

**prototype carbon fund**  
 a public/private partnership

**ANNUAL REPORT**  
 2004

Prototype Carbon Fund  
 Annual Report 2004

Prototype Carbon Fund  
 The World Bank  
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This is the fourth annual report of the Prototype Carbon Fund (PCF), covering the period from October 1, 2003 through September 30, 2004. The audited financial statements for fiscal year 2004 (July 1, 2003 to June 30, 2004) are included. An online version of this report is available on the PCF website: [www.prototypecarbonfund.org](http://www.prototypecarbonfund.org)

Notes: All \$ = U.S. dollars (unless otherwise indicated). One ton = 1000 kilograms (one metric tonne). All greenhouse gas emission reductions are measured in tons of carbon dioxide equivalent (tCO<sub>2</sub>e). This report is provided for informational purposes only. The PCF is not a legal partnership. No warranties or representations are made as to the accuracy, reliability or completeness of any information herein.



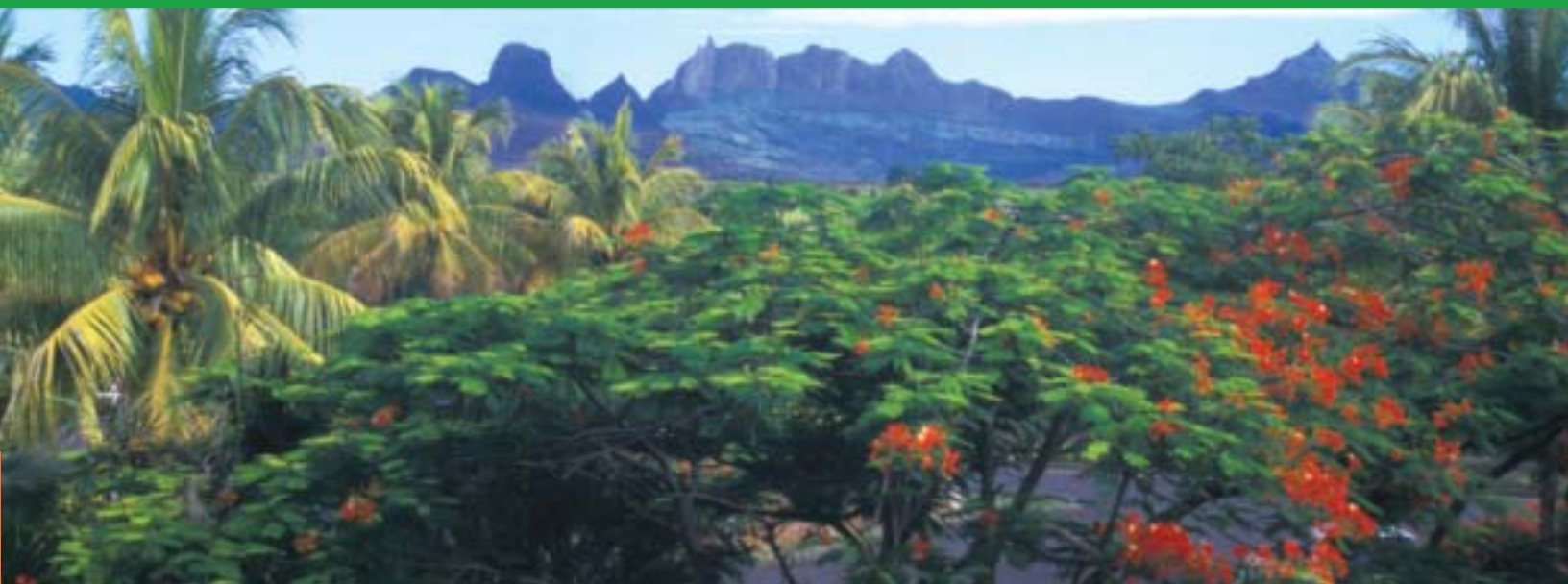
Our **Mission** is to pioneer the market for project-based greenhouse gas emission reductions within the framework of the Kyoto Protocol and to contribute to sustainable development.

# Climate

change and accompanying disrupted weather patterns are caused by the greenhouse effect through atmospheric loading of greenhouse gases.

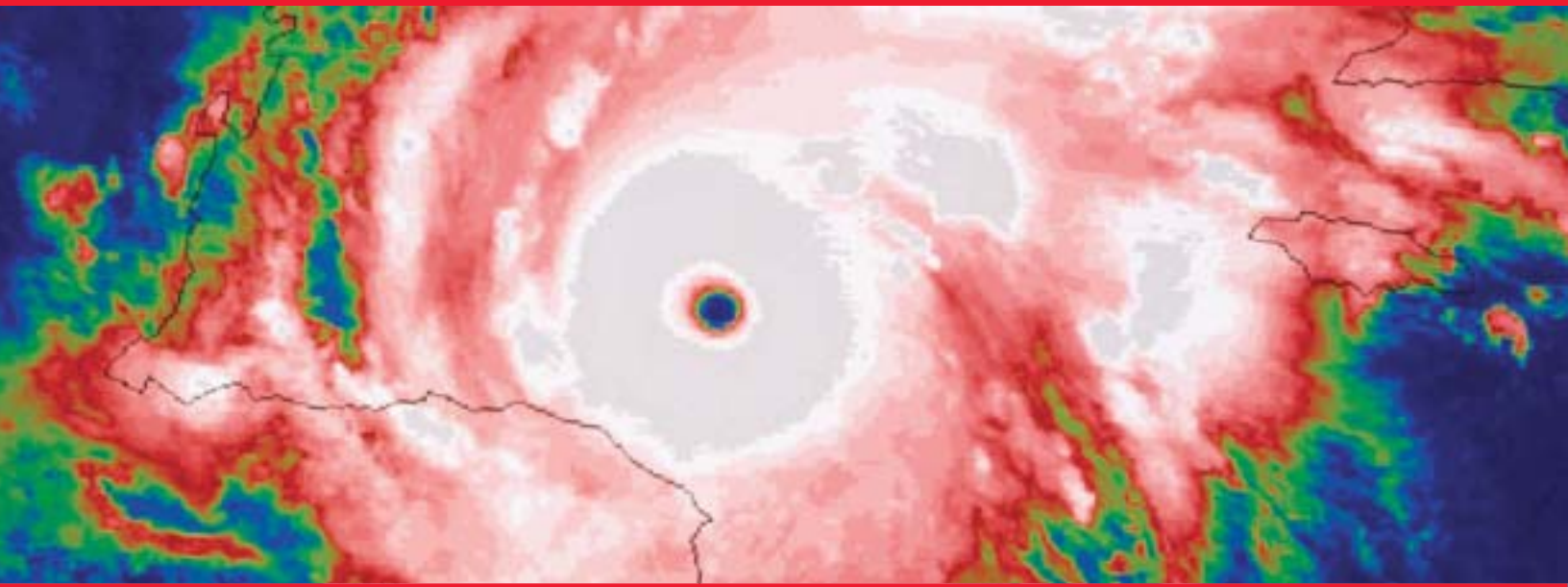


Scientists agree that in the absence of global action to reduce human-caused greenhouse gas emissions, there will be an unprecedented rapid increase in the Earth's average global temperature during this century.



Because climate **Change** will have the most impact on its borrowing client countries, on July 20th, 1999, the Executive Directors of the World Bank approved the establishment of the Prototype Carbon Fund (PCF).

# 2004 has shown the kind of **Impact** climate change will have.



In 2004, droughts, hurricanes and hazardous weather around the world are costing billions of dollars in damage and destroying countless lives.

The Prototype Carbon Fund, a partnership of six governments and 17 companies, has been a leader in the creation of a carbon market to help deal with the threat posed by climate change. The PCF has 32 projects under preparation with an emission reduction potential of US\$165 million.



Climate **Mitigation** efforts through the Kyoto Protocol will see industrialized country signatories reduce their greenhouse gas emissions by an average of 5.2 percent compared with 1990 emissions, in the period 2008-2012.

Clean and environmentally sound

# Technology

is now more accessible through the emerging carbon market.







## Letter from The World Bank

Human-induced climate change continues to pose a direct risk to developing countries and poor people in those countries whose lives and livelihoods are likely to be threatened. Nature has been sending strong messages this year of what a world caught in the flux of climate change and related weather patterns would look like. Droughts, hurricanes, tornadoes and hazardous weather around the world are costing billions of dollars in damage and destroying countless lives.

Adaptation must go hand-in-hand with mitigation to minimize global warming's alarming trend. Dealing with the impacts of climate change and with emission reductions and fostering technology development through sound global public policy are key elements of an agenda for action at the global level.

The emerging carbon market represents an innovative mechanism. It provides an opportunity to bring new financial resources from developed countries to developing countries. And it represents access to development opportunities such as clean and environmentally sound technologies.

The Prototype Carbon Fund has been a beacon for the carbon market. The first carbon fund to be established globally, the PCF is a learning by doing instrument. Almost every aspect of the work of the Prototype Carbon Fund is being done for the first time, and it therefore allows others to apply the lessons learned. Carbon finance coming largely from private corporations and from governments in the OECD can bring about transformations in technology, and results in improved quality of manufacturing processes, agriculture and forestry.

This flagship carbon finance fund has also spawned a family of other funds, that address specific market needs and result in a greater focus on sustainable development and poverty reduction dividends.

And all of this pioneering work in carbon finance is happening because six governments and 17 private companies had the courage to take the first step. They are to be commended.

A handwritten signature in black ink that reads "Ian Johnson". The signature is fluid and cursive, with the first name "Ian" and last name "Johnson" clearly legible.

Ian Johnson  
Vice President for Sustainable Development  
The World Bank



## Letter From The PCF Participants' Committee Chair

Will we be able to combat climate change efficiently before it is too late? Even with all the positive steps taken, today's situation casts more doubt on the answer than we had seven years ago.

Today, 126 countries have ratified the Kyoto Protocol, making it one of the most widely supported multilateral environmental agreements ever. Japan, Canada and the European Union are already taking steps to prepare themselves for meeting their commitments. The 'Prompt Start' decision has led to a strongly needed boost in Clean Development Mechanism (CDM) project activity. An increasing number of host countries (both Annex I and non-Annex I) have set up the necessary structures to cope with this intricate concept.

We have made much progress; we have set up smart and efficient processes and structures—but delivery is a problem. While the calendar rushes towards our deadlines, more battles must be fought to acquire and transfer emission reductions effectively. While several regional carbon markets are emerging, we still do not know how to connect them. And while so many projects are considered, described, studied and prepared, we hear more and more about the difficulty in cooperating with administrations within both the United Nations and host countries. Different agendas, unyielding principles and fears based on dubious extrapolations are blocking many efforts, blurring the overall vision and casting doubt on the final scale of the carbon market.

Will CDM and Joint Implementation (JI) ever be more than a niche for pensioned pioneers and never-doubt money-losers? Somehow, we are beginning to look like runners who stop and sit down a few yards before the finish line. If we want to reach our objectives and achieve concrete results, we have to reverse now a series of trends that are diluting and diverting our efforts.

On one side, businesses should not lock themselves into indicators, numbers, balance sheets and measurable targets. We should make more exceptions—like that of contributing to the PCF—to the omnipresent value-for-money principle that compels us to leave aside anything that does not efficiently contribute to a short-term financial objective. On the other side, those who set the rules should have a more balanced view between their dreams and reality. They would then be less prone to radical principles that kill feasible solutions.

And both sides—both the 'players' and the 'rule-setters'—should talk to each other much more, exercising a sense of compromise that takes the others' needs and rules into account. Then we would be able, even in the current hard economic conditions, to walk the uneasy paths with a profound sense of pioneering something rewarding. But there is an additional concern: Hidden behind all the mushrooming thinking about "after Kyoto", there is a temptation for decision makers to play with ideas further in the future and in that way escape the hard work that is just before us.

As the PCF closes its portfolio, it has in its files much more than business plans and technology notes—for the last four years the PCF has nurtured the hopes of many project developers and sponsors that they are able to do something for the environment while doing sound business.

Still the question remains: will we be able to combat climate change efficiently before it is too late?

A handwritten signature in black ink, appearing to read 'Jean Claude Steffens'. The signature is stylized and somewhat abstract.

Jean Claude Steffens  
PCF Participants' Committee Chair



## Letter From The Outgoing Chair Of The Host Country Committee

From the beginning, the host country representatives to the World Bank's carbon funds have had the privilege to participate in the process that is setting the groundwork for the *emerging carbon market*. Why a privilege? Because the first-hand knowledge gained on project preparation, project financing and existing capacity building tools, plus the opportunity to share experiences with donor and other countries, have given them the chance to learn by doing with the Marrakesh rules and come up with their own conclusions on the overall process.

Without the World Bank supporting the pioneering experience of the PCF, it would have been difficult to reach the current level of host country participation in the portfolio of projects of the carbon finance business. Considering present legal and market uncertainties, the number of projects and transactions achieved has been remarkable. Nevertheless, progress in regional project balance is highly desirable in order to bring the benefits of carbon finance to all countries represented in the Host Country Committee.

Over the past two years, encouraging events such as the prompt start of the CDM, modalities for land-use, land-use change, and forestry projects, the European Union Emissions Trading Scheme (EU-ETS), the new carbon products at the World Bank and the first international carbon trade fair took place. These achievements indicate that things are moving quickly in the carbon business field and therefore, host countries need to move forward accordingly. In simple terms, it means that they have to improve their national capacities to respond to the expected growth in the demand for certified emission reductions. Sectoral approaches during project identification, bundling of small-scale projects, market development in seller countries and inclusion of CDM and JI in local development plans are part of the answer.

Host countries are willing to move forward but more resources and new strategies are required. Acquiring funding for designated national authorities, building capacity for project preparation, creation of local designated operational entities, involvement of the private sector in the carbon business and transaction costs are some of their concerns. The recent focus of the Host Country Committee on these issues should be continued by the new chair and elected officers, as sustainability of actions is the way to address these and other matters properly.

The unexpected number of restrictions for the CDM deserves special attention. Overly conservative approaches followed by the CDM Executive Board on methodologies, its delay in approving and publishing them and the limits for the integration of CDM and JI in trading schemes such as the EU-ETS are scaring investors, jeopardizing relevant project areas—such as renewable energy—and are nullifying the willingness of developing countries to reduce global greenhouse gas concentrations through certified project activities.

Simpler CDM/JI rules and administrative procedures were the aim at the beginning of the process and they should return to that status right away. Host countries can play an important role in making this happen.

Juan Pedro Searle  
Member of the Host Country Steering Committee



## From the Fund Manager

The last twelve months have been both rewarding and challenging. The challenges reflect the constraints on the Kyoto Protocol's project-based mechanisms generally. While the PCF has more than doubled the volume of emission reductions under signed emission reductions purchase agreements or ERPAs, we were aiming for triple 2003 volumes. Two important constraints were regulatory uncertainty—being able to obtain assurance that certain projects were indeed CDM-eligible and would give rise to compliance-grade carbon assets, or certified emission reductions—and ongoing uncertainty inside developing country governments as to which agency had responsibility for approving carbon purchases. This latter constraint is not as straightforward as reaching agreement on the agency that will play the role of Designated National Authority under the Kyoto Protocol. It extends to the question of which public agency can sign contracts where government at any level is the seller of emission reductions, and a lack of understanding within governments at all levels on the requirements for carbon asset creation and the potential value of carbon finance.

These are the teething problems of North-South carbon trade. It is not surprising that governments would take some time to adjust to and cope with regulation and facilitation of trade in what is an entirely new global-environmental commodity—both at the global and national level. Some governments are yet to see the full trade and development finance potential of the instruments they have helped negotiate. The Kyoto Protocol and its Marrakesh Accords have created a new environmental commodity and there is a growing interest and capacity in the private sector to facilitate the trade in this new product. But on the other hand, it has been the tendency of the regulators, to draw on their experience in administering donor grant funds under global environment conventions in designing regulatory systems for carbon trade.

Despite these problems, the PCF has powerfully demonstrated the sustainable development impact of CDM and JI projects, reinforcing the need to promote and protect these mechanisms as vehicles for expanding resource flows for sustainable development locally while mitigating climate change globally.

Ken Newcombe  
PCF Fund Manager, Senior Manager Carbon Finance Business, The World Bank



## PCF Highlights of 2004

Notable achievements in the fourth full year of PCF implementation that have helped us learn by doing include:

- The PCF completed the project identification phase of its implementation. The PCF portfolio will be finalized from the 32 identified projects and will contract to deliver 40-45 million tons of carbon dioxide equivalent emission reductions. About 80 percent of the emission reductions from the contracted projects are likely to be delivered before 2012.
- Between July 31, 2003 and July 31, 2004 the number of emission reductions purchase agreements signed has more than doubled from seven in July 2003 to 16 in July 2004. The total value of the signed purchase agreements in July 2004 was \$74.3 million.
- In the last year, the PCF has shifted to the development of larger projects. Until June 2003, the average size of an emission reductions purchase agreement was \$3.3 million. The average size of agreements signed since July 2003 is about \$7 million.
- In 2004 the PCF saw a continued growth in projects from the East Asia region. The Indocement Sustainable Cement Production project in Indonesia became the first signed emission reductions purchase agreement in the East Asia region. Agreement was reached with the Government of China on the first two projects from China that will be included in the PCF portfolio.
- Substantial progress was made in 2004 to complete JI projects. Of the nine emission reductions purchase agreements signed in 2004, four were for JI projects. On a cumulative basis, the PCF has signed six purchase agreements with JI projects with a value of about \$18.5 million.
- In 2004, a total of 14 projects in the PCF portfolio started generating emission reductions.
- The PCF has submitted 10 methodologies (in nine projects) to the Executive Board through the Methodology Panel. Of these, four methodologies have been approved and four are still under consideration.



The Prototype Carbon Fund has been pioneering the development of project-based mechanisms to generate potential credits for reductions in emissions of greenhouse gases.

The fund utilizes two of the flexible mechanisms incorporated in the Kyoto Protocol. The Clean Development Mechanism and Joint Implementation enable industrialized countries to meet some of their emission reduction obligations through projects generating greenhouse gas emission reductions in developing countries and countries with economies in transition.



