

The Role of the World Bank in Carbon Finance: An Approach for Further Engagement

The Bank's engagement in carbon finance started with the establishment of the \$180 million Prototype Carbon Fund in 1999. Since then the Bank has also agreed to administer country carbon funds for the Dutch, Italian, Spanish and the Danish Governments. In addition to the country carbon funds, the Bank established the Community Development Carbon Fund on March 25, 2003 and the BioCarbon Fund on September 11, 2003. The growth of the carbon funds in the last year has been rapid. Bank administered carbon funds grew from \$413.6 million on July 1, 2004 to about \$ 914.7 million on July 1, 2005. With the Umbrella Carbon Facility, Bank administered carbon funds are expected to be about \$ 1,352.7 million by July 1, 2006.

Although the Bank's initial role was to catalyze the market for carbon emissions reductions, carbon finance is now emerging into the mainstream of the Bank's lending program. In light of a variety of external developments, not least of which is the entry into force of the Kyoto Protocol on February 16, 2005, three clear objectives have emerged for the Bank's carbon finance activity as it matures:

- (i) To ensure that carbon finance contributes substantially to sustainable development, beyond its contribution to global environmental efforts;
- (ii) To assist in building, sustaining, and expanding the international market for carbon emission reductions and its institutional and administrative structure; and
- (iii) To further strengthen the capacity of developing countries to benefit from the emerging market for emission reduction credits.

The Bank has built a portfolio of greenhouse gas emission reduction projects offered for carbon financing both by the Bank's administered funds and by other purchasers. This role will continue, but at the same time the scale of operations must increase if the Bank is to fully commit the funding it has received from participants in the Bank's carbon funds. Though there is an increase in the availability of money in the market for purchase of emission reduction credits, there is a growing shortage of projects generating such credits. Most projects encounter financing difficulties due to unfavorable investment climate and a lack of investment in the sectors that could generate emission reductions. In addition, there is a lack of certainty about the climate change regulatory framework after 2012 when the first commitment period of the Kyoto Protocol ends. The short time left to develop projects that can produce significant quantities of emission reduction credits before 2012 is resulting in a decreasing interest among potential project developers. Despite post 2012 uncertainty, there remains a growing demand by both, developing and industrialized countries for Bank engagement to create viable projects for carbon emission reductions, especially from middle-income countries and the fast growing Asian economies. In addition, European buyers, both private and public, are increasingly seeking to place funds with the Bank for purchase of carbon emission reductions.

The Umbrella Carbon Facility would ensure that a part of the capital now accumulating in the OECD to meet emissions reductions obligations flows to developing countries to stimulate investment in renovation of old, inefficient power plants and allow a programmatic approach to addressing carbon emissions through improved urban waste management, providing sustainable development benefits beyond its contribution to global environmental efforts (e.g. local health

and sanitation benefits arising out of better waste management, local air quality and health impacts of cleaner and more efficient use of fossil fuel or renewable energy).

Over the next year, the Bank could potentially also seek collaborative relationships with other multilateral financial institutions and parties so that the considerable knowledge gained from the Bank's carbon finance operations could be shared and the Bank could assist in building capacity in other important institutions. One potential partnership currently under discussion would create a carbon fund with the European Investment Bank (EIB) so that projects could be created jointly for carbon finance. This partnership would bring to bear the collective technical and financing capabilities of both institutions to prepare and invest in projects that reduce carbon emissions and thereby help abate climate change. In addition, such agreements would allow the Bank to reduce transaction costs by consolidating future resources of European origin for carbon purchases into a single fund.

Even though there are risks to the Bank's engagement in carbon finance, the potential benefits to Bank client countries could be very high. The flow of new and additional resources for environmentally sound projects in developing countries can augment Official Development Assistance (ODA) and serve as a conduit for new technologies. At the same time, developed countries with carbon emission reduction commitments can find a cost-effective means of meeting their obligations or other interests through trade with developing countries in carbon emissions credits. These outcomes are consistent with the G8 Action Plan coming from the Gleneagles summit and the need of developing countries to increase their energy efficiency and mitigate environmental pollution. It also complements the Bank's renewed engagement in energy and infrastructure projects, where carbon finance can improve the viability of these investments.

Background: The Growth of the World Bank's Carbon Finance

In July 1999, the World Bank established a prototype carbon fund to promote the buying of carbon emission reductions in developing countries. Six governments and 17 private sector entities have provided \$180 million to this fund. The Bank has identified, on behalf of the participants in the fund, emission reductions from projects ranging from biomass and small hydro to energy efficiency and conservation in over 20 countries.

