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On the  
Transfer of Real Resources to Developing Countries)



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**CLEAN ENERGY FOR DEVELOPMENT INVESTMENT FRAMEWORK:  
PROGRESS REPORT OF THE WORLD BANK GROUP ACTION PLAN**

Attached for the October 21, 2007, Development Committee Meeting is a background report entitled "Clean Energy for Development Investment Framework: Progress Report of the World Bank Group Action Plan," prepared by the staff of the World Bank.

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**CLEAN ENERGY FOR DEVELOPMENT  
INVESTMENT FRAMEWORK:**

**PROGRESS REPORT ON THE WORLD BANK GROUP ACTION PLAN**

**Sustainable Development Network**

**September 27, 2007**

## ABBREVIATIONS AND ACRONYMS

ADB	Asian Development Bank	IFC	International Finance Corporation
AfDB	African Development Bank	IFI	International financial institution
AFR	Africa region	IGCC	Integrated gasification combined cycle
ASAL	Arid and semi-arid lands	IPCC	Intergovernmental Panel on Climate Change
CAS	Country Assistance Strategy	IPR	Intellectual property rights
CCRIF	Caribbean Catastrophe Risk Insurance Facility	JBIC	Japan Bank of International Cooperation
CDFC	Community Development Carbon Fund	KACCAL	Kenya Adaptation to Climate Change in Arid Lands
CDM	Clean Development Mechanism, Kyoto Protocol	LAC	Latin America and Caribbean Region
CEA	Country Environment Analysis	LCCCS	Low-Carbon Country Case Studies
CEIF	Clean Energy for Development Investment Framework	LDC	Least Developed Country
CER	carbon emission reduction	LED	Light-emitting diodes
CGIAR	Consultative Group on International Agricultural Research	LULUCF	Land use and land use change and forestry
CMI	Carbon Market Initiative	MDB	Multilateral development bank
CPF	Carbon Partnership Facility	MDG	Millennium Development Goals
CPS	Country Partnership Strategy	MIC	Middle-Income Country
CO <sub>2e</sub>	Carbon dioxide	MIGA	Multilateral Investment Guarantee Agency
DEC	Development Economics department	MNA	Middle East and North Africa Region
DRC	Democratic Republic of Congo	NAPA	National Adaptation Programme of Action
EAP	East Asia and Pacific Region	NGO	Nongovernmental organization
EBRD	European Bank for Reconstruction and Development	NTB	Non-tariff barrier
ECA	Europe and Central Asia Region	ODA	Overseas development assistance
EEfSD	Energy efficiency for sustainable development	OECD	Organization for Economic Co-operation and Development
EIB	European Investment Bank	PPIAF	Public-Private Infrastructure Advisory Facility
ESMAP	Energy Sector Management Assistance Program	RE/EE	Renewable energy and energy efficiency
ESW	Economic and Sector Work	REDD	Reduced emissions from deforestation and degradation
ETF	Environmental Transformation Fund	SAR	South Asia Region
EU	European Union	SBSTA	Subsidiary Body for Scientific and Technological Advice
FEMA	Forum of Energy Ministers of Africa	SCCF	Special Climate Change Fund
FCPF	Forest Carbon Partnership Facility	SIP	Sector Investment Program
FDI	Foreign direct investment	SLM	Sustainable land management
GFDRR	Global Facility for Disaster Reduction	SSA	Sub-Saharan Africa Region
GDP	Gross domestic product	SWAP	Sector-wide programmatic approach
GEF	Global Environment Facility	TA	Technical assistance
GGFR	Global gas-flaring reduction	TFSD	Transformation Fund for Sustainable Development
GHG	Greenhouse gases	UNDP	United Nations Development Programme
GIPDF	Global Infrastructure Project Development Fund	UNEP	United Nations Environment Programme
IADB	Inter-American Development Bank	UNFCCC	United Nations Framework Convention on Climate Change
IBRD	International Bank for Reconstruction and Development	UK	United Kingdom
IDA	International Development Association	WEF	World Economic Forum
IPP	Independent power producer	WBG	World Bank Group
		WTO	World Trade Organization

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# CLEAN ENERGY FOR DEVELOPMENT INVESTMENT FRAMEWORK: PROGRESS REPORT ON THE WORLD BANK GROUP ACTION PLAN

## EXECUTIVE SUMMARY

1. ***During the 2007 Spring Meetings, the Development Committee endorsed the World Bank Group’s Action Plan on the Clean Energy Investment Framework (CEIF).***<sup>1</sup> This Progress Report is a response to the Committee’s request for an update on the implementation of the Action Plan for the Annual Meetings in October 2007. It summarizes accomplishments in the three areas of the Action Plan: (i) energy for growth, with a particular emphasis on access to energy in Sub-Saharan Africa; (ii) transition to a low-carbon development trajectory; and (iii) adaptation to the impacts of climate change. This report also outlines an approach to scaling up actions on climate change and provides a review of options to further reduce the financial barriers to support low-carbon and adaptive growth in developing countries.
2. ***Since the 2007 Spring Meetings, there has been a remarkable surge in the call for action to combat climate change.*** Most notable has been the conclusion of the Fourth Assessment of the Intergovernmental Panel on Climate Change (IPCC) that warming of the climate system is “unequivocal” and very likely due to the observed increase in anthropogenic greenhouse gas (GHG) emissions. The urgency to take steps to address climate change was strongly reinforced by the G8 Summit in Heiligendamm, as well as the pledge of the G8 leaders to engage in discussions on a post-Kyoto framework by year-end 2008.
3. ***Poverty reduction and economic growth remain the highest priorities for developing countries.*** There is broad recognition that global efforts to address climate change in developing countries should be consistent with their objectives of accelerating and sustaining economic growth. Moving to a lower-carbon path must ensure that growth and poverty reduction are not compromised. While action on climate change can also yield local benefits (e.g., energy security and reductions in local pollution), the incremental costs of the global benefits of such action need to be financed through financial flows additional to ODA, based on the principle of “common, but differentiated responsibilities.”
4. ***At the same time, the development case for taking action on climate change is becoming more compelling and is making its way into developing countries’ strategies.*** Recent examples include China’s National Climate Change Program, Mexico’s National Climate Change Strategy, and India’s Integrated Energy Policy. There is growing recognition that, for a number of countries which are highly vulnerable to climate variability, climate change puts hard-won development gains at risk. This trend makes adaptation critical for growth and poverty

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<sup>1</sup> The “Clean Energy for Development Investment Framework: The World Bank Group Action Plan” (DC2007-0002, March 28, 2007) is the third paper in a series on the Clean Energy for Development Investment Framework (CEIF). See also “Clean Energy and Development: Towards an Investment Framework” (DC2006-0002, April 2006), and “An Investment Framework for Clean Energy and Development: A Progress Report” (DC2006-0012, September 2006).

reduction, including sustained progress towards and beyond the Millennium Development Goals (MDGs).

5. ***Building on this renewed impetus, the World Bank Group (WBG), working with the Global Environmental Facility (GEF) and other partners, has made substantial progress in the implementation of the Action Plan since spring 2007.<sup>2</sup> Highlights include:***

- ***The WBG is likely to exceed the forecast for overall energy lending of US\$10 billion over the FY06–08 period,*** compared to US\$7 billion in the FY03–05 period. For the first two years of the FY06–FY08 period, WBG lending for energy has exceeded US\$8 billion, with over US\$1 billion expected to be delivered during the first quarter of FY08. The projects supported by the WBG promote increased access to energy, with an emphasis on clean energy and energy efficiency, as well as the creation of an enabling environment for private sector participation in energy generation, transmission and distribution via effective public-private partnership arrangements.
- ***WBG financing for the energy sector in Sub-Saharan Africa (SSA) increased significantly in FY07.*** In line with the Africa Action Plan,<sup>3</sup> WBG support for energy in this region rose to US\$1.1 billion in FY07 from approximately US\$0.6 billion in each of the preceding two fiscal years. With portfolio growth for the sector facing the constraints of the IDA envelope, new IDA energy projects in FY08 are expected to be again around US\$0.8 billion, further advancing the access agenda in synergy with other donor programs. The WBG Lighting Africa Program was launched in FY07. The program involves private sector resources in helping provide access to modern energy services to 250 million “energy-poor” customers by 2030.
- ***Continued progress has been made in supporting the transition to a low-carbon economy,*** with low-carbon projects of US\$1.4 billion in FY07, representing 40 percent of WBG energy lending (up from 28 percent in FY03–05, and 36 percent in FY06). Support for hydropower was the highest since 1996, with the approval of nine projects for US\$748 million in new WBG lending and guarantees and US\$66 million in carbon finance. With US\$682 million on new renewable energy and energy efficiency delivered in FY07, the WBG continued to exceed its Bonn commitment of an annual funding increase of 20 percent for renewable energy and energy efficiency. The WBG also catalyzed capital investments in gas-flaring reduction projects of US\$1.9 billion through carbon finance and partnerships with the private sector, keeping on track to deliver 22 million tons of CO2 emission reductions by 2012. The new program to begin measuring and reporting on the GHG intensity of the lending portfolio has been initiated, in collaboration with other multilateral development banks (MDBs) and some bilateral donors. Economic and Sector Work (ESW) also accelerated, with the initiation of five Low-Carbon Country Growth Case Studies

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<sup>2</sup> This report includes project information on approvals in FY07 and selected developments in the first two months of FY08.

<sup>3</sup> See “Strengthening the Development Partnership and Financing for Achieving the MDGs: An Africa Action Plan” (DC2005-0021), September 16, 2005.

(India, China, Mexico, Brazil were started in FY07 and South Africa will be initiated in FY08).