# Who is the PCF?

## *A Public/Private Partnership to Mitigate Climate Change*

### GOVERNMENT OF CANADA



The Canadian International Development Agency and Canada's Clean Development Mechanism and Joint Implementation Office, housed at Foreign Affairs Canada, have represented Canada in the PCF since its inception in 2000. Canada ratified the Kyoto Protocol in December 2002 and is committed to addressing climate change. Since 2003, over CDN\$1.3 billion in funding has been dedicated to climate change related activities. Canada recognizes the opportunities associated with the international carbon market in terms of providing a cost-effective means for public and private entities to meet their Kyoto targets, as well as the means for new investments that also contribute to the sustainable development objectives of the host country.

Canada congratulates the PCF for its groundbreaking achievements. The PCF has been an excellent source of 'learning by doing', providing a wealth of information on the practical aspects of implementing greenhouse gas emission reduction projects. The experience with the PCF has fostered Canada's commitment to continue its participation via the new World Bank carbon funds, namely the Community Development Carbon Fund and the BioCarbon Fund.\*

### GOVERNMENT OF FINLAND



The Finnish government regards the Kyoto Protocol as a landmark agreement among the international efforts to tackle global environmental challenges. Joint Implementation and the Clean Development Mechanism are essential parts in the implementation of the Protocol. According to the current National Climate Change Strategy, Finland aims to reach its Kyoto target through domestic measures and European Union Emissions Trading. The Strategy will, however, be revised by early 2005, and an official target for the use of the CDM and JI may be set.

Finland has established a CDM/JI Pilot Program to test the mechanisms and create the capacity to utilize these mechanisms. The Program has a budget of approximately €20 million. The PCF accounts for about half of this budget. The rest of the budget will be used to buy verified emission reductions, emission reduction units, assigned amount units and/or certified emission reductions from about ten projects bilaterally, as well as through another carbon fund. Finland expects to cover approximately five percent of its reduction target through the Pilot Program.\*

### JAPAN BANK FOR INTERNATIONAL COOPERATION



JAPAN BANK FOR INTERNATIONAL COOPERATION

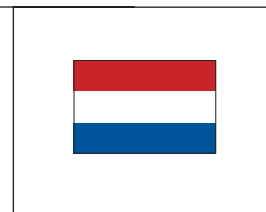
The Japan Bank for International Cooperation (JBIC) is a governmental financial institution that implements Japan's external economic policy and economic cooperation with an overseas network of 26 representative offices worldwide, and with ¥20,566 billion (end of fiscal year 2003, International Financial Operations: ¥9,087 billion, Overseas Economic Cooperation Operations: ¥11,479 billion) in outstanding loans.

JBIC has been very active for more than 10 years in addressing global environment issues and in providing finance to projects that contribute to the effort to mitigate climate change. In line with these past efforts, JBIC participated in the PCF along with Japanese private companies in order to become engaged in promoting the flexible mechanisms of the Kyoto Protocol. JBIC is actively

involved as a member of the PCF Participants' Committee and highly commends the PCF fund management unit for the accumulation of know-how in formulating concrete Clean Development Mechanism and Joint Implementation projects. JBIC also intends to utilize the experience and knowledge obtained through participation in the PCF, along with our extensive network in dealing with developing countries.\*

#### GOVERNMENT OF THE NETHERLANDS

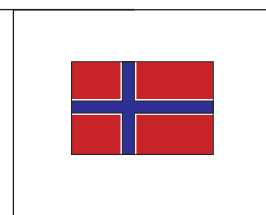
The Dutch government is very committed to tackling the problem of global warming. The government decided in 2000 to make available a budget to buy 50 percent of its Kyoto target of a six percent reduction by 2012 as credits from the Joint Implementation and Clean Development Mechanism instruments. This target equals 100 million tons of carbon dioxide equivalent. The Dutch government implements JI projects through the Dutch Joint Implementation ERUPT tenders; agreements with the European Bank for Reconstruction and Development (EBRD) and the World Bank; and CDM projects via the Clean Development Mechanism Purchase Program.



The Ministry of Economic Affairs, the representative of the Dutch government in the PCF, finds it of utmost importance that carbon dioxide emission reductions get a price on an international market, because it will allow us to use market mechanisms to tackle an environmental problem in a cost-effective way. The start of the European Union Emissions Trading Scheme from January 1st 2005 is a very positive development on this road. The PCF and the Dutch government are working hard on the prompt start of the CDM. The government is disappointed by the fact that the Kyoto Protocol is not yet in force but the EU Directive linking CDM and JI with the European Emissions Trading Scheme will provide an incentive for the development of the CDM and JI. The Netherlands hopes the years 2004 and 2005 will bring a breakthrough because investments in sustainable energy development need certainty about long-term policies and targets.\*

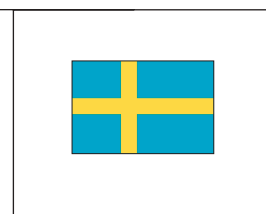
#### GOVERNMENT OF NORWAY

In 1996, following the creation of the pilot phase on Activities Implemented Jointly (AIJ) at the first Conference of the Parties to the United Nations Framework Convention on Climate Change in Berlin, Norway supported the creation of an AIJ program at the World Bank. The objectives of the program were to extend and diversify the AIJ transactional experience by creating new partnerships and implementing a range of project types. The program emphasized learning, client-country engagement, methodological development, private sector participation and the identification and selection of projects. Three AIJ projects—in Poland, Mexico and Burkina Faso—were implemented through the program, and methodologies for baselines and for monitoring and verification were developed for these projects. These experiences directly influenced the development of the carbon funds in the World Bank, and the participation of Norway in the PCF.\*



#### GOVERNMENT OF SWEDEN

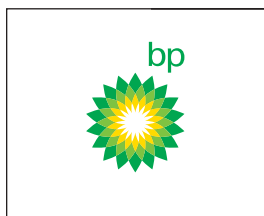
Sweden strives to be a forerunner in global cooperation to curb climate change. Its domestic emissions are low compared to most other industrialized countries—with a reduction of emissions by almost 50 percent since the 1970s. International cooperation, cost efficiency and fairness are core elements in Swedish climate policy. Even before the first meeting of the Parties to the Kyoto Protocol, Sweden decided to launch a program for Joint Implementation projects in the Baltic Sea region. More recently, Sweden with Norway, Denmark, Finland and other regional





neighbors signed a Testing Ground Agreement that aims to make the Baltic Sea region a testing ground for the flexible mechanisms. A core element is a Testing Ground Facility that will invest €10-20 million in regional JI-projects. Sweden has made great efforts to ensure that the Kyoto Mechanisms evolve into efficient, reliable and fair tools for international cooperation in the field of climate change mitigation. Sweden joined the PCF with a view to influence the policy of the fund towards high-quality projects, discuss interesting methodological challenges, and promote a just geographical distribution of projects. Our conviction that rules and guidelines must reflect high standards of environmental integrity, as well as practical experience, is also reflected in our participation in the PCF. \*

#### BP P.L.C.



BP p.l.c. is the holding company of one of the world's largest petroleum and petrochemicals groups. The company's main activities are exploration and production of crude oil and natural gas; refining, marketing, supply and transportation and manufacturing and marketing of petrochemicals. BP has a growing activity in gas and power and in solar power generation. BP has well-established operations in Europe, North and South America, Australasia and Africa.

One of BP's goals is to "do no damage to the environment". We are actively involved in climate change policy debate, working with others on mitigating technologies, and supporting the development of flexible mechanisms such as emissions trading. Having met our first emission reductions objective in 2001, we are making continuing efforts to reduce emissions from our production and our products. In 2003, we developed our thinking on how greenhouse gas concentrations could be stabilized over time—acknowledging the magnitude of the challenge while identifying potential solutions.

Participating in the PCF has provided a good business perspective, which runs in parallel with BP's stated goals to achieve sustainable development and behave with social and corporate responsibility. The PCF provides a strong framework for developing the CDM and JI processes, and for communicating its market-leading knowledge of the global carbon market.\*

#### CHUBU ELECTRIC POWER CO. INC.



Chubu Electric Power Co. Inc. (Chubu Electric) supplies electricity to the Chubu region of central Japan, which has a population of 16.6 million people. Manufacturing in the region accounts for about 15 percent of the national gross domestic product.

In the energy industry, Chubu Electric believes that there is no sustainable development for an enterprise if it does not work in harmony with the global environment. Climate change in particular, is a complex, long-term problem and this requires us to coordinate not only with our partners in Japan but also with those overseas. This is why we adopted an action plan through which our company shares environmental consciousness with others. We are working towards achieving this goal in a variety of fields such as implementing a biomass project in Thailand and a fund to improve energy efficiency in Asian countries.

The PCF has promoted well-designed Clean Development Mechanism and Joint Implementation projects that further the sustainable development of host countries and has played a leading role in implementing the Kyoto Mechanisms. Chubu Electric joined the PCF at its founding and has committed \$10 million—among the largest contributions from a private sector participant. \*

## THE CHUGOKU ELECTRIC POWER CO., INC.

Since its establishment in 1951, the Chugoku Electric Power Co., Inc. has developed its businesses on the basis of its fundamental mission of providing a stable supply of high-quality electricity at affordable rates. Our service area, the Chugoku region in western Japan, covers about 32,000 square kilometers, and has a population of around 7.8 million. The area has an annual gross domestic product of approximately \$260 billion, making it comparable to the economy of Switzerland or Belgium.



One of the top management priorities of the company is taking action on environmental issues. In 1993, the company adopted the Chugoku Electric Environmental Action Plan and is actively engaged in environmental issues. To prevent global warming, we are taking various measures including promotion of nuclear power generation and expanded use of new forms of energy. Participation in the PCF, the world's pioneer in the field of carbon markets, is also one of our measures to address the global warming issue. Through participation in the PCF, we expect that not only will we obtain emission reductions to assist us in meeting our voluntary target, but that we will also be able to contribute to sustainable development and expand our knowledge of the global carbon market.\*

## DEUTSCHE BANK

Deutsche Bank, one of the world's largest financial services groups, recognizes the fundamental importance of the environmental and economic implications of climate change. As a consequence, the bank is establishing a portfolio of services to assist its clients to deal with the changing policy and economic conditions that the ratification of the Kyoto Protocol and other climate change legislation will generate. These services include helping clients identify their liabilities under national and international climate change legislation, developing innovative hedging mechanisms to reduce risk and providing structured finance to maximize projects' viability and environmental value. Deutsche Bank strongly endorses the approach and methodology undertaken by the PCF. Its objective of learning by doing has been extremely instructive—first, by helping to develop the appropriate documentation for generation and transfer of emission reductions, but also and more importantly, by highlighting some of the critical linkages in the public-private sector frameworks that need to be addressed if the significant transfers of finance and technology envisaged by the Kyoto Protocol are to be realized. To this end, the ability of Deutsche Bank to meet representatives of host governments, industry and the finance sector, who are participating in the PCF, has been particularly welcome. Given that the Kyoto Protocol is still not in force and that the methodologies and procedures, which the market had hoped would be forthcoming from the Protocol's Executive Board, are yet to materialize, the PCF has achieved notable successes. Equally, in the current very illiquid market conditions, the PCF has played a major catalytic role in ensuring that the economic benefits of the Kyoto Protocol's ratification have been given an empirical base.



Deutsche Bank will be launching an emissions trading desk in the near future. This will be based in London as part of the Global Commodities Group. The Global Commodities Group is one of the world's leading providers of risk management strategies across a range of products and sectors including: oil, petroleum, gas, electricity, weather and base and precious metals. Underpinning our capacity to price, trade and hedge for clients is the security and ability to commit capital from the bank's substantial balance sheet. We consider that this cross-sectoral capability will enable us to provide clients with a unique climate change management service. As with all the participants of the PCF, working with the fund over the last few years has been an invaluable experience and we are happy to take this opportunity to congratulate the fund management unit on the contribution it has made to climate change policy and market development.\*

## ELECTRABEL



Electrabel is one of Europe's front-runners in the energy sector and leader in the Benelux electricity market. Electrabel provides comprehensive and tailor-made energy for industrial enterprises, making the most of the synergy between electricity and natural gas. It also offers services to small businesses and residential customers. In 2002, Electrabel's sales outside Belgium (its historical base country) represented more than one third of the total volume (excluding trading).

Climate change is one of the most important challenges Electrabel will have to face in the future. But response to climate change is much more than complying with the new European Emissions Trading Scheme that will come into force at the beginning of 2005. We have to look for innovative ways to protect our business future in view of the emerging carbon-constrained economy. Scenarios and models alone will not be able to define more than the rough processes of the new market. The PCF appealed to us because we realized the climate-change challenge cannot be solved in industrialized countries alone. In this context, projects represent a positive combination of sustainable progress in the host countries, technology transfer and cooperative development.\*

## FORTUM



Fortum is a leading energy company in the Nordic countries and the other parts of the Baltic Rim. Fortum's activities cover the generation, distribution and sale of electricity and heat; the production, refining and marketing of oil; as well as other energy-related services. Fortum's ambition is to provide safe and environmentally benign energy products and services, that contribute to a more sustainable use of resources.

At the beginning of 2000 Fortum launched a Climate Initiative, which included actions at our own installations and the creation of Fortum's Climate Fund investing in Kyoto Mechanisms. In autumn 2002 the company introduced a bio-gasoline with an ethanol component. In Fortum's electricity and heat production the company aims to favor renewable energy sources, and is currently focusing on enhancement of hydropower and increasing use of biomass. Eighty-one percent of Fortum's power production in 2003 took place without carbon dioxide emissions. The cooperation with the World Bank started in 1997 in the early design phase of the PCF. Fortum's vision then was that market-based instruments, like emissions trading and Kyoto Mechanisms, could offer the best solutions for tackling climate change. This vision is now realized by the start-up of European Union-wide emissions trading and the implementation of the Linking Directive.\*

## GAZ DE FRANCE



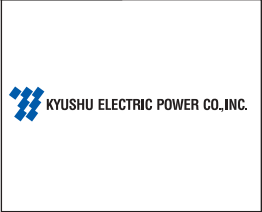
Gaz de France is one of the leading European gas groups and is active throughout the world in exploration and production, natural gas trading, transmission, storage, distribution, energy management, air conditioning and heating. Gaz de France has 15 million customers, 38,000 employees, €16.65 billion in consolidated net sales, €2.87 billion in investments, 662 billion kilowatt hours of natural gas carried (via pipelines and liquid natural gas facilities), 9.8 billion cubic meters of natural gas stored in 14 storage facilities, and 31,000 kilometers of transmission systems. Its greenhouse gas emissions today are close to four million tons of carbon dioxide equivalent.

Gaz de France is actively looking at sustainable development issues such as reserves impoverishment, promotion of energy efficiency and climate change. The company was engaged in action early on global warming—both internally and externally—including research on more efficient and

cleaner systems, including major experimentation programs on fuel cells. The company is also France's leader in district heating networks using geothermal power. Gaz de France has invested heavily in fostering the development of clean public transport using natural gas—30 cities have switched to natural gas vehicles. In 2002, Gaz de France made a voluntary commitment in France to reduce the greenhouse gas emissions of its transport and distribution pipeline systems by 10 percent between 1990 and 2007. It is also involved in a research program in the Netherlands for carbon dioxide sequestration in production fields.\*

**KYUSHU ELECTRIC POWER CO. INC.**

Kyushu Electric Power Company is a power utility where business covers a wide range of services—from power supply to telecommunications. The company is situated in the Kyushu region, the most southwestern of Japan's four main islands. With an area of 4.2 million hectares, the region is home to approximately 13 million people, with an economic scale of \$377 billion. Taking advantage of its close proximity to the Asian continent, Kyushu has long served as a hub of cultural and technical exchange between European and other Asian countries, and Japan. Kyushu Electric Power Company was founded in 1951. Its capital is ¥237.3 billion, with power sales of 77.3 billion kilowatt hours, and it employs 13,660 people.



Kyushu Electric is taking the best possible measures for environmental conservation, while satisfying power requirements. As measures against global warming, the company actively promotes the use of nuclear power and renewable energy, as well as improvements in the efficiency of power stations.

Kyushu Electric is endeavoring to utilize its accumulated know-how and technologies on the reduction of greenhouse gases in activities to prevent global warming. As a part of such efforts, the company participated in the World Bank's PCF upon its establishment in 2000, agreeing to contribute \$8 million.\*

**MITSUBISHI CORPORATION**

Mitsubishi Corporation (MC) is one of the world's most diverse enterprises as manifested in the expertise of its six business groups—Energy, Metals, Machinery, Chemicals, New Business Initiative and Living Essentials. We have many subsidiaries and affiliates and a network of offices around the world. MC has been active, not only in the trading area, but also in the development of commercial opportunities, from product marketing to distribution, project coordination, sourcing of raw materials, capital investment and development of sales channels.



Mitsubishi Corporation's participation in the PCF contributes to establishment of a risk mitigation system for those who are potentially liable for the climate change problem. Specifically, emission reduction credits acquired through the PCF will be made available to others in the future for them to comply with any possible compliance requirement, and also will be used to develop an emissions trading market to facilitate the industry's compliance activities in the most efficient way. MC is prepared to continue its active role as a PCF participant.\*

## MITSUI & CO., LTD.



Mitsui is one of Japan's leading general trading companies, or *sogo shosha*. As part of the world-wide effort to find solutions to the problem of global warming, Mitsui is undertaking such commerce-oriented approaches as compliance with international tradable emissions programs, participation in brokerage of carbon credits through investment in the broker CO2e.com, LLC, and promotion of emission reduction projects, afforestation businesses and alternative energy sources.

Mitsui is a participant in the PCF established by the World Bank, having made a commitment to contribute \$6 million. The fund is an ambitious endeavor to seek out new, economically optimized methods of solving the twenty-first century's greatest environmental challenge. It plays a capacity-building role that demonstrates that the Kyoto Protocol is workable through the Kyoto Mechanisms, composed of the Clean Development Mechanism, Joint Implementation, and emissions trading. These activities contribute to fostering a global carbon market, climate-change mitigation and sustainable development.\*

## NORSK HYDRO



Norsk Hydro manufactures aluminum, petrochemicals and has activities in the oil, gas and electricity sectors. The group has businesses in 30 countries. Norsk Hydro's annual emissions of greenhouse gases amounted to 8.3 million tons of carbon dioxide equivalent in 2003. About three quarters of Norsk Hydro's emissions are in the European Union (EU) and Norway.

