6. FACILITATE THE DEVELOPMENT OF INNOVATIVE MARKET MECHANISMS (ACTION AREA 3)

93. **An important role of markets.** Market mechanisms or economic incentives, when appropriately designed and matched by an adequate regulatory capacity, can play a key role in mobilizing financing for development with environmental benefits. They can potentially lower the costs of climate change action and they also provide incentives to opt for available low-carbon alternatives, to take steps to reduce vulnerability to current climate variability and upcoming climate risks, and to support the development of innovative climate-friendly technologies. Sustained growth in the carbon market over the past few years, together with other factors, such as oil prices, has contributed to the rise of (private sector) clean energy investment worldwide and financial institutions have actively expanded their activity toward the nascent markets for climate change related goods and services.

94. Nevertheless, challenges and barriers remain before climate-friendly markets can reach their full potential, in supporting both adaptation and GHG reductions. The WBG can play a significant role in the facilitation of market development and financial intermediation to reconcile climate and development.

Expanding the Boundaries of the Carbon Market

95. **Experience to date.** The World Bank launched its first public-private partnership, the Prototype Carbon Fund, in April 2000 (years before the Kyoto Protocol entered into force). Over the past eight years, carbon finance activities have grown to US$ 2.1 billion, through 10 funds, pooling stakes from 16 governments and 66 private companies. Carbon finance, with its significant leveraging, has become among the main channels to support low-carbon investment. The estimated leverage factor is 6.[15]

96. IFC's carbon finance unit has been engaged directly with the carbon market since 2002 and its involvement has recently shifted from intermediation efforts on behalf of the Dutch government to leveraging its ability to take long-term project and credit risk in emerging markets and take carbon-related exposure for its own account, primarily via its innovative flagship product, the Carbon Delivery Guarantee. The product capitalizes on the synergy between IFC's strong balance sheet and its ability to assess and take emerging market project and credit risk (see Box 17).

97. **Barriers and limitations.** Despite its strong momentum, the project-based carbon market faces challenges, including the absence of market continuity beyond 2012, which put at risk this additional source of financing for clean energy and other low-carbon investments in developing countries. In addition, the carbon market faces the following key barriers:

- Because carbon markets are in their infancy, investors in potential mitigation projects face huge uncertainties regarding the cost and time required to register carbon credits from their projects, as well as regarding the eligibility, volume, and prices of credits that they would ultimately generate.

[15] Excluding Hydro FluoroCarbon (HFC) projects.

- The carbon market does not address the need for upfront financing of mitigation investments**.** Given the risks to the underlying projects, there have been few attempts by financial institutions to monetize forward carbon revenue streams to provide the investment capital required.

- Transaction costs and uncertainties linked to project-based mechanisms (complex and changing rules, delays and bottlenecks along the project cycle, project performance, and so on), as well as the riskier business environments for project-based emission reductions (that is, developing countries and economies in transition vis-à-vis creditworthy industrialized countries), and lack of local capacity may also deter investors.

Box 17: IFC's Carbon Delivery Guarantee: Managing Risk and Maximizing Returns

Projects under the Kyoto Protocol's Clean Development Mechanism generate carbon credits (known as Certified Emission Reductions or CERs) when they reduce their GHG emissions and can sell these credits in global markets. Given IFC's experience in the carbon market and its financial strength, IFC is in a unique position to help qualifying clients maximize the benefits of the carbon market. Under its new Carbon Delivery Guarantee (CDG), IFC assures delivery of carbon credits from companies in developing countries to buyers in developed countries. The new product provides companies selling CERs access to a wider range of potential buyers by mitigating country and project risks. Acting as an intermediary, IFC sells credits on behalf of companies in the global market and passes the attractive prices back to the projects. Clients profit from IFC's credit rating by gaining access to markets and benefit from full price transparency. For buyers in developed countries, IFC provides certainty by eliminating the risk of not receiving the carbon credits when promised. The CDG product is a key pillar of IFC's climate change strategy and can help clients maximize the potential for clean energy and other climate friendly and low carbon investments.

IFC signed its first CDG agreements in Sub-Saharan Africa and South Asia in early 2008 and is actively pursuing other CDG deals throughout the developing world. In South Africa, IFC's agreement is to help sell up to 900,000 carbon credits from Omnia Fertilizers, one of the country's leading fertilizer producers. The installation of a nitrous oxide abatement facility will not only generate carbon credits, it also mitigates pollution by employing cleaner technology that prevents NO_x emissions. In addition, Omnia has committed to contributing 5 percent of revenue generated by the CERs to reducing poverty in the surrounding community. In India, IFC signed a deal for 850,000 carbon credits from Rain CII Carbon (India), an IFC client for over 15 years and now the largest merchant of calcined coke in the world. Their 50 megawatt waste heat recovery power plant will generate power that reduces Rain's dependence on fossil fuel-based power from the grid in a country with severe power deficits.