- ***Two new Carbon Facilities were designed to scale up the use of carbon finance for climate change mitigation.*** The Carbon Partnership Facility (CPF) will support the development of a programmatic and sectoral approach to scaling up carbon finance in a manner that builds on new, recently approved procedures and guidance from the Clean Development Mechanism (CDM) Executive Board. This facility will place the WBG in a position to dramatically expand—in reach, scope, and effectiveness—its carbon finance operations and integrate them more closely into the Bank’s country assistance programs. The new Forestry Carbon Partnership Facility (FCPF) will pilot incentive mechanisms to reduce emissions from deforestation and land use changes, estimated to account for more than a third of total annual emissions from developing countries. In addition, the Bank’s BioCarbon Fund opened a second tranche in FY07 that will support forest sequestration, as well as conserve soil carbon in agricultural areas and rangelands. Finally, the Carbon Fund for Europe was established in March 2007 as the first carbon fund managed in partnership with another international financial institution, the European Investment Bank.
- ***Increased awareness of the impacts of climate variability has led client countries to actively demand WBG support for adaptation to climate variability and change.*** In FY07, concerns about vulnerability to climate change were mainstreamed in 32 percent of the CASs, up from 15 percent in FY00–05 and 25 percent in FY06. The Bank has undertaken the preparation of an IDA-specific paper on climate change, with a focus on adaptation, for the IDA15 Replenishment Meeting in November 2007. A number of important ESW were prepared in FY07, including reports on adaptation strategies and options to address climate variability and change in rural India, adaptation to the impacts of rapid glacier retreat in the tropical Andes, and the East Asia Environment Monitor 2007 on adapting to climate change.
- ***Climate risk management and adaptation are emerging as an important part of WBG programming—***FY07 projects include the Caribbean Implementation of Adaptation Measures in Coastal Zones; the new, first-ever multi-country Caribbean Catastrophe Risk Insurance Facility (CCRIF); and the inclusion of an adaptation component, co-financed by the Japan PHRD Climate Change Initiative Grant, in the India’s Andhra Pradesh Rural Poverty Reduction project. The first version of the Climate Change Screening Tool has been launched, allowing task teams to better integrate adaptation into project designs. IDA, GEF and other private sources helped develop climate risk-management and adaptation programs in SSA, including pilot projects in Burkina Faso, Kenya and Mozambique.
- ***The preparation of a joint MDBs framework of action was advanced,*** focusing on coordination and scaled-up support for low-carbon and climate-resilient growth. The coordination process will support greater consistency in setting policies, programs and instruments across MDBs. Several other recent initiatives to increase collaboration among MDBs took place in FY07, including an MDB workshop, “Climate Change Mitigation and Adaptation,” hosted by the EBRD in March 2007,

and the London “Conference on the Framework for Public-Private Partnership to Address Climate Change” in June 2007. The latter conference was organized by six MDBs, the World Economic Forum and the World Business Council for Sustainable Development.

6. ***There is also scope for scaling up.*** Good progress can be reported on implementation of the WBG CEIF Action Plan. However, growing recognition of the enormous challenge of climate change, together with demand from governments, the private sector and the public, call for the WBG to adopt a more comprehensive approach beyond the CEIF. This approach would address climate change not only as a risk to development, but also as an opportunity for Bank clients to accelerate their economic transformation and take advantage of new technologies. The WBG would expand its role in supporting meaningful, country-specific and country-driven climate actions, focusing on the highest development and climate impacts. Broadening the WBG strategy would mean including the following elements: (i) a comprehensive approach to climate change, extending beyond clean energy and addressing sectors such as transport, agriculture, forests and urban development; (ii) a stepped-up program in policy research and knowledge sharing; (iii) an enhanced role in the acceleration of new technology; and (iv) an increased engagement in climate risk management.

7. ***Scaling up requires addressing the resource gap through further expansion of concessional finance.*** Currently available mechanisms, while playing a very important role in financing action on climate change, are insufficient to meet the growing needs of developing countries. The GEF is a valuable source of grant assistance for climate change mitigation, but constrained to US\$1 billion for the FY07–10 period. Once operational, the recently created UNFCCC Adaptation Fund will help provide an important new resource stream for climate-resilient development. For low-income countries, a strong IDA replenishment is crucial to support an enhanced response to the challenge of climate adaptation. Carbon finance can also generate larger flows of resources as the carbon market becomes fully functional over the longer term. The WBG is actively pursuing ways to increase the availability of concessional financing through existing instruments, and to accelerate the access of developing countries to carbon finance.

8. ***Private sector engagement will be essential.*** The response of the private sector and of markets will be critical for successful action on climate change mitigation and adaptation. A continuing focus of WBG efforts will be to support the engagement of the private sector in this respect, including through investment support, barrier removal, and competitive markets as sources of investment and solutions to the complex challenges.

9. ***The Bank is cooperating with donors in the design of new innovative financing.*** One recent example is a new £800 million (US\$1.6 billion) Environmental Transformation Fund (ETF) announced by the United Kingdom (UK). The UK has asked the Bank to help design and administer this international financing facility to advance its key objectives of co-financing new activities with strong development and environmental benefits and supporting developing countries’ transformation to low-carbon, climate-resilient growth paths. Complementary solutions to further extend the reach of the facility are under review, such as a climate change bond backed by “front-loaded” donor contributions and/or a concessional lending facility

capitalized by a combination of public and private sources, serviced by loan repayments and backed by carbon credits.

10. ***Moving forward, the WBG will maintain the momentum for implementing the CEIF action plan and expand its strategic thinking on climate change, in alignment with the growing needs of developing countries.*** The CEIF is an enormously important first step in this direction, investing in low-carbon energy while advancing WBG knowledge and action on climate adaptation. But for the WBG to be truly effective in responding to climate change, it needs to fully exploit its comparative advantage. The WBG's ability to work across multiple sectors and to deal at both the policy and project level; its presence in the field; its ability to innovate; the leverage which its financing provides; and its convening power—all of these advantages need to be brought to bear on what is one of the largest and most complex problems the development community has faced. Effectively marshalling WBG efforts will require a multisectoral approach to climate change.

11. ***Over the next months, a series of important events will guide the WBG's strategic thinking on climate change and help balance country and global priorities.*** The next G8 Summit in Japan is expected to take stock of the extent to which MDBs are positioned to assist developing countries to meet their energy access and clean energy needs. Progress in this area will be a significant contribution to the climate change commitments made at the Gleneagles and Heiligendamm Summits, and to UNFCCC processes and related initiatives. The value of the WBG contribution would depend on its ability to scale up the CEIF, including technical and financial innovations, while balancing bottom-up (country-specific) and top-down (global) actions to address mitigation and adaptation. In this context, scaling up the CEIF would be consistent with the current strategic thinking on the role of the Bank in the provision of global public goods. This approach would be based on the fact that climate change and development are inextricably linked for the Bank's client countries and that it is essential to identify means to support their efforts towards sustainable development pathways, so that growth and poverty reduction are not compromised.



# CLEAN ENERGY FOR DEVELOPMENT INVESTMENT FRAMEWORK: PROGRESS REPORT ON THE WORLD BANK GROUP ACTION PLAN

## I. INTRODUCTION

1. *This Progress Report provides an update on the implementation of the CEIF Action Plan,*<sup>4</sup> within the context of a changing external environment. It also outlines emerging concepts on how to further scale up support to developing countries to reduce risks from climate change and achieve low-carbon growth. This report is complemented by collaborative work under way with other multilateral development banks (MDBs) on climate change and clean energy. It is also accompanied by a separate submission to the Board for approval of two new carbon facilities designed to (i) provide carbon finance for large-scale emission-reduction programs, and (ii) pilot incentive mechanisms to reduce emissions from deforestation.

2. *The past year has witnessed a remarkable surge in political and popular support for actions to combat climate change.* The Intergovernmental Panel on Climate Change (IPCC), in its Fourth Assessment, concluded that warming of the climate system is “unequivocal” and very likely due to the observed increase in anthropogenic greenhouse gas (GHG) emissions. Developing countries will be disproportionately affected by the adverse impacts. In order to minimize the severity of climate change impacts on developing and developed countries alike, GHG emissions must be dramatically reduced. A determined call for action emanated from the G8 Summit in Heiligendamm, together with a pledge to engage in discussions towards a post-Kyoto framework by year-end 2008.

3. *While economic growth and poverty reduction remain paramount concerns, many developing countries are already beginning to take action* to lower GHG emissions intensity and integrate adaptation considerations into their development strategies while remaining on their growth trajectories. Recent examples include China’s National Climate Change Program, Mexico’s National Climate Change Strategy and India’s Integrated Energy Policy (as well as its ongoing work on its first national climate change strategy). A recent global public opinion poll pointed to growing concerns about climate change, including in developing countries such as Brazil and India. Concerns about the impact of a changing climate are increasingly making their way into development strategies. Indeed, there is growing recognition that, for a number of the poorest countries which are highly vulnerable to climate variability, climate change puts hard-won development gains at risk. This trend makes adaptation critical for growth and poverty reduction, including sustained progress towards and beyond the Millennium Development Goals (MDGs).

4. *At the same time, increasing energy supply and services are critical for economic growth* in all developing countries, as well as for improving the livelihoods and economic opportunities of about 1.6 billion poor people still living with no electricity. More broadly, it is imperative that options for tackling climate change recognize the need to protect broad-based

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<sup>4</sup> “Clean Energy for Development Investment Framework: The World Bank Group Action Plan” (DC2007-0002, March 28, 2007).

development and poverty alleviation objectives and funding flows, especially to the poorest. In the case of Sub-Saharan Africa (SSA), approximately 500 million people lack access to electricity and about 130 million households rely on traditional biomass for cooking. Providing modern energy to these households would only add about 0.6 percent to current global emissions. As a result, development assistance in this region should be focused on meeting the needs of the poor. This is the clear message from the March 2007 Forum of Energy Ministers of Africa (FEMA), where political leaders emphasized the urgency of accelerating access to energy. With strong ownership of local and regional initiatives, FEMA is expected to play a prominent role in advocating sector-wide energy programs and the financing needed for them in the future.

5. ***With improvements in knowledge about the impacts and causes of climate change, a global consensus has emerged on a set of issues,*** which can be summarized as follows:

- ***Tackling climate change is feasible and non-action is not affordable.*** Nicholas Stern's 2006 economics review of climate change estimated that "business-as-usual" emissions of greenhouse gases might lead to damages between 5 percent and 20 percent of GDP over the next 200 years.<sup>5</sup> Various recent studies have attempted to ascertain the feasibility of global action to limit climate change and minimize the risk of its catastrophic impacts. These studies have calculated economic estimates for GHG stabilization that can be achieved through strong policy frameworks and incentives, removal of barriers to behavioral change, deployment of available technologies and additional research and development. According to the IPCC, stabilization of GHG concentrations in order to limit average global warming to 2 degrees Celsius would keep the impacts of climate change manageable. This goal is achievable through multilateral action involving policy incentives and the deployment on a global scale of currently available and future commercialized technologies in sectors such as energy supply, transport, buildings, industry, agriculture and waste management. Cost estimates vary from 3 percent of global GDP<sup>6</sup> to annual costs of about 1 percent of global GDP by 2050 for such stabilization.<sup>7</sup>
- ***Stabilization of GHG concentrations must take into account the energy needs of developing countries for economic growth.*** Industrialized countries are expected to continue to lead efforts to reduce GHG emissions. The UNFCCC principle of "common but differentiated responsibilities and respective capabilities" will guide contributions to this goal by emerging and developing countries cost-effective actions to reduce the GHG emission-intensity of their economic development. Cost-effective measures include scaling up flows of carbon finance to developing countries to support low-carbon policies and programs; greater international cooperation to accelerate technological innovation and diffusion; and efforts to curb deforestation.