Carbon finance at the World Bank has now expanded into eight funds with contributions from public and private entities of nearly \$1 billion. In the course of this expansion, Bank management and OED have reviewed the performance of the World Bank activities and assessed the risks involved in entering this new field of finance for development. The OED review on Global Programs and Partnerships concluded that the Prototype Carbon Fund (PCF) was an innovative public-private partnership providing public goods (i.e., market information, knowledge and capacity building) that private investors would not necessarily provide. It was recognized that PCF outcomes were at risk if the Kyoto Protocol was not ratified, if the emissions reductions failed to materialize, or if emissions certificates turned out to be unmarketable.

Box 1: The Logic of Carbon Markets

- Carbon market based on
 - Greenhouse gas (GHG) effect being a global phenomenon dispersing throughout the atmosphere => therefore the location of abatement is irrelevant to the goal of reduction of overall atmospheric concentrations; and
 - Difference in cost of abatement between OECD and developing countries – short run marginal cost of abatement in OECD is from \$25 to well over \$50 per ton of carbon dioxide, versus less than \$5 per ton in developing countries => international trade in emission reduction credits provides opportunity for low cost abatement and mutual gains from trade
- The carbon market has essentially created a new globally traded commodity:
 - The commodity is the “reduction of GHG emissions by the equivalent of one ton of CO₂”
 - This commodity has a market value, and similar to wheat or oil can be traded across borders on the market
 - This commodity is produced by those with a comparative advantage, and consumed by entities requiring emissions reduction credits to meet their regulatory or treaty obligations.
- A participating OECD private sector actor or government
 - Invests in a less greenhouse gas (GHG) or “carbon-intensive” project/technology in a developing country and
 - Receives credit for GHG (“carbon”) emission reduction created through that activity
- Developing country receives increased investment and cleaner technology

With the Kyoto Protocol coming into force in February 2005, the market for emission reductions has expanded with the sale of emissions reductions from developing countries reaching over \$400 million annually.¹ Despite this expansion, it is an emerging market with the institutional structure underlying it still weak and only a few, but increasing number of, countries benefiting from the growing flow of carbon finance. While private purchasers are active in the market, many generally trade either in small quantities generated from low-risk projects, or from projects that offer little explicit sustainable development benefits beyond the reduction of carbon emissions. The late maturing of the market for carbon emissions has significantly hampered all participants in the carbon market and slowed the preparation and implementation of sound projects for reducing carbon emissions. It is widely acknowledged that the Bank was one of the first major player in the market and has accumulated significant knowledge and experience in carbon finance.

The demand from buyers and sellers for the Bank continuing and even expanding its activities in carbon finance is substantial. Funds for the Bank’s carbon finance and supporting technical assistance could easily grow to over \$1.3 billion in the next eight months. The Bank’s purchase of carbon emission reductions could grow from individual purchases with a contract value of \$4 million or less to potential purchases in the hundreds of millions of dollars in one project or program. At the same time, the Bank is increasingly called upon to give technical assistance to developing country governments and private sector companies interested in participating in this market and benefit from this source of non-ODA financing. From a minor, experimental activity, carbon finance has grown to be an emerging line of Bank assistance to client countries and could become a significant instrument in supporting sustainable development.

¹ State and Trends of the Carbon Market, 2005. World Bank and the International Emissions Trading Association, Washington D.C.

The Evolving Objectives and Challenges of World Bank Carbon Finance

At the early stages of the Bank's engagement, the objective was to catalyze the nearly nonexistent international market for carbon emission reductions. The Bank's engagement was built on the recognition of the substantial difference in the costs of reducing emission reductions between developed countries and developing countries and the opportunities this potentially presented to developing countries. While developed countries could reduce carbon emissions at costs that ranged from \$25 per ton to well over \$50 per ton of CO₂, many developing countries could decrease emissions at costs below \$5 per ton. This intrinsic comparative advantage of developing countries presented a remarkable opportunity for international trade in these emission reductions. The Bank recognized that this trade could result, over the longer term, in considerable new and additional sources of finance for developing countries for low carbon energy and infrastructure development and improved land management. Despite this opportunity, the institutional hurdles for this to happen were considerable, creating substantial risks for potential purchasers in OECD countries. At the time of the Bank's initial engagement, the Kyoto Protocol had not yet entered into force, and therefore the necessary regulatory regime for global carbon trading and finance was not in place. Additionally, fundamental questions were outstanding on how to define and measure carbon emission reductions within the framework of the Kyoto Protocol. Thus, sufficient risks existed that without impetus backed by a technically strong institution such as the Bank, the market for emissions would have lain dormant.

The first carbon fund – the Prototype Carbon Fund - attracted both governments and private companies to attempt to create and buy carbon credits in developing countries. At the launch of this fund, the entry into force of the Kyoto Protocol was still five years in the future.