Norsk Hydro recognizes that the risk of long-term climate change requires action now to reduce global greenhouse gas emissions. The group considers that technology development and transfer are necessary to develop long-term sustainable systems that reduce emissions. Norsk Hydro recognizes that the EU has taken the lead by establishing a market-based emissions trading system that provides incentives to drive emission reductions. The company welcomes the possibility of using credits from CDM-projects as soon as 2005 and credits from JI from 2008 in the EU trading system.

Norsk Hydro's participation in the PCF has been an important element in the company's build-up of knowledge and position, as it prepares for the emissions trading system emerging within the EU. Participation in the PCF is also expected to result in cost savings for Norsk Hydro. The company knows that the marginal abatement costs of achieving greenhouse gas reductions in OECD countries are projected to be significantly higher in the future than the costs in developing countries and countries with economies in transition. PCF projects are undertaken exclusively in the latter groups of countries, resulting in cost savings for Norsk Hydro. And finally, the company's participation in the PCF meets with its goals of being environmentally and socially responsible.\*

## RABOBANK

Rabobank was among the first financial institutions to realize the business implications of climate change. As the world's leading food and agri bank, the business of Rabobank's key clients is in natural resource development. Hence Rabobank's long-term business depends on sustainable resource management and effective climate change mitigation policies. Given the potentially large societal impacts of climate change, it was clear that Rabobank could not stand aside. Participation in the PCF was Rabobank's first step into the emerging carbon market. Today Rabobank has a suite of products to help its clients interact effectively with environmental asset markets. Building on its network of offices in countries such as India, Brazil, Chile and China, Rabobank is presently running an efficient and fully integrated carbon finance operation. Having signed an emission reductions procurement contract with the Dutch government, Rabobank is the first private financial institution to run a carbon fund. In addition, Rabobank's Environmental Financial Products department, based in London, England, assists its clients in managing their compliance risks and helps them to deploy their capital effectively in environmental asset markets. With a view to the imminent start of a mandatory carbon dioxide compliance scheme in the European Union, Rabobank has recently opened an electronic trading portal for environmental commodity trading (see "www.newvalues.net"). In this way Rabobank intends to enable easy access to environmental commodity markets, thereby contributing to enhanced liquidity and market transparency.



The Rabobank Group is a broad financial service provider with a balance sheet of \$400 billion. The group consists of 340 independent local cooperative Rabobanks, with more than 1.4 million members. In its Dutch home market, the Rabobank Group has nine million private and business customers and is the market leader in virtually every area of financial services. Rabobank is also the largest internet bank in Europe. The Rabobank Group is represented internationally with 169 locations in 34 countries. It has received the highest credit rating from the major rating institutes and was selected as the world's safest bank by Global Finance each year from 1999 to 2002. The Swiss rating agency Sustainable Assets Management gave the Rabobank Group the second highest sustainability rating of banks worldwide in 2003.\*

## RWE

RWE is Germany's fifth-largest industrial company and ranks among the world's leading multi-utility companies. Its core businesses are electricity, gas and water services. Through its core business, RWE offers services that are indispensable to modern society. This gives rise to the question of how we should handle resources and take responsibility for future generations.



Climate protection is one of the major challenges facing us. To address this, the company carries out comprehensive modernization projects for its portfolio of power plants, which allows us to lower greenhouse gas emissions profitably—and to impressive orders of magnitude. RWE's latest-generation, lignite-fired power station sets global standards. In addition, the company dedicates significant time to exploring ways to use renewable energy profitably. In this light, RWE expanded its renewable energy capacity considerably in recent years. As part of RWE's climate change mitigation strategy and in order to gain experience with project-based greenhouse gas emission reductions, RWE joined the PCF. The PCF plays a unique role in the market for JI/CDM projects and represents the cutting edge in realizing greenhouse gas mitigation projects.\*

## SHIKOKU ELECTRIC POWER CO., INC.



Shikoku Electric Power Co., Inc. (YONDEN) is one of the 10 electric utility companies in Japan that carry on the integrated process of generating, transmitting, distributing and selling electricity in their respective service areas. We provide high-quality, low-cost, stable electricity of 26 terawatt hours for more than four million customers on Shikoku Island.

We perceive environmental concerns, especially climate change, as one of the key issues for corporate management. With this in mind, the company is pursuing a well-balanced combination of power sources, considering carbon dioxide-free nuclear power as a core power source. In addition, the company is making every effort to reduce greenhouse gas emissions in the development, operation and maintenance stages of power supply facilities. Furthermore, we recognize that implementing overseas projects based on the Kyoto Mechanisms effectively supplements our domestic efforts. From this point of view, we have committed to contribute \$10 million in total to the Prototype Carbon Fund.

Through many ongoing projects in the PCF, we have acquired significant knowledge on emerging rules for CDM/JI and project design techniques. We expect the PCF to create high-quality greenhouse gas emission reduction credits economically while contributing to sustainable development.\*

## STATOIL ASA



Statoil is an integrated oil and gas company headquartered in Stavanger, Norway with approximately 19,000 employees in 28 countries. In 2003 we produced an average of 1.1 million barrels of oil equivalent per day—92 percent from the Norwegian continental shelf. We are one of the largest net crude exporters in the world, a leading supplier of natural gas to Europe and a major retail brand in Scandinavia and the Baltic states.

Statoil's greenhouse gas emission reductions strategy involves cost-effective emission cuts in our operations, participation in emissions trading from 2005 and the project-based mechanisms in the Kyoto Protocol. We support the World Bank's gas-flaring initiative, which aims to reduce gas flaring worldwide. We seek to develop our leading position in subsurface injection and storage of carbon dioxide into an industrial business opportunity, capitalizing on our carbon dioxide sequestration at the Sleipner field in the North Sea. For this, Statoil received the World Petroleum Congress's award of excellence for technological development in 2002.

Statoil is now building the first export facility for liquefied natural gas (LNG) in Norway and Europe. Natural gas deep beneath the Barents Sea will be piped ashore, cooled down and shipped by special carrier to Spain and the United States. Shipment starts in 2006, and will continue for more than 20 years. Carbon dioxide captured from the natural gas stream will be returned to the offshore field through a 143-kilometer pipeline and injected and stored in a separate geological formation. A total of 700,000 tons will be stored annually.

Statoil's participation in the PCF is based on a wish to contribute to implementation of the Kyoto Mechanisms to benefit the development of non-Annex I countries and to enable Statoil to meet obligations for greenhouse gas emission limitations cost-effectively. Statoil has confirmed its commercial trust in the PCF by its extended \$10 million participation.\*

## TOKYO ELECTRIC POWER COMPANY

Tokyo Electric Power Company (TEPCO), which supplies electricity mainly to Tokyo metropolitan areas, is one of the largest electricity supply companies in the world with peak supply and yearly electricity sales at 64,300 megawatts and 281,902 gigawatts respectively. As TEPCO consumes a large amount of fuel in generating electricity, the reduction of carbon dioxide emissions has been an important issue for TEPCO's management. In its management vision, TEPCO voluntarily set its carbon dioxide emission reduction target of curbing carbon dioxide emission intensity 20 percent from 1990 levels in 2010. In order to achieve this challenging target, TEPCO is taking various measures including developing nuclear power plants and renewable energy projects and improving energy efficiency in thermal power plants.



In addition to these domestic measures, TEPCO has been engaged in CDM/JI activities—participation in the PCF was a milestone in terms of TEPCO's CDM/JI project development. Since it began operations in 2000, the PCF has played an important role in creating the CDM/JI market and has successfully pioneered the carbon business. The PCF has contributed to the creation of rules and procedures of new mechanisms that can be used by various carbon market players. As a participant in the PCF, we are proud of its success and have obtained much invaluable knowledge through PCF experience. Based on the experience and expertise gained, we are extending our CDM/JI activities and look forward to continuing cooperation with the PCF.\*

## TOHOKU ELECTRIC POWER COMPANY, INCORPORATED

Tohoku Electric Power Company was established in 1951 and supplies electricity to approximately 7.6 million customers throughout the seven prefectures of the Tohoku region, in the northeastern part of Japan's main island. Tohoku Electric Power operates facilities under an integrated structure of generation, transmission and distribution. The company's electric power sales in 2003 amounted to 74,547 gigawatt hours, equivalent to those of Belgium.



With the deregulation of the electricity market in Japan along with a drastic change of its business, Tohoku Electric Power has placed environmental activities at the top of its management's list and established the Environmental Policy and the Midterm Environmental Action Plan, which covers the next three years. One of the plan's major emphases is climate change mitigation. As part of this effort, we decided to participate in the PCF. Furthermore, the company has committed itself to nuclear power development and expanding utilization of renewable energy, enhancement of efficiency, and lower fossil fuel consumption at its generation facilities.

Participation in the PCF gives Tohoku Electric Power Company a great opportunity for gaining know-how with regard to the Kyoto Mechanisms, and also a chance to demonstrate to the world community its environmental commitment to climate change mitigation.\*

\*This information was provided by the participants of the PCF and, with the exception of minor editorial changes, is reproduced in the same form in which it was provided. The views and opinions expressed in these pages are those of the participants providing the information, and do not represent the views and opinions of the World Bank or the Trustee. Neither the World Bank, nor the Trustee take any responsibility for the information contained, or the representations made in these pages.



# PCF Report on Business

## PCF Portfolio Status:

### EMISSION REDUCTIONS PURCHASE AGREEMENTS SIGNED (as of September 30, 2004)

Country/Project Name	Project Description	PCF Contract in million US\$	PCF ERPA ERs tCO <sub>2</sub> e	Total Project ERs tCO <sub>2</sub> e
<b>Brazil:</b> Plantar Sequestration and Biomass Use	Charcoal produced from sustainably harvested plantations replaces coke for pig iron manufacture	5.30	1,514,286	10,251,564
<b>Bulgaria:</b> District Heating	District heating system upgrades for the city of Sofia	4.34	1,084,000	1,539,715
<b>Bulgaria:</b> Svilosa Biomass	13.4 megawatt biomass-based boiler to utilize wood waste produced at the Svilosa pulp and cellulose plant to replace coal	1.58	450,000	1,007,724
<b>Chile:</b> Chacabuquito Small Hydro	26 megawatt run-of-river hydro to replace coal or gas in the grid	4.06	1,000,000	2,752,000
<b>Colombia:</b> Jeparachi Wind Farm	19.5 megawatt wind farm in the northern part of Colombia to displace a mix of coal- and gas-based power generation	3.20	800,000	1,168,000
<b>Costa Rica:</b> Cote Small Hydro	6.3 megawatt hydro to replace thermal power generation	0.60	172,120	215,138
<b>Costa Rica:</b> Chorotega Wind Farm*	8.4 megawatt wind farm to displace thermal power capacity addition	0.92	262,660	323,850
<b>Czech Republic:</b> CEA Energy Efficiency	Energy efficiency measures and renewables through the Czech Energy Agency (CEA)	2.00	500,000	500,000
<b>Guatemala:</b> El Canada Small Hydro	43 megawatt run-of-river hydroelectric plant in the west coast of Guatemala to displace thermal power plants	7.50	2,000,000	2,883,600
<b>Hungary:</b> Pannongreen Pécs Fuel Conversion Project	Conversion of Pécs Power plant's existing coal-fired boilers to biomass. Annual generation 162 terajoules heat and 334.3 gigawatt-hour electricity	5.01	1,193,000	2,645,500
<b>Indonesia:</b> Indocement Sustainable Cement Production	Implement energy efficiency measures including reducing clinker contents in the produced cement, burning alternative fuels for clinker formation, utilizing heat power generation	10.80	**	11,313,017
<b>Latvia:</b> Liepaja Solid Waste Management	Methane capture from waste management and carbon dioxide reduction from power generation	2.48	387,933	864,600
<b>Moldova:</b> Soil Conservation	Afforestation of 14,394 hectares of degraded and eroded state-owned and communal agricultural lands throughout Moldova	4.55	1,300,000	3,215,296
<b>Romania:</b> Afforestation	Afforestation of 6,852 hectares of public land	3.08	854,985	1,360,183
<b>South Africa:</b> Durban Municipal Solid Waste	10 megawatt landfill gas-fired generator to produce electricity from landfill-collected methane	15.01	3,800,000	8,780,034
<b>Uganda:</b> West Nile Electrification Project	1.5 megawatt and 5.1 megawatt small hydro to replace a number of diesel generator sets in the West Nile region	3.90	1,300,000	1,884,102

\*This agreement terminated on June 30, 2004 as the financial closure conditions precedent to effectiveness were not satisfied. The Trustee may execute another purchase agreement for this project should the conditions precedent be satisfied at a later date.

\*\*Omitted at the request of project sponsor



## PCF Portfolio Status:

### PROJECTS UNDER NEGOTIATION (as of September 30, 2004)

Country/Project Name	Project Description	PCF Contract in million US\$	PCF ERPA ERs tCO <sub>2e</sub>	Total Project ERs tCO <sub>2e</sub>
<b>Brazil:</b> Alta Mogiana Bagasse Cogeneration	Increase efficiency in manufacturing processes and install new facilities to generate surplus electricity to be commercialized	0.68	170,000	450,000
<b>Brazil:</b> Guarani Cruz Alta Bagasse Cogeneration	Increase the installed capacity for electricity production at Cruz Alta's site through installing new equipment (boilers and turbo-generators)	0.90	225,000	625,000
<b>Brazil:</b> Lages Wood Waste Cogeneration Facility	Installed capacity of 28 megawatt electricity plus 25 ton/h of steam, fueled by wood waste from the sawmill industries of the region	2.8	700,000	1,622,500
<b>China:</b> Jincheng Coal Mine Methane Recovery	Capture of coal mine methane associated with coal mining operation and utilization of coal mine methane for 120 megawatt power generation	17.0	4,000,000	49,046,000
<b>China:</b> Xiaogushan Run-of River Hydropower	98 megawatt run-of-river hydroelectric plant located on the Heihe River in the Sunan Yugur County	9.22	2,170,000	2,932,600
<b>Costa Rica:</b> Rio General	39 megawatt run-of-the-river hydroelectric project in the lower part of the General River sub-basin in the Chirripó Atlantic basin	6.3	1,800,000	2,715,240
<b>Costa Rica:</b> Vara Blanca Wind Farm	9.6 megawatt wind farm to displace thermal power generating units in the provinces of Heredia and Alajuela	1	284,660	355,825
<b>India:</b> Municipal Solid Wastes (ABIL)	5.6 megawatt electricity and 75 tons per day of organic waste from municipal solid waste in Lucknow in Uttar Pradesh	4.25	1,000,000	1,898,649
<b>India:</b> Nitrous Oxide Removal Project	Removal of Nitrous Oxide from the production of Nitric Acid	12	3,000,000	10,800,000
<b>Mexico:</b> INELEC Hydros	66 megawatt capacity hydro plants in four areas: Trojes, El Gallo, Chilatan, and Benito Juárez	4.48	1,120,000	6,175,464
<b>Mexico:</b> Umbrella Waste Management	21 megawatt capacity 6 bundled waste-to-energy projects	6.3	1,500,000	3,513,000
<b>Philippines:</b> North Wind Bangui Bay Wind Farm	25 megawatt capacity wind farm on a strip of land on the foreshore of Bangui Bay in Ilocos Norte	2.41	566,000	884,500
<b>Poland:</b> Stargard Geothermal Heating	District heating system to utilize geothermal energy to replace coal in the city of Stargard	0.96	240,000	364,553
<b>Uzbekistan:</b> Andijan Heating	District heating system replacement and upgrade in the city of Andijan	0.63	210,000	1,070,000
<b>Uzbekistan:</b> Tashkent Heating	District heating system replacement and upgrade in the city of Tashkent	7	2,000,000	3,135,000
<b>Vietnam:</b> Grontmij Landfill in Ho Chi Minh City	Landfill gas recovery and flaring of captured methane at 4 landfills in Ho Chi Minh City.	15	2,500,000	6,540,000

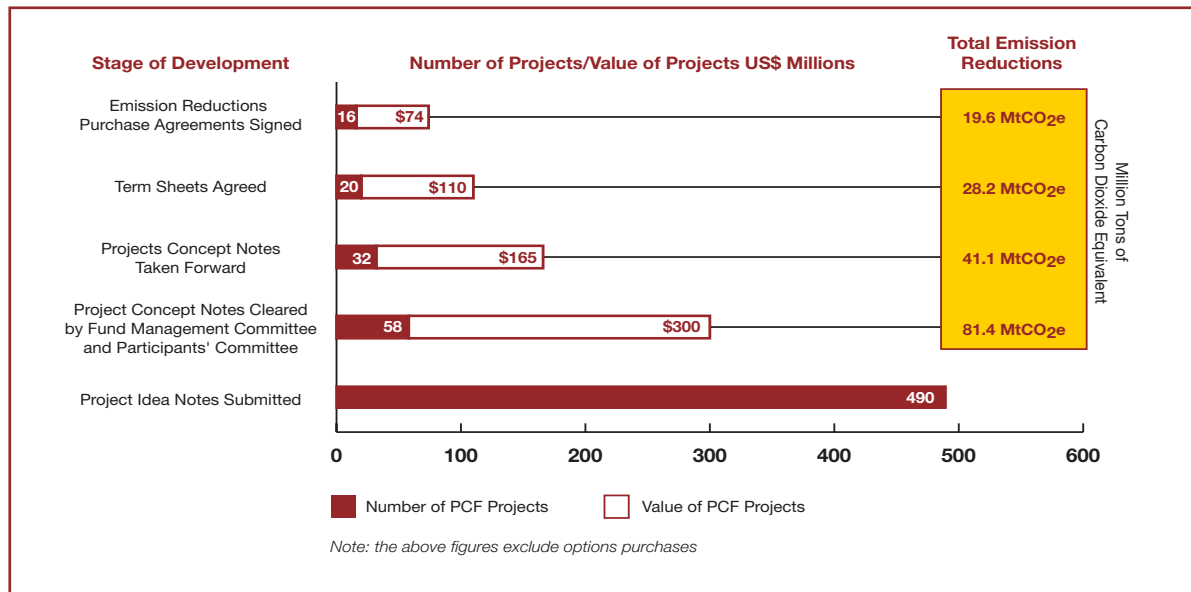


# PCF Portfolio Development

Four years into the placement phase, the PCF has reviewed more than 490 project proposals (Figure II.A.) Of these, 58 have been presented to the PCF Participants' Committee and have received its approval. The process of identification of the projects for the placement phase of the PCF is almost complete and the final portfolio of 32 projects will be drawn from the projects listed in the PCF Portfolio Status 2004 tables. The PCF has signed emission reductions purchase agreements (ERPAs) with a total value of \$74.3 million and is now negotiating 16 projects with a total value of \$ 90.9 million.