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<sup>5</sup> Nicholas Stern, *The Economics of Climate Change: The Stern Review* (Cambridge: Cambridge University Press, 2006). Stern's approach to assessing the economic costs of climate change assumes a very low utility discount rate of 0.1 percent. This choice is driven by a strongly held position on the ethics of bequeathing climate change damages to future generations. Stern also seeks to include low-probability/high-cost events, such as catastrophic change, as well as non-consumption effects, such as damages to health.

<sup>6</sup> Intergovernmental Panel on Climate Change (IPCC), "Climate Change 2007: Fourth Assessment Report (AR4)," European Union, Brussels, Belgium, February 2, 2007.

<sup>7</sup> Stern, 2006, op. cit.

- ***Even if efforts to reduce GHG emissions are successful, it is no longer possible to avoid some degree of global warming and climate change.*** Changes in temperature and weather patterns will affect the frequency and severity of rainfall, droughts, floods, access to water, food production, health and the use of land. These impacts will not be evenly distributed—the poorest countries and communities are likely to suffer the earliest and hardest because of their geographical location, low incomes and low institutional capacity, as well as their greater reliance on climate-sensitive sectors like agriculture. Countries at risk need to start adapting to increasing variability and extreme events, recognizing that future vulnerability depends not only on the changing climate, but also on other stresses and development practices. Sustainable development can reduce vulnerability to climate change. Climate change, however, can undermine a nation’s development prospects and offset certain development gains.
- ***A wide array of adaptation options exists, but there are barriers, limits and costs associated with these options.*** The Least Developed Countries (LDCs) are in the process of preparing National Adaptation Programs of Action (NAPAs), supported by the GEF-administered LDC Fund. In these plans, they prioritize activities for immediate adaptation needs and address both financing requirements and barriers to adaptation. So far, 13 African, three Asian, and three Pacific, and one Latin American countries have completed NAPAs. Such progress at the country level has stimulated increased international support to help implement national and sectoral development plans that take into account local impacts of climate change, such as changes in sea level, storms and rainfall patterns, so that development investments will have a better chance of achieving desired results.
- ***Climate change is also becoming an increasingly significant factor in the strategic approach of many large private corporations.*** From a business perspective, climate change creates both risks and opportunities. The risks include physical impacts (insurance losses, reduced agricultural productivity, changes in water and other infrastructure), policies and regulations likely to raise the costs of fossil fuels and damages to the reputation of firms perceived to be unresponsive to the issue. The opportunities include carbon trading and profitable investments in energy efficiency, clean energy and other low-carbon-emitting technologies, which is the focus of a rapidly growing volume of private investment.

6. ***Global directions for joint action on climate change will be further clarified and strengthened over the next year.*** The UNFCCC has been leading formal discussions on post-2012 options since 2005. In parallel, a number of complementary initiatives have also been launched, these include: the Asia-Pacific Partnership on Clean Development and Climate (AP6)—an international arrangement among Australia, China, India, Japan, South Korea and the United States with a focus mainly on technology; the EU declaration (March 2007) of long-term goals to limit the temperature rise to 2 degrees Celsius and the confirmation that the EU Trading System will continue post-2012, thus adding some degree of assurance that carbon markets will continue; the Japan “Cool Earth 50” initiative launched in May 2007; and the U.S.-led, high-level “Meeting of Major Economies on Energy Security and Climate Change” held in September 2007. The June 2007 G8 Summit in Heiligendamm, with participation of the G8+5 countries, called on all parties to actively and constructively participate in achieving a post-2012

agreement within the UNFCCC, with the goals of a basic agreement on the framework achieved by the time of the Bali UNFCCC conference in December 2007 and a global agreement by 2009. Important elements of this dialogue focus on the means of securing new sources of financing and alternative approaches to inducing low-carbon development, such as expanding cap and trade systems and/or the introduction of carbon taxes, recognizing that current incentives, approaches and levels of finance are inadequate to address the challenges posed by climate change.

## II. IMPLEMENTATION OF WBG ACTION PLAN

7. *This section reports on progress in implementing the three pillars of the Action Plan:* (i) support for the energy sector, with an emphasis on the Sub-Saharan Africa energy scale-up plan; (ii) support for transitioning to a low-carbon economy; and (iii) support for countries to adapt to climate variability and change. Given the short time frame since the endorsement of the Action Plan in March 2007, this report focuses on particular areas of significant advancement from which broader lessons can be drawn. It also reports on lending approved in FY07 and highlights analytical work, with a particular focus on deliveries since the last report in March 2007 (see Annex A).<sup>8</sup>

### A. Access to Energy, including for Sub-Saharan Africa

8. *Energy lending results show that the WBG is on track—and likely to exceed—its overall target of US\$10 billion over the FY06–08 period.* As anticipated in the Spring Meetings, the lumpy nature of energy lending leads to fluctuations and, indeed, WBG energy lending in FY07 was lower than in FY06. However, the pipeline remains strong. Cumulative energy commitments for FY06–FY07 exceeded US\$8 billion, compared to US\$7 billion in FY03–05 (Table 1). For the first quarter FY08, the Bank expects to extend over US\$1 billion in energy lending, and about US\$2-3 billion is programmed for delivery during the rest of FY08. Projects funded in the first quarter of FY08 supported increased access to energy, with an emphasis on clean energy and energy efficiency, as well as the creation of an enabling environment for private sector participation in energy generation, transmission and distribution via effective public-private partnership arrangements (see Box 1).

**Table 1. WBG Energy Portfolio by Financing Source, FY03–07**

	<i>(in US\$ million)</i>				
<i>Product line</i>	<i>FY03</i>	<i>FY04</i>	<i>FY05</i>	<i>FY06</i>	<i>FY07</i>
World Bank Subtotal	1,194	938	1,825	3,132	2,017
IBRD/IDA <sup>1/</sup>	1,120	841	1,640	2,993	1,734
Carbon Offset <sup>2/</sup>	10	35	79	88	144
GEF2/	64	63	105	51	128
Recipient-executed	0	0	0	0	5
Special financing	0	0	1	0	6
IFC <sup>3/</sup>	638	705	791	1,472	1,170
MIGA	556	73	232	190	417
<b>Total Energy Lending</b>	<b>2,388</b>	<b>1,716</b>	<b>2,848</b>	<b>4,794</b>	<b>3,604</b>

Source: World Bank.

<sup>1/</sup> Includes guarantees.

<sup>2/</sup> Revised figures based on GEF and Carbon Finance databases. Minor differences exist with Business Warehouse figures because the GEF numbers do not include IFC GEF projects.

<sup>3/</sup> IFC numbers include GEF and Carbon Offset.

<sup>8</sup> FY06 activities were covered in the last Progress Report (“An Investment Framework for Clean Energy and Development: A Progress Report”, op. cit).

### **Box 1. World Bank Group Support for Private Participation in Low-carbon Projects**

**The Bujagali Hydropower Project** is a proposed, 250 MW hydropower facility on the Victoria Nile that will address the medium- and long-term needs for economical, large-scale power generation in Uganda. The project consists of the development, construction and maintenance of a run-of-the-river power plant on a build-own-operate-transfer basis. The project is structured as a privately owned independent power producer (IPP) that will sell electricity to the national grid. The total project cost is expected to be approximately US\$750 million and will be financed by the Government of Uganda as well as a consortium of lenders, including the WBG. The IFC is providing financing in the form of long-term loans, MIGA is providing equity political risk insurance, and the IDA, a partial-risk guarantee. The financial package sufficiently mitigated risk to enable a consortium of private developers (the Industrial Promotion Services - IPS(K)-, the industrial development arm of the Aga Khan Fund for Economic Development, and Sithe Global) to fund this renewable energy option, which will help Uganda increase access to electricity in a climate-friendly manner.

The **Renewable Energy Market Transformation Project** supported by the Bank is designed to establish policy and regulatory frameworks and to build institutional capacity for renewable energy development in South Africa. The project has an overall cost of US\$17.3 million and is being funded by a US\$6 million grant from GEF, a US\$2.3 million contribution from the South African government and US\$9 million in funding leveraged from the private sector. The project's objective is to assist the government over a four-year period to meet its target of 4 percent of electricity demand being met by renewable energy by 2013. The project is designed to remove the barriers and reduce implementation costs of renewable energy technologies to help mitigate GHG emissions.

IFC set a new business precedent when it invested the equivalent of US\$10 million in **equity financing in AgCert International, PLC**, a market leader that relies on the production and sale of agriculturally derived GHG emissions reductions as its sole source of revenue. Working primarily with swine and dairy farms, AgCert installs—at no cost to farmers—covered biodigesters to replace open-air lagoons that emit large volumes of methane. The methane collected is then either flared to convert it to CO<sub>2</sub> or channeled to a generator to produce electricity. With IFC support, AgCert is scaling up its operations to 1,600 sites across Latin America by 2009. Upon completion of all planned sites, AgCert is expected to produce about 15 million tons of emissions reductions per year.

*Source:* World Bank.

9. ***However, inadequate investment in both new energy assets and the maintenance of existing assets remains a key issue.*** According to a recent ESW on nine countries, proper policy and implementation support can enable client countries to satisfactorily address this financing gap.<sup>9</sup> The study showed that in many countries, improved governance also helped improve the financial health of the power sector to a degree sufficient to induce increased private sector participation. Vietnam, for example, managed to attract private investment in independent power-generation facilities that, when combined with public-sector investments, helped meet a ten-year average annual growth rate in electricity demand of 16 percent. Better use of competitive processes has also enabled India to considerably reduce bid prices for two 4,000 MW power plants. Many countries in Africa, Asia and Latin America continue to struggle to meet electricity demand. This shortfall is both a drag on growth and an environmental issue. Investment constraints—resulting partly from policy and institutional barriers—are causing the quality of the capital stock to deteriorate, exacerbating the emissions problem as plant efficiencies deteriorate. Inadequate investment in new plants, moreover, necessitates that older, lower-efficiency plants must be operated to address the shortfall. An increased focus on power-sector reform is thus an energy sector issue that impacts local and global emissions with health and climate change implications.

10. ***WBG financing for the energy sector in Sub-Saharan Africa (SSA) increased appreciably in FY07.*** WBG support for energy increased to US\$1.1 billion in FY07 from approximately US\$0.6 billion in each of the preceding two years. Carbon finance and the GEF

<sup>9</sup> “Closing the Electricity Supply-Demand Gap,” World Bank (2007).

funded US\$23 million and US\$13 million of low-carbon projects, respectively. For example, IDA provided US\$296 million in financing for the Regional and Domestic Power Markets Development project for the Democratic Republic of Congo in FY07. The project, critical to the future development of regional energy trade in southern Africa, will leverage a total investment of US\$500 million for hydropower capacity rehabilitation, transmission and distribution to areas lacking electricity. The IFC, IDA and MIGA are supporting the 250 MW run-of-the-river Bujagali power plant in Uganda, which will reduce supply costs, displace about 50 MW of expensive emergency thermal power and enable improved access to electricity in the country (see Box 1). The project will be Uganda's first independent power producer (IPP) and represents one of the largest mobilizations of private financing for an IPP project in Africa.

