Executive Summary

Evidence is mounting that developing countries will be disproportionately affected by the adverse impacts of climate change, putting at risk hard-earned development gains. Sir Nicholas Stern's 2006 economic review of climate change estimated that "business as usual" emissions of greenhouse gases might lead to damages between 5 and 20 percent of gross domestic product (GDP) over the next 200 years. The poor are the most vulnerable and least able to adapt. At the same time, increasing energy supply and services are critical for economic growth for all developing countries. A consensus is growing that moderating and managing climate change is central to every aspect of poverty reduction, economic growth, and development.

> *We are working with our Board to significantly step up our assistance to the international efforts to address climate change.... Our main objective will be to help countries "mainstream" adaptation and mitigation actions within their growth strategies, including plans for energy development, agriculture, and land use*.
>
> —Robert B. Zoellick, President, World Bank Group.[1]

Leveraging World Bank Group Resources

The response of markets and the private sector will be critical for successfully increasing energy access and mitigating and adapting to climate change. The continuing focus of WBG efforts will be to support the engagement of the private sector and other partners in this effort, through diverse measures, including investment support, barrier removal, and competitive markets as sources of investment and solutions. The role of governments remains important for establishing the required policy and regulatory environment and other efforts at barrier removal. The many lessons learned are being applied regionally, from country to country and from one sector to another. This report draws out such lessons from our experiences in solar photovoltaics (PV), energy

[1] "Catalyzing the Future: An Inclusive and Sustainable Globalization," Annual Meeting Board of Governors of the World Bank Group, Washington, D.C., October 22, 2007.

efficiency, and hydropower. Among them are the following:

- Improve the policy and regulatory environment to reduce energy price distortions, mitigate regulatory risks, streamline approval processes, and increase transparency in decision making.
- Adhere strictly to good environmental and social management principles and ensure that all parties—from consumers and affected communities, to energy suppliers and financiers—benefit. Embed sustainability principles in executing agencies.
- Although economic viability may be compelling, financial viability, as well as market and consumer confidence, are sine qua non for project success and scale-up. Pay heed to quality and meet consumer expectations in service and value.
- Increase access to pre-investment and investment financing, and introduce risk management and credit enhancement instruments. Benefit from new instruments, such as those offered by the carbon markets.
- Introduce business models better suited to renewable energy and energy efficiency, including distributed generation. Be adaptable and take advantage of innate capacities within each country.
- Build capacity and increase knowledge among the domestic financial sector, industry, utilities, engineering, policy makers, and consumers. Support South–South knowledge exchanges.
- Facilitate access to improved technologies and strengthen the capacity to plan, design, construct, and integrate such technologies into the energy supply sectors.

The WBG brings to bear a wide range of financial and nonfinancial instruments to support the development of renewable energy and energy efficiency. Among them are conventional lending instruments; equity and quasi-equity; partial risk guarantees; currency, commodity, and interest rate risk management; and carbon finance; as well as capacity building and policy, legal, and regulatory support.

World Bank Group Financial Support for Renewable Energy and Energy Efficiency

World Bank Group funding for renewable energy—comprising wind, solar, biomass, geothermal, and hydropower—and energy efficiency projects rose by two-thirds in fiscal 2007 to US$1.43 billion.

In fiscal 2007 (July 1, 2006, to June 30, 2007), total WBG financial commitments for renewable energy, including hydropower of all sizes, and energy efficiency rose to US$1.4 billion (Table 1). This represents a 67 percent scale-up in financing for renewable energy [2] and energy efficiency from US$860 million in fiscal 2006. The GEF has been an important partner, contributing US$128 million in co-financing for World Bank projects. The World Bank's Carbon Finance Unit has been an important contributor—its impact is even greater, since every dollar of carbon financing is estimated to leverage five to six dollars in investment funds. In fiscal 2007, the WBG supported 63 renewable energy and energy efficiency projects in 32 countries with more than half the financing going to Africa. Commitments for new renewable energy and energy efficiency were US$683 million, and US$751 million was committed for hydropower projects greater than 10 MW per facility. As shown in Figure 1, the cumulative WBG financial commitments to renewable energy and energy efficiency from fiscal 1990 to fiscal 2007 exceeded US$11 billion, with a nearly steady increase in commitments from 2002.

The World Bank (IBRD and IDA), in partnership with GEF, committed US$821 million for

[2] New renewable energy comprises energy from solar, wind, biomass, and geothermal energy, as well as hydropower facilities with capacities up to 10 MW per facility.

Table 1: World Bank Group Commitments for Renewable Energy and Energy Efficiency in FY07