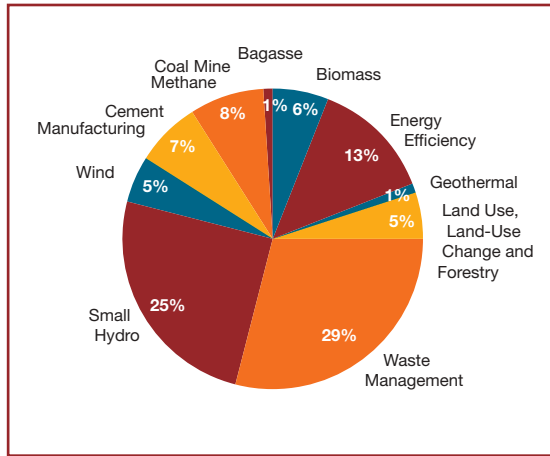
With the placement phase coming to an end by June 2005 new projects will now only be considered if they are of exceptional quality and have significant benefits for the PCF portfolio. More important from a business perspective, all the groundwork has been laid for final contracting of all the projects and only logistical factors could affect the final dates of closure for these deals.

Figure II.A - Status of Project Development in the PCF



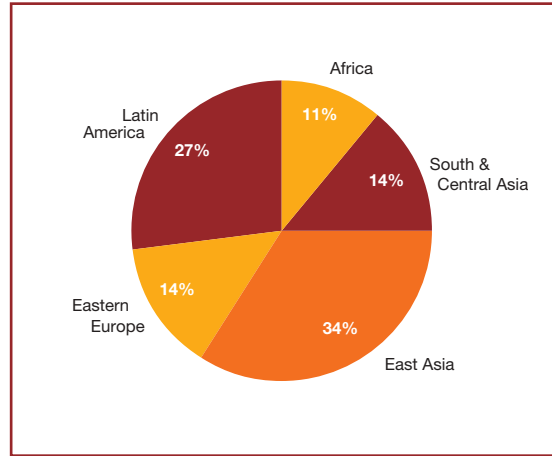
**Figure II.B - Technological Distribution**

Active PCF Pipeline Projects - Total of Approx. US\$165 Million



**Figure II.C - Regional Distribution**

Active PCF Pipeline Projects - Total of Approx. US\$165 Million



**Technological diversity** has been a design parameter for the PCF portfolio. As is demonstrated in Figure II. B, the PCF portfolio is diverse and covers a wide range of technology and applications. As intended, renewable energy and waste-to-energy technologies dominate the portfolio pipeline by representing 60 percent of total emission reductions purchased. Including cement alternative fuel and component projects involving efficiency upgrades, over 20 percent of the portfolio will consist of energy efficiency projects.

**Geographic diversity** of the projects from which the final PCF portfolio will emerge is presented in Figure II.C. While project pipeline development moved rapidly in the Latin America region in the early years of the placement phase of the PCF, a balance is beginning to emerge among the regions. Consistent with the expressed preference of the PCF participants, the East Asia pipeline of potential projects has become very strong and is dominated by a few projects with large volumes of emission reductions. As a consequence, East Asia now accounts for about 34 percent of the total amount of about \$165 million of contracted and potential emission reduction purchases in the PCF portfolio (Figure II.C). While the pipeline of projects has grown in East Asia, the Eastern European region involving Joint Implementation projects has not developed as quickly as anticipated.



# PCF Asset Creation

## Creating the Carbon Asset

The *carbon asset* refers to the verified greenhouse gas emission reductions that a project generates when comparing its emissions to emissions in a baseline scenario. The baseline scenario describes the situation that would prevail without the project. The baseline scenario and the associated emissions are determined by applying a baseline methodology. The Parties to the United Nations Framework Convention on Climate Change (UNFCCC) have established an Executive Board to oversee the CDM and to approve methodologies for baselines, monitoring and calculation of emission reductions. Project participants must use approved methodologies in order to create emission reductions, which can be used to comply with their Kyoto obligations. In order to maximize the likelihood to convert verified emission reductions purchased by the PCF into certified emission reductions, the development or the application of a methodology and the setting of the baseline is an essential step in the PCF carbon asset creation process.

Since its inception, the PCF has been a major contributor to the development of internationally approved CDM methodologies and has contributed its experience to decisions by the Parties to the UNFCCC and the CDM Executive Board on a wide range of issues:

- The PCF has developed and submitted numerous baseline methodologies for approval by the CDM Executive Board, and in doing so exposed critical issues and proposed solutions—significantly contributing to the development of the two Consolidated Methodologies on waste management and renewable energy projects.
- The PCF has regularly commented on draft papers and positions produced by the Methodology Panel, sharing significant insights with the regulator on how it sees the development of the regulatory system supporting the CDM. Thus the PCF provided significant input on the revision of the project design reporting formats and on the discussion and development of the tools for testing the additionality of CDM projects.
- The PCF has systematically brought issues to the attention of the Parties to the UNFCCC and the CDM Executive Board that it considers to be of major importance for the proper functioning of the CDM market, for instance on the question of an ‘early start’ of CDM projects, authorization of project participants, the definition of small-scale projects, and on modalities and procedures for afforestation and reforestation projects.

The PCF’s work on methodologies has not always fully anticipated the Methodology Panel’s positions and the decisions on methodologies made by the CDM Executive Board. Consequently, in 2004, the CDM Executive Board did not approve all methodologies that were submitted for PCF projects. This outcome requires further attention to limit the regulatory risks assumed by the PCF under its emission reductions purchase agreements. However it is encouraging that as of September 2004, an increasing number of methodologies had been approved. A total of 14 methodologies have been approved and published, five of which are World Bank methodologies (four from the PCF), plus two consolidated methodologies. These methodologies can now be used for preparation and validation of CDM projects without further approval processes. It is also encouraging to note that with the first Designated Operational Entities having been accredited in 2004, all the prerequisites for the registration of CDM projects are in place and the first CDM projects have already been submitted for registration.

## Critical Decisions Ahead

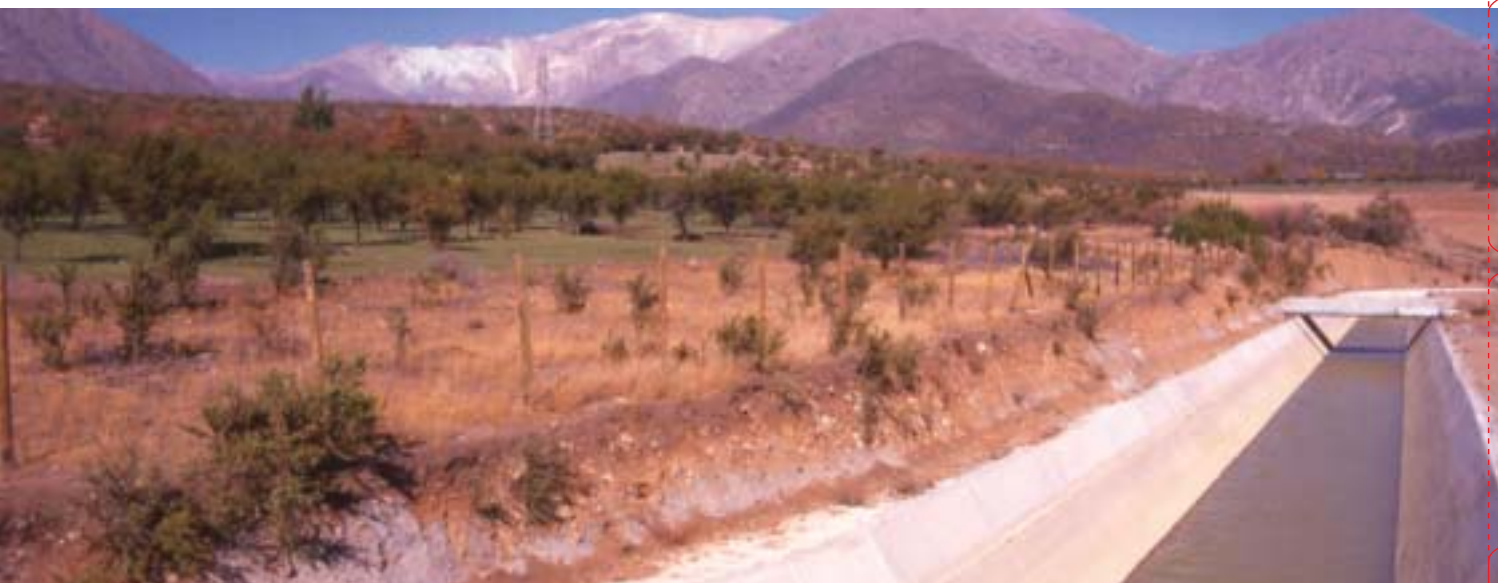
However, many critical decisions on methodologies still need to be made, and the CDM projects within the PCF portfolio remain exposed to regulatory risks. For instance, it is not clear yet how national and sectoral policies will be taken into account in the assessment of baseline methodologies, how the Methodology Panel’s criteria for assessing additionality will actually be applied, whether so-called continuation projects (which continue an activity while the economic rationale for doing so and thus the baseline have changed) will be eligible, how small-scale projects will be defined in the waste management sector, how the simplified methodologies can be applied to series of very small, multi-actor projects, and how the decision of the Parties on modalities and procedures for afforestation and reforestation will be translated into methodologies. The World Bank’s Carbon Finance Business stays involved in all these issues, makes use of the PCF portfolio to develop new methodologies and disseminates its experience to the Executive Board and other participants in the market. For example, with the endorsement from the Chilean Energy and Environmental Agencies, the PCF is currently developing a national methodology for renewable energy projects in the Chilean power sector.

### Challenges for JI Projects

At the same time as the CDM is progressing, the situation for Joint Implementation projects is becoming problematic. Three years before the JI crediting period officially starts (January 2008), very little progress has been made in defining JI rules. At the UNFCCC level the international supervisory board for JI is yet to be established, and on the host country level the national rules for first track JI are still undetermined. The PCF portfolio includes six emission reductions purchase agreements for JI projects, with an additional JI project still in the development phase. Some of these projects are in countries that are subject to the EU Emissions Trading Scheme, which complicates the regulatory environment for JI projects in those countries. In order to facilitate the development of JI projects, the PCF is working with host country governments to make sure that the regulatory infrastructure for first track JI will be established and emission reductions from these projects can be transferred from the start of the first commitment period.

In the past year, the PCF management unit has systematically reported to PCF participants on the status of the regulatory system for the CDM and the progress regarding approval of methodologies generally and as it concerns the PCF project portfolio. The fund management unit now sees more clearly that the challenges regarding CDM and JI methodologies are not diminishing as the PCF portfolio matures, but rather are shifting in sometimes, unforeseeable ways:

- The PCF team spends significantly more time ensuring that PCF-developed methodologies and projects are as closely aligned as possible with the work of the Methodology Panel and the decisions of the CDM Executive Board. In some cases, this means that the team has to redesign projects and redraft project documents to enable registration of these projects. This work is necessary to minimize the regulatory and methodology risk the PCF participants assume, so that participants will not only receive verified emission reductions purchased under PCF emission reductions purchase agreements but will also receive certified emission reductions issued by the CDM Executive Board. This process of conversion of verified emission reductions into certified emission reductions contains risks and challenges, that may sometimes result in verified emission reductions not being issued as certified emission reductions.
- The team is more directly faced with the need to implement a monitoring, verification and tracking system for the PCF portfolio as it begins to receive emission reductions from projects and requests the distribution and issuance of the corresponding certified emission reductions into PCF participants' accounts.
- As the CDM regulatory system is becoming clearer the PCF now has a better chance to raise the efficiency and lower the costs of the development and management of CDM projects. This has already led to greater specialization within the PCF fund management unit. Staff training and capacity building for partner institutions will become even more effective as the certainty of the regulatory system increases.



## Transaction Structuring and Risk Management

As pioneers in the emerging emission reductions market, PCF participants have assumed a wide array of risks in order to facilitate the purchase of emission reductions and benefit from learning by doing. The fund management unit has developed and implemented a range of tools and techniques to help mitigate and manage these risks, both at the transaction level and across the portfolio.

In its early transactions, the PCF negotiated purchases of emission reductions without the benefit of approved methodologies to provide clear guidance specifying eligibility under the CDM or JI. Indeed, as the previous section points out, this guidance is still emerging, and the PCF has made substantial contributions to its articulation. Despite this, most emission reductions purchase contracts done without the World Bank have been for the delivery of certified emission reductions, whereas the PCF purchases verified emission reductions. In the former case, the project sponsor assumes Kyoto-related risks, whereas in the latter case, the purchaser assumes the risk.

For a project to assume Kyoto risk may hamper a project's ability to secure financing. Given the lack of clarity, complexity and rapid evolution of rules, project sponsors and their financial backers are unable to assess the risk that a project or the emission reductions generated by a project will not be Kyoto-compliant. Partly for this reason, banks have been unwilling to lend against the cash flows expected from emission reductions sales.

The PCF has taken a number of steps to remedy this problem and encourage lending to CDM and JI projects. First, it has continued to contract for the purchase of verified emission reductions rather than certified emission reductions

or emission reduction units, thereby assuming the risk that emission reductions verified under a validated Monitoring Plan are not ultimately registered under Kyoto. This therefore makes the revenues from emission reduction sales to the PCF a clear function of a project's performance rather than being contingent upon Kyoto-related "policy risk".

Second, using grant funding from PPIAF and CDCF-plus, and in cooperation with the United Nations Environment Programme's Sustainable Energy Finance Initiative, the carbon finance team has identified and developed risk mitigation tools to facilitate financing of CDM and JI projects, and has convened public and private financial institutions and export credit agencies to provide input on these tools, including identifying ways to improve the "bankability" of emission reductions purchase agreements. PCF participants have both contributed to these consultations and benefited from the resulting improvements in the proportion of projects that reach financial closure.

Third, the fund management unit has identified boutique investment firms that are willing to lend against emission reduction proceeds where banks are not and has introduced them to project sponsors where appropriate. These introductions are resulting in improved ability of projects to reach financial closure, with a number of innovative financing structures that capitalize on the high quality of the emission reductions cash flow—hard currency denominated, with investment grade counterparties.

Finally, to manage the risk of non-delivery of verified emission reductions, the PCF has developed a four-pronged risk management strategy involving: project screening, transaction structuring, portfolio risk management and monitoring. The PCF's previous annual reports pro-

vide detailed explanations of project screening and transaction structuring/risk mitigation tools. The sections below discuss progress in 2004.

**Project Screening.** Project ideas are carefully screened upstream against financial, technical and portfolio development criteria. In 2004 a new financial template was introduced that not only improves the quality of financial screening but also reduces the time required for review. At the Project Concept Note stage, the fund management now systematically applies the risk matrix introduced in 2002 to analyze a range of risks—project, country, baseline, Kyoto Protocol-related and price risk—in further detail. During project appraisal, a team of experts ensures the project's consistency with the World Bank Group's standards for financial, technical, social and environmental sustainability, and for coherence with the host country's development objectives. These improvements have enhanced quality at entry and reduced the proportion of dropped projects.

**Transaction Structuring.** PCF transactions are structured so that the project sponsors and their creditors assume most project risks, while the PCF bears most of the Kyoto Protocol-related risks and price or market risk (i.e. the contracts are at a fixed price). By assigning risks to those best able to assume them, this structure provides incentives for both parties to perform their duties and obligations under the contract and therefore renders the contract more durable. Some of the recent larger emission reductions purchase agreements provide the project sponsor with the opportunity to sell a fixed volume of the annual emission reductions to a third party once delivery obligations to the PCF have been met. This gives project sponsors certainty that a fixed volume of emission reductions will be



purchased by the PCF at a fixed price, and it also allows project sponsors to benefit from possible increases in verified emission reduction prices, or assume some of the Kyoto risk and try and sell higher valued certified emission reductions or emission reduction units. As noted above, emission reductions purchase agreements also contain provisions that help sponsors attract financing, including for example the ability to assign payments to special-purpose debt reserve accounts.

The fund management unit and legal team have worked with other industry experts, notably members of the International Emissions Trading Association, to develop standard letters of intent, term sheets and emission reductions purchase agreements, which has expedited transaction preparation.

**Portfolio Risk Management.** In fiscal year 2004 the fund management unit delivered and implemented an agreed Portfolio Risk Management Plan that enables the fund management unit in consultation with the Participants' Committee to assess and mitigate portfolio risks. Implementation of this plan included:

- Development and implementation of a Portfolio Hedging Strategy to enable the fund management unit to cost-effectively cover delivery shortfalls and minimize the all-in cost of emission reductions delivered. This is done by buying options and monitoring the portfolio to determine when/whether to exercise them.
- Identification and quantification of the PCF's exposure to delivery risk (i.e. the risk that projects will not deliver the volume of verified emission reductions committed under emission reductions purchase agreements) with advice from industry experts on risk exposure assessment and risk management tools.
- Updating the Life-of-Fund Financial Planning Model to reflect the likely actual PCF portfolio, draw-downs and expected emission reductions deliveries.

**Monitoring.** Systematic monitoring of the portfolio and the market is integral to the PCF's risk management strategy. In fiscal year 2004, key activities included:

- Quantifying the risk that contracted verified emission reductions would not become certified emission reductions, based on whether approved methodologies enable registration of less than 100 percent of contracted emission

reductions.

- Updating the online Emission Reductions Database established in fiscal year 2003, enabling participants to obtain real-time estimates of emission reductions deliveries for a range of asset classes and timeframes.
- Continued monitoring and reporting of price trends through market intelligence studies to ensure consistency of PCF transaction prices with those in the wider market, culminating in a report and presentation on pricing practices and their implications for PCF portfolio management.

Together, these risk management policies and tools have enabled participants to better plan the expected deliveries of emission reductions from the PCF.