11. ***Projects under preparation for delivery in FY08 amount to approximately US\$0.8 billion in IDA financing, reaching what appears to be the ceiling from IDA without compromising other sectors.*** These projects, which advance the implementation of the Africa Action Plan, feature greater harmonization with the access programs of other donors.<sup>10</sup> Sector-wide programs have been initiated in countries with a favorable policy framework, with work started in Senegal and Kenya in FY07. Prospectuses are expected to be ready for first-round discussions with donors by December 2007 that comprise sector vision and indicative targets for the next 5–10 years (e.g., coverage, other key indicators, policy initiatives, etc.) and sector investment programs (SIP) consistent with targets that advance generation, transmission and distribution investments. ESMAP funding is presently supporting the preparation of expansion plans in these two countries, using a geo-reference-based rapid assessment tool that supports policy makers to evaluate alternative rural electrification scenarios. GEF-supported IDA projects in Ghana, Tanzania and Zambia involve donor participation beyond traditional co-financing and feature greater alignment of individual donor efforts in a global program aimed at achieving ambitious access targets. The WBG launched the Africa Lighting Program, which is bringing private sector resources to help provide access to modern energy services to 250 million “energy-poor” customers by 2030 (see Box 2).

12. ***Continued expansion of energy access in Sub-Saharan Africa depends on a strong IDA replenishment, innovative approaches to overcome funding constraints and greater engagement of the private sector.***<sup>11</sup> Key actions include design and implementation of innovative public-private arrangements to ensure a more robust pipeline of bankable projects. A promising approach is represented by multinational, single-purpose companies that have joint ownership of generation and/or transmission assets. The WBG will work to streamline and mainstream such arrangements. The Felou hydropower project co-owned by Mali, Mauritania and Senegal that is being executed by the Senegal River Basin Development Authority and

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<sup>10</sup> “Emerging” donors are becoming increasingly involved in the development of Africa's power sector, notably the Chinese and Indian EXIM banks, as well as various Arab funds. China has been active in financing hydropower, with projects reported underway in a number of countries, including Benin and Togo, the Republic of the Congo, Ethiopia, Guinea, Nigeria and Sudan. The Bank is pursuing dialogue with “emerging” donors to ensure effective coordination.

<sup>11</sup> The September 2006 CEIF Progress Report to the WBG Board highlighted the need for increased funding to SSA. The report noted that 47 percent of households in SSA would have access to electricity by 2030 if countries improve their sectoral policies and implementation capacity, private funds are increased and concessional funding levels increase from the current US\$2 billion to US\$4 billion per year. A five-track program has been designed to increase access in SSA that focuses on the following goals: (i) scale-up of household electrification, (ii) additional generation capacity with associated transmission, (iii) provision of energy services for key public facilities, such as schools and clinics, (iv) provision of stand-alone lighting packages for households without electricity services, and (v) access to clean cooking, heating and lighting fuels.

## Box 2. The World Bank Group Lighting Africa Program

Lighting Africa, a WBG program developed to increase access to modern lighting services in Sub-Saharan Africa, recently received the necessary funding for full mobilization. Its goal is catalytic: to mobilize the private sector to reach 250 million “energy-poor” customers by 2030 with low-cost, reliable, affordable lighting services in support of achieving the MDGs. Lighting Africa seeks to achieve four objectives: (i) improved low-cost lighting technology and product innovation; (ii) strengthened private sector capacity for manufacturing, marketing and distribution supply chains; (3) improved affordability; and (4) reduced transaction costs while mitigating risks. Through these activities, Lighting Africa aims to help offer superior alternatives to consumers globally and in Africa in particular that spend US\$40 billion annually on costly, inefficient, poor-quality, polluting, fossil fuel-based lighting products, a category dominated by kerosene lanterns. These products typically account for 10 to 30 percent of household expenses in SSA. To achieve these goals, Lighting Africa has established a five-part program that is:

- conducting a Development Marketplace for Lighting Africa competition among private and social entrepreneurs for the design and delivery of low cost, high-quality, non-fossil fuel-based lighting products targeted at low-income consumers in Sub-Saharan Africa;
- undertaking capacity building, market intelligence and consumer and supplier outreach to access the lighting market in SSA, beginning with Kenya, Ghana, Tanzania and Zambia;
- developing performance specifications and metrics for newly emerging lighting products based on white light-emitting diodes (LED), so that private suppliers can design, manufacture and supply products to respond more effectively to user needs;
- conducting performance testing and certification of solar lanterns to ensure that users have access to high-quality, reliable and efficient products; and
- developing a streamlined, programmatic approach for the mobilization of Clean Development Mechanism credits for efficient lighting so that African consumers can benefit from carbon credit funds.

The program is designed to facilitate the entry of efficient lighting programs as a WBG lending product, starting in FY08. Lighting Africa is also supported by about US\$8 million in total contributions from the European Union, the GEF, ESMAP, PPIAF, Norwegian Trust Funds, the Government of Luxembourg, and the Renewable Energy and Energy Efficiency Partnership (REEEP).

*Source:* World Bank.

supported by the World Bank is an example of such promising public-private partnership arrangements.

## B. Accelerating the Transition to a Low-carbon Economy

13. *The WBG has strengthened its investment support for low-carbon energy projects.* The share of support for low-carbon energy projects increased from 28 percent in FY03–05 to 36 percent in FY06, and will reach 40 percent (US\$1.4 billion) in FY07 (see Table 2<sup>12</sup>). It should also be noted that the WBG has exceeded its Bonn commitment of investing US\$361 million in new renewable energy (RE) and energy efficiency (EE). In FY07, the WBG invested a total of US\$682 million on RE and EE, of which US\$262 million was for EE and US\$420 million for new RE.

<sup>12</sup> Table 2 presents information that updates the equivalent Table 2 from the March 6, 2007 *Clean Energy For Development Investment Framework: The World Bank Group Action Plan, including FY07 data*. Differences between the data in the two tables are due to: (i) a more detailed analysis of Project Appraisal Documents for IBRD/IDA projects previously classified in the "Other Energy" category, especially Energy Sector Development Policy Loans to determine the breakdown; (ii) a more consistent application of the breakdown definitions across the WBG, leading to a disaggregation of IFC projects in the "Other Energy" category; (iii) an improved definition of Access projects to include all system components needed for increased electrification; (iv) exclusion of non-coal mining projects and components; (v) inclusion of IFC data of energy components in other sectors; and (vi) correction of a few classification errors.

**Table 2. Sectoral Breakdown of WBG Energy Lending, FY03–06 and FY07**  
(in US\$ millions)

<b>Energy Sector</b>	<b>FY03</b>	<b>FY04</b>	<b>FY05</b>	<b>FY06</b>	<b>FY07</b>
Low-carbon	237	299	781	1,461	677
Access	684	475	627	727	482
Blended low-carbon & access	128	52	440	281	757
Transmission and distribution	90	103	200	645	469
Oil, gas and coal	325	496	529	1,037	628
Thermal generation	461	191	76	510	360
Other energy	462	100	196	130	231
<b>Grand Total<sup>1/</sup></b>	<b>2,388</b>	<b>1,716</b>	<b>2,848</b>	<b>4,794</b>	<b>3,604</b>
<b>Total Low-carbon<sup>2/</sup></b>	<b>365</b>	<b>351</b>	<b>1,221</b>	<b>1,742</b>	<b>1,434</b>
<b>Total Access<sup>3/</sup></b>	<b>813</b>	<b>527</b>	<b>1,067</b>	<b>1,008</b>	<b>1,239</b>

Notes:

<sup>1/</sup>As anticipated in the Spring Meetings, the lumpy nature of energy lending leads to fluctuations. Indeed, WBG estimated energy lending in FY07 is lower than in FY06, but the pipeline remains strong.

<sup>2/</sup>Total commitments for low-carbon energy projects include low-carbon, plus blended low-carbon and access projects.

<sup>3/</sup>Total commitments for energy access projects include access, plus blended low-carbon and access projects.

Definitions:

*Low-carbon projects:* renewable energy projects (including all sizes of hydropower projects), energy efficiency, power plant rehabilitation; district heating; biomass waste-fueled energy; gas-flaring reduction; high-efficiency coal-fired thermal plants (super-critical and ultra-supercritical). Beginning in FY05, the IFC undertook a review of its investment portfolio at the end of each fiscal year in order to identify components appropriately counted as coming within the WBG definition of "energy efficiency and new renewables." Prior to that time, only projects with energy efficiency or renewable energy investments as a primary purpose were counted.

*Access Projects:* projects aimed at increasing access to electricity services. For IDA countries, these include all generation, transmission and distribution projects, as they are all needed for increased electrification. For IBRD countries, only projects specifically aimed at increasing electricity access (e.g., rural electrification projects) were included.

*Blended low-carbon/access projects:* access projects that use low-carbon energy options (such as renewables) to increase access to electricity and other energy forms.

*Transmission and distribution; oil, gas and coal; and thermal generation:* conventional projects that meet local environmental standards, but do not specifically target lower-carbon or energy- efficiency solutions.

*Other energy:* includes projects where energy policy support is provided, such as Energy Sector Development Policy Loans or other WBG interventions where the form of energy cannot be clearly distinguished, or where there are multiple energy sub-sectors supported within a single project that could not be prorated. Includes energy storage projects.

Source: World Bank.

#### 14. **Other FY07 highlights include:**

- **The share of projects with a low-carbon focus within the overall energy portfolio remains strong.** GEF and Carbon Finance contributed US\$272 million, or 8 percent, of total energy funding and 19 percent of funding for low-carbon projects. In FY07, nine hydropower projects (five of which are carbon financed) were approved, with US\$748 million in new WBG lending, of which US\$115 million is loan guarantees and US\$66 million is carbon finance. Recent activity represents a re-engagement in new hydropower generation (of varying sizes), as well as rehabilitation projects. Two solar thermal power projects co-financed by the GEF (Mexico and Morocco) were approved by the Board in FY07, and the third (Egypt) is scheduled for delivery in FY08. The Mexico Wind Umbrella Project, approved in 2007, is using carbon finance to stimulate new wind-field developments. Sixty-nine percent of the WBG oil and gas program consisted of natural gas projects, maintaining a three-year average exceeding 60 percent.
- **The WBG is optimizing the use of available non-lending sources, such as GEF and Carbon Finance, for mitigation.** The Bank has committed 22 percent of its GEF envelope for mitigation under the GEF 2006–2010 replenishment period. Bank

Carbon Finance emission-reduction purchase agreements totaled US\$195 million in FY07 (of which US\$144 million is for energy) and are expected to reach US\$300 million in FY08. MIGA, which recently provided a Breach of Contract guarantee to an investor in carbon credits (carbon emission reductions, or “CERs”) expected to be generated by a municipal landfill gas project in El Salvador, is exploring how to expand guarantee operations for carbon finance projects.

