance.com/onlinews/13juncdm.htm>

Global Environment Facility. 2001. “Results from the GEF Climate Change Program.” Monitoring and Evaluation Unit. Evaluation Report No. 1-02.

Grubb, Michael at al. 2003. “A Strategic Assessment of the Kyoto-Marrakech System Synthesis Report.” The Royal Institute of International Affairs: Sustainable Development Program. Briefing Paper no. 6.

IPCC. “Summary for Policymakers: The Economic and Social Dimensions of Climate Change.” <http://www.ipcc.ch/pub/sarsum.htm>

Lecocq, Franck. 2002. “Is PCF to Kyoto what Kyoto is for climate policy in general?”

______. 2004. “Trends and Outlook for Global Trading,” Australasian Emissions Trading Forum, February-March 2004

Lecocq, Franck and Capoor, Karan. 2002. “State and Trends of the Carbon Market 2002.” World Bank, Washington, D.C.

______. 2003. “State and Trends of the Carbon Market 2003.” World Bank, Washington, D.C.

______. 2004. “State and Trends of the Carbon Market 2004.” World Bank, Washington, D.C.

Orr, Hermann E. 2002. “After the Marrakech Accords: From Legislation to Implementation.” Wuppertal Institute for Climate, Environment and Energy. Published under the title “Global Climate” in Yearbook of International Environment Law Volume 12 (2001), Oxford University Press.

Prototype Carbon Fund (PCF). 2001a. *PCF Annual Report 2001*. Washington, D.C.

______. 2001b. “Report and Financial Statements.” <http://carbonfinance.org/pcf/router.cfm?Page=DocLib&Dtype=7&ActionType=ListItems>

______. 2002a. *PCF Annual Report 2002*. Washington, D.C.

______. 2002b. “PCFplus Program: Indicative Work Program for World Bank Fiscal Year 2003.” <http://carbonfinance.org/pcf/router.cfm?Page=DocLib&Dtype=5&ActionType=ListItems>

______. 2003a. “Annual Report to the Participants on Progress in Implementation. Fiscal Year 2003.” May 19th.

______. 2003b. *PCF Annual Report 2003*. Washington, D.C.

Ravaillon, Martin, Mark Heil, and Jyotsna Jalan. 2000. “Carbon Emissions and Income Inequality.” Oxford Economic Papers 52 (2000), 651-669. Oxford University Press.

Richards, Michael. 2003. “Poverty Reduction, Equity and Climate Change: Global Governance Synergies or Contradictions?” Overseas Development Institute. < http://www.odi.org.uk/iedg/publications/climate_change_web.pdf>

Schelling, Thomas C. 2002. “What Makes Greenhouse Sense?” *Foreign Affairs*, May-June.

Streck, Charlotte. 2002. “The Clean Development Mechanism: A Playing Field for New Partnerships.” In Frank Bierman, Rainer Brohm, and Klaus Dingworth, eds. *Proceedings of the 2001 Berlin Conference on the Human Dimensions of Global Environmental Change: Global Environmental Change and the Nation State.* Potsdam Institute for Climate Impact Research.

World Bank. 2000. *Fuel for Thought: An Environmental Strategy for the Energy Sector*. Washington, DC.

______. 2001. *Making Sustainable Commitments: An Environmental Strategy for the World Bank*. Washington, DC.

______. 2003. *World Development Report 2003: Sustainable Development in a Dynamic World*. Washington, DC.

Annex A. Evaluation Framework for Phase 2 Report and 26 Case Studies

1. The Phase 2 Report and each case study follows a common outline and addresses 20 evaluation questions (Table A.1) that have been derived from OED's standard evaluation criteria (Table A.2), the 14 eligibility and approval criteria for global programs (Table A.3), and the 8 eligibility criteria for grant support from the Development Grant Facility (Table A.4).