Source: IFC.

98. **WBG Priorities for further action.** Building on its experience, WBG is further exploring and piloting a number of avenues to deepen the reach of carbon finance in supporting long-term, climate-friendly investments and harness the new carbon finance potentials outlined below:

- *Target systematic programs of investments in a strategic way* (as opposed to the more random, short-term project-by-project mode of today's carbon market), with the Carbon Partnership Facility providing a key leverage. The CPF, approved in 2007, will promote GHG emission reductions on a large scale through long-term investments (like power sector development, energy efficiency, gas flaring, transport, and urban development, including integrated waste management systems), help create an enabling environment for mitigation programs, and scale up the delivery of carbon finance through programmatic and sectoral initiatives that help catalyze a change in the way Bank client countries approach GHG mitigation. The CPF also addresses market continuity issues as the purchase of carbon credits might extend up to 2022. During FY09–11, 12 to 16 Emissions Reduction Programs are expected to be developed under the CPF.

- *Address areas so far by-passed by the carbon market*, with the Forest Carbon Partnership Facility offering a key channel for action. The FCPF, launched in Bali alongside the COP13 in December 2007, will aim at preventing deforestation by compensating developing countries for carbon dioxide reductions realized by maintaining their forests. Most of the forest-rich countries are among the poorest in the world. By end-FY09, 18 readiness grants to help developing countries build the technical, regulatory, and sustainable forestry capacity for reducing emissions from deforestation and degradation are expected to be provided, with at least 5 pilots completed by end-FY10. The WBG will continue its efforts to increase access to carbon markets by African countries. Efforts should also extend to mitigation potentials from the agricultural sector (for example, carbon soil) so that carbon finance can encourage sustainable practices and increase climate resilience in a key sector for development and poverty reduction.

- *Further expand the use of risk management products and their combination with WBG projects.* Such risk management products, including IFC's Carbon Delivery Guarantee and MIGA's insurance (see Box 17), increase the confidence of potential carbon asset buyers or of potential investors in the underlying project, and can help project sponsors secure better terms for financing or for the transaction of the carbon assets. Efforts will be pursued to further combine such products with carbon finance operations.

99. In addition, the WBG is extending collaboration with client countries and other clients in the design, development, and implementation of innovative *host country driven CF vehicles*. In Mexico and Argentina, national carbon funds have been established and already operate as ER project aggregator vehicles. In Brazil and India, technical assistance has been provided for the design of auctioning platforms and development of related domestic capacities and infrastructure. IFC is considering capacity building via its advisory services business that will help provide access to markets for a wide range of under-represented sectors and market participants, including work with municipalities, and wholesaling credits from smaller projects via domestic financial institutions in developing countries. These financial institutions are expected to be the conduit for significant flows of private capital to low carbon projects.

Customizing Climate Risk Management Products

100. Natural disasters in middle- and low-income countries have major fiscal and developmental implications. Engagement by the private sector has, however, been very limited to date due to correlated risks (large weather systems can affect a large portion of an insurance company's portfolio), adverse selection (whereby only the riskier clients seek insurance), lack of data and objective indicators of damage, the small size of individual coverages (in the case of small farmers), and the lack of willingness or ability of smaller clients to pay insurance premiums. Therefore, the WBG has begun offering a complementary suite of products and services to assist countries develop tailor-made catastrophe risk financing strategies, increase penetration of insurance and access to re-insurance markets (see Box 18).

Box 18: Facilitating Access to Catastrophic and Climate Risk Insurance and Re-insurance Markets

Insurance linked to weather indexes: To improve the penetration of private insurance to reach poor and vulnerable populations, the WBG has helped clients develop property insurance schemes linked to weather indexes. The WBG has provided technical assistance for the development of innovative agriculture insurance programs in several low- and middle-income countries. The Index-Based Livestock Insurance Program was established by the Government of Mongolia to protect herders against excessive livestock mortality. More than 550,000 animals are currently covered under this program. The Government of India, with technical assistance from the WBG, established a Weather Based Crop Insurance Scheme, which currently protects more than 600,000 farmers against drought. Similar initiatives are ongoing in Ethiopia, Malawi, and Thailand, for example. In cases where vulnerable people have very limited ability to pay, donor funding has been mobilized to pay premiums for privately-provided drought insurance on behalf of small farmers as part of a wider program to offer weather-index based derivative intermediations to IDA and IBRD countries.