- ***Worldwide, gas-flaring reduction projects seeking carbon finance reached 23 in FY07***, placing the program on track to deliver an annual CO<sub>2e</sub> reduction of about 11 million tons. Global Gas Flaring Reduction program (GGFR)–sponsored projects provide around 20 percent of the emission reductions from the 23 projects. The GGFR Phase II, 2007–2009, focuses on high-impact flaring countries and/or regions, such as Russia, the Middle East and the Gulf of Guinea. It is also expected to include the G8+5 countries, such as Brazil.
- ***Going forward, a stronger focus on energy efficiency is anticipated.*** Energy efficiency remains the most cost-effective way to reduce GHG emissions. During FY07 the WBG invested US\$262 million for energy efficiency. This funding paved the way for the development of a more robust program of assistance, which has been outlined in the Energy Efficiency for Sustainable Development Action Plan. The plan has four key tracks of work: (i) integrating energy efficiency within economic and sector work; (ii) mainstreaming energy efficiency in investment operations; (iii) improving operational, learning and analytic capacity; and (iv) monitoring, evaluation and outreach. This program will also be instrumental in supporting client countries in the strengthening of the enabling environment needed for private sector participation in energy efficiency.
- ***A pilot program to begin measuring and reporting on the GHG intensity of the WBG lending portfolio has been initiated*** in collaboration with other MDBs and certain bilateral donors. This program will give client countries better information with which to manage GHG risks by quantifying and reporting GHG emissions associated with their respective development projects. The Bank expects this process to help its partners identify and prioritize emission-reduction opportunities, track progress over time, participate more fully in carbon markets and determine how best to achieve needed growth while moving toward lower-carbon development strategies. In the near term, the Bank will focus on the energy and transport portfolios to refine the methodologies that will be used to measure the impacts of policy changes stimulated by development policy lending, as well as by investment lending. In each case, the expected net gain or reduction of emissions will be calculated, as compared with the “business-as-usual” scenario. The methodology will be reality-tested in the context of a specific country (or countries) in order to assess potential indirect emissions impacts in other, interacting sectors. The Bank has also initiated discussions with other MDBs to ensure there is harmonization of the methodology used to measure common indicators.

15. ***While the CEIF has focused mainly on the power sector, work has extended to other sectors where there are opportunities to tackle development and mitigation together.*** In the transport sector, interventions are under way or being planned in Chile, China, Ghana, India,

Pakistan and Vietnam that present an important opportunity for achieving local and global co-benefits. Initial focus, with support from GEF, has been on technology transfer, modal shifts, fuel substitution and training. Analytical work on trade policies for liquid biofuels was recently published. Biofuels also feature as one of the key themes of the International Assessment on Agricultural Science and Technology (IAASTD), as well as this year's World Development Report on "Agriculture for Development". In an effort to move towards operationalizing these assessments, the Bank has initiated studies on biodiesel in Brazil, and on the potential for biofuel production in Mozambique. In addition, significant advances in the preparation of a new transport strategy also took place during this period. The proposed strategy includes tackling transport emissions and climate change as a key area of Bank action, working in partnership with the GEF and others.

16. ***There are some opportunities to address poverty reduction, mitigation and adaptation together.*** This is particularly the case in the forestry and agriculture sectors, which contribute over 30 percent of GHG emissions from developing countries and provide an opportunity to link local benefits to the climate agenda. Forest regions such as the Amazon and Congo play a critical role in moderating climate variability. In the case of Latin America, the GHG emissions caused by deforestation exceed those produced by all other sources of energy. The Bank has been piloting and expanding support to low-carbon interventions and programs in the forestry and agriculture sectors. The Bank's BioCarbon Fund was set up in 2004 to deliver cost-effective emission reductions through carbon sequestration while at the same time promoting biodiversity conservation and poverty alleviation. The Fund opened a second tranche in March 2007 after committing over US\$50 million in carbon sequestration credits from the first tranche. In addition to supporting forest sequestration, the second tranche will target CDM-eligible programs for conserving soil carbon in agricultural areas and rangelands. Agricultural wastes—from crop residues, as well as and from liquid and/or solid waste generated by livestock and industrial food production—are also a significant source of GHG emissions. The Bank is supporting a broad range of projects for the commercial use of such wastes while reducing GHG emissions, such as the use of rice husks and sugar cane bagasse for energy generation.

17. ***Two new Carbon Facilities***—the Carbon Partnership Facility (CPF) and a Forest Carbon Partnership Facility (FCPF)—designed to scale up carbon finance were approved by the Board of Executive Directors of the WBG in September 2007.

18. ***The Carbon Partnership Facility*** (CPF) is designed to: (i) scale up carbon finance through programmatic and sector-based approaches; and (ii) support long-term, low-carbon investments by purchasing emission reductions beyond 2012. It is intended to use carbon markets to promote GHG mitigation, enhancing the value of carbon finance to leverage investment for clean energy and the use of lower-carbon technologies. In doing so, the proposed CPF will also provide continuity and sustain capacity in the carbon market, both in developed and developing countries. Key features include:

- The facility will develop and pilot methodologies for the use of programmatic and sectoral approaches to the delivery of carbon finance on a larger scale, so that it begins to affect the emissions of an entire industry or sector in a given country. These approaches depart from the current, project-by-project approach and seek to integrate in Bank country assistance/partnership strategies, programs to prepare and implement

investments that reduce GHG emissions in Bank country assistance strategies, as well as to assist Bank client countries to access the carbon market as sellers of carbon credits. The facility will thus set the stage for eventual take-up of these approaches by the market in the future.

- In order not to preempt the outcome of the post-2012 climate change negotiations in any way, the facility will be regime-open, allowing it to respond to accommodate different future emission reduction regimes. Rather than being limited to purchasing Kyoto-based carbon assets, the CPF will support assets that are potentially recognized under any credible regulatory system. The facility will make every effort to develop these assets for the ultimate use of compliance-based markets, thus ensuring their maximum value.
- The CPF is structured as a partnership between buyers and sellers, in line with the principles of common but differentiated responsibilities. It would strive to attain a balanced representation of buyer and seller interests, a feature that is more aligned with the evolution of capacity and awareness among developing countries in the carbon market. The facility will thus build on the relationships of the Bank with developing countries, as well as the new relationships that it has forged over the past decade with buyers of carbon credits and other participants in the carbon market.
- The target for initial investments from the public and private sectors in the facility will be US\$500 million, with the goal of reaching investments of US\$1 billion per year. Based on the leverage rates from previous carbon finance operations, these amounts could leverage between US\$3 to US\$6 billion in other financing.

19. *The Forest Carbon Partnership Facility (FCPF)* recognizes that well-structured strategies to protect forests and rehabilitate degraded land can improve the livelihoods of poor people who depend on these natural resources, while also protecting natural assets. These assets have critical local environmental benefits (for example, protection of watersheds); their clearing and degradation represents about 30 percent of GHG emissions from developing countries and a loss of biodiversity. The FCPF has been developed in response to requests from developing and industrialized countries to explore a framework for piloting activities that would improve livelihoods while reducing emissions from deforestation and degradation using policy approaches and a system of positive incentives. Key features are:

- The FCPF is a pilot, setting the stage for a future, large-scale system of positive incentives. It will test different approaches to ensure that financing flows reach local communities; tackle such issues as setting reference scenarios and monitoring systems; and address the issue of leakage on the ground.
- The FCPF will finance capacity building to increase developing countries' capacity to harness a future system of incentives, as well as pilot performance-based carbon purchases for avoided emissions in a small number of countries. The facility will be governed by a partnership between developing and industrialized countries, with the overarching objective of learning lessons from the pilot phase and building needed capacity in developing countries.

- The target size for participant investment will be US\$300 million, with US\$100 million devoted to capacity building and the remainder to carbon purchases.

20. ***Economic and Sector Work (ESW)***. Over the reporting period, the Bank has expanded its analytic work on low-carbon growth issues. The centerpiece of this work is the Low-Carbon Country Case Studies, initially on the G8+5 countries, but with the intent to learn from these studies so as to support other country demands for this product. The Bank is also continuing to explore avenues to accelerate technology transfer.

21. ***Low-Carbon Country Case Studies have been initiated for G8+5 countries*** to help these countries identify: the carbon emission-reduction potential, as well as the incremental costs and benefits, of “lower-carbon” growth strategies; the policy support requirements; and projects and programs that contribute to their respective growth and development objectives while lowering increases in GHG emissions. These country studies are establishing a framework for deepening the analysis of mitigation interventions and costs at the country level, complementing both the global analyses undertaken by IPCC and IEA and the efforts of individual countries.

- Each G8+5 country is at a different stage of developing a strategy to address climate change and controlling the carbon intensity of economic development. China recently published its low-carbon strategy through 2010 and will now embark on lengthening that time horizon to 2030. In 2006, India’s Planning Commission guided the preparation of several long-term energy supply and demand scenarios, together with estimates of their respective carbon emissions. The Government of India is currently working to develop a national climate change strategy, expected to be completed by year-end 2007. Mexico recently published a National Strategy on Climate Change as a basis for deepening analytical work and facilitating the implementation of low-carbon projects. Brazil recently created a Climate Change Secretariat in the Ministry of Environment and is in the early stages of developing a climate change strategy. South Africa established a National Climate Change Response Strategy in 2004 and is currently preparing a long-term climate change mitigation scenario, due to be finalized in mid-2008.
- Preliminary analyses have identified both common and unique features of these countries with respect to low-carbon growth strategies. While these countries are quite different in terms of economic structure and GHG reduction potential across sectors, they share the common feature of relatively low per capita emissions levels, which further emphasizes the need to move forward on the basis of “common but differentiated” responsibilities. In undertaking these studies, immediate challenges include both the need to (i) respect client countries’ primary goals of economic growth and poverty alleviation; and (ii) identify financing to cover the incremental costs associated with lower-carbon development trajectories. Within the framework of consistent principles and objectives, each study is guided by the needs and priorities of the particular country (see Box 3).

