



**International
Finance Corporation**
World Bank Group

IFC and Climate Change

*Sustainable Energy
and Carbon Finance*

*Unleashing the Power
of the Private Sector
to Mitigate and Adapt
to Climate Change*

Addressing Climate Change at IFC

IFC, the private sector arm of the World Bank Group, provides financing for a variety of sustainable energy and climate change mitigation ventures.

Through its sustainable energy investments, IFC has played a pioneering role in helping to remove barriers for clean energy technologies and services in emerging markets.

Tackling climate change in developing countries is one of the World Bank Group's priorities. In 2004, the World Bank Group committed to scale up its support for renewable energy and energy efficiency by 20 percent annually through 2010.

As the private sector member of the World Bank Group, IFC is helping private companies identify business risks associated with climate change as well as business opportunities. IFC provides its client companies with expert advice on reducing, managing, and mitigating the impacts of climate change on their businesses and on investing in sustainable energy and carbon finance.

By leveraging its investments and partnerships, IFC is playing a key role in helping the private sector address climate change.

Financing Sustainable Energy Projects

IFC offers a full range of investment products and mobilized over US\$2 billion in clean energy investment during FY07. IFC's clean energy investment portfolio emphasizes structured project finance and also includes corporate financings, extensive support for financial intermediaries, and advisory services. IFC financing can include both debt and equity finance of private ventures.

Mobilizing Donor Finance for Innovative Investments

Investments in higher risk, innovative technologies and services often have to address non-commercial risks as well. With resources provided by the Global Environment Facility (GEF) and other donors, IFC oversees a diverse portfolio of more than US\$200 million dedicated to helping commercialize innovative climate friendly investments by removing barriers to market development and reducing costs to replicate transactions in the future.

Promoting the Carbon Market

An important and distinguishing aspect of project-based carbon trading under the Kyoto Protocol is that it is neither a subsidy nor a grant, but market-based mechanisms in which an exchange of value takes place that captures environmental benefits of climate friendly projects. IFC is leveraging its extensive project finance experience in developing countries to identify and structure emission reduction projects to help minimize key risks associated with delivery of carbon credits.



Financing and Advisory Services

Sustainable Energy Finance

IFC actively participates in the growing market for financing private power generation using grid-connected renewable energy technologies (e.g., wind, hydropower, biomass and geothermal). Such projects typically require mobilization of both equity and debt financing. IFC also participates in many different types of financing operations that generate energy efficiency benefits including financing to electricity distribution companies to reduce system-wide losses, direct investments in energy service companies (ESCOs) and companies who manufacture energy efficiency equipment.

IFC's largest impact on sustainable energy investment is potentially through IFC's investments in the agribusiness, general manufacturing, and infrastructure sectors. Sustainable energy investment opportunities are embedded in many of the investments in these sectors. In FY07, IFC leveraged over \$2 billion in sustainable energy investment through 27 such projects, ranging from biomass cogeneration facilities in sugar refineries and waste heat recovery in steel mills, cement manufacturing, to run-of-river hydro, geothermal, and wind power projects. IFC seeks to expand this impact through a systematic approach to adding value based on evaluating alternatives, measuring and reporting outcomes, and working with clients to promote greater developmental benefits.

Financial Intermediaries

IFC strengthens developing countries' financial markets to help achieve sustainable economic growth by providing support to local commercial banks, leasing companies, micro-financiers and private equity funds. Through investments and technical assistance, IFC is strengthening financial intermediaries and markets to support a more robust investment capability for sustainable energy. IFC/GEF programs directly supporting these activities by local financial institutions are now operational in eight countries with commitments of more than US\$400 million in IFC funds. IFC seeks to grow this business with financial intermediaries to the level of \$500 million in new commitments per year, supporting more than twice that level of lending by our partner banks.

Carbon Finance

IFC has committed US\$135 million on behalf of the Government of the Netherlands, through its partnership to purchase emission reduction credits from projects eligible under the Kyoto Protocol's Clean Development Mechanism and the Joint Implementation mechanism. IFC has concluded 12 transactions to purchase emissions reductions from more than 40 renewable energy (wind farms, small hydros), landfill and coalbed methane, and industrial gas projects.

IFC now also offers value-added financial products that will help mitigate risks in the carbon market by leveraging its own ability to take long-term project and credit risk in emerging markets. IFC, which is AAA-rated, is offering a Carbon Delivery Guarantee for credits from projects in developing countries. This product will service those who need credits for compliance, while channeling a higher value to qualifying projects in developing countries. IFC recently concluded two transactions and will guarantee delivery of 1.75 million credits from CDM projects.

Advisory Services

IFC provides advice to governments and companies on the structuring and implementation of private sector participation in power sector transactions. For example, IFC completed an advisory mandate to introduce private sector participation in power generation in non-grid areas in the Philippines and recommended installation of possible wind-diesel hybrid systems in some village mini-grids.

Donor Funding for Innovative and Catalytic Projects

In response to the need for concessional resources to remove barriers and lower costs to climate friendly investments, IFC utilizes GEF and other donor funding for private sector projects that help transform markets. These projects are done in partnership with the private sector and highlight the potential for innovative and catalytic approaches.

Making a Difference

Wind: Recent wind energy investments include two wind farms totaling 37 MW in India, and an 8.25MW project in the Dominican Republic. IFC is also considering wind projects in other promising markets, including China, India, Turkey, Pakistan, Argentina, Bulgaria and Estonia. IFC has also concluded a transaction to purchase carbon credits from wind farms totaling 75 MW in India operated by Enercon.