2. The sheer number of these criteria, some of which overlap, can be daunting even to an evaluator. Hence the OED evaluation team has reorganized these criteria into four major evaluation issues, which correspond to the four major sections of each report (Table A.1):

- The overarching global relevance of the program
- Outcomes and impacts of the program and their sustainability
- Governance, management, and financing of the program
- The World Bank's performance as a partner in the program

3. These four issues correspond roughly to OED's evaluation criteria of relevance, efficacy, efficiency, and Bank performance, **appropriately interpreted and expanded for the case of global programs**. In the case of global programs, **relevance** must be measured not only against individual borrowing countries' priorities and Bank priorities, but also in terms of the interplay between global challenges and concerns on the one hand and country needs and priorities on the other. The former are typically articulated by the "global community" by a variety of different stakeholders and are reflected in a variety of ways such as formal international conventions to which developing countries are signatories; less formal international agreements reached at major international meetings and conferences; formal and informal international standards and protocols promoted by international organizations, NGOs, etc.; the Millennium Development Goals; and the Bank's and the Development Committee' eligibility criteria for global programs. While sponsorship of a program by significant international organizations may enhance "legitimacy" of a global program in the Bank's client countries, it is by no means a sufficient condition for developing country ownership, nor for ensuring its development effectiveness. "Relevance" and ownership by the Bank's client countries is more assured if the program is demanded by them. On other hand some "supply-led" programs may also acquire ownership over time by demonstrating substantial impacts, as in the case of the internet. Assessing relevance is by far the most challenging task in global programs since global and country resources, comparative advantages, benefit, costs, and priorities do not always coincide. Indeed the divergence of benefits and costs between the global level and the country level is often a fundamental reason for the provision of global public goods. Evaluating the relevance of global action to the Bank's client countries is however important because the global *development* agenda is becoming highly crowded and resources to finance it have remained relatively stagnant, therefore highlighting issues of selectivity.

4. For the global programs that have been operating for some time, **efficacy** can be assessed not only in terms of program outcomes but more crucially in terms of impacts on the ground in developing countries. Outcomes and impacts in turn depend on the clarity and evaluability of each program's objectives, the quality of the monitoring and evaluation of results and, where appropriate, the effectiveness of the links of global program activities to the country level.

5. Since global programs are partnerships, **efficiency** must include an assessment of the extent to which the benefit-cost calculus in collective organizational, management and financing arrangements is superior to achieving the same results by the individual partners acting alone. The institutional development impact and the sustainability of the program itself (as opposed to that of the outcomes and impacts of the program's activities) are also addressed in this section of each report.

6. Finally, this being an OED evaluation, it focuses primarily on the **Bank's strategic role and performance** in playing up to its comparative advantage relative to other partners in each program. The Bank plays varied roles in global programs as a convener, trustee, donor to global programs, and lender to developing countries. The Bank's financial support to global programs – including oversight and liaison activities and linkages to the Bank's regional operations – comes from a combination of the Bank's net income (for DGF grants), the Bank's administrative budget, and Bank-administered trust funds. In the case of the Global Environmental Facility (GEF) the Bank is a trustee and in the case of the Global Fund to Fight HIV/AIDS, Tuberculosis, and Malaria (GFATM), a "limited" trustee. In the case of GEF and MLF the Bank is also an implementing agency. Thus, the assessment of Bank performance includes the use of the Bank's convening power, the Bank's trusteeship, Bank financing and implementation of global programs, and, where appropriate and necessary, linkages to the Bank's country operations. Bank oversight of this entire set of activities is an important aspect of the Bank's strategic and programmatic management of its portfolio of global programs.

7. The first column in Table A.1 indicates how the four sections and 20 evaluation questions addressed in the Phase 2 Report and case studies relates to the eight evaluation issues that were raised by the Bank's Executive Board in the various Board discussions of global programs during the design phase of OED's global evaluation and identified in the OED's Evaluation Strategy paper:[1]

- Selectivity
- Monitoring and evaluation
- Governance and management
- Partnerships and participation
- Financing
- Risks and risk management
- Linkages to country operations

8. The third column in Table A.1 indicates how the four sections and 20 evaluation questions relate to OED's standard evaluation criteria for investment projects (Table A.2), the 14 criteria endorsed by the Development Committee and established by Bank management for approving the Bank's involvement in global programs (Table A.3), and the 8 criteria for grant support from the Development Grant Facility (Table A.4).