## PCF Financial Performance

In fiscal year 2004, the PCF completed its fourth year of operation and continued its successful operational track record. An increasing number of projects have now reached the signed emission reductions purchase agreement milestone and have transferred either into their implementation phase or are operational and have started delivering emission reductions. The fund management unit is focusing on finalizing the project portfolio by signing outstanding emission reductions purchase agreements and laying the ground for future monitoring and management. The fund expects to conclude the placement phase in fiscal year 2005 and focus exclusively on project implementation and portfolio management.

In line with that the fund focuses now on three major goals in the finance area:

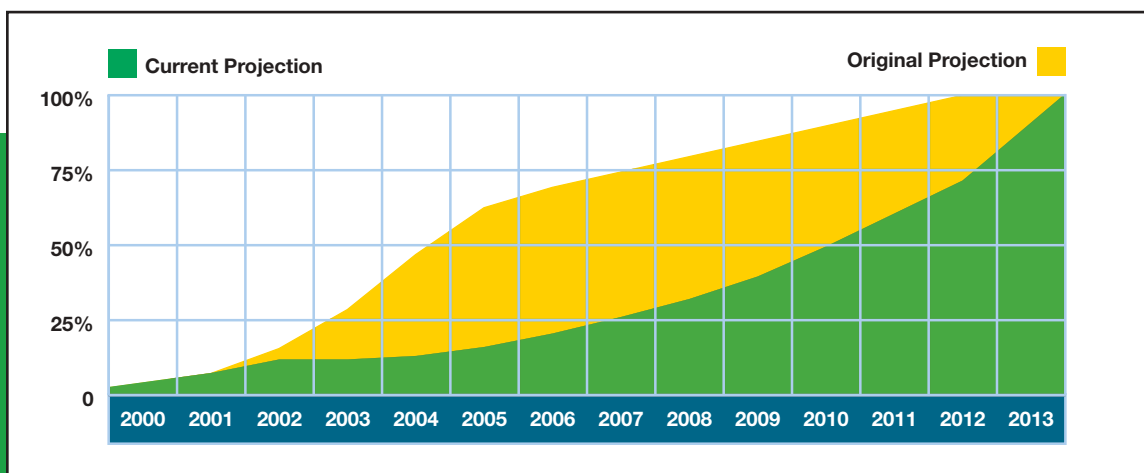
- To maintain the integrity of its financial systems and ensure that financial processes are in place to support operations. As most financial systems of the trustee are geared primarily towards loans and government clients, maintaining effectiveness and efficiency for PCF financial processes remain a challenge.
- To ensure that fund expenses are held within agreed and approved levels. After underspending its operating budget in all prior years, the fund's expenses in fiscal year 2004 exceeded its operating budget by \$15 thousand (about 0.8 percent) due to an unforeseen accumulation of audit bills from prior years. An overview of historical use of administrative resources versus the budget is enclosed in the table below.
- To allow participants insight into the financial implications of the latest market, regulatory and operational issues. This is achieved through the Long Term Plan, a tool that has been developed and is now updated on a semi-annual basis to keep participants abreast of any new developments and to maintain focus on long term performance.

### PCF Use of Administrative Resources

\$ IN THOUSANDS	BUDGET	ACTUAL
FY00	350	286
FY01	1,728	1,291
FY02	1,692	1,661
FY03	1,904	1,467
FY04	1,804	1,820
<b>Total Use of Administrative Resources</b>	<b>7,478</b>	<b>6,525</b>

The PCF has been successful in keeping its operating cashflow needs at low levels, therefore drawing funds from participants at a much lower rate than originally envisaged. The original drawdown schedule outlined in the Information Memorandum assumed that by fiscal year 2004 about 47 percent of contributions would have been drawn. The current level of funds drawn is at 13 percent of total contributions, resulting in a substantially higher rate of return for PCF participants. The enclosed chart shows the original drawdown projection contrasted with the current estimate.

### PCF Funding inflows from Participants





## Capturing and Disseminating Learning

In accordance with the PCF's objective of disseminating knowledge gained through the implementation of its operations, the PCF has become an important reference point and a primary source of information on benchmarking carbon asset creation and carbon transactions.

The primary vehicle to disseminate procedures, documentation and methodologies to both PCF participants and stakeholders in the CDM and JI remains the website, which was revamped to improve accessibility. While the number of visitor sessions per month has decreased slightly, from 6,300 in 2003 to 5,600 in 2004, users are accessing more information per session—from 60,000 hits per month over the past three years to 180,000 hits per month in 2004. Specific questions—a substantive 65 per month—continue to be addressed through the Help Desk.

During fiscal year 2004, a usability test was introduced with the intention of measuring the ease of use, navigability and intuitive understanding of the website's interface. Based on the analysis of results, the PCF website was redesigned and the "new look" website was launched in May 2004. Also in fiscal year 2004,

summary pages for signed emission reductions purchase agreements were created, describing projects and how they benefit the host country and local stakeholders.

The fund management unit has also emphasized direct interaction to facilitate learning by doing. Fund participants can take part in seminars, workshops and debriefings provided at PCF annual meetings or upon request, and may apply to send staff to work in the Carbon Finance Business under the World Bank's Staff Exchange Program for a duration of several months to three years, or on internships to learn about specific aspects of the business for a duration of several days to several months.

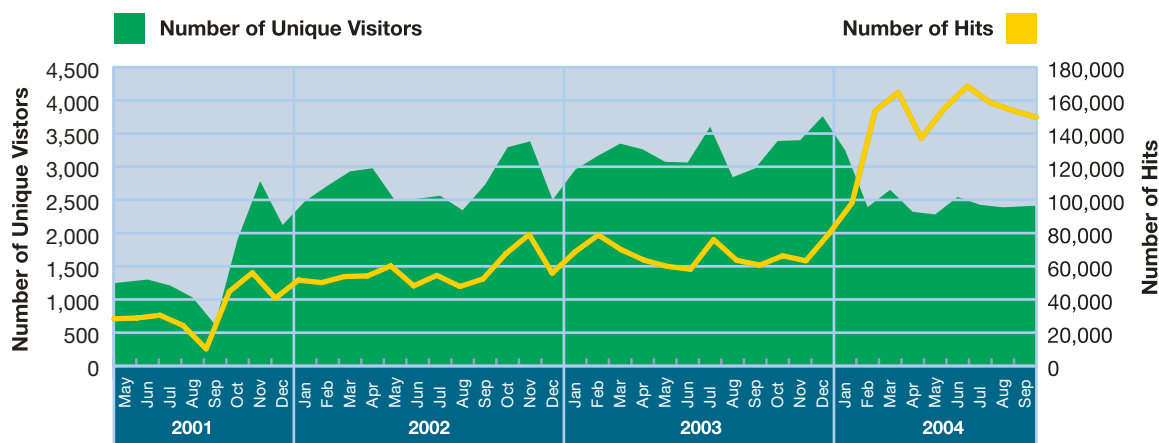
Since 2001, the fund management unit has delivered a training program in cooperation with the World Bank Institute (WBI), mostly targeted at project developers, public sector experts and members of Designated National Authorities in developing countries and economies in transition. Demand for training under the program remains high, as modules integrate the PCF's transactional experience and experience in the delivery of high-quality assets that contribute to

sustainable development. In 2004, the program delivered more than 3100 training days, which represents a 30 percent increase from the previous year.

In June 2004, the fund management unit and the Carbon Finance Business organized the world's first trade fair and conference on the carbon market, Carbon Expo, in cooperation with the International Emissions Trading Association (IETA) and Koelnmesse, and in conjunction with annual meetings of the PCF participants, the Host Country Committee, and meetings concerning other carbon finance initiatives. Carbon Expo provided an opportunity for the more than 700 participants representing carbon sellers, buyers and service providers to share knowledge about the carbon market, and featured lessons learned from the implementation of PCF operations.

**Training.** The PCF*plus* Training Program is delivered in partnership with the World Bank Institute and seeks to build the capacity of the private sector in both developing countries and countries with economies in transition, to design CDM and JI projects that will facilitate foreign investment, strengthen public institutions to facilitate climate-friendly investments,

Figure VI.A - Distribution of Unique Visitors/Hits on the PCF website (May 2001 - Sept. 2004)



and enhance the capacity of intermediaries to prepare small-scale carbon projects, consistent with the procedures for small-scale CDM project activities under the UNFCCC.

In fiscal year 2004, WBI successfully delivered regional project preparation workshops in Mozambique (with the Development Bank of Southern Africa), Indonesia, Philippines and India (the latter two in partnership with IETA); designed and delivered a distance learning course in baseline methodologies for four Latin American countries; and participated in a regional training event on carbon finance opportunities in landfill gas-to-energy projects in Mexico and Brazil. The PCF's commitment to disseminating its unique knowledge to host countries and other stakeholders was handsomely demonstrated in 2004, in which there was an increase of 30 percent of delivered person-training days in carbon finance, from about 2400 in 2003 to over 3100 in 2004.

**Capacity-Building.** In fiscal year 2004, the Bank launched a capacity building initiative called CF-Assist to provide a unified approach to all client countries and to coordinate all World Bank capacity building and training activities on carbon

finance. The objective of the CF-Assist program is to work in partnership with key players in selected host countries over a 12 to 24 month period to enhance the capacity of the public sector to review and provide approval to potential projects, and to enable the private sector to develop a portfolio of projects and to fully participate in the market. In fiscal year 2004, a CF-Assist work program was launched for India. In addition, CF-Assist disseminates tools developed by the PCF to facilitate entry into the market, for instance by referring potential project sponsors to financial institutions that were involved in the PCF's outreach program to promote investments in projects on the basis of emission reduction revenue streams.

**Fellowships.** One of the main objectives of the PCF is to facilitate learning by doing and disseminate knowledge and information. Within the World Bank's Carbon Finance Business, great emphasis is placed on achieving these objectives through host country and participant fellowships whereby participants send staff to the Carbon Finance Business to observe and learn specific aspects of carbon asset creation and management. Since PCF operations began in April 2000,

participants in World Bank-administered carbon funds have sent 18 fellows to the World Bank Carbon Finance Business. In addition, five senior staff from PCF participants joined the PCF fund management unit for one to two year assignments under the World Bank's Staff Exchange program. By September 2004, 18 host country fellows have also joined the Carbon Finance Business for typically three-month fellowships.

**Research.** PCFplus Research is administered by the World Bank's Development Economics Research Group, which is able to provide extensive expertise in a number of relevant topics. Notably, in fiscal year 2004, PCFplus Research published the "State and Trends of the Carbon Market" report, which was released at the 9th Session of the Conference of the Parties to the UNFCCC in Milan, and has been widely distributed and cited as an authoritative source of information on JI and CDM transactions. In partnership with emission reduction verifiers and auditors PCFplus Research has also contributed to the preparation of a standard Validation and Verification Protocol. An updated version of this report was presented at the PCF Annual Meetings in Cologne, Germany.





# PCF Projects: Learning by Doing



## El Canada Hydropower Project in Guatemala

*The first example of a CDM project in Central America*

Only 41 percent of the people of Guatemala have access to electricity—the lowest percentage in Central America. Fortunately, Guatemala has a large untapped hydroelectric potential. The PCF's El Canadá Hydroelectric Project is a 43-megawatt run-of-river hydroelectric plant located on the Samalá River on the west coast of Guatemala near the town of Santa María de Jesús. It was developed and operated by Generadora de Occidente Ltda., a private local company, and a subsidiary of ENEL Power of Italy. The project started generating electricity in November 2003, with an average production of 178 gigawatts per year, reducing roughly 140,000 tons of carbon dioxide per year. The electricity that is generated is being sold to COMEGSA, which is a subsidiary of Empresa Electrica de Guatemala S.A, the largest distribution company in Guatemala accounting for more than 65 percent of the electricity consumption in the country.

### Financing For Renewables

The project was developed through \$27 million in debt financing from the International Finance Corporation (IFC) and from FMO, the Netherlands Development Bank. It was the first IFC project to include a carbon finance component, as well as the first example of a CDM project in Central America, paving the way for carbon finance to be a critical element in financing renewable energy.

In addition, the El Canadá Project is one of the first renewable energy projects to be developed after the approval of Guatemala's new General Electricity Law. Its development has provided important knowledge and experience for other project developers that want to participate in the competitive national and regional market.



Guatemala is the largest country in Central America, with a population of about 12.6 million. Despite its middle-income country status (per capita income of \$1,670 in 2001), poverty in Guatemala is higher than in other Central American countries. In 2000, over half (56 percent) of all Guatemalans lived in poverty, with approximately 16 percent living in extreme poverty. Guatemala has the second most skewed income distribution pattern in Latin America.

Poverty in Guatemala is predominantly rural. Over 81 percent of the poor and 93 percent of the extreme poor live in the countryside.





The El Canadá Project is not only generating electricity using the country's renewable sources, but has also opened the door to the development of up to 50 megawatts of future hydropower projects on the Samalá River, which was identified as possessing the most hydroelectric potential in Guatemala. El Canadá will provide relatively clean and filtered water to any future projects down river, and may eliminate the need for future projects to construct regulating reservoirs that would otherwise be required.

### **Benefiting Both The Environment And Local Communities**

Local communities benefit from power produced by the project being fed into the local grid. The project developer, Generadora de Occidente, has also made a commitment to the Municipality of El Palmar, as well as other landowners near the project site, to protect a number of water sources found in the area near the project's water intake and powerhouse. By doing this, sub-surface water will be conserved, which would directly benefit the local community. In addition, the project has committed to reforesting properties owned by the national electricity utility, INDE, on which the El Canadá project is constructed. These properties have long been abandoned by INDE and are presently used for low intensity agriculture.

Generadora de Occidente also has a voluntary reforestation initiative designed to care for the Samalá River watershed around the project site. This initiative will provide long-term benefits to both the project and local community by helping to protect the surrounding water and biological resources. Generadora de Occidente has also committed to making annual payments to the Municipality of Zunil to help improve the social conditions of the mostly indigenous community of Zunil, located 20 kilometers from the project site.



## South Africa: The Durban Landfill Gas to Energy Project

*This pioneering project shows the potential for landfill gas to energy projects throughout the developing world*

*“I think this is a first for the whole African continent, a project of this magnitude, dealing with waste. I think the example we are setting in Durban, working with the World Bank to deal with landfill, is a huge innovation—we are turning dirt and garbage into a raw material that we could grow wealth from. If you wanted to say to yourself, ‘we want to be the cleanest city in the world’, waste, in my view, is the best place to start”*

*-His Excellency Obed Mlaba, Mayor of Durban.*

The first PCF emission reductions purchase agreement in South Africa was signed for a landfill-gas-to-energy project in Durban. The project will reduce greenhouse gas emissions through an enhanced collection of landfill gas at three landfill sites of the municipality of eThekweni. Electricity generated from landfill gas will displace electricity from the grid, which is predominantly supplied by coal-fired power stations. The signing ceremony, attended by His Excellency Obed Mlaba, Mayor of Durban, and the Project Manager Lindsay Strachan, took place in June 2004 in Cologne Germany at the first Carbon Expo, a trade fair event for the global carbon market.

Conditional upon the successful completion of the Environmental Impact Assessment of the project, the PCF will purchase 3.8 million tons of greenhouse gas emission reductions from the project which consists of two components: Component One (Mariannhill and La Mercy Landfill) will generate 700,000 tons of emission reductions. Component Two (Bisasar Road Landfill) will generate 3,100,000 tons of emission reductions. Component One is expected to become operational this year, and Component Two is expected to be fully commissioned in 2005.

The project will be implemented by the Department of Cleansing and Solid Waste (DSW)—the municipal solid waste department of eThekweni Municipality. The electricity produced from the landfill gas will be sold to the municipal electricity department, eThekweni Electricity.

South Africa is one of the richest and most economically significant countries on the African continent. With 41.3 million people, a gross domestic product (GDP) of \$117 billion, a rich natural resource base, and a total area of 1.2 million square kilometers, the country dominates the Southern African sub-region and accounts for more than a third of the GDP of all Sub-Saharan Africa. However, despite this progress, nearly 60 percent of Black South Africans live below the poverty line and income disparity is among the highest in the world.



### A Pioneer Project in Every Sense of the Word

This pioneering project is indicative of the potential of landfill-gas-to-energy projects throughout the world. A carbon market intelligence study recently released by the World Bank shows that one sixth of all carbon finance projects involve landfill gas. This demonstrates that carbon finance has the potential to revolutionize waste management, particularly in developing countries.

The PCF plans to support additional social benefits through the project by paying an additional 20 cents per ton of emission reductions delivered to help fund a program that will address the needs of poor and disadvantaged people in Durban. These resources will be placed in a trust fund and spent in accordance with annual work programs approved by the administrators or trustees of the established trust and the World Bank as trustee of the PCF. Eligible activities to be included in the work program include waste management and recycling programs that benefit poorer residents; vocational training, education and skill enhancement for poorer residents of eThekweni Municipality; or waste management or educational activities that lead to job creation in the eThekweni Municipality. Activities will address the direct needs of the community and will be in line with Durban's Integrated Development Plan and Sustainable Development Plan, designed to mold the eThekweni Municipality into a world-leading city by 2020.

*“This project will kick-start South Africa’s contribution to combating climate change. It ‘builds the stadium’ for South Africa’s renewable energy goals and directly serves the strategic needs of the community. The social benefits fund of \$760,000 will be instrumental in accelerating the delivery of benefits to serve the needs of the Durban communities in line with the city’s integrated development plan.”*

*-Lindsay Strachan, project director and senior engineer for Unicity Landfills*

Photos by Mia Antoni and Quentin Hurt, ESCOSERV (Pty) Ltd.



## Bulgaria Sofia District Heating Project

*This project is designed to rehabilitate and modernize the heating system of the Bulgarian capital Sofia.*

Sofia, as with many cities in central and Eastern Europe, has a centralized heating system where heat is produced at four centralized sites and piped to industrial and residential customers. With the passage of time and lack of investment capital, the system was falling into disrepair. In addition, the absence of proper metering at the customer level, resulted in many households paying for heat they did not consume, while others were getting a free ride. As a result, large numbers of households decided to physically disconnect themselves from the system. These disconnections compounded the cash revenue problems of the district heating company Toplofikacia Sofia. Despite this, district heating is still the most economical way to provide heat to a high-density urban area.

In 2000, significant improvements were made in the Sofia district heating system, including: tariff increases, which are helping to improve Toplofikacia Sofia's financial situation; the elimination of disconnections from the district heating system; metering of consumption; and the rehabilitation of some sub-stations.