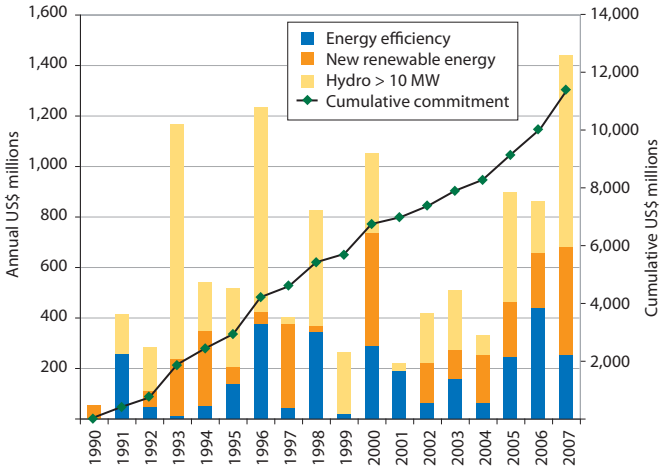
Source of funds	*New renewable energy*	*Hydro > 10MW*	*Energy efficiency*	*Total*
World Bank (IBRD/IDA)	70	430	49	549
GEF (World Bank)	121	0	7	128
World Bank (Carbon Finance)	68	66	10	144
IFC (own funds)	154	140	156	450
IFC (Carbon Finance)	7	0	0	7
MIGA	0	115	40	155
Total	421	751	262	1,433

Note: Some columns may not add up exactly because of rounding.
Source: WBG databases.

renewable energy and energy efficiency projects and activities. MIGA committed US$155 million in guarantees for clean energy–related investments, with significant expected leverage in additional private sector financing. The IFC made 25 investments totaling US$450 million in energy efficiency and renewable energy, such as biomass cogeneration systems, hydropower, wind, geothermal, solar PV manufacturing. The total value of the renewable energy and energy efficiency investments supported by the IFC exceeded US$1.1 billion, of which US$763 million came from commercial investors. Thus, every dollar of IFC lending was associated with US$2 of private sector investment.

In fiscal 2007 the share of renewable energy and energy efficiency financing reached 40 percent of total energy commitments.

Figure 1: World Bank Group Commitments for Renewable Energy and Energy Efficiency, FY90–07

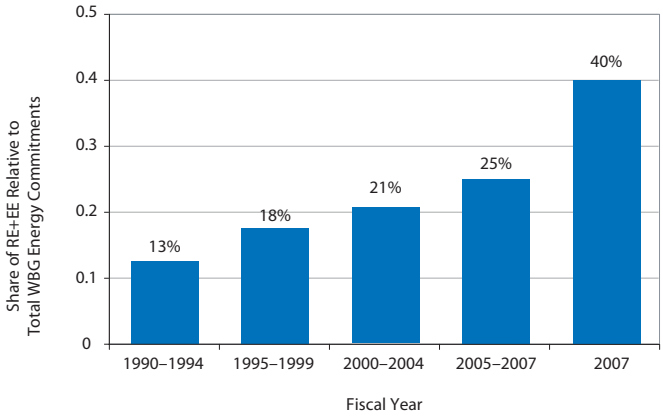


Source: WBG databases

There has been a steady rise in the share of financing the WBG committed for low carbon renewable energy and energy efficiency since 1990 (Figure 2). In 1990–94 the share was about 13 percent of total energy sector commitments. The share of renewable energy and energy efficiency financing rose to 25 percent of total energy commitments in the three years, fiscal 2005–07, and 40 percent in FY 07.

At the Bonn International Conference on Renewable Energies in June 2004, the WBG made a commitment to accelerate its support for new renewable energy and energy efficiency.The WBG committed to increasing our financial commitments for new renewable energy and energy efficiency at a growth rate of 20 percent per year between fiscal 2005 and 2009, compared with a baseline commitment of US$209 million (equal to the average of the previous three years). The WBG has exceeded its Bonn commitment by almost 100 percent. From fiscal 2005 to fiscal 2007,

Figure 2: Share of World Bank Group Commitments for Renewable Energy and Energy Efficiency Relative to Total Energy Commit-



Source: WBG databases.

we committed US$1.8 billion for new renewable energy and energy efficiency compared with the Bonn commitment goal of US$913 million for the same period.

Technical Assistance

Increasing adoption of clean energy options is supported by a variety of economic sector work and technical assistance. We are supporting the preparation of low-carbon energy strategies in advanced developing countries. Work began in fiscal 2007 on four Low-Carbon Country Growth Case Studies (Brazil, China, India, Mexico), and South Africa beginning in FY08. Other activities performed in the past year include studies, reports, and policy notes on renewable energy policy in Colombia and Morocco, energy security in Uruguay, and rural electrification in Mexico, Peru, and Timor-Leste. Energy efficiency also received considerable attention, for example, building energy efficiency in China and energy efficiency policy formulation in Morocco.

The Energy Sector Management Assistance Program (ESMAP) and the Asia Alternative Energy Program (ASTAE) have been major resources for this work. Of special note is the ESMAP-funded Investment Climate Assessment for Renewable Energy in India supported by the WBG. It is examining barriers and barrier removal options related to the development of economically viable renewable energy, encompassing policy, regulatory, financing, and entrepreneurial constraints. The outcome of the study will be guidance to policy makers and regulators for establishing a framework to support faster development of renewable energy by reducing transactions costs and risks to private investors.

Previous renewable energy and energy efficiency progress reports focused on the progress the WBG was making in meeting its Bonn commitments and the impact the projects were having in improving the lives of people in developing countries. This report again details progress on clean energy, but in addition focuses more specifically on the efforts we are making to work in partnership with the private sector to leverage our resources, since the WBG, despite being one of the largest multilateral development bank lenders for energy, can meet only a small part of the investment needed. Consequently, as the WBG continues to grow our energy investments in absolute terms, we increasingly see our role as a catalyst in working with our client countries and the private sector to leverage our resources.