9. The 14 **eligibility and approval criteria** for the Bank's involvement in global programs have evolved since April 2000 when Bank management first proposed a strategy to the Bank's Executive Board for the Bank's involvement in global programs and include the *four overarching*

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[1] OED, The World Bank and Global Public Policies and Programs: An Evaluation Strategy, July 16, 2001, page 21. "Partnerships and participation" were originally listed as two separate evaluation issues in the evaluation strategy document. "Monitoring and evaluation" is now interpreted more broadly to include not only an assessment of the monitoring and evaluation procedures of each program but also the findings of previous evaluations with respect to the outcomes and impacts of each program, and their sustainability.

criteria endorsed by the Development Committee, and the *four eligibility criteria* and *six approval criteria* presented by Bank management to the Bank's Executive Board. Each global program must meet at least ***one*** of the four relatively more substantive eligibility criteria and ***all six*** of the relatively more process-oriented approval criteria. The first two eligibility criteria relate directly to the Bank's global public goods and corporate advocacy priorities (Table A.3). Although the six approval criteria resemble the topics covered in a project concept or appraisal document for Bank lending operations, unlike for Bank lending operations, there is currently only a one-step approval process for new global programs – at the concept stage and not at the appraisal stage. And new global programs only have to be approved by the Bank managing director responsible for the Network proposing a new program, not by the Bank's Executive Board.

10. While the approval of new global programs is logically separate from and prior to their financing (whether from the DGF, trust funds, or other sources), the eight **DGF eligibility criteria** for grant support from the DGF (Table A.4) were actually established in 1998. Twenty out of the 26 case study programs and about two-thirds of the Bank's total portfolio of 70 global programs have received DGF grants.

Table A.1. Key Evaluation Issues and Questions

Evaluation Issues	Evaluation Questions	Reference
Section I. Overarching Global Relevance of the Program		
1. Selectivity	**1. Relevance.** To what extent are the programs: • Addressing global challenges and concerns in the sector • Consistent with client countries' current development priorities • Consistent with the Bank's mission, corporate priorities, and sectoral and country assistance strategies?	A modification of OED's relevance criterion (Table A.2) for the purpose of global programs. The third bullet also relates to managing director (MD) approval criterion #1 regarding a "clear linkage to the Bank's core institutional objectives" (Table A.3).
	2. International consensus. To what extent did the programs arise out of an international consensus, formal or informal: • Concerning the main global challenges and concerns in the sector • That global collective action is required to address these challenges and concerns?	Development Committee (DC) criterion #4 (Table A.3).
	3. Strategic focus. To what extent are the programs: • Providing global and regional public goods • Supporting international advocacy to improve policies at the national level • Producing and delivering cross-country lessons of relevance to client countries • Mobilizing substantial incremental resources?	The four bullets correspond to the four MD eligibility criteria (Table A.3).
	4. Subsidiarity. To what extent do the activities of the programs complement, substitute for, or compete with regular Bank instruments?	DGF eligibility criterion #1 (Table A.4).

Evaluation Issues	Evaluation Questions	Reference
Section II. Outcomes, Impacts, and their Sustainability		
	5. Efficacy. To what extent have the programs achieved, or are expected to achieve, their stated objectives, taking into account their relative importance?	OED's efficacy criterion (Table A.2).
2. Monitoring and evaluation	**6. Value added**. To what extent are the programs adding value to: • What the Bank is doing in the sector to achieve its core mission of poverty alleviation and sustainable development • What developing and transition countries are doing in the sector in accordance with their own priorities?	The first bullet corresponds to DC criterion #1 (Table A.3).
	7. Monitoring and evaluation. To what extent do the programs have effective monitoring and evaluation: • Clear program and component objectives verifiable by indicators • A structured set of quantitative or qualitative indicators • Systematic and regular processes for data collection and management • Independence of program-level evaluations • Effective feedback from monitoring and evaluation to program objectives, governance, management , and financing?	MD approval criterion #6 (Table A.3), since effective communications with key stakeholders, including the Bank's Executive Directors, requires good monitoring and evaluation practices.
	8. Sustainability of outcomes and impacts. To what extent are the outcomes and impacts of the programs resilient to risk over time?	OED's sustainability criterion (Table A.2).
Section III. Organization, Management, and Financing of the Program		
3. Governance and management	**9. Efficiency**. To what extent have the programs achieved, or are expected to achieve: • Benefits more cost-effectively than providing the same service on a country-by-country basis • Benefits more cost-effectively than if the individual contributors to the program acted alone?	A modification of OED's efficacy criterion for the purpose of global programs (Table A.2). The first bullet also relates to MD eligibility criterion #3 (Table A.3) and DGF eligibility criterion #3 (Table A.4).
	10. Legitimacy. To what extent is the authorizing environment for the programs effectively derived from those with a legitimate interest in the program (including donors, developing and transition countries, clients, and other stakeholders), taking into account their relative importance.	A modification of OED's evaluation criteria (Table A.2) for the purpose of global programs.