22. ***The Bank has initiated analytical work to explore additional avenues for accelerating the development of new clean energy technologies***. Several recent reports, such as the Stern Review and the IPCC Fourth Assessment, have concluded that new and improved energy technologies are essential to meeting the twin goals of development and climate change mitigation. Such new technologies impose not only incremental costs, but also incremental risks

that developing countries may be reluctant to bear. To both better understand and help address this gap, the Bank prepared a study on trade barriers to clean coal and renewable energy technologies (Box 4). It further commissioned a review of cases of successful technical innovations in sectors with traits similar to clean energy, among them: agriculture (with the Consultative Group on International Agricultural Research, or CGIAR); vaccines (Advance Market Commitments); biotechnology (the Human Genome Project); and software (distributed open-source innovations). The review is expected to be available by October 2007.

### **Box 3. Assessing “Low-Carbon” Growth Strategies for India**

A new study assesses India’s future GHG emissions from various sectors; the costs and local benefits of several alternative scenarios, each with different emission levels; the incremental costs and other barriers to “lower-carbon” growth trajectories; and the financial needs of different sectors for adopting technology options and programs, as well as appropriate financing instruments to meet those needs. Work on the study, led by the Government of India Planning Commission in coordination with several ministries (Environment and Forests, Power, New and Renewable Energy, Transport, Agriculture), began in December 2006.

An initial assessment points to some important features of India’s economy with respect to GHG emission performance. Based on available data, methane and nitrogen oxide emissions from agricultural activities are significant sources of current GHG emissions in the country. India’s CO<sub>2</sub> emissions, which mainly derive from fuel use, currently account for 55 percent of its total GHG emissions—against a global average of 80 percent. However, this share is rising in response to the vast energy demand of a growing economy and the need to provide electricity to about half of the country’s population (a half a billion people) that still lacks access. India has been relatively successful in de-linking economic growth and energy use. Recently, economic growth has been increasing at 8 percent a year, while commercial energy consumption has been growing just 3.7 percent and the CO<sub>2</sub> emission-intensity of the economy (per unit of GDP) has been declining.

A new model for estimating future GHG emissions under different scenarios and calculating marginal abatement costs—so that the model structure, data inputs and underlying assumptions will be as transparent as possible—will be used to generate cost-effective strategies for further lowering the CO<sub>2</sub> and/or GHG intensity of the economy at the macro- and sectoral levels, as well as identify opportunities for leveraging needed financial resources without compromising growth. The study will also help formulate specific regulatory and investment programs in a range of sectors and develop a strengthened multisectoral program of WBG support. Interim results that analyze CO<sub>2</sub> scenarios, costs and the financial gaps that must be met for power generation are expected by October 2007. The full multisectoral analysis and final report will be completed by summer 2008.

*Source:* “Low-carbon Growth Strategy,” India (draft), World Bank, 2007.

### **Box 4. Trade Issues Related to Clean Energy Technologies**

A recent World Bank report looks at tariffs and nontariff barriers, or NTBs (among them, price and quantity-control measures, technical regulations and intellectual property rights regimes), for four climate friendly technologies: high-efficiency and clean coal technologies, efficient lighting, solar photovoltaics and wind power. The report suggests that varied levels of tariffs and NTBs combined form a major impediment to the transfer of these technologies to developing countries. For example, energy-efficient lighting in India is subject to a tariff of 30 percent and a non-tariff barrier equivalent of 106 percent. Firms sometimes avoid tariffs by undertaking foreign direct investment (FDI), either through a foreign enterprise or via projects involving joint ventures with local partners. However, weak intellectual property rights regimes (IPRs)—or perceived weak IPRs—often inhibit diffusion of specific technologies beyond the project level.

There is potential for substantial South-South trade in promoting clean energy technology in developing countries. As a result of their improving investment climate and massive consumer base, developing countries are increasingly becoming major players in the manufacture of clean technologies.

The study finds that a removal of tariffs and NTBs for these four basic clean energy technologies in 18 of the top GHG-emitting developing countries would result in trade gains of up to 13 percent. Translated into emission reductions, this finding suggests that the impact of trade liberalization could be reasonably substantial. The ongoing WTO negotiations on environmental goods have the potential to contribute significantly to trade liberalization and environmental efforts by inclusion of specific climate-friendly goods and technologies.

*Source:* “Warming up to Trade? Harnessing International Trade to Support Climate Change Objectives,” World Bank, 2007.

## C. Adaptation to Climate Variability and Change

23. *Climate change presents a unique and unprecedented challenge that threatens to undermine gains in economic growth and poverty alleviation of the past century.* Even if efforts to reduce GHG emissions are successful, it is no longer possible to avoid some degree of global warming and climate change. Changes in temperatures and weather patterns will affect the frequency and severity of rainfall, droughts, floods, access to water, flood protection, health, and the use of land. These impacts will not be evenly distributed. The poorest countries and people, who are the least responsible for human contributions to climate change and the least able to cope with it, are expected to suffer earliest and most due to their geographical location, low incomes and low institutional capacity, as well as their greater reliance on climate-sensitive sectors like agriculture. The small island states in the Pacific, Caribbean and Indian oceans are particularly vulnerable, with many of them already suffering from sea-level rise and increased storms and storm surges. Given the long-lived nature of greenhouse gases, many experts feel that adaptation is the only response available for the impacts that will occur over the next few decades before mitigation measures begin to have an effect.

24. *Although more quantitative information needs to be developed on the costs of economy-wide adaptation needs, these needs may fall in the range of US\$15 to US\$150 billion per year globally.*<sup>13</sup> For developing countries, preliminary estimates suggest that an additional US\$10 to US\$40 billion annually will be needed to support climate-resilient development.<sup>14</sup> Adapting to climate variability is a multi-dimensional process. It requires cross-cutting responses and approaches, including improving the knowledge base, establishing effective social safety nets and insurance systems, improving disaster preparedness, and strengthening planning and coordination. Focused support will be required to adapt development in areas ranging from water resource management to agriculture, urban planning and infrastructure design and disaster management. Both the private and public sectors will need to pursue a variety of strategies for climate variability and change to improve coping capacity and to promote short- and long-term sustainability.

25. *In FY07, the Bank advanced the mainstreaming of climate vulnerability and climate risk management into its dialogue with, and support of, client countries through a range of instruments:*

- *Country assistance/partnership strategies (CAS/CPS) better reflected adaptation concerns*, with more systematic assessments of climate change vulnerability, together with a set of programs to address it by the Bank and other MDBs, incorporated into Bank assistance programs. In FY07, 32 percent of CASs acknowledged concerns about vulnerability to climate change, up from 25 percent in FY06 and 15 percent in FY00–05. Issues identified as priorities include the impacts of climate variability on

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<sup>13</sup> Stern, 2006, *Economics of Climate Change*, Op. Cit.

<sup>14</sup> A recent report by the UNFCCC Secretariat provides an estimate of the investment and financial flows needed to address adaptation in developing (i.e., Non-Annex 1) countries in 2030, based on different assumptions and methodologies [[http://unfccc.int/files/cooperation\\_and\\_support/financial\\_mechanism/financial\\_mechanism\\_gcf/application/pdf/dialogue\\_working\\_paper\\_8.pdf](http://unfccc.int/files/cooperation_and_support/financial_mechanism/financial_mechanism_gcf/application/pdf/dialogue_working_paper_8.pdf)]. Their range of US\$30 to US\$60 billion for 2030 is consistent with the CEIF and Stern estimates of US\$10 to US\$40 billion in the immediate future. (See World Bank, “Clean Energy for Development Investment Framework,” 2007; and Stern, 2006, *Economics of Climate Change*, respectively).

water resources, agriculture, land, disasters, the spread of vector-borne diseases and infrastructure sustainability.

- **Analytical work deepened.** Progress at the CAS level can partly be attributed to a much better understanding of the country-specific adaptation challenges, supported by strong analytic work. For example, in FY07 the Bank completed studies on the potential impacts of glacial melt in the Latin America and Caribbean Region (LCR), adaptation strategies and options to address climate variability and change in rural India, and sectors vulnerable to climate change in the East Asia and Pacific Region (EAP). The Andhra Pradesh Rural Poverty Reduction project includes specific adaptation measures based on the above analytical work. In China, the Bank supported the preparation of a cross-sectoral, country-wide risk assessment. The *World Development Report 2008: Agriculture and Rural Development* (WDR 2008) showed that agriculture has much untapped potential to reduce GHG emissions through reduced deforestation, changes in land use and agricultural practices, all of which are also important for increasing adaptive capacity (see Box 5).

#### **Box 5. Adaptation to Climate Change in Agriculture**

According to recent survey data from 11 African countries, farmers are planting different varieties of the same crop, changing planting dates and adapting practices to a shorter growing season. But in some countries, more than one-third of all households that perceive greater climate variability or higher temperatures report no change in their agricultural practices. Barriers to adaptation vary by country, but for many the main reported barrier is the lack of credit or savings. Farmers in Ethiopia, Kenya and Senegal also point to the lack of access to water.

In countries with severe resource constraints, farmers will not be able to adapt to climate change without outside help. And the poor will need additional help in adapting, especially where costs are higher. The public sector can facilitate adaptation through such measures as crop and livestock insurance, safety nets and research on and dissemination of flood, heat-, and drought-resistant crops. New irrigation schemes in dryland farming areas are likely to be particularly effective, especially when combined with complementary reforms and better market access for high-value products. But greater variability of rainfall and surface flows needs to be taken into account in the design of new irrigation schemes and the retrofitting of existing ones. The cost of modifying irrigation schemes, especially those that depend on glacial melt (as in the Andes, Nepal and parts of China), together with the regulation of water flow by high-altitude wetlands, could run into millions, if not billions, of dollars.

Better climate information is another potentially cost-effective way of adapting to climate change. For example, an agro-meteorological support program in Mali initiated in 1982 in response to the Sahelian drought provided timely weather information and technical advice that helped farmers better manage climate risk and reduce the economic impact of droughts.

The uncertainty associated with climate change can be best addressed through contingency planning across sectors. Many of the Least Developed Countries (LDCs) are preparing National Adaptation Plans of Action to identify immediate priorities in order to improve their preparedness for climate change. Mainstreaming climate change in the broader economic agenda, rather than taking a narrow agricultural perspective, will be crucial in implementing these plans.

Source: World Development Report 2008.

- **To evaluate the potential vulnerability of Bank-funded projects to climate change, the Bank developed and launched a Climate Change Screening Tool in FY07.** Currently, about 26 percent of Bank operations take into account vulnerability to climate change. The Climate Change Screening Tool supports task teams to better integrate adaptation into project designs. The tool is designed to quickly identify

potential climate change and adaptation risks in projects under preparation and to direct task managers to sources of information to help manage that risk. This first screening tool covers agriculture and irrigation sectors for both the South Asia and Africa regions, as well as the biodiversity/natural resource management sectors on a global basis. The initiative is part of a broader agenda to equip staff with the necessary tools to respond adequately to client needs with respect to climate change. IFC has also started analytical work to test the extent to which climate risks to IFC and clients can be identified and addressed through IFC operations.