Hydro: Financing has been provided for more than fifteen run-of-river hydroelectric projects including: the 250 MW Bujagali run-of-river in Uganda, the 60.2 MW India Hydro Development Company (IHDC) in India, and the 20 MW Hidromaule and the 158 MW La Confluencia projects in Chile. IFC has successfully concluded emissions reduction purchase agreements with Brascan Energetica in Brazil, Eco Power in Sri Lanka, IHDC in India, and Xinglong and Kangyuan in China that cover 30 projects totaling 270 MW.

Biomass: IFC has provided financing to several sugar producers in India, Brazil, Peru and Nicaragua that includes funds for construction of bagasse cogeneration plants as well as ethanol distilleries in some cases. This has helped provide over 600MW of new biomass-fired power generation facilities that dispatch surplus power to the grid. IFC concluded an agreement to purchase carbon credits generated by 40MW of bagasse-based power generation owned by Balrampur Chini Mills in India.

Geothermal: IFC recently invested almost \$50 million in the Philippine development company PNOC-EDC to expand their geothermal project development business. IFC also helped finance the 24 MW Orzunil geothermal power plant project in Guatemala. IFC is involved in exploring financing of other prospective geothermal projects involving electricity production and district heating. A GeoFund that supports the geothermal project development in Central and Eastern Europe is under development in collaboration with the GEF and the World Bank. An initial program in Turkey is under preparation.

Solar PV: IFC is the largest source of financing for off-grid solar businesses in the developing world, using a combination of donor resources and its own capital to test new business models, seed

promising enterprises, and provide capital for business development. With GEF resources, IFC has also implemented the largest grid-connected PV installation in the developing world - a 1 MW facility in the Philippines. IFC recently published a report entitled "Selling Solar" which presents its lessons learned from investing in solar energy in emerging markets for more than a decade.

Distributed Generation: IFC is about to launch in Sri Lanka a new initiative to support distributed generation. People and businesses living and operating outside of large urban centers often lack access to reliable energy. Using different technologies, the production of electricity on a small-scale can provide access to reliable energy supply. The new GEF-supported initiative aims to reduce costs associated with connecting small distributed power systems.

Capturing and Destruction of Industrial Gases:

IFC recently committed a Carbon Delivery Guarantee transaction with Omnia Fertilizers in South Africa for credits generated by nitrous oxide emission in fertilizer manufacturing. Earlier, an agreement with Core Carbon Group was concluded for a similar project in Russia.

Methane Capture and Utilization: IFC invested in a company which offers waste management services to swine and dairy farmers and sells carbon credits by capturing and combusting associated biogas. IFC signed emissions reduction purchase agreements with landfill operators Villa Dominico in Argentina and PhasCon in China, as well as with Dequingyuan in China that generates biogas derived from chicken waste. IFC also successfully concluded an agreement to purchase credits via ING Bank from a project that generates power using methane captured from coal mines in Ukraine.

Waste Heat Recovery: IFC recently provided a Carbon Delivery Guarantee for credits from a waste heat recovery project done by Rain CCII Carbon India Limited that reduces the company's dependence on fossil fuels.



Future Strategic Directions

Growth in Sustainable Energy Commitments

IFC will accelerate investments in renewable energy and energy efficiency to contribute to the World Bank Group's target to scale-up its portfolio of such investments by an annual average of 20% through 2010.

A New Climate Change Strategy

IFC has adopted climate change as a strategic priority and this is being mainstreamed through its operations. Through its focus on investments and mobilization of resources by the private sector in emerging markets, IFC complements and supports the overall World Bank Group strategy.

New Products for the Carbon Market

Participating in the carbon market is fundamental to IFC's ability to deliver on its climate change objectives to facilitate projects that abate GHG emissions and decouple economic growth from increases in GHG emissions. IFC's comparative advantage in assessing and assuming emerging market risk allows it to play a leadership role in providing innovative products, like its Carbon Delivery Guarantee and lending against future carbon revenues. IFC helps its developing country clients unlock the value of their carbon credits and assists its developed country partners in meeting their commitments to mitigate climate change. Toward this end, IFC is also enhancing its advisory services to broaden participation by sectors and players currently under-represented in the market.

Increased Clean Energy Project Support

IFC expects to double or triple investments in renewable energy and energy efficiency across all sectors from FY05-07 levels of \$1.1 billion.

Through use of improved analytical methods, audits, and targeted cost-sharing with clients, IFC will aim to more effectively identify and pursue a much wider range of potential clean energy opportunities. New donor funds are also being explored which may allow greater risk-taking and support for commercializing new energy technologies.

Assessment of Private Sector Adaptation Risks

Climate change poses a series of risks to all private sector companies, including IFC clients. To help its clients understand and respond to the risks of climate change, IFC aims to develop best practices in assessing private sector risk and adaptation strategies.

New Methodology to Measure Portfolio Footprint

There currently exists no method yet to measure the impact on climate change of a portfolio of lending. IFC aims to develop a new methodology for the measurement of portfolio GHG emissions. Once IFC has created this new methodology, it will apply it to its own portfolio and will make it public for use by other financial institutions.



**International
Finance Corporation**
World Bank Group

Alan Miller
IFC Climate Change Coordinator
Environment and Social Development Department
enviro@ifc.org

Russell Sturm
Sustainable Energy Team Leader
Environment and Social Development Department
rsturm@ifc.org

Vikram Widge
Program Manager, Carbon Finance Unit
Carbonfinance@ifc.org

Darius Lilaoonwala
Senior Manager
Power & Renewables
Infrastructure Department
dlilaoonwala@ifc.org

Dana Younger
Senior Adviser
Renewable Energy & Sustainability
Infrastructure Department
dyounger@ifc.org

INTERNATIONAL FINANCE CORPORATION
2121 Pennsylvania Avenue, NW
Washington, DC 20433 USA
Tel: (202) 473-1000
www.ifc.org/innovator
www.ifc.org/carbonfinance
www.ifc.org/infrastructure