Catastrophe Risk Deferred Drawdown Option: Policy responses to extreme weather events include *ex-ante* adaptation and *ex-post* recovery efforts, for which immediate availability of funds is necessary for effective action. The Catastrophe Risk Deferred Drawdown Option facility, or CAT DDO, helps to meet this need by providing immediate liquidity during an emergency, while other forms of assistance are being mobilized. It accomplishes this by providing a contingent DPL whose disbursement is deferred until a natural disaster happens. Eligible countries are IBRD and IBRD-IDA-blend countries with adequate macroeconomic policy framework and with a satisfactory implementation of a disaster risk reduction program. In order to avoid 'moral hazard' problems, the DDO becomes available after satisfactory implementation of a hazard risk management program (the client is notified if not compliant). Repayments will commence from the date of the drawdown, but the terms can be determined at the time of commitment or drawdown.

On-going work on new products: The WBG is investigating other financial services, including the intermediation of weather derivatives between the member countries and the market counterparts. It is supporting the creation of the Global Index Reinsurance Facility (GIRIF), a multi-donor trust fund linked with a specialized index-based reinsurance company, which will promote index-based insurance in developing markets.

Source: The WBG.

101. Going forward, the WBG will explore potential for replicating such insurance and reinsurance instruments for managing climate risk linked to changing climate. Further integration of disaster risk reduction and climate adaptation work will strengthen the foundation for developing applications of the risk management products that combine responses to immediate catastrophic risks with longer-term climate risk management.

Other initiatives

102. Building on its expertise, the WBG is seeking to proactively use capital markets to raise funds for climate friendly investments; both in mitigation and adaptation (see Box 19). The WBG, particularly IFC, will expand support to developing markets of energy efficiency services. The WBG will continue its innovative programs of payments for ecosystem services (PES) that also bring mitigation or/and adaptation co-benefits. Building on a successful pilot program, in Costa Rica, supported by the GEF, several WBG projects in LAC have been modeled on this approach.

Box 19: Putting Capital Markets to Climate Action

The World Bank's Treasury is actively developing new tools to engage investors looking for investment opportunities that contribute to sustainable development using the capital markets. Examples of recent initiatives (developed with the collaboration of CFU) include the first Certified Emissions Reductions-linked Uridashi Bond, nicknamed the "Cool Bond", with Daiwa Securities Group, and the World Bank Eco-3Plus Note—a 6-year bond issued by ABN AMRO for investors in The Netherlands, Belgium, and Luxembourg.

By purchasing the Uridashi Cool Bond, investors can indirectly participate in the market for greenhouse gas emission reductions. After a fixed rate annual coupon of 3 percent for an initial period, the coupon will be linked to the future performance of CER market prices and the actual-versus-estimated delivery of CERs generated by a hydropower plant located in the Guizhou Province in China, which has been registered as a CDM project. Other similar bonds are under development. In the same way, the Eco-3Plus Note has an annual minimum coupon (3 percent) plus a potential additional amount based on the performance of an environmentally focused index. Other initiatives being considered include "Green Bonds" to fund development activities with climate mitigation and adaptation benefits and an International Finance Facility for Climate Change based on the IFFIm model, whereby development aid for mitigation and adaptation activities is frontloaded, using the capital markets.

On the climate risk management side, the WB Treasury is helping partners hedge financial losses related to adverse weather events and/or natural disasters. For example, the Caribbean Catastrophe Risk Insurance Facility (CCRIF), which was launched in June 2007, and renewed this year, on behalf of the Caribbean Community (CARICOM) heads of government and under the guidance of the World Bank with donor funding, provides immediate liquidity to Caribbean governments after a catastrophic hurricane or earthquake. This regional institution is the first multi-country risk pool in the world, and is also the first insurance instrument to successfully develop a parametric policy backed by both traditional and capital markets. The IBRD has arranged for CCRIF to transfer a portion of the catastrophe risk to the capital market through a cat swap transaction. This swap between IBRD and CCRIF enables emerging countries to use a derivative transaction to access the capital market to insure against natural disasters. The first transaction was executed last year, when CCRIF was launched, which was also the first time a diversified pool of emerging market countries' catastrophe risk was placed in the capital markets. The WBG is also developing a multi-country catastrophe bond that would pool the risks of several countries and transfer the diversified risk to capital markets.

Source: The WBG.