### The Project

In 2003, with the support of loans from the World Bank and the European Bank for Reconstruction and Development and a grant from the Kozlodui International Decommissioning Support Fund, the European Union and the PHARE Program, also funded by the European Union, and using its own resources, Toplofikacia Sofia launched the implementation of the three-year District Heating Rehabilitation Project. The investment program will rehabilitate both the network and substations. Specifically, the project will replace about 60 kilometers of outdated heat transmission pipelines. Network interconnection between the four heating zones will also be strengthened to optimize the heat supply. Seven thousand sub-stations in residential buildings in Sofia will be replaced.

Among the economies in transition, Bulgaria stands out with its extremely high-energy intensity per unit of Gross Domestic Product (GDP) (526 kilograms of oil equivalent per \$1,000 GDP in 1997). This is due partly to 70 percent of the population residing in urban areas, which generates a very large demand for home heating. With high-energy intensity, the environmental impact of Bulgaria's economy is tremendous. In terms of carbon dioxide emissions per unit of GDP, among the transition economies Bulgaria is surpassed only by Russia and Ukraine. District heating remains a drain on the fiscal budget: about two-thirds of one percent of GDP per year. The challenge in Bulgaria's energy sector is to contain energy consumption and to bring about efficiency gains in future energy supply.





Heat transmission pipelines have fallen into disrepair with the passage of time and lack of capital, leading to serious losses and ensuing greenhouse gas emissions. The project will replace about 60 kilometers of pipelines in Sofia.



The old direct and indirect substations had very basic mechanical control systems, which could not follow the building heat demand based on the ambient temperature, which lead to significant wastage. Prior to the installation of set-point controllers on substations and thermostatic valves on radiators, customers typically opened or closed windows to regulate room temperature.



The new indirect substations to be installed using the project loan will result in improved distribution efficiency. The efficiency increase stems from the improved heat exchanger and better control systems including the set-point controller and variable speed drive to regulate flow and temperature of the hot water.

### The PCF Transaction

As the project is implemented it will save greenhouse gas emissions through efficiency gains stemming from improved heat exchangers and better control systems at substations, reductions in heat and water losses in the pipeline distribution system, improved interconnectivity among the four zones in the Sofia district heat transmission system, and installation of variable-frequency pump drive systems at the main transmission lines at the various district heat plants. All these efficiency gains lead to lower consumption of fossil fuels and thus lower carbon dioxide emissions. The emission reductions purchase agreement signed July 8, 2004 by the World Bank and Toplofikacia Sofia provides for 1,084,000 tons of carbon dioxide equivalent to be purchased by the PCF over nine years (2004-2012). About half of the emission reductions are expected before 2008 and half between 2008 and 2012.

The baseline study and monitoring plans were drafted by the engineering consulting firm Nexant, with support from World Bank staff. The project was validated by TÜV Süddeutschland, a firm with Designated Operational Entity status, and approved by the Minister of Environment and Water on June 22, 2004 based on the review of the National Steering Committee on Climate Change. The project is envisaged as a Joint Implementation project and is the second PCF project in Bulgaria, a country that has also signed a Host Country Agreement with the World Bank.

*“Environmental protection has become a major priority of the European Union. Ratifying the Kyoto Protocol in 2002, the Republic of Bulgaria committed to reduce greenhouse gas emissions by eight percent compared to 1990 levels. This fact gave rise to various forms of cooperation between industrial countries and the countries in transition toward market economies through the so-called Flexible Mechanisms. The joint investment project for rehabilitation of Sofia district heating system ... will contribute to the sustainable development of Bulgaria through savings of energy and natural resources and efficient use of funds.”*

*-Mr. Valentin Dimitrov, Executive Director of Toplofikacia Sofia*

## Lucknow, Uttar Pradesh, India: ABIL

*A waste treatment project that reduces greenhouse gas emissions and provides employment opportunities for the city's poor.*

Located in the city of Lucknow in Uttar Pradesh, one of India's most densely populated and most poverty-stricken states, the ABIL Biomethanation Plant brings much needed relief for the treatment of municipal solid waste. As the city grows, limited land and increased costs make the "business-as-usual" solution—unmanaged open dumps—dangerous and untenable. Increasing land values, health hazards, local and national government assistance programs, and environmental concerns in Lucknow brought Indian, Singaporean and European companies together to establish the Asia Bioenergy India Limited (ABIL) waste treatment facility. Instead of land-filling the waste in open dumps with all the associated problems—odor, groundwater pollution, and health risks—the ABIL facility sorts and treats waste under sanitary conditions, using a sorting plant and two large tanks, or 'biodigesters'. Recyclables are first sorted, then the organic waste is separated for treatment. In the process of biomethanation, microorganisms digest the pulped organic waste inside the biodigesters, and these organisms release methane as a byproduct. The methane is harvested and burned for electricity generation, and the remaining waste is used as natural, organic fertilizer.



Uttar Pradesh is a large state with a geographical area of about 294,411 square kilometers and 175 million people. The state has produced eight of India's 12 prime ministers to date. The Ganges River forms the backbone of Uttar Pradesh and is the sacred river of Hinduism. Uttar Pradesh mostly consists of the vast Ganges Plain, an area of awesome flatness and highly fertile land. Because of its very fertile soil, Uttar Pradesh helped lead the Green Revolution of the 1960s and 1970s. The state is also world famous for its handicrafts (e.g., Chickankari Embroidery of Lucknow) and handmade textiles, and is the largest carpet weaving and brass and copper making state in India. India has nearly 80,000 villages without electricity, mainly concentrated in eight states including Uttar Pradesh. About 60 million people in Uttar Pradesh live in poverty.

### More Power and a Better Environment

The treatment facility helps alleviate the city's waste disposal problem, and also contributes to the power needs of Lucknow's growing population of three million. The project stimulates the local job market and provides employment opportunities to the city's poor. For example, the plant locally employs individuals to sift out collectables from the refuse under sanitary conditions. The plant is designed to digest 300 tons of waste per day and has the capacity to generate 5.6 megawatts of electricity to be fed into the State grid.

### Financial Viability Through the PCF

The PCF's purchase of emission reductions helps make this environmentally sound and socially responsible project financially viable. The project reduces emissions in three important ways. The facility captures and burns methane, which reduces greenhouse gas emissions from methane, and the methane-fueled generator reduces reliance on non-renewable fossil fuels, which further reduces carbon dioxide emissions from coal-based power plants. Using organic fertilizer produced by the project also reduces the need for chemical fertilizers like ammonia and urea that give off large amounts of carbon dioxide when produced. Since the site opened in July 2003, ABIL has reduced greenhouse gas emissions by more than 100,000 tons of carbon dioxide equivalent. Over the next ten years, the plant is projected to reduce emissions by more than one million tons by capturing methane, displacing electricity generated from fossil fuels and substituting organic for chemical fertilizers. The PCF is in the final stages of negotiating the emission reductions purchase agreement and has reserved the right to purchase one million tons of greenhouse gas emission reductions from all three sources.

The project has entered into a long-term waste supply agreement (WSA) with Lucknow Nigar Nigam and a long-term fixed price (indexed) power purchase agreement with the Uttar Pradesh Power Corporation. The project is developed, constructed, owned, operated and maintained by ABIL, a special purpose vehicle established by the sponsors (Enkem Engineers Private Ltd. of India, Entec GmbH of Austria and Jurong Engineering Ltd. of Singapore). Construction of the project takes place under a turnkey agreement with the sponsors, with equally and jointly binding responsibilities.



## PCF Project Update:

### Pannongreen Commissions Biomass Combined Heat and Power Plant in Pécs, Hungary

Pannongreen's combined heat and power plant provides electricity to the grid and supplies heat and hot water to the city of Pécs, which contains Hungary's second largest district heating network. In August 2004, Pannongreen commissioned the conversion of one of its coal-fired units to biomass firing. The PCF's purchase of 1.2 million tons of carbon dioxide equivalent of expected emission reductions from this project rendered the biomass fuel conversion financially viable.

The new biomass unit has a capacity of 65 megawatts thermal and 49 megawatts electric, making it the largest in Hungary and one of the largest in Europe. Substituting sustainably-harvested wood for coal firing will reduce carbon dioxide emissions as well as sulphur dioxide, nitrogen dioxide and particulate pollution.

*"The Pécs fuel conversion is one of only a few projects utilizing the JI Mechanism that have proceeded to this stage of development, bringing about a reduction in climate change at a reasonable cost to the benefit of both Hungary and the developed economies providing finance."*

*Nigel Blackaby, "Pécs workout is healthy exercise,"  
Power Engineering International, February, 2004*





## PCF Project Update:

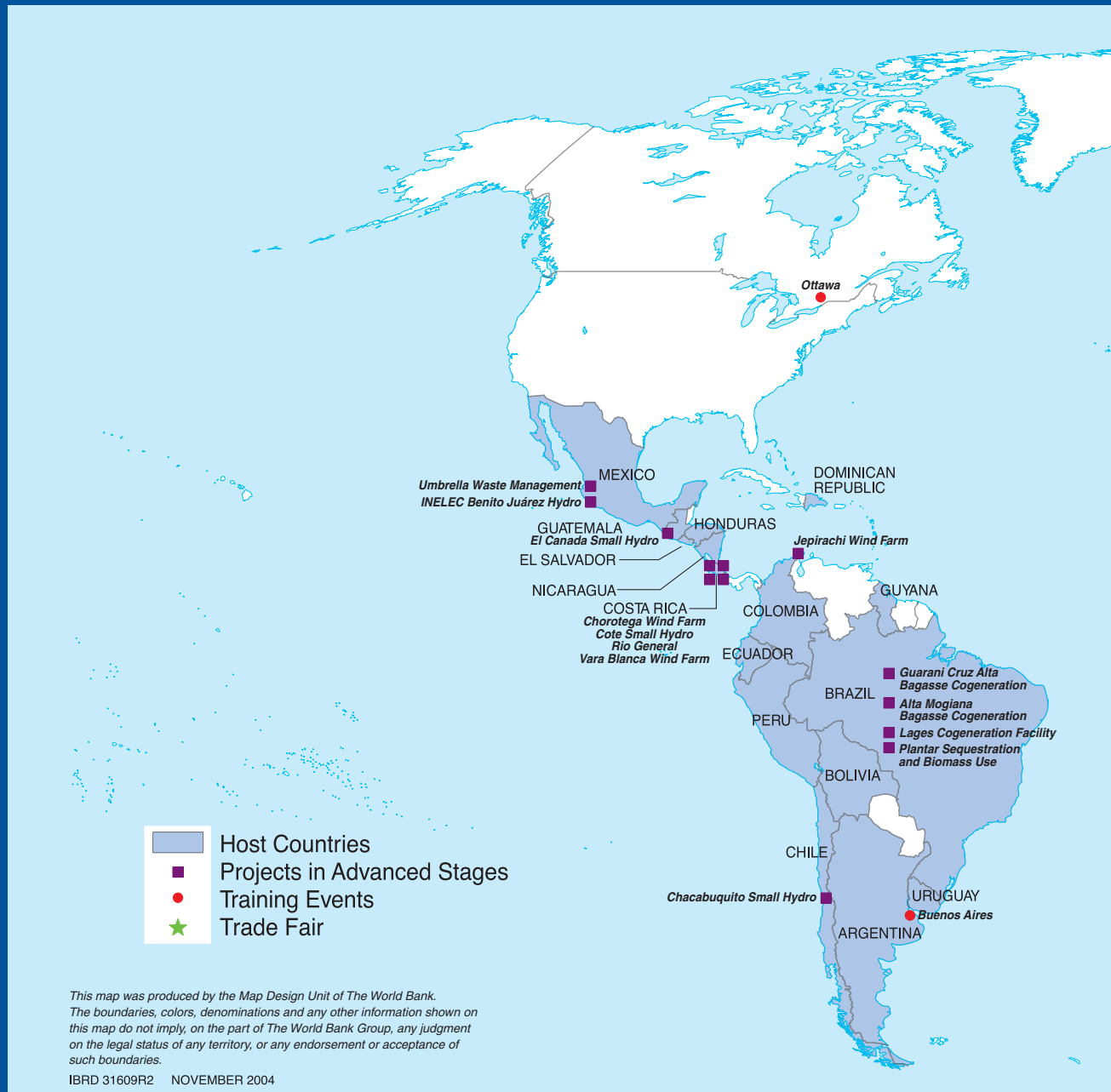
### The Romania Afforestation of Degraded Agricultural Land Project

The emission reductions purchase agreement for the Romania Afforestation of Degraded Agricultural Land Project was signed in September 2003, but plantings had already started in the spring of 2002. By the fall of 2004, around 5,000 of the 6,000 hectares had been planted and an estimated 10,000 tons of carbon dioxide equivalent sequestered. Initial verification of the project was completed and the PCF made its first carbon payment to the National Forest Administration of Romania in January 2004.

This view is of the Small Island of Braila, one of the project sites. The Small Island of Braila is a wetland consisting of a dozen islets in the lower Danube. Because it is of critical importance, it is listed under the Ramsar Convention on wetlands. The project restores the natural vegetation cover in some of the deforested areas of the Small Island of Braila through plantings of various species of poplar and willow.

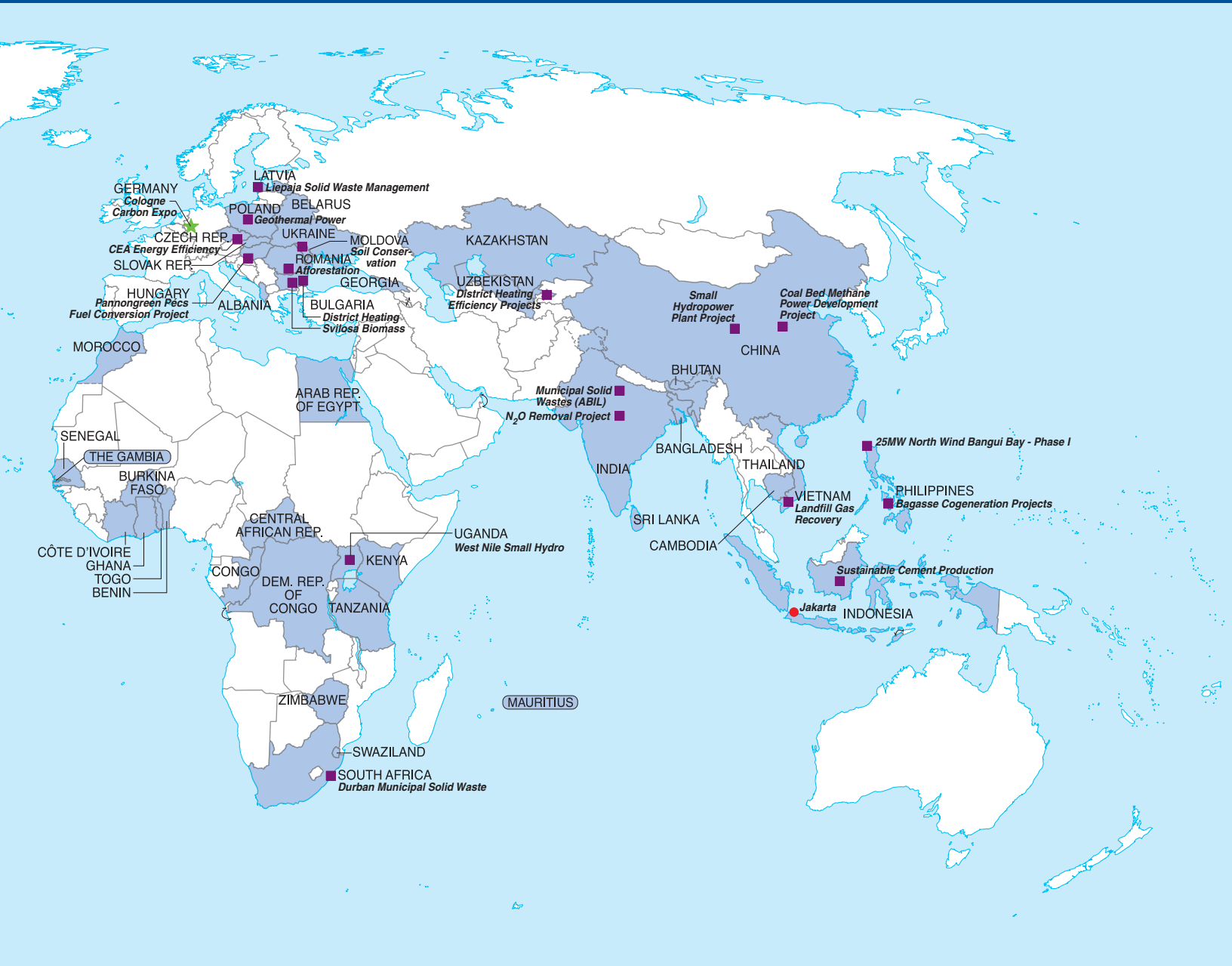


# Host Countries, Project Pipeline and Training

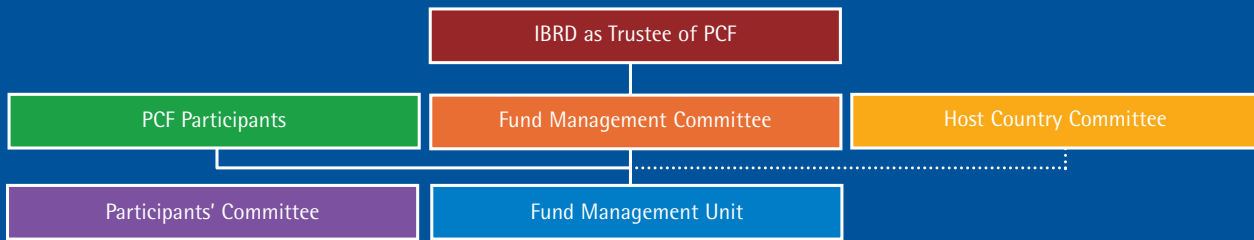


*"By participating in the PCF, Canada has gained access to valuable expertise and experience and is better equipped to advise Canadian companies and provide them with the resources and tools they need to participate in CDM and JI project activities."*

Government of Canada  
PCF Participant



# PCF Governance



## FUND MANAGEMENT COMMITTEE

*Members of the Fund Management Committee are drawn from the entire World Bank.*

### Ken Newcombe (Chair)

PCF Fund Manager, Senior Manager  
World Bank Carbon Finance Business

### Henk Busz

Sector Manager, Infrastructure & Energy  
Services Department (ECSIE)