Evaluation Issues	Evaluation Questions	Reference
	11. Governance and management. To what extent are the governance and management of the programs: • Transparent in providing information about the programs • Clear with respect to roles & responsibilities • Fair to immediate clients • Accountable to donors, developing and transition countries, scientists/professionals, and other stakeholders?	MD approval criterion #5 (Tables B.3) and DGF eligibility criterion #5 (Table A.4).
4. Partnerships and participation	**12. Partnerships and participation**. To what extent do developing and transition country partners, clients, and beneficiaries participate and exercise effective voice in the various aspects of the programs: • Design • Governance • Implementation • Monitoring and evaluation?	DGF eligibility criterion #8 (Table A.4).
5. Financing	**13. Financing**. To what extent are the sources of funding for the programs affecting, positively or negatively: • The strategic focus of the program • The governance and management of the program • The sustainability of the program?	MD approval criterion #4. (Table A.3). The third bullet also relates to OED's sustainability criterion (Table A.2).
	14. Bank action to catalyze. To what extent has the Bank's presence as a partner in the programs catalyzed, or is catalyzing non-Bank resources for the programs?	DC criterion #2 (Table A.3) and DGF eligibility criterion #4 (Table A.4).
	15. Institutional development impact. To what extent has the program established effective institutional arrangements to make efficient, equitable, and sustainable use of the collective financial, human, and other resources contributed to the program.	A modification of OED's institutional development impact criterion (Table A.2) for the purpose of global programs.
6. Risks and risk management	**16. Risks and risk management**. To what extent have the risks associated with the programs been identified and are being effectively managed?	MD approval criterion #3 (Table A.3).
Section IV. World Bank's Performance		
7. Linkages to country operations	**17. Comparative advantage**. To what extent is the Bank playing up to its comparative advantages in relation to other partners in the programs: • At the global level (global mandate and reach, convening power, mobilizing resources) • At the country level (multi-sector capacity, analytical expertise, country-level knowledge)?	DC criterion #3 (Table A.3), MD approval criterion #2 (Table A.3), and DGF eligibility criterion #2 (Table A.4).

Evaluation Issues	Evaluation Questions	Reference
	18. Linkages to country operations. To what extent are there effective and complementary linkages, where needed, between global program activities and the Bank's country operations, to the mutual benefit of each?	MD approval criterion #1 (Table A.3) regarding "linkages to the Bank's country operational work."
	19. Oversight. To what extent is the Bank exercising effective and independent oversight of its involvement in the programs, as appropriate, for in-house and externally managed programs, respectively.	This relates to DGF eligibility criterion #6 on "arm's length relationship" (Table A.4). Both questions 17 and 18 together relate to OED's Bank performance criterion (Table A.2).
	20. Disengagement strategy. To what extent is the Bank facilitating effective, flexible, and transparent disengagement strategies, as appropriate?	DGF eligibility criterion #7 (Table A.4).