26. ***The demand for World Bank support in addressing climate risk management and adaptation has increased.*** Projects from FY07 include the Caribbean Implementation of Adaptation Measures in Coastal Zones; a pilot GEF project that looked at key issues facing small islands in the Pacific Ocean; inclusion of an adaptation component for drought-prone communities in India's Andhra Pradesh Rural Poverty Reduction Project (financed by the Japan PRHD Climate Change Initiatives Grant); integrating the effects of climate variability and change into the management plans of China's three river basins; and upgrading water impoundments in Guyana to take account of increased storm intensity and a rise in the sea level. Support for adaptation in Sub-Saharan Africa, the region most vulnerable to climate risks, is also growing. Adaptation projects are under preparation in Kenya and Madagascar, and the GEF-supported TerrAfrica program will mainstream adaptation in sustainable land management (see Box 6).

#### **Box 6. Climate Risk Management in Sub-Saharan Africa**

In many nations in Sub-Saharan Africa, the World Bank and its partners are working actively to support countries to better manage these risks. Examples include:

*Kenya.* The Kenya Adaptation to Climate Change project, co-managed with UNDP and co-financed by the GEF, engages the Bank in dialogue with the Government of Kenya on how to strengthen the resilience of communities in arid and semi-arid lands to current and future climate risks. Ongoing activities strengthen the baseline information on climate risks to rural development processes for use by decision makers, identify coping and adaptation strategies suitable for addressing changing environmental conditions, and refine the practical utility of early warning and seasonal forecasting systems. These efforts will feed into policy dialogue and the development of risk-management mechanisms, including incentives for economic diversification, community-driven development mechanisms and monitoring and evaluation systems. Such a comprehensive approach to adaptation is exceptional in a developing country context, especially in SSA.

*Madagascar.* Through this program, co-financed by the GEF, the Bank is working with the Government of Madagascar to mainstream climate risk management more effectively into economic planning. To date, activities include developing regional projections of climate change, rice agro-climatic modeling and setting norms and standards for cyclone proofing.

*TerrAfrica.* Adaptation to climate change is being integrated into programmatic support for sustainable land management (SLM) in several SSA countries using the TerrAfrica framework for aligning and scaling up SLM investments. Working closely with the GEF Strategic Investment Program for SLM, the Bank and its partners are initially undertaking analytical work to improve information on climate-related risks and vulnerabilities. Using this new understanding, they will integrate relevant adaptation measures into country-level investment programs.

*Source:* World Bank.

27. ***In FY07, WBG made significant progress on innovative work regarding climate, or weather insurance,*** which is currently being widely discussed as a means for climate change adaptation.

- ***Project-level application of climate insurance has been launched through the Caribbean Catastrophe Risk Insurance Facility (CCRIF).*** On June 1, 2007, this

facility commenced operations as the first regional disaster insurance facility in the world. Its objective is to help governments increase insurance penetration, efficiently aggregate risk at the country and sub-regional level, build up domestic reserve funds, transfer risk to international capital markets (including through reinsurance) and create catastrophe insurance markets where they do not currently exist. The IBRD assisted the CCRIF in transferring a portion of its risk to the market by entering into a US\$20 million, one-year maturity catastrophe swap with the CCRIF. The IBRD hedged its risk by entering into a companion swap with a market counterpart. The swap between IBRD and CCRIF is the first transaction to enable developing countries to use a derivative transaction to access the capital markets to insure against natural disasters. It is also the first time a diversified pool of catastrophe risks of emerging-market countries was placed in the capital markets.

- ***The Bank and other partners created the Global Facility for Disaster Reduction and Recovery (GFDRR) in FY07, which can become an essential instrument for adaptation action.*** GFDRR provides technical assistance (TA) for risk identification. The facility develops and implements risk-reduction and risk-transfer strategies in disaster-prone countries. In FY07, the Facility helped provide US\$5 million of TA in five countries<sup>15</sup> and is expected to support an additional 44 countries in FY08, with the objective of integrating disaster risks into Country Development Strategies. One key objective of this TA is to enable national governments and other country development partners to elaborate common country risk assessments that include disaster risks and the impacts of climate change. These risk assessments are intended to assist these countries to design and implement national disaster risk-reduction strategies, as well as reduce the impacts of climate change.
- ***Finally, a new reinsurance vehicle, the Global Index Insurance Facility, being established by IFC,*** will originate, intermediate and underwrite indexable weather, disaster and commodity price risks in developing countries.

28. ***The priority for future work on adaptation is to develop and implement specific adaptation strategies at the country level that can diminish the risks associated with climate variability.*** While all regions will need to adapt to climate variability, the challenges that must be overcome vary significantly by region and country. This variance is reflected in the focus of the analytic work undertaken by the various regions, which respectively examines: (i) arid lands, rural areas and water resources in AFR; (ii) coastal cities, irrigated agriculture and small islands in EAP; (iii) mountain ecosystems, glacial lakes, coastal wetlands and national and regional adaptation planning in LCR; (iv) water management, agricultural production and policies and the rise in the sea level in MNA; (v) sustainable land management, drought and water management in SAR; and (vi) water resource management and hydro-meteorological monitoring in ECA. The Bank is playing an increasingly important role as a knowledge broker in connecting scientific knowledge with development policy and is actively developing partnerships with major scientific organizations, such as the Earth Simulator Team (working through the Meteorological Research Institute of Japan), to improve the availability of climate information relevant to development.

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<sup>15</sup> Mozambique, Malawi, Nepal, Nicaragua and Vietnam.

29. *The increasing collaboration on adaptation with other MDBs and/or donors emerged as an important trend in FY07, providing the platform for coordinated approaches to address adaptation needs.* For example, in Asia, the Asian Development Bank, the Japan Bank for International Cooperation and the World Bank have initiated a cooperative program to assess the impacts of climate change on large coastal cities (see Box 7). The Bank is leading the design of the Pacific Alliance for Sustainability, a GEF-initiated partnership that will support a coordinated and multisectoral approach in Pacific Island nations. The Alliance seeks to build consensus and harmonize strategies and policies across the region to promote adaptive development, including adaptation to climate risks and clean energy. The Bank has also initiated the preparation of a multi-donor-funded analysis to assess the costs of adaptation. A joint IMF-Bank assessment of the financial implications of climate-proofing development is being undertaken for Ethiopia. Similarly, greater cooperation is foreseen in developing relevant disaster-reduction tools that also support adaptation to climate change. GFDRR is developing a disaster risk assessment tool that integrates climate change-related catastrophic risks with non-climate related risks. The facility intends to offer this template as the basis for designing common country assistance strategies for the UN, IFIs and donors, following a recent meeting of more than 120 governments and members of the international community in Geneva to discuss a global platform for disaster risk reduction.

**Box 7. Working with Partners: Climate Impact and Adaptation in Asian Coastal Cities**

Asian coastal cities are highly exposed to climate change in the form of coastal inundations, saltwater intrusion and coastal erosion, increased storm surges and typhoons, disruptions to water supplies, severe heat waves and prolonged flooding. The resulting social and economic impacts could cause large-scale displacement of vulnerable populations, particularly the poorest residents of cities and surrounding areas. For example, most slums in Asian coastal cities are in low-lying areas, which are already periodically subject to flooding. The effects of climate change will exacerbate already stressed urban areas and infrastructures, with potentially devastating economic impacts. The Asian Development Bank, the Japan Bank for International Cooperation and the World Bank have initiated a cooperative program to assess the impacts of climate change on large coastal cities in Asia. The program will strengthen the understanding of the likely economic, social and environmental impacts of climate change and the associated vulnerabilities of the urban poor to such impacts, as well as the need to adapt urban planning and urban infrastructure to mitigate these impacts and protect urban communities. The key objectives of the program are to: (i) identify the urban infrastructure and populations in large Asian coastal cities that are most vulnerable to climate change impacts; (ii) assess the magnitude of physical and economic damage expected from climate change impacts; (iii) specify measures, together with their associated costs, needed to mitigate and/or adapt to such impacts; and (iv) propose priorities for responding to the threat of climate change impacts for use by policy makers.

Source: East Asia Environment Monitor, World Bank, 2007.

**D. Coordination with Multilateral Development Banks**

30. *The preparation of a joint MDB framework of action on climate change, together with consultations with other partners, has also advanced.*<sup>16</sup> This framework focuses on the coordination and scaling up of support for low-carbon and climate-resilient growth (see Annex B). The joint study, which will be ready by October 2007, is designed to explore synergies, identify gaps and agree on joint activities that would accelerate the low-carbon economic growth of developing countries, their access to appropriate and affordable technologies and to carbon finance, and shifts in development trajectories that are adaptive to climate change and variability.

<sup>16</sup> The Development Committee requested in March 2007 that this Progress Report describe progress on an action plan for strengthened collaboration with Regional Development Banks (Development Committee Communique, April 15, 2007).

It is hoped that such a joint venture would lead to a more coherent overall global framework of actions by the MDBs. The cooperative venture would also strengthen coordination between the public and private financing windows of each of the MDBs, as well their engagement with the private sector more generally. The study will establish a database template that is acceptable to all MDBs as a means of updating and exchanging information on an ongoing basis.

31. ***The initial findings from the study indicate that MDBs largely share a common vision regarding approaches and responses to the challenges posed by climate change.*** Prior to the G8 Gleneagles summit, the MDBs had a long history of close cooperation in such areas as energy efficiency, renewable energy, clean coal technologies, urban transport, forestry and environmental protection, all of which have a direct impact on climate change. Their joint efforts have accelerated and become much more intense in the post-Gleneagles period. In particular, each MDB has consulted with its sister institutions in developing and/or revising its respective overall climate change and energy strategies to respond to new global priorities.

32. ***Additional initiatives are being undertaken to increase the level of collaboration among the MDBs on climate change activities.*** These collaborative initiatives are seen as particularly important as the MDBs move from strategy formulation to implementation. For example, an MDB workshop on mainstreaming climate change mitigation and adaptation was hosted by the EBRD in June 2007. The working session focused on some of the practical issues faced by MDB staff in scaling up climate activities and covered such topics as organization, targets, incentives and measurement and reporting. A key objective of this collaboration among MDBs is to explore how to mobilize private sector investment through new financing mechanisms.