As the mechanisms for trade under the Kyoto Protocol advanced, the Bank established new funds to purchase carbon credits with participants from OECD governments and private companies. This resulted in expansion of the Bank's engagement as trustee to over \$400 million at the end of FY04. With the entry into force of the Kyoto Protocol in 2005, the demand for carbon emissions reduction credits grew considerably. Despite the increased demand, the purely private segment of the carbon market has not been expanding sufficiently to satisfy demand from OECD buyers. Many of the high emissions reductions volume activities in the developing countries are in the state or para-statal realm, and this combined with the ongoing regulatory risk and uncertainty associated with the steep learning requirements of the UN regulator, led to requests from buyers and sellers for the Bank to stay engaged due to its advantages in working within the intergovernmental framework.

Box 2: Types of Emission Reduction Credits

An “Assigned Amount” is the total amount of greenhouse gas that each ratifying Annex 1 country (list of industrialized countries and economies in transition countries which undertook greenhouse gas reduction commitments under the Kyoto Protocol) is allowed to emit during the ‘first commitment period’ (2008 – 2012) of the Kyoto Protocol. Assigned Amount Units or AAUs are issued by governments that have emission reduction commitments, and can be traded between countries pursuant to international emissions trading, provided that these countries are fully compliant with eligibility requirements.

Certified Emission Reductions (CER) are units of greenhouse gas reductions generated from clean development projects (in countries that do not have emission reduction commitments under the Kyoto Protocol), verified by external, UN-accredited third party verifiers, and issued by the regulatory body of CDM (Clean Development Mechanism), the “CDM Executive Board”. CERs can be used for compliance with Kyoto Protocol obligations or to meet emissions caps under the European Union Emissions Trading Scheme. CERs are often traded in forward contracts.

Emission Reduction Units (ERU) are units of greenhouse gas reductions generated from Joint Implementation (JI) projects (in countries, i.e. typically, economies in transition, that have emission reduction commitments under the Kyoto Protocol), verified by external UN-accredited third party verifiers, and issued by the host country. ERUs are also often traded in forward contracts. Kyoto commodities are measured in tonnes of CO₂ equivalent. All Kyoto Protocol commodities currently have a compliance value only until 2012.

Verified Emission Reduction (VER) are units of greenhouse gas emission reductions generated from either CDM or JI projects that are intended for compliance under the Kyoto Protocol. These emission reductions have not been processed by the regulatory system and so there are risks to the conversion of a part or all of the emission reductions to CERs or ERUs. To address these risks and to guarantee the revenues from the sale of emission reduction credits, the buyer of the VERs assumes the regulatory risks. The price of VERs is lower than that for CERs and ERUs.

The European Union (EU) Emissions Trading Scheme is an EU wide cap and trade emissions trading system that trades in “EU Allowances” (EUAs). EUAs are allocated units (tonnes) of CO₂ that grant the holder – typically a private emitter of greenhouse gases – to emit the equivalent quantity of CO₂ towards meeting emissions obligations in the EU ETS. “Allowances” are essentially “rights to emit”, unique to cap and trade schemes, issued by national governments and allocated to emitters either by auctions, regulation or specific decree. The Bank administered carbon funds do not contract for EUAs.

By the end of FY05, the Bank was managing, as trustee, funds approaching \$1 billion. A prototype activity had grown in the Bank to nearly a mainstream activity with all Regions of the Bank engaged in identifying and preparing projects that could generate carbon credits. With the increase in funding, there has been a commensurate increase in the risks for the Bank in managing these funds. The Bank’s institutional structure for managing trust funds was not designed to deal with this kind of funding or purpose – the purchase of carbon emissions reductions – essentially an internationally traded commodity.

Another factor influencing the risky nature of the business is that the international UN structure set up by the Kyoto Protocol has not adequately matured. Indeed since its establishment over three years ago just 26 projects have been formally registered as valid CDM projects². The first certified emission credits were issued by the CDM Executive Board on October 20, 2005. The slow start of the operations of the CDM under the Kyoto Protocol is a great impediment, both to OECD countries seeking to lower the cost of meeting their Kyoto Protocol obligations and to developing countries wanting to take full advantage of carbon finance through carbon trading. It is expected that at the next meeting of the Parties to the Kyoto Protocol (December, 2005), there

² As of October 24, 2005. See <http://cdm.unfccc.int> for updated information.

will be pressure to address the issue of complex documentation and procedures which have led to serious delays and regulatory uncertainty.