### Denis Clarke

Chief Investment Officer, CININ  
International Finance Corporation (IFC)

### Susan G. Goldmark

Sector Manager, Energy Cluster (LCSFE)

### Arun Sanghvi

Lead Energy Specialist (AFTEG)

## PCF PARTICIPANTS' COMMITTEE

**Jean-Claude Steffens (chair)**  
Electrabel, Belgium

**Hans-Georg Adam**  
RWE, Germany

### Olle Bjork

Ministry of Industry, Employment and  
Communications, Sweden

**Maurits Blanson Henkemans**  
Ministry of Economic Affairs,  
The Netherlands

### Masato Ichimiya

MIT Carbon Fund Co., Ltd. (Mitsui)

### Kyosuke Inada

Japan Bank for International Cooperation

### Liv Rathe

Norsk Hydro, Norway





**PCF PARTICIPANTS**

**Governments**

Government of Canada  
 Government of Finland  
 Japan Bank for International Cooperation  
 Government of The Netherlands  
 Government of Norway  
 Government of Sweden

**Corporations**

British Petroleum, United Kingdom  
 Chubu Electric Power Co., Inc., Japan  
 Chugoku Electric Power Co., Inc., Japan  
 Deutsche Bank, Germany  
 Electrabel, Belgium  
 Fortum, Finland  
 Gaz de France, France  
 Kyushu Electric Power Co., Inc., Japan  
 Mitsubishi Corporation, Japan  
 Mitsui & Co. Ltd., Japan

Norsk Hydro, Norway  
 Rabobank, The Netherlands  
 RWE, Germany  
 Shikoku Electric Power Co., Inc., Japan  
 Statoil, Norway  
 Tohoku Electric Power Co., Inc. Japan  
 Tokyo Electric Power Co., Japan

**CARBON FINANCE  
 BUSINESS MANAGEMENT TEAM**

**CHAIR**

Ken Newcombe  
*Senior Manager CFB*

**MEMBERS**

Asif Faiz  
*Program Manager*  
 Andrea Pinna  
*CDCFplus Manager;  
 Exec. Secretary CDCF Advisory Group*

Benoit Bosquet  
*Fund Relationship Manager,  
 BioCarbon Fund*  
 Chandra Shekhar Sinha  
*Team Leader, Operations*  
 Charles Cormier  
*Team Leader, Stakeholder Relations*  
 Eduardo Dopazo  
*Team Leader, CF Assist*  
 Jan Zika  
*Senior Resource Management Officer*  
 Johannes Heister  
*Team Leader, Methodology*  
 Maria-Isabel Alegre  
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## INDEPENDENT AUDITORS' REPORT

To: International Bank for Reconstruction and Development  
as Trustee for the Prototype Carbon Fund

We have audited the accompanying balance sheets for the Prototype Carbon Fund, as of June 30, 2004 and 2003 and the related statements of income (loss), changes in equity and cash flows for the years then ended. These financial statements are the responsibility of the Trust Fund Trustee's management. Our responsibility is to express an opinion on these financial statements based on our audits.

We conducted our audits in accordance with auditing standards generally accepted in the United States of America and International Standards on Auditing. Those standards require that we plan and perform our audit to obtain reasonable assurance about whether the financial statements are free of material misstatement. An audit includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements. An audit also includes assessing the accounting principles used and significant estimates made by management, as well as evaluating the overall financial statement presentation. We believe that our audits provide a reasonable basis for our opinion.

In our opinion, such financial statements present fairly, in all material respects, the financial position of the Prototype Carbon Fund, at June 30, 2004 and 2003, and the results of its operations and its cash flows for the years then ended in conformity with International Financial Reporting Standards.

As discussed in Notes 6 and 7 to the financial statements, Emission Reductions and Options to Purchase Emission Reductions are stated at fair value. Management of the Fund has estimated the fair values of Emission Reductions and Options to Purchase Emission Reductions in the absence of readily ascertainable market values, and has determined that the best estimate of fair value is the consideration given. These values may differ from the values that would have been used had a ready market for Emission Reductions and Options to Purchase Emission Reductions existed, and the differences could be material.

September 25, 2004

Member of  
Deloitte Touche Tohmatsu

Prototype Carbon Fund: Balance Sheets As of June 30, 2004 and 2003

Expressed in U.S. dollars

	June 30, 2004	June 30, 2003
<b>ASSETS</b>		
Equity in pooled investments	\$ 2,937,786	\$ 7,925,852
Investment income receivable	5,122	43,378
Advances to Trustee (Note 2)	8,898	-
Receivable from other trust funds (Note 3)	29,594,892	28,202,154
Emission reductions (Note 6)	368,720	355,320
Option to purchase emission reductions (Note 7)	562,500	562,500
Advance payments for emission reductions (Note 8)	1,840,000	595,000
	<u>\$ 35,317,918</u>	<u>\$ 37,684,204</u>
<b>LIABILITIES AND EQUITY</b>		
<b>LIABILITIES:</b>		
Accrued fund development expenses	\$ -	\$400,000
Accrued project-related expenses	8,159	68,000
Accrued administrative expenses	-	22,769
Accrued performance-linked expenses (Note 4)	-	100,000
	<u>8,159</u>	<u>590,769</u>
<b>EQUITY:</b>		
Capital contributions pledged	180,000,000	180,000,000
Notes receivable on capital contributions	(127,278,760)	(130,613,786)
Capital contributions paid in (Note 1)	52,721,240	49,386,214
Retained deficit	(17,411,481)	(12,292,779)
	<u>35,309,759</u>	<u>37,093,435</u>
<b>TOTAL LIABILITIES AND EQUITY</b>	<u>\$ 35,317,918</u>	<u>\$ 37,684,204</u>

Prototype Carbon Fund: Statements of Income (Loss) For the Years Ended June 30, 2004 and 2003

Expressed in U.S. dollars

	July 1, 2003 to June 30, 2004	July 1, 2002 to June 30, 2003
<b>REVENUE</b>		
Investment income (Note 9)	\$ 78,452	\$ 260,806
Premium income	2,886	-
	<u>81,338</u>	<u>260,806</u>
<b>EXPENSES</b>		
Net project-related expenses (Note 11)	3,290,143	2,428,815
Performance-linked expenses (Note 4)	90,000	100,000
Administrative expenses	1,819,897	1,470,021
Valuation allowance for advance payments (Note 8)	-	(595,000)
Investment income transfer (Note 10)	-	686,157
	<u>5,200,040</u>	<u>4,089,993</u>
<b>NET LOSS</b>	<u>\$ (5,118,702)</u>	<u>\$ (3,829,187)</u>

See notes to financial statements

Prototype Carbon Fund: Statements of Changes in Equity For the Years Ended June 30, 2004 and 2003

Expressed in U.S. dollars

	Capital Contributions	Notes Receivable	Retained Deficit	Total Equity
FOR THE YEAR ENDED JUNE 30, 2003				
BALANCE, JULY 1, 2002	\$ 145,000,000	\$ (102,117,990)	\$ (8,463,592)	\$ 34,418,418
CAPITAL CONTRIBUTIONS:				
Public sector participants	5,000,000	(2,028,356)	-	2,971,644
Private sector participants	30,000,000	(26,467,440)	-	3,532,560
Net loss	-	-	(3,829,187)	(3,829,187)
BALANCE, JUNE 30, 2003	\$ 180,000,000	\$ (130,613,786)	\$ (12,292,779)	\$ 37,093,435
FOR THE YEAR ENDED JUNE 30, 2004				
BALANCE, JULY 1, 2003	\$ 180,000,000	\$ (130,613,786)	\$ (12,292,779)	\$ 37,093,435
CAPITAL CONTRIBUTIONS:				
Public sector participants	-	2,138,061	-	2,138,061
Private sector participants	-	1,196,965	-	1,196,965
Net loss	-	-	(5,118,702)	(5,118,702)
BALANCE, JUNE 30, 2004	\$ 180,000,000	\$ (127,278,760)	\$ (17,411,481)	\$ 35,309,759

Prototype Carbon Fund: Statements of Cash Flows For the Years Ended June 30, 2004 and 2003

Expressed in U.S. dollars

	July 1, 2003 to June 30, 2004	July 1, 2002 to June 30, 2003
CASH FLOWS FROM OPERATING ACTIVITIES		
Net loss	\$ (5,118,702)	\$ (3,829,187)
Adjustments to reconcile net loss to net cash used in operating activities:		
Unrealized loss on pooled investments	37,058	157,303
Decrease in investment income receivable	38,256	19,131
Increase in advances to Trustee	(8,898)	-
Increase in receivable from other trust funds	(1,392,738)	(6,796,544)
Increase in emission reductions	(13,400)	(355,320)
Increase in option to purchase emission reductions	-	(562,500)
Increase in advance payments for emission reductions	(1,245,000)	-
Decrease in allowance for advance payments	-	(595,000)
Increase/(Decrease) in accrued project-related expenses	(59,841)	68,000
Decrease in accrued administrative expenses	(22,769)	(155,512)
Decrease in accrued fund development expenses	(400,000)	(530,000)
Decrease in accrued project development expenses	-	(193,000)
Decrease in accrued performance-linked expenses	(100,000)	(40,000)
Net cash used in operating activities	(8,286,034)	(12,812,629)
CASH FLOWS FROM INVESTING ACTIVITIES		
Sales of securities	4,951,008	6,308,425
Net cash provided in investing activities	4,951,008	6,308,425
CASH FLOWS FROM FINANCING ACTIVITIES		
Capital contributions	3,335,026	6,504,204
Net cash provided by financing activities	3,335,026	6,504,204
NET INCREASE IN CASH	-	-
CASH, BEGINNING OF PERIOD	-	-
CASH, END OF PERIOD	\$ -	\$ -



## 1. ORGANIZATION AND OPERATIONS

The Prototype Carbon Fund (the Fund) was established in 1999 by the International Bank for Reconstruction and Development (IBRD) as a mechanism to help countries reduce global concentrations of greenhouse gases (GHG) and thereby minimize the adverse impacts of climate change on developing countries. The operational principles of the Fund are: (1) to invest in projects that are intended to generate high-quality GHG emission reductions in developing countries and countries with economies in transition, (2) to endeavor to effect an equitable sharing between the Fund participants and the developing countries of any emission reductions and other benefits arising from such projects, and (3) to disseminate broadly the knowledge gained in the development of the Fund and the implementation of the projects.

The Fund is administered by IBRD as Trustee. Pursuant to the Fund's governing document, the Trustee is authorized, among other things, to accept capital contributions to the Fund from the participants, invest the funds collected, and establish a committee responsible for overseeing the operations of the Fund (the Fund Management Committee).

There have been two closings of the Fund representing the deadline for entering into Participation Agreements. As of the First Closing of the Fund on April 20, 2000, six Public Sector Participants and 15 Private Sector Participants had purchased an interest in the Fund by signing Participation Agreements. As of the Second Closing of the Fund on October 31, 2000, two additional Private Sector Participants had entered into Participation Agreements. At the Third Annual

Participants' Meeting, held in June 2002 at Zakopane, Poland, it was approved to increase the size of capital contributions to the Fund from \$145 million to \$180 million and ten of the Participants entered into Supplementary Participation Agreements to purchase an additional interest in the Fund. Participants provide their contributions either through the delivery of an unconditional promissory note made payable to the Trustee upon demand, or through advance payments to separate holding trust fund accounts managed by IBRD as Trustee. As the Trustee establishes the need for cash on an annual basis and requests cash payments from the Participants, the outstanding balances of promissory notes are reduced by the corresponding amounts received from the Participants. As of June 30, 2004 and 2003, capital contributions paid in cash by the Participants, are as follows:

Expressed in U.S. dollars

PUBLIC SECTOR PARTICIPANTS	Amounts paid as of June 30, 2004	Amounts paid as of June 30, 2003
Canada	\$ 1,288,003	\$ 1,182,600
Finland	1,288,003	1,182,600
Japan Bank for International Cooperation	1,288,003	1,182,600
Netherlands	1,932,005	1,771,400
Norway	1,288,003	1,182,600
Sweden	1,288,003	1,182,600
<b>TOTAL PUBLIC SECTOR PARTICIPANTS</b>	<b>\$ 8,372,020</b>	<b>\$ 7,684,400</b>
	<b>Amounts paid as of June 30, 2004</b>	<b>Amounts paid as of June 30, 2003</b>
<b>PRIVATE SECTOR PARTICIPANTS</b>		
BP Amoco	\$ 586,300	\$ 586,300
Chubu Electric Power Company Inc.	1,288,003	1,175,100
Chugoku Electric Power Company Inc.	901,602	821,580
Deutsche Bank	644,002	586,300
Electrabel	644,002	586,300
Fortum OYJ	772,792	704,060
Gaz de France	644,002	586,300
Robeco Sustainable Private Equity Fund C.V. (Note 12)	644,002	586,300
Kyushu Electric Power Company Inc.	1,030,403	939,580
MIT Carbon Fund	772,802	704,060
Mitsubishi Corporation	644,002	586,300
Norsk Hydro ASA	644,002	586,300
RWE Aktiengesellschaft	644,002	586,300
Shikoku Electric Power Company Inc.	1,288,003	1,175,100
Statoil	1,288,003	1,175,100
Tohoku Electric Power Company Inc.	1,288,003	1,175,100
Tokyo Electric Power Company	1,030,403	939,580
<b>TOTAL PRIVATE SECTOR PARTICIPANTS</b>	<b>\$ 14,754,328</b>	<b>\$ 13,499,660</b>
<b>TOTAL ALL PARTICIPANTS</b>	<b>\$ 23,126,348</b>	<b>\$ 21,184,060</b>
Plus receivables from other trust funds	29,594,892	28,202,154
<b>TOTAL CAPITAL CONTRIBUTIONS PAID IN</b>	<b>\$ 52,721,240</b>	<b>\$ 49,386,214</b>

## 2. SUMMARY OF SIGNIFICANT ACCOUNTING AND RELATED POLICIES

**Basis of Accounting** – The accompanying financial statements are prepared in accordance with International Financial Reporting Standards. These financial statements are presented on a comparative basis for the years ended June 30, 2004 and 2003.

**Use of Estimates** – The preparation of financial statements in conformity with International Financial Reporting Standards includes estimates and assumptions that affect the reported amounts of assets and liabilities and disclosure of contingent assets and liabilities at the date of the financial statements and the reported amounts of revenue and expenses during the reporting period. Actual results could differ from these estimates.

**Cash** – The Fund places the funds it receives from the Participants under IBRD investment management into Equity in Pooled Investments.

**Equity in Pooled Investments** – Amounts paid into the Fund, but not yet disbursed, are managed by IBRD, which maintains a single investment portfolio (the Pool) for all of the trust funds administered by IBRD, the International Development Association (IDA), and the International Finance Corporation (IFC). Under the Pool's current investment strategy, a significant portion of the Pool is invested in liquid instruments such as U.S. Treasury securities and other high-grade bonds.

IBRD maintains the investments on a pooled accounting basis: investment income is allocated to each trust fund on a pro-rata basis based on proportional fund balance at cost. Equity in pooled investments represents the Fund's pro-rata portion of the Pool's market value at the end of the period. The corresponding pro-rata realized and unrealized gains or losses accrue to the Fund in the period in which they occur.

**Capital Contributions** – The Fund derives its funding from contributions provided by its Participants. Each Participant's contribution is recorded in full as Capital Contributions Pledged upon execution of a Participation Agreement between the Participant and the Fund. Amounts not yet paid in are recorded as Notes Receivable on Capital Contributions and shown as a reduction of Capital Contributions Pledged on the balance sheet. The notes receivable are settled through cash payments upon the Trustee's request, in accordance with an annual budget and business plan approved by the Participants.

**Emission Reductions** – The Fund enters into executory contracts (i.e., firm commitments) with external parties for the purchase of emission reductions (ERs). Upon delivery of verified ERs by such external parties, the Fund records them on the balance sheet as assets that are measured at fair value at the end of the reporting period.

**Option to Purchase Emission Reductions** – The Fund enters into agreements with external parties to purchase ERs. Some purchase agreements

contain provisions which provide options for the Fund to purchase additional ERs generated by the projects. Options to purchase emission reductions are deemed to be derivative instruments accounted for under International Accounting Standard (IAS) 39, Financial Instruments: Recognition and Measurement, and are measured at fair value at the end of the reporting period.

**Advance Payments for Emission Reductions** – The Fund enters into agreements for the purchase of ERs with external parties. In some instances, the purchase agreements contain provisions for the Fund to pay for ERs prior to their delivery. Such prepayments are recorded by the Fund in the balance sheet as Advance Payments for Emission Reductions. The amounts accumulated in the Advance Payments for Emission Reductions account will be reclassified to Emission Reductions on the balance sheet when qualifying ERs are delivered to the Fund.

**Premium Income** – Participants who enter into Participation Agreements after the First Closing pay the Fund a premium in an amount equal to 2.5 percent of their required annual contributions. The premium payments are not taken into account in determining the Participants' interests in the Fund, or in the calculation of the size of the Fund. Income from premiums is recognized in the statement of income (loss) as earned.

**Fund and Project Development Expenses** – The Fund will reimburse the Trustee for 80 percent of all costs and expenses incurred by the Trustee prior to the First Closing in relation to the development of the Fund, not to exceed \$2 million, which is to be paid in five equal annual installments. In addition to these amounts, the Fund will also reimburse the Trustee for all costs and expenses incurred by the Trustee prior to the First Closing of the Fund in relation to the identification, preparation, and appraisal of proposed projects. No new fund and project development expenses were incurred in fiscal years ended June 30, 2004 and 2003.

**Administrative Expenses** – The Fund reimburses the Trustee for all costs and expenses incurred in the administration of the Fund. These include salaries and benefits, contracted services, marketing, communications, audits and reporting, and overhead. Administrative expenses are recognized when incurred.

**Project-Related Expenses** – The Fund will reimburse the Trustee for all costs incurred during each project's preparation, including project negotiation and validation costs. The Fund will absorb the expenses that are associated with each project's supervision and verification of ERs. Project expenses are recognized when incurred.