Table A.2. Standard OED Evaluation Criteria

Criterion	Standard Definitions for Lending Operations	Possible Ratings
Relevance	The extent to which the project's objectives are consistent (1) with the country's current development priorities and (2) with current Bank country and sectoral assistance strategies and corporate goals (expressed in Poverty Reduction Strategy Papers, Country Assistance Strategies, Sector Strategy Papers, Operational Policies).	High, substantial, modest, negligible.
Efficacy	The extent to which the project's objectives were achieved, or expected to be achieved, taking into account their relative importance.	High, substantial, modest, negligible.
Efficiency	The extent to which the project achieved, or is expected to achieve, a return higher than the opportunity cost of capital and benefits at least cost compared to alternatives.	High, substantial, modest, negligible.
Legitimacy /1	The extent to which the authority exercised by the program is effectively derived from those with a legitimate interest in the program (including donors, developing and transition countries, clients, and other stakeholders), taking into account their relative importance.	High, substantial, modest, negligible.
Institutional development impact	The extent to which a project improves the ability of a country or region to make more efficient, equitable and sustainable use of its human, financial, and natural resources through: (a) better definition, stability, transparency, enforceability, and predictability of institutional arrangements and/or (b) better alignment of the mission and capacity of an organization with its mandate, which derives from these institutional arrangements. IDI includes both intended and unintended effects of a project.	High, substantial, negligible, modest.
Sustainability	The resilience to risk of net benefits flows over time.	Highly likely, likely, unlikely, highly unlikely.
Outcome	The extent to which the project's major relevant objectives were achieved, or are expected to be achieved, efficiently.	Highly satisfactory, satisfactory, moderately satisfactory, moderately unsatisfactory, unsatisfactory, highly unsatisfactory
Bank performance	The extent to which services provided by the Bank ensured quality at entry and supported implementation through appropriate supervision (including ensuring adequate transition arrangements for regular operation of the project).	Highly satisfactory, satisfactory, unsatisfactory, highly unsatisfactory.
Borrower performance	The extent to which the borrower assumed ownership and responsibility to ensure quality of preparation and implementation, and complied with covenants and agreements, toward the achievement of development objectives and sustainability.	Highly satisfactory, satisfactory, unsatisfactory, highly unsatisfactory.

/1 This represents an addition to OED's standard evaluation criteria in the case of global programs, since effective governance of global programs is concerned with legitimacy in the exercise of authority in addition to efficiency in the use of resources.

Table A.3. Selectivity and Oversight of Global Programs

Selectivity Criteria for Bank Involvement in Global Public Goods: Endorsed by Development Committee (September 2000) /1

- An emerging international consensus that global action is required
- A clear value added to the Bank's development objectives
- The need for Bank action to catalyze other resources and partnerships
- A significant comparative advantage for the Bank.

Approval Criteria for Bank Involvement in Partnership Initiatives Beyond the Country Level: Established by Bank Management (November 2000) /2

1. A clear linkage to the Bank's core institutional objectives and, above all, to the Bank's country operational work
2. A strong case for Bank participation based on comparative advantage
3. A clear assessment of the financial and reputational risks to the Bank and how these will be managed
4. A thorough analysis of the expected level of Bank resources required, both money and time, as well as the contribution of other partners
5. A clear delineation of how the new commitment will be implemented, managed, and assessed
6. A clear plan for communicating with and involving key stakeholders, and for informing and consulting the Executive Directors.

Global Public Goods Priorities /3

Communicable diseases
- HIV/AIDS, tuberculosis, malaria and childhood communicable diseases, including the relevant link to education
- Vaccines and drug development for major communicable diseases in developing countries

Environmental commons
- Climate change
- Water
- Forests
- Biodiversity, ozone depletion and land degradation
- Promoting agricultural research

Information and knowledge
- Redressing the Digital Divide and equipping countries with the capacity to access knowledge
- Understanding development and poverty reduction

Trade and integration
- Market access
- Intellectual property rights and standards

International financial architecture
- Development of international standards
- Financial stability (incl. sound public debt management)
- International accounting and legal framework

Strategic Focus for Oversight of Global Programs: Established by Bank Management (March 2003)

a. Provide global public goods

b. Support international advocacy for reform agendas which in a significant way address policy framework conditions relevant for developing countries

c. Are multi-country programs which crucially depend on highly coordinated approaches

d. Mobilize substantial incremental resources that can be effectively used for development.