For the Bank and other institutions and private companies, creating projects for carbon emission reductions under an ambiguous regulatory regime proved to be more difficult than originally envisioned. Although the Bank has nearly \$1 billion of funds pledged by countries and companies for purchase of carbon credits, actual purchases have reached only \$141 million. Although a strong pipeline of projects is being generated, the gap between the hoped for purchases and the reality remains considerable. The prototype mode of operation where small projects were being developed in diverse fields has not satisfied the growing demand for emission reductions. A new mode of operation is called for with the expansion of funding and the maturing of the market. The Umbrella Carbon Facility, for instance, would identify and prepare very large projects which would not only pool and utilize the funds from the existing Bank carbon funds, but would also allow private sector buyers to participate in the very large projects. Furthermore, the initial tranches of the Umbrella Carbon Facility expect to utilize methodologies and procedures approved by the CDM Executive Board. This is expected to result in much lower regulatory and delivery risk for the emission reductions.

Box 3: The International Framework for the Carbon Market

Most industrialized countries have ratified the Kyoto Protocol, which entered into force on February 16th, 2005. The Kyoto Protocol mandates industrialized countries to reduce their emissions on an average by 5.2% between 2008 and 2012 relative to emissions in 1990, with individual industrialized country targets varying. There are no emissions targets for developing countries.

The Kyoto Protocol contains a number of core elements, including a set of compliance rules, e.g., Article 6: Joint Implementation (JI) for project-based trading of carbon emission reduction credits between industrialized nations, and Article 12: the Clean Development Mechanism (CDM) for project-based trading of carbon emission reduction credits between industrialized and developing nations.

The CDM and JI are the so-called “flexibility mechanisms” of the Kyoto Protocol, which are designed to help countries with quantitative commitments to reduce greenhouse gas emissions and to do so at an affordable cost by taking advantage of investment opportunities outside of their borders. The investor in the project is typically a company or a government from an industrialized country with an obligation to reduce emissions. Once a CDM or JI investment they have made becomes operational, e.g. a wind farm starts generating green electricity, it helps cut greenhouse gas emissions compared to the use of fossil fuel based electricity, and the investor gains emission reduction credits. The CDM allows an industrialized country to buy emission reduction credits through a project-based investment implemented in a developing country while JI allows an industrialized country to buy emission reductions credits through a project-based investment realized in another industrialized country. In both cases, the emission reduction credits generated by the project are then used by the industrialized country buying the credits to offset part of its emissions and fulfill its commitment at a lower cost than if it had to reduce emissions solely through domestic measures.

Given that most industrialized countries will not meet their reduction targets with domestic actions alone, this provides opportunities for transactions in the carbon market while also supporting sustainable development.

Despite the slow start and the institutional weaknesses in the international regulatory regime, the promise of carbon trading remains substantial. While many developing countries have become actively engaged in carbon finance, others have barely recognized the opportunity to earn carbon emissions reduction credits and exploit them as export “commodities.” Eligible sectors such as coal thermal power plant repowering, rehabilitation and modernization have not been touched by the carbon market. Further, the potential of carbon finance to support investments in efficient

energy production and end-use efficiency, urban waste management, forestry and agriculture is substantial and still largely unexploited. The Bank and other international lending institutions have the opportunity to use carbon finance to increase investment in efficient fossil fuel plants, support renewable energy, deal with poorly managed landfills and other waste streams that pose serious public health risks to large populations, build sustainable forest management, improve land use practices in agriculture, and increase efficiency in transportation – all while setting up a cost-effective mechanism to deal with climate change.

Having reached nearly \$1 billion of pledged funds for carbon purchases under Bank management, there is a need for a shift to a programmatic approach and to scale up the operations in all carbon funds administered by the Bank. The approach for achieving these needs is presented in the next sections.

The Bank’s Approach in Carbon Finance

Three interrelated objectives form the foundation of the Bank’s approach in carbon finance.

The first objective is to ensure that carbon finance contributes substantially to sustainable development—as required in the Kyoto Protocol—beyond its contributions to global environmental efforts, by:

- (i) Supporting developing countries to enable them to receive the maximum capital transfers for sustainable development from carbon finance through:
 - Assisting in the identification and preparation of projects that reduce carbon emissions and are eligible under the international and national regulatory frameworks for carbon trading;
 - Going beyond a project by project approach by a growing focus on a programmatic approach, both regionally and sectorally, to achieving emissions reductions for trade.³
 - Promoting carbon projects in countries, sectors, and activities yet to benefit from carbon finance; and
 - Raising additional carbon finance and supporting investments through partnering with OECD governments and private corporations wanting to buy carbon credits in developing markets.
- (ii) Ensuring all carbon projects promoted by the Bank have additional sustainable development benefits⁴ beyond the reduction of carbon emissions by:

³ This is particularly important in rural areas where projects need to be “bundled” from a village approach to covering a region. Such an approach is currently being pioneered in Nepal for biogas. At a much larger scale, the Bank is currently exploring how renovation and modernization of coal power plants can be placed into a program covering many plants with common financing. Such an approach is being considered for India.