**Advances to Trustee** – If the estimated amounts paid to Trustee for administrative expenses exceed the actual expenses incurred for the fiscal year, the amount paid above the expenses incurred is shown as Advances to Trustee in the balance sheet.

In December 2003, as part of its improvements to International Accounting Standards (IAS) project, International Accounting Standards Board (IASB) issued fifteen revised International Accounting Standards to eliminate redundancies and conflicts between existing standards. The revised standards are to be applied for fiscal years beginning on or after January 1, 2005. The Fund management is currently examining the impacts of these standards on the Fund's financial statements.

## 3. RECEIVABLE FROM OTHER TRUST FUNDS

Certain Participants have elected to deposit all or part of their contribution in holding accounts established as separate trust funds. These trust funds are also administered by IBRD. As contributions become due, at the request of the Trustee, funds will be transferred from those holding accounts into the Fund.

As of June 30, 2004, four holding accounts set up by Canada, Finland, Sweden and Deutsche Bank had contribution balances (less contributions already transferred to the Fund) of \$8,711,997, \$8,578,328, \$7,948,569, and \$4,355,998, respectively. As of June 30, 2003, the amounts in these holding accounts were \$8,817,400, \$8,554,189, \$6,416,865 and \$4,413,700 for Canada, Finland, Sweden, and Deutsche Bank respectively.

## 4. PERFORMANCE-LINKED EXPENSES AND CONTINGENT LIABILITY

During each of the first ten years of the Fund's operations, the Trustee may be entitled to receive a performance-linked payment of up to \$100,000, payable annually upon the approval of the Participants at the annual Participants' meeting. The Participants have authorized transfers of \$90,000 and \$100,000 for the fiscal years ended June 30, 2004 and 2003, respectively, from the Fund to the Trustee as performance-linked payments. The amount of future payments can not be reasonably estimated.

## 5. FIRM COMMITMENTS

As of June 30, 2004, the Fund has entered into executory contracts (i.e., firm commitments) with external parties to purchase ERs in the total amount of \$69,422,730. As of June 30, 2003, the amount of signed firm commitments was \$19,498,730. When verified ERs are delivered to the Fund by such external parties, the Fund records them on the balance sheet as assets that are measured at fair value at the end of the reporting period (Note 6). In addition, under the provisions of some contracts, the Fund is entitled to purchase a share of any additional ERs over the annual minimum required. The future volume of such ERs can not be reasonably estimated.

## 6. EMISSION REDUCTIONS

As of June 30, 2004 and 2003, the Fund has paid for the ERs in a total amount of \$368,720 and \$355,320, respectively, as summarized below:

	As of June 30, 2004	As of June 30, 2003
ERs from National Forest Administration-Romsilva	\$ 13,400	\$ -
ERs from Hidroelectrica Guardia Vieja S.A.	355,320	355,320
<b>TOTAL</b>	<b>\$ 368,720</b>	<b>\$ 355,320</b>

These ERs are not currently certified emission reductions (CER) under the Clean Development Mechanism (CDM).

Due to the evolving nature of international and national climate change and emission trading regulatory and policy regimes, as well as the emerging nature of the current market for ERs, presently, there is no single standard for determining fair value of ERs. Therefore, determining fair value requires that judgment be applied to the specific facts and circumstances of ERs in our portfolio while employing a consistently applied valuation process. Hence, Fund management has determined that the best estimate of fair value of these ERs approximates consideration given for them by the Fund, which is equal to the amount of \$368,720 and \$355,320 as of June 30, 2004 and 2003, respectively. Because of the inherent uncertainty of determining the fair value of ERs, the fair value determined in good faith by management may differ from the values that would have been used had a ready market existed for the ERs, and the differences could be material. Management intends to closely monitor market conditions and revise this valuation as appropriate.

## 7. OPTION TO PURCHASE EMISSION REDUCTIONS

In November 2002, the Fund paid \$562,500 for the option to purchase ERs over and above the firm commitment under the contract from Hidroelectrica Guardia Vieja S.A. The option may be exercised, in whole or in part, on or before December 31, 2010. Options to purchase emission reductions are deemed to be derivative instruments accounted for under IAS 39, Financial Instruments: Recognition and Measurement, and are measured at fair value at the end of the reporting period.

Due to the evolving nature of international and national climate change and emission trading regulatory and policy regimes, as well as the emerging nature of the current market for ERs, presently, there is no single standard for determining fair value of this option. Therefore, determining fair value requires that judgment be

applied to the specific facts and circumstances of the option in our portfolio while employing a consistently applied valuation process. Hence, Fund management has determined that as of June 30, 2004 and 2003, the best estimate of fair value of such option approximates consideration given for it by the Fund, which is equal to the amount of \$562,500. Because of the inherent uncertainty of determining the fair value of the option, the fair value determined in good faith by management may differ from the values that would have been used had a ready market existed for the option, and the differences could be material. Management intends to closely monitor market conditions and revise this valuation as appropriate.

## 8. ADVANCE PAYMENTS FOR EMISSION REDUCTIONS

As of June 30, 2004 and 2003, the Fund has made a total advance payments of \$1,840,000 and \$595,000, respectively, as summarized below:

	As of June 30, 2004	As of June 30, 2003
Republic of Latvia	\$ 1,180,000	\$ 595,000
Pannongreen Kft	625,000	-
Czech Energy Agency	35,000	-
<b>TOTAL</b>	<b>\$ 1,840,000</b>	<b>\$ 595,000</b>

Prior to fiscal year 2003, a 100 percent valuation allowance for the advance payments of \$595,000 was established. Such allowance was established due to significant uncertainties surrounding the quantities and value of ERs for which these advance payments were made. In fiscal year 2003, management re-assessed the allowance and determined that such allowance was no longer required.

## 9. INVESTMENT INCOME

Investment income consists of both realized and unrealized gains or losses incurred during the respective fiscal years. For the years ended June 30, 2004 and 2003, the unrealized investment loss is \$37,058 and \$157,303, respectively. For the years ended June 30, 2004 and 2003, the realized investment income is \$115,510 and \$418,109, respectively.

## 10. INVESTMENT INCOME TRANSFER

In accordance with the decision made by the Participants, in August 2002 a transfer of investment income was made from the Fund to a separate trust fund in the amount of \$686,157 to be used for enhanced capacity building, training, and research activities. The amount represents investment income earned by Deutsche Bank's contributions while held in the Fund for the period

from May 2000 to July 2002. No investment income transfer was made in the fiscal year ended June 30, 2004.

## 11. PROJECT-RELATED EXPENSES

For the fiscal year ended June 30, 2004, the net project-related expenses of \$3,290,143 consists of project-related expenses in the amount of \$3,300,143 net of reimbursements for preparation, supervision, and verification costs in the amount of \$10,000 received from National Forest Administration-Romsilva in accordance with the executory contract.

For the fiscal year ended June 30, 2003, the net project-related expenses of \$2,428,815 consist of project-related expenses in the amount of \$2,508,553 net of reimbursements for preparation, supervision, and verification costs in the amount of \$79,738 received from Hidroelectrica Guardia Vieja S.A. in accordance with the executory contract.

## 12. INTEREST ASSIGNMENT

In fiscal year ended June 30, 2004, pursuant to the terms of the Instrument establishing the Fund (the Instrument), the interest of the Fund's Participant Gilde Strategic Situations B.V. (Gilde) was assigned to Robeco Sustainable Private Equity Fund C.V. (Robeco). Robeco accepted and assumed all the rights and obligations of Gilde under the Participation Agreement and the Instrument. A new unconditional promissory note, issued on the same terms as the note issued by Gilde, has been issued by Robeco in favor of the Fund, and is being held by the Trustee together with all other promissory notes payable by Fund Participants. The face value of the note is equal to the amount of contribution owed by Gilde and which remained outstanding at the time of the assignment. The Trustee accepted the assignment of the interest.

## List of Acronyms

AAU .....	Assigned Amount Units	IBRD .....	International Bank for Reconstruction and Development
ABIL .....	Asia Bio-energy India Limited	IETA .....	International Emissions Trading Association
AIJ .....	Activities Implemented Jointly	IFC .....	International Finance Corporation
CDCF .....	Community Development Carbon Fund	INDOCEMENT .....	PT Indocement Tunggal Prakarsa Tbk.
CDM .....	Clean Development Mechanism	INELEC .....	Impulsora Nacional de Electricidad, S. de R.L. de C.V.
CEA .....	Czech Energy Agency of the Czech Republic	JBIC .....	Japan Bank for International Cooperation
CER .....	Certified Emission Reduction	JI .....	Joint Implementation
CF-Assist .....	Carbon Finance Assist Program	LNG .....	Liquefied natural gas
CH <sub>4</sub> .....	Methane gas	LULUCF .....	Land use, land-use change and forestry
COP .....	Conference of the Parties to the UNFCCC	MDG .....	Millennium Development Goal
EBRD .....	European Bank for Reconstruction and Development	MC .....	Mitsubishi Corporation
ERPA .....	Emission Reductions Purchase Agreement	MSW .....	Municipal solid waste
ER .....	Emission Reduction	MtCO <sub>2</sub> e .....	Million tons of carbon dioxide equivalent
ERUPT .....	Emission Reduction Units Purchase Tender	MW .....	Megawatt
ESSD .....	Environmentally and Socially Sustainable Development	MWh .....	Megawatt hour
EU .....	European Union	N <sub>2</sub> O .....	Nitrous oxide
EU-ETS .....	European Union Emissions Trading Scheme	OECD .....	Organisation for Economic Cooperation and Development
FaL-G .....	Fly ash-lime-gypsum	PCF .....	Prototype Carbon Fund
FMO .....	Netherlands Development Bank	tCO <sub>2</sub> e .....	Tons of carbon dioxide equivalent
FMU .....	Fund Management Unit	TEPCO .....	Tokyo Electric Power Company
FY .....	Fiscal year	TJ .....	Terajoule
GDP .....	Gross Domestic Product	UNFCCC .....	United Nations Framework Convention on Climate Change
GHG .....	Greenhouse gases	WBI .....	World Bank Institute
GWh .....	Gigawatt hours	YONDEN .....	Shikoku Electric Power Co., Inc.



## Glossary

**Activities Implemented Jointly:** The Implemented Jointly program was established by the Parties to the UNFCCC to promote investment in project activities that sequester, mitigate, or avoid greenhouse gas emissions and that were implemented jointly among Annex I Parties or between Annex I and non-Annex I Parties. The program ended in the year 2002.

**Additionality:** According to the Kyoto Protocol, gas emission reductions generated by Clean Development Mechanism and Joint Implementation project activities must be additional to those that otherwise would occur. Additionality is established when there is a positive difference between the emissions that occur in the baseline scenario, and the emissions that occur in the proposed project.

**Afforestation:** The process of establishing and growing forests on bare or cultivated land, which has not been forested in recent history.

**Annex I countries:** The countries listed in Annex I of the UNFCCC and, when appropriate, in Annex B of the Kyoto Protocol.

**Assigned Amounts Units:** The quota of Annex I Parties' permissible emissions under the Kyoto Protocol.

**Baseline:** The emission of greenhouse gases that would occur without the contemplated policy intervention or project activity.

**BioCarbon Fund:** The BioCarbon Fund is a World Bank administered prototype carbon fund to pilot projects that sequester and conserve greenhouse gases in forest and agro-ecosystems. The fund will deliver cost-effective emission reductions, while promoting biodiversity conservation and sustainable land use.

**Biomass fuel:** Combustible fuel composed of a biological material, for example, wood or wood by-products, rice husks, or cow dung.

**Carbon asset:** The potential of greenhouse gas emission reductions that a project is able to generate and sell.

**Carbon finance:** Resources provided to projects generating (or expected to generate) greenhouse gas (or carbon) emission reductions in the form of the purchase of such emission reductions.

**Carbon dioxide equivalent (CO<sub>2</sub>e):** The universal unit of measurement used to indicate the global warming potential of each of the six greenhouse gases. Carbon dioxide—a naturally occurring gas that is a byproduct of burning fossil fuels and biomass, land-use changes, and other industrial processes—is the reference gas against which the other greenhouse gases are measured.

**Certified Emission Reductions (CERs):** A unit of greenhouse gas emission reductions issued pursuant to the Clean Development Mechanism of the Kyoto Protocol, and measured in metric tons of carbon dioxide equivalent.

**Clean Development Mechanism (CDM):** The mechanism provided by Article 12 of the Kyoto Protocol, designed to assist developing countries in achieving sustainable development by permitting industrialized countries to finance projects for reducing greenhouse gas emissions in developing countries and receive credit for doing so.

**Community Development Carbon Fund (CDCF):** The Community Development Carbon Fund is a World Bank administered carbon fund which provides carbon finance to small-scale projects in least developed countries and poorer areas of the developing world. The World Bank initiated this public/private fund in collaboration with the Secretariat to the United Nations Framework Convention on Climate Change and the International Emissions Trading Association (IETA). Through the CDCF, the World Bank links private investors with community development projects.

**Conference of Parties (COP):** The meeting of parties to the United Nations Framework Convention on Climate Change.

**Designated National Authority (DNA):** The establishment of a DNA for the Clean Development Mechanism is a requirement to participate in the CDM.

**Emission Reductions (ERs):** The measurable reduction of release of greenhouse gases into the atmosphere from a specified activity or over a specified area, and a specified period of time.

**Emission Reductions Purchase Agreement (ERPA):** Agreement which governs the purchase and sale of emission reductions.

**Emission Reduction Units (ERUs):** A unit of emission reductions issued pursuant to Joint Implementation. This unit is equal to one metric ton of carbon dioxide equivalent.

**Fund Management Committee:** PCF Committee comprising five members, consisting of the fund manager and four other members of the management of the International Bank on Reconstruction and Development (IBRD) selected by the President of the IBRD. The Fund Management Committee is responsible for overseeing the operations of the fund.

**Fund Management Unit (FMU):** Unit headed by the fund manager and responsible for the day-to-day operations of the fund.

**Greenhouse gases (GHGs):** These are the gases released by human activity that are responsible for climate change and global warming. The six gases listed in Annex A of the Kyoto Protocol are carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), and nitrous oxide (N<sub>2</sub>O), as well as hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF<sub>6</sub>).

**High quality emission reductions:** Emission reductions of a sufficient quality so that, in the opinion of the Trustee, at the time a project is selected and designed, there will be a strong likelihood, to the extent it can be assessed, that PCF participants may be able to apply their share of emissions reductions for the purpose of satisfying the requirements of the United Nations Framework Convention on Climate Change, relevant to international agreements, or applicable national legislation.

**Host country:** The country where an emission reductions project is physically located.

**Host Country Agreement:** The Host Country Agreement is a legal document between the PCF and a JI host country which engages the host country to transfer Emission Reduction Units and Assigned Amount Units to the project participants.

**Host Country Committee:** The committee known as the Carbon Finance Host Country Committee established by the World Bank for the purposes of facilitating interaction between the Host Countries and the Bank in relation to the development and operation of CDM projects.

**Internal rate of return:** The annual return that would make the present value of future cash flows from an investment (including its residual market value) equal the current market price of the investment. In other words, the discount rate at which an investment has zero net present value.

**Joint Implementation (JI):** Mechanism provided by Article 6 of the Kyoto Protocol, whereby a country included in Annex I of the UNFCCC and the Kyoto Protocol may acquire Emission Reduction Units when it helps to finance projects that reduce net emissions in another industrialized country (including countries with economies in transition).

**Kyoto Protocol:** Adopted at the 3rd Conference of the Parties to the United Nations Convention on Climate Change held in Kyoto, Japan in December 1997, the Kyoto Protocol commits industrialized country signatories to reduce their greenhouse gas (or "carbon") emissions by an average of 5.2 percent compared with 1990 emissions, in the period 2008-2012. In other words, annual Annex I emissions must be, on average, 950 million metric tons of carbon dioxide equivalent lower than 1990 emissions during the period 2008-2012.

**Methodology Panel:** The CDM Executive Board at its fourth meeting held on June 9-10 in Bonn, Germany agreed to establish a Methodology Panel which is to develop recommendations to the Board on guidelines for methodologies for baselines and monitoring plans.

**Monitoring plan:** A set of requirements for monitoring and verification of emission reductions achieved by a project.

**Operational Entity:** An independent entity, accredited by the CDM Executive Board, which validates CDM project activities, and verifies and certifies emission reductions generated by such projects.

**PCFplus:** PCFplus is a program to supplement the work of the Prototype Carbon Fund in the areas of outreach and capacity building, and research and training. The objectives of the program are to build the capacity of host countries and PCF participants, to enhance the operations and activities of the PCF and its partners, and to promote the market for and quality of greenhouse gas projects and emission reductions by reducing risks and transaction costs.

**Project Concept Note:** A brief description of a project prepared by the project proponent entity or intermediary that is to be presented for consideration by the PCF's Fund Management Committee and the Participants' Committee.

**Project Design Document:** A project-specific document required under the CDM rules which will enable the Operational Entity to determine whether the project (i) has been approved by the parties involved in a project, (ii) would result in reductions of greenhouse gas emissions that are additional, (iii) has an appropriate baseline and monitoring plan.

**Project Idea Note:** A note prepared by a project proponent regarding a project proposed for PCF. The Project Idea Note is set forth in a format provided by the PCF and available on its website [www.prototypecarbonfund.org](http://www.prototypecarbonfund.org).

**Reforestation:** This process increases the capacity of the land to sequester carbon by replanting forest biomass in areas where forests have been previously harvested.

**Registration:** The formal acceptance by the CDM Executive Board of a validated project as a CDM project activity.

**Sequestration:** Sequestration refers to capture of carbon dioxide in a manner that prevents it from being released into the atmosphere for a specified period of time.

**United Nations Framework Convention on Climate Change (UNFCCC):** The international legal framework adopted in June 1992 at the Rio Earth Summit to address climate change. It commits the Parties to the UNFCCC to stabilize human-induced greenhouse gas emissions at levels that would prevent dangerous manmade interference with the climate system. In December 1997, the Parties to the UNFCCC adopted the Kyoto Protocol.

**Validation:** The assessment of a project's Project Design Document, which describes its design, including its baseline and monitoring plan, by an independent third party, before the implementation of the project against the requirements of the CDM.

**Verification Report:** A report prepared by an Operational Entity, or by another independent third party, pursuant to a Verification, which reports the findings of the Verification process, including the amount of reductions in emission of greenhouse gases that have been found to have been generated.