Corporate Advocacy Priorities /3

Empowerment, security, and social inclusion
- Gender mainstreaming
- Civic engagement and participation
- Social risk management (including disaster mitigation)

Investment climate
- Support to both urban and rural development
- Infrastructure services to support private sector development
- Regulatory reform and competition policy
- Financial sector reform

Public sector governance
- Rule of law (including anti-corruption)
- Public administration and civil service reform (incl. public expenditure accountability)
- Access to and administration of justice (judicial reform)

Education
- Education for all, with emphasis on girls' education
- Building human capacity for the knowledge economy

Health
- Access to potable water, clean air and sanitation
- Maternal and child health

/1 From the Development Committee Communiqué issued on September 25, 2000. Both the Development Committee and Bank Management envisaged global programs as being the principal instrument for Bank involvement in providing global public goods.

/2 The Initiating Concept Memorandum in the Partnership Approval and Tracking System (PATS) was initially organized according to these six criteria.

/3 These are the five corporate advocacy priorities and the five global public goods priorities (and bulleted sub-categories) from the Strategic Directions Paper for FY02-04, March 28, 2001. Within the Partnership Approval and Tracking System (PATS), global programs are expected to identify, for tracking purposes, their alignment with at least one of these ten corporate priorities.

Table A.4. Eligibility Criteria for Grant Support from the Development Grant Facility

1. Subsidiarity	The program contributes to furthering the Bank's development and resource mobilization objectives in fields basic to its operations, but it does not compete with or substitute for regular Bank instruments. Grants should address new or critical development problems, and should be clearly distinguishable from the Bank's regular programs.
2. Comparative advantage	The Bank has a distinct comparative advantage in being associated with the program; it does not replicate the role of other donors. The relevant operational strengths of the Bank are in economic, policy, sector and project analysis, and management of development activities. In administering grants, the Bank has expertise in donor coordination, fund raising, and fund management.
3. Multi-country benefits	The program encompasses multi-country benefits or activities which it would not be efficient, practical or appropriate to undertake at the country level. For example, informational economies of scale are important for research and technology work, and operations to control diseases or address environmental concerns (such as protect fragile ecosystems) might require a regional or global scope to be effective. In the case of grants directed to a single country, the program will encompass capacity-building activities where this is a significant part of the Country Assistance Strategy and cannot be supported by other Bank instruments or by other donors. This will include, in particular, programs funded under the Institutional Development Fund, and programs related to initial post-conflict reconstruction efforts (e.g., in countries or territories emerging from internal strife or instability).
4. Leverage	The Bank's presence provides significant leverage for generating financial support from other donors. Bank involvement should provide assurance to other donors of program effectiveness, as well as sound financial management and administration. Grants should generally not exceed 15 percent of expected funding over the life of Bank funding to a given program, or over the rolling 3-year plan period, whichever is shorter. Where grant programs belong to new areas of activities (involving, e.g., innovations, pilot projects, or seed-capital) some flexibility is allowed for the Bank's financial leverage to build over time, and the target for the Bank grant not to exceed 15 percent of total expected funding will be pursued after allowing for an initial start-up phase (maximum 3 years).
5. Managerial competence	The grant is normally given to an institution with a record of achievement in the program area and financial probity. A new institution may have to be created where no suitable institution exists. The quality of the activities implemented by the recipient institution (existing or new) and the competence of its management are important considerations.
6. Arm's length relationship	The management of the recipient institution is independent of the Bank Group. While quality an arm's length relationship with the Bank's regular programs is essential, the Bank may have a role in the governance of the institution through membership in its governing board or oversight committee. In cases of highly innovative or experimental programs, Bank involvement in supporting the recipient to execute the program will be allowed. This will provide the Bank with an opportunity to benefit from the learning experience, and to build operational links to increase its capacity to deliver more efficient services to client countries.
7. Disengagement strategy	Programs are expected to have an explicit disengagement strategy. In the proposal, monitorable action steps should be outlined indicating milestones and targets for disengagement. The Bank's withdrawal should cause minimal disruption to an ongoing program or activity.
8. Promoting partnerships	Programs and activities should promote and reinforce partnerships with key players in the development arena, e.g., multilateral development banks, UN agencies, foundations, bilateral donors, professional associations, research institutions, private sector corporations, NGOs, and civil society organizations.

Source: World Bank, Development Grant Facility documentation.