⁴ Clean Development Mechanism of the Kyoto Protocol requires all projects to contribute to sustainable development in addition to reducing greenhouse gas emissions.

- Applying to carbon projects the Bank's environment and social safeguard policies; and
- Adding sustainable development value to carbon finance beyond that which the private markets add, e.g., facilitating the channeling of carbon finance revenues into further sustainable development activities or developing carbon finance projects that present institutional, policy and regulatory barriers challenges too steep for the private markets to tackle alone.

The second objective is to assist in building, sustaining, and expanding the international market for carbon emission reductions and its institutional and administrative structure by:

- (i) Supporting the regulatory structure of the United Nations Framework Convention on Climate Change (UNFCCC) through:
 - Piloting the development of new methodologies for achieving carbon emission reductions to create access to carbon finance for new types of projects (e.g., clean coal, urban infrastructure). The Bank is responsible for over a quarter of the approved methodologies and for five of the six consolidated methodologies developed for the clean development mechanism of the Kyoto Protocol; and
 - Collaborating with the Secretariat of the UNFCCC to address methodological and technical issues.
- (ii) Expanding the capacity of other financial and development institutions to support developing countries in carbon finance through:
 - Providing carbon finance to projects prepared and appraised by other international financial institutions such as the Asian Development Bank; and
 - Exploring common funds for carbon finance (e.g., the potential fund with the European Investment Bank).
- (iii) Participating with the private sector through:
 - Supporting international associations of private traders and private market exchanges with technical assistance and advice; and
 - Providing opportunities for purchase of carbon emission reduction credits by private sector entities.
- (iv) Providing increased liquidity to the market as needed through:
 - Creating projects that generate large amounts of emission reduction credits, a portion of which can be acquired by the private sector.

The third objective is to further strengthen the capacity of developing countries to benefit from the emerging market for emission reduction credits. The Bank is the single largest source for carbon finance capacity building, utilizing the CF Assist Fund. Details are provided in Box 4.

Box 4: Capacity Building Through CF-Assist

Carbon Finance-Assist (CF-Assist) is a \$10 million Bank administered trust fund for capacity building and technical assistance program established by the Bank in FY05 to enable the full engagement of developing countries and economies in transition in the carbon market. As part of the Bank's program, with its own donor constituency and work plan, CF-Assist is aimed at assisting interested countries in the development and implementation of projects under the CDM (Clean Development Mechanism) and JI (Joint Implementation), or to access International Emissions Trading (IET) of the Kyoto Protocol.

CF-Assist works with developing countries and economies in transition for 3-5 year periods to develop sound structures, where local institutions have the capacity to prepare and review projects for approval. Priority countries identified for 2005 – 2006 are Argentina, Bolivia, Bulgaria, Brazil, Chile, Cambodia, Central America, China, Colombia, Ecuador, India, Kazakhstan, Mexico, Papua New Guinea, Peru, Poland, Romania, Russian Federation, Sri Lanka, Ukraine and Uruguay. In Africa, the current priority countries are: Cameroon, Ghana, Kenya, Mali, Morocco, Mozambique, Nigeria, Senegal, South Africa, Uganda and Zambia. The Bank will be in dialogue with countries to discuss further prioritization and the possibility of engaging in capacity building in other countries.

Also WBI is committed to scaling up its carbon finance-related capacity building in partnership with CF-Assist and to mainstream carbon finance more effectively into sector specific capacity development, e.g. urban clean air and solid waste management programs

The Specifics of the Approach for Expanded Engagement

Building on the past engagement, the Bank will focus on the following approaches:

- (i) **Continue to align carbon finance more closely with poverty alleviation and locally sustainable development ensuring that smaller, poorer countries benefit from carbon market development.** While the Bank will focus on larger projects under the Umbrella Carbon Facility, the Bank expects to play a continuing role in intermediating risks of carbon investment in poorer smaller countries and communities and in carbon sequestration for improved land use. It is unlikely that direct private sector investment will grow significantly in this market segment for the foreseeable future. Through the existing funds and especially the Community Development Carbon Fund and the Bio-Carbon Fund, the Bank will reach out to poorer countries especially in Africa to help ensure that these countries are not left behind in benefiting from carbon finance.⁵ Special funding through CF Assist, the trust fund for capacity building, is also being directed at these countries.
- (ii) **Expanding the technology frontiers of the carbon market to ensure that carbon finance and carbon trade supports energy infrastructure and technology transfer.** There is significant potential for carbon trade to also support transfer of technology. For instance, current international and leading edge clean coal, coal-to-gas shifts and overall improvements in energy efficiency, can help rapidly industrializing developing countries move beyond traditional technologies to develop low carbon, climate-friendly systems for sustainable economic development.

⁵ For example the Bank is seeking ways to have biomass energy, which in Africa provides 80 percent of energy, modernized through carbon finance.

- (iii) **Expanding the Bank’s role in helping developing countries to develop and market portfolios of carbon assets directly to OECD buyers.** The Bank will assist developing countries in identifying and presenting their emission reduction projects directly to the carbon market or through private sector intermediaries where the Bank as trustee of its funds is not the primary buyer.⁶ Funds under management by the Bank can provide the catalyst to these projects, by providing seed financing as lead buyer. In this role, the Bank is assisting in bringing carbon reducing projects to the market that might not have been feasible without the engagement of the funds under Bank’s management.
- (iv) **Ensure that there is value-added from carbon purchase.** In all projects where the Bank facilitates transactions to purchasing carbon, the Bank’s environmental and social safeguards are applied. In addition, the Bank strives to achieve additional sustainable development value, for example through adding to the project other components such as broader environmental compliance and community benefits. For many countries, in particular for poor rural communities, land-use activities beyond afforestation and reforestation have the potential to mitigate climate change while creating multiple environmental and social benefits. Activities such as revegetation of salinized lands using shrubs, reduced tillage, conservation forestry, forest restoration, etc. offers the only way to participate and compete in the global carbon market. The Bank will also actively involve external development partner organizations in the design and implementation of these projects.
- (v) **Achieving Greater Integration of Carbon Finance into the Mainstream of Bank Lending Operations.** Most projects in the Bank administered carbon fund have not been financed by the Bank; these projects have largely been with private sector financing. Because the funding from carbon finance – like the trade in any commodity – is transferred to the seller only when the carbon emission reductions are produced, the business of carbon purchasing must rely on projects being created with up-front investments. Private and public capital to invest in underlying potential projects remains in short supply in many countries, sectors and industries. Increasing alignment between IBRD/IDA and IFC operations and carbon finance is key to helping developing countries benefit from growing demand for emissions reductions. Under an action plan developed between ESSD and the Regions being implemented over the past year, progress has been made to integrate carbon finance with Bank lending assistance across all regions. This approach is being expanded to enhance synergy between carbon finance and development assistance in support of country assistance strategies. Work Program Agreements are being agreed between the Carbon Finance Unit and the operational units of the Bank to generate the underlying finance for carbon

⁶ The Bank administered carbon fund being a “primary” buyer implies that such a fund buys substantially all emission reduction from the project. Taking account of performance risk, this could imply buying 60-80% of the first emission reductions. Being a “lead” buyer implies that the Bank administered carbon fund catalyzes the transaction by being the first to buy a small part, usually less than the first 20%, of the emission reduction. Buying only part of the emission reduction in a project, usually the first of the generated emission reductions reduces delivery risk for the purchasing Bank carbon fund. The seller, in turn, can retain the balance of the emission reductions for sale to third parties, thereby capturing the potential market price up-side (but also bearing the risk of a price collapse). To avoid a conflict of interest, the Bank discusses with fund participants the amount of emission reductions to be purchased from the project.

projects. One Region of the Bank has even required that every Bank operation be examined for the potential to add carbon finance components.

- (vi) **Reaching Out to Other International Finance Institutions and Entities** - By being a global leader in carbon finance and methodology, the Bank has the opportunity to work with other financial institutions and non-government institutions in supporting developing countries to benefit from carbon markets. Already the Carbon Finance Unit is in discussions with other institutions on how the Bank can facilitate their active engagement in the carbon business.
- (vii) **Improving the Pipeline of Carbon Finance Projects.** As of July 1, 2005, the Bank has signed 30 carbon emission reduction purchase contracts mostly from renewable energy, energy efficiency and waste management. These are mainly stand-alone projects and involve the purchase of emission reductions of about \$141 million.

The Bank's delivery of potential emission reduction credits (see Box 2 for Types of Emission Reduction Credits) to end FY07 is currently estimated at about \$1 billion of which about \$500 million is from two very large projects in FY06 for HFC-23 destruction in China.⁷ Of this, about \$200 million is expected from existing Bank administered carbon funds. Most of the current funds have portfolio and country diversity criteria. These criteria restrict the ability of these carbon funds to purchase the available emission reductions from large emission reductions projects. Aggregating funds into the Umbrella Carbon Facility from the different Bank administered carbon fund allows the purchase of emission reduction from large projects.

Meeting the challenge of delivering on the rapidly growing funds received by the Bank requires:

- Using programmatic approaches to the design of carbon finance transactions such as a country-wide, instead of a site-by-site, waste management or coal generation plant re-powering program incorporating carbon finance. The programmatic approach may involve bundling of similar project activities or may require sectoral baseline approaches. While sectoral approaches offer simplification possibilities, the CDM Executive Board still needs to clarify if such approaches are eligible.
- Seeking emission reduction from projects involving greenhouse gases such as HFC-23 or nitrous oxide. The price of these emission reductions is higher in the market than the abatement of CO₂ due to lower regulatory and delivery risk. As required by the Clean Development Mechanism of the Kyoto Protocol, there is a need to design and embed sustainable development programs with these projects to increase the impact of the revenues from such emission reductions. Payments for emission reduction are income for the party selling the emission reduction and therefore the seller decides how to use these funds. The Bank encourages and assists countries and entities from whom emission reductions are purchased to

⁷ HFC-23 is a very powerful greenhouse gas formed as a bi-product in the production of HCFC-22, a chemical widely used as a refrigerant and chemical feedstock. HFC-23 emissions can be reduced by a number of ways including thermal decomposition of HFC-23 with end-of-pipe incinerators. Its effect on the atmosphere is nearly 12,000 times that of carbon dioxide.

put in place system and frameworks that would facilitate the use of carbon revenues for sustainable development activities;⁸ and

- Developing credible infrastructure investment programs utilizing the revenues from the sale of surplus emission allowances allocated to Economies in Transition such as Russia, Ukraine and Bulgaria to increase the acceptability of such transactions.⁹

Capturing Benefits for Developing Countries:

There are considerable benefits to the Bank's involvement in carbon finance as noted below.

- The Bank's role in capacity building has already facilitated the transfer of knowledge and technology which facilitates the growth of expertise in developing countries enabling them to position themselves to become players in this emerging market;
- Despite the relatively short time frame of 2012, the Bank believes it will be possible to facilitate significant transfers of incremental finance to developing countries over and above ODA. Such transfers could be important to financing energy programs in developing countries which are critical for their economic growth. Estimates of carbon financial flows to developing countries are in the range of US\$2-\$3 billion (2005 prices) per annum.
- If long term targets were agreed to, North to South transfers between 2013 and 2050 could increase by one or two orders of magnitude relative to their first commitment period levels. With a 450 parts per million target of concentration in the atmosphere, annualized North to South payments for carbon between 2013 to 2050 would be between US\$27-\$175 billion (2005 prices); and with a 550 parts per million target, annualized North to South payments for carbon from 2013 to 2050 being between US\$4-\$90 billion (2005 prices). The wide range of the potential financial flows is indicative of the market uncertainty.

Carbon Finance Business: Exit and the Post-Kyoto Period

To the degree that carbon markets thrive, the Bank will exit from the carbon market. The Bank as trustee of carbon funds will increasingly be able to act as the 'buyer of last resort' and transition from being a 'buyer' of carbon assets to helping its clients countries position themselves as sellers.

⁸ For example, the Chinese Government is establishing a facility to use 65 percent of the revenues from the purchase of HFC-23 emission reductions for sustainable development investments in climate-friendly projects and capacity building. This additional benefit of the purchase of carbon emission reductions makes the project much more attractive to purchasers as it is perceived to be more consistent with the sustainable development goals of the CDM of the Kyoto Protocol.

⁹ These surplus emission reduction credits originate from the decrease in economic activity of industry and utilities in these countries since 1990, the baseline for emissions reductions. These credits are generally referred to as "hot air". Purchase of these credits has generated political resistance by environmental NGOs and the public in general as they do not contribute to additional or so called "real" new reductions. "Green Investment Schemes" are infrastructure investment programs are financed by the revenues from the sale of the surplus emissions which are linked to verifiable emission reductions. These credits do not require preparatory work on Bank safeguards and related standards.

If risk and uncertainty declines in certain countries and for certain technologies, the Bank's carbon funds will be no longer needed as the Bank's participation becomes, over time, no longer necessary to help create viable projects and to manage risks for buyers and sellers. This, in effect, constitutes a built-in exit approach for the Bank from the lower-risk part of the carbon market. Already, in some countries and projects, under its pledge not to compete head-to-head with private sector buyers, the Bank has withdrawn in favor of private buyers. In such circumstances, the Bank will only be engaged through carbon finance if additional benefits from the project can be achieved, for example through improving environmental or social conditions, an externality not usually obligated for a private buyer to address. This approach is consistent with the Bank's objective to assist in ensuring that carbon finance contributes to sustainable development.

Because of the long lead time for energy and carbon investments, the opportunity for the Bank to create and deliver carbon assets to serve OECD compliance needs before the end of 2012 is beginning to decline. The willingness of Bank-managed Fund Participants to buy emission reductions for post-2012 delivery may be an important contributor to market stability, providing continuity between the Kyoto and any post-Kyoto regimes in the evolution of the global carbon market.

Such long term buying, however, does not imply Bank support for Kyoto-specific instruments and modalities in a post-2012 era. As it has done for the Kyoto mechanisms, the Bank stands ready to support governments, through analysis and "learning-by-doing".

Conclusion

The Kyoto Protocol and the emerging carbon emissions reduction market are at a critical juncture. The demand for emission reductions is conservatively estimated at 3.5 billion tons by 2012. Only a small amount of that demand has been met and time is running out. Although the Kyoto Protocol continues until 2012, viable projects that can generate large volumes of emissions to meet the demand have not been developed at the scale needed. At the same time, geographic and technological diversity of greenhouse gas emission reduction projects is important to many countries both on the buyer and seller side of the carbon market. So far projects have been concentrated in a few sectors and have not reached many countries, in particular some of the poorer developing countries.

The Bank has an important role to play as an experienced developer of CDM projects having been engaged in carbon finance for over six years. Combined with the Bank's operational experience and its capacity to work with diverse partners, the Bank's expanded engagement in carbon finance is critical for addressing the longer-term threat of climate change. With the Umbrella Carbon Facility and the existing funds the Bank has a diverse package of instruments. While the Umbrella Carbon Facility can assist in meeting the demand for volume in the market, the BioCarbon Fund and Community Development Carbon Fund offer the potential of reaching out to rural sectors and poorer countries. The country funds – the two Netherlands's funds, the Italian Carbon Fund, Danish Carbon Fund and the Spanish Carbon Fund – provide the resources for increasing technological and geographical diversity while providing funds also for volume purchases.

At the same time, the CF-Assist Program supported by donor contributions provides funding for specific institutional and capacity building in countries so that the supply of CDM assets can be increased. The potential of further partnerships with other multilateral development banks can further spread the knowledge and experience of the Bank in carbon finance.

The potential benefits to developing countries in terms of capital transfers for environmentally sound projects and technological transfer from carbon finance are substantial. But as outlined in this paper, there are many hurdles to overcome in building the international regulatory framework. The recent issuance of CERs has signaled a small but historically important step forward.¹⁰ This needs to be followed by much more substantial issuance of CERs and then their linkage into the European Trading Scheme and other markets.

The months ahead in carbon finance are important in fulfilling the obligations and expectations of many countries that have ratified the Kyoto Protocol. The Bank has been engaged in carbon finance at an early stage and has much to offer based on this experience. The Bank can also contribute to the meeting of the obligations of the ratifiers of the Kyoto Protocol while improving the environment and energy efficiency in client countries.

To meet these objectives, the approach in this paper for further engagement in carbon finance is based on three inter-related objectives:

- (i) To ensure that carbon finance contributes substantially to sustainable development, beyond its contribution to global environmental efforts;
- (ii) To assist in building, sustaining, and expanding the international market for carbon emission reductions and its institutional and administrative structure; and
- (iii) To further strengthen the capacity of developing countries to benefit from the emerging market for emission reduction credits.

The approach for further engagement addresses the risks inherent in the Bank's involvement in carbon finance. The risks are considered manageable and worth the benefits to the Bank's client countries of carbon finance, both in terms of non-ODA capital flows to developing countries and as a vehicle for technology transfer. However, it is recognized that, while manageable, risks remain. In particular the Bank will continue to monitor issues such as conflict of interest, participation of the private sector, and meeting delivery targets. The Bank will also continue its engagement with stakeholders on post-2012 carbon credits. Within the Bank, ESSD will continue to provide senior management with progress reports on strengthening monitoring and accountability systems.

Finally, and as noted previously, the Umbrella Carbon Facility would allow aggregation of funds at a scale that would permit the purchase of large volumes of greenhouse gases. This Facility would allow the use of over \$300 million from existing Bank carbon funds, in the next year and a half, and will considerably reduce risk of non-delivery which has been identified as the major risk in the further growth of carbon finance operations at the Bank. Also, and in contrast to the current Bank carbon funds, funding would only be sought once projects have been prepared. This "as-needed" approach reduces considerably the delivery risk currently being encountered under current carbon trust funds under Bank management.

¹⁰ On October 20, 2005, the first CERS for two small CDM projects located in Honduras were issued. One of these projects, the La Esperanza project is selling certified greenhouse gas emission reductions to the Bank-administered Community Development Carbon Fund.