### III. SCALING-UP SUPPORT FOR LOW-CARBON AND CLIMATE-RESILIENT DEVELOPMENT

#### A. Scope for Scaling Up

33. ***This Progress Report documents that the WBG is on track to achieve the commitments made in its CEIF Action Plan.*** It also outlines important new initiatives, such as the Energy Efficiency Sustainable Development Action Plan for FY07–09, that build on the successful implementation of the Bank’s Bonn commitment. Driven by growing country demand, as reflected in many recent CASs, a strong pipeline of analytical work and investments in support of low-carbon and climate-resilient development is in place. While progress under the CEIF is most substantial in the energy sector, work has extended to other sectors where there are opportunities to generate critically needed local development while achieving GHG emission reductions. Bank assistance on adaptation has shifted from relatively limited analytical and project work before the Gleneagles Summit to a current portfolio of 48 ongoing and pipeline analytical studies on adaptation and 29 ongoing and pipeline investment projects dealing either directly with adaptation or containing significant components on the issue.

34. ***With progress in implementing the CEIF, there has also been a growing recognition of the enormous challenge that climate change presents to development.*** The CEIF demonstrated the value of concerted efforts to expand access to clean energy and support low-carbon and climate-resilient growth in developing countries. It has also provided a compelling example of how the WBG can strategically utilize the range of instruments at its disposal to expand its support for an important development priority. In addition, the CEIF has both served as a

platform for collaboration among the MDBs to agree on joint activities and advanced their engagement with the private sector, key bilaterals, UNFCCC, and other important participants.

35. ***Demand from governments, the private sector and the public is increasing for the WBG to adopt a more comprehensive approach to address climate change*** as a risk to development and an opportunity for Bank clients to accelerate their economic transformation and take advantage of new technologies. Such an approach will allow the WBG to expand its role in supporting meaningful, country-specific and country-driven climate actions that are focused on the highest climate and development impact. Broadening the WBG strategy will include: (i) a comprehensive, multisectoral approach to climate change; (ii) a stepped-up program in policy research and knowledge sharing; (iii) an enhanced role in technology acceleration; and (iv) increased engagement in climate risk management. The more comprehensive approach will also require further resource mobilization.

36. ***A broader multisectoral approach is essential for scaling up action on climate change.*** Given the importance of potential GHG reduction in multiple sectors (including industry, transport, agriculture, forests and urban development), mitigation actions must move beyond clean energy supply. Similarly, addressing adaptation needs must cut across most sectors. With respect to both mitigation and adaptation, it is important to develop appropriate fiscal policies and complementary regulatory frameworks. In many cases climate actions can also benefit the local environment and bring substantial growth and poverty-reduction benefits. For example, the redesign of urban transport systems can lead to significant reductions in GHG emissions while providing co-benefits in the form of better local air quality, improved traffic flow and reduced economic losses from delays and fuel costs. In a number of developing countries, most GHG emissions originate from land degradation and deforestation, requiring actions in sustainable land and forest management – linked to growth and poverty reduction efforts, as well as improving the resilience of these countries to climate variability. A comprehensive approach to climate action would provide a platform for the WBG to mobilize its sectoral and macroeconomic policy skills to offer countries advice and investment support to help set priorities for climate action on an economy-wide basis.

37. ***Closing knowledge gaps will require stepped-up global policy research, linked to and relevant for country programs.*** With respect to both adaptation and mitigation, policy research needs to be expanded on country-specific choices for cost-effective actions with the highest economic, social and climate impacts. On mitigation, priority areas for policy research include the fiscal implications of low-carbon growth strategies; assessments of the impacts of alternative incentives regimes on developing countries; and accelerated adoption of policy incentives for least-cost actions (e.g., scaling up energy efficiency). On adaptation, there are enormous gaps in the current understanding of the social dimensions of increased climate variability, not to mention how to undertake adaptive measures to assist the transition of the most vulnerable countries and communities towards more climate-resilient development. Climate change poses special challenges for water management, as water supply is changing due to variable precipitation, snow and glacial melt, and changed demand for hydropower, irrigation, water supply and environmental flows. In the many developing countries where emissions arise largely from changes in land use, such as deforestation and agriculture, there are significant interactions between GHG reduction, climate resilience and food security. In this context, the research program of the Development Economics Department (DEC) on climate change and

clean energy is planned to be further enhanced and increasing country demand for analytical work is expected to be reflected in future CASs.

38. ***The WBG role in the area of technology should be further explored.*** To date, the WBG has focused on helping client countries access new *proven* technologies by mobilizing financing (like GEF and carbon finance) to cover the incremental costs associated with the delivery of global benefits. Based on the outcome of the forthcoming report on cases of successful support for technical innovations in non-energy sectors<sup>17</sup>, later this year the WBG will review, in consultation with key stakeholders, options for advancing both Research and Development (R&D) and acceleration of implementation of new technologies in its client countries. This review will help define the possible role of the WBG in supporting the transition from pre-commercial to commercial application of new low-carbon technologies by identifying any gaps in existing public and private clean energy R&D that the WBG could usefully fill. In the context of CEIF implementation, the WBG has already explored approaches for risk-sharing to hasten the move of critical low-carbon technologies. For example, the IFC is considering investing in venture capital-type funds for new technology developments, including through a program that uses GEF support to provide prize capital for promising energy and environmental technologies. In the area of adaptation, the WBG is supporting the CGIAR, which is building a strong program on climate change that addresses both hard (e.g. irrigation technology) and soft (e.g. crop rotation) technologies, and promoting the transfer of indigenous technologies that have been developed over centuries in regions and countries prone to climate risks. The WBG's position as an honest broker can create a platform for North-South and South-South exchanges, in particular by raising public and private investment in R&D and new technologies. A stronger WBG role could also include using advocacy and analytical work to promote investment to close gaps in technology development.

39. ***The WBG should continue to expand the use of climate risk analysis and management to reinforce the ability of client governments to manage their development portfolios.*** Climate risk assessments should be included in upstream works such as CASs and Country Environment Analysis (CEAs), and all projects should be assessed for risks that might arise from climate variability and change. Tools to assist the Bank and its client countries in this task need to be further developed. Country assessments of disaster risk under the GFDRR are being expanded to include a comprehensive climate risk assessment. The application of insurance mechanisms as risk management tools is being expanded. Small-scale agriculture presents a particular challenge, as insurance markets are nascent or nonexistent for this sector and its risk profile is poorly understood and changing. Weather-indexed insurance is a promising opportunity, as it reduces costs and simplifies operations, but extremely weak hydro-meteorological infrastructure in many client countries, particularly in Africa, may undermine this approach.

40. ***An important element of a scaled-up WBG program would be continued mobilization of additional concessional financial resources for climate change.*** Since major technological transitions take a long time to implement, incentives for early action to reduce climate change impacts in a cost-effective way will become the key to public and private transformation toward low-carbon growth in the developing world. Concessional finance is particularly important to buy down the difference in costs between currently employed technologies and their lower-

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<sup>17</sup> See paragraph 22. p. 12.

carbon alternatives, such as renewable energy and state-of-the-art, high-efficiency, coal-fueled power plants. Carbon finance, concessional lending and grants help developing countries to implement: (i) energy efficiency programs on a large-scale, (ii) low-carbon sectoral policies and investments, and (iii) reduced deforestation.

41. ***The need for further resource mobilization is reinforced by the private sector.*** The London Conference organized by the EBRD and the World Economic Forum (WEF) in March 2007, and the subsequent working group comprised of senior professionals from private sector financial institutions and IFIs, are helping to better understand current constraints to the mobilization of private capital for clean energy investments in developing countries, as well as to propose mechanisms to address financing gaps. To date, the group's work has led to the following three key recommendations: (i) the need to support the transition to a post-2012 framework to reduce uncertainties with respect to carbon credit markets after that period, together with the importance of mobilizing additional private financial capacity to support carbon finance post-2012; (ii) the need to support new technology transfer through high-impact projects for the development of clean energy commercial technologies, financed by concessional loans; and (3) the importance of improving the regulatory framework in the energy sector, and the development of a more enabling environment at policy level.

42. ***Further expansion of existing financial instruments is essential for scaling up.*** Mobilizing support on a large scale is needed to protect development gains from climate risks and ensure the lasting results of growth and poverty reduction efforts.

- ***The GEF is the most important source of grant assistance for climate change mitigation and a platform for increased support for climate action in the developing world.*** The GEF has made US\$1 billion available to programming from FY2007–2010. Its mission is to transform the market development paths of eligible countries to trajectories with lower GHG emissions in the energy, industry, transport and land-use sectors. The GEF-4 climate change strategy focuses on promoting: (i) energy efficiency in residential and commercial buildings and industry; (ii) market approaches to promoting renewable energy; (iii) sustainable energy production from biomass; (iv) innovative systems for sustainable urban transport; and (v) reducing emissions from land use, land-use changes and forestry (LULUCF). GEF recently committed US\$50 million to a new public-private partnership which has the potential to be a significant catalyst for innovative, climate friendly private sector actions. In its role as the financial mechanism of the UNFCCC, the GEF finances adaptation measures through three different sources: the Strategic Pilot on Adaptation (SPA) under the GEF Trust Fund (to which US\$50 million was initially allocated); the Special Climate Change Fund (through which US\$60 million has been made available for adaptation projects); and the Least Developed Countries Fund (which has made available US\$160 million).
- ***The recently created UNFCCC Adaptation Fund will help.*** Once operational, this fund will provide an important new resource stream for adaptation. The UNFCCC Adaptation Fund provides for a 2-percent tax on CDM transactions. Assuming levels of transactions similar to US\$5 billion of 2006, this would generate between US\$500 million to US\$1 billion by 2012. While a very valuable and timely initiative, the

Adaptation Fund's resource mobilization is still likely to fall short of estimated needs during this critical period and should thus be complemented by additional resources. The eventual size of the fund will depend on the size of the CDM.

- ***Carbon finance can also generate larger flows of resources.*** The WBG will continue to build opportunities for developing countries to access carbon finance in support of low-carbon development goals. It is generally believed that the carbon market, which provides market-based incentives, could eventually generate a transfer of as much as US\$100 billion per year from developed to developing countries—making carbon trade the most significant potential source of funding incremental costs. The WBG was a pioneer of carbon finance and continues to explore new opportunities to expand the scope of carbon finance options, develop new methodologies and remove barriers to market development, as in the case of the FCPF and CPF. The recent World Bank annual review of the carbon market showed that carbon trade with developing countries has experienced rapid growth, doubling between 2005 and 2006 from US\$2.5 to US\$5 billion. It is likely that opportunities for carbon finance will continue to expand, both within the CDM and through alternative schemes. Over the long term, carbon finance can play a crucial role in allowing Middle-Income Countries (MICs) to implement low-carbon development goals. However, a mechanism may be needed in the short term to support MICs in this agenda prior to the eventual transition to a fully functional carbon market.
- ***Last, but not least, a strong IDA replenishment will be critical for supporting an enhanced response to the challenge of climate change adaptation for low-income countries.*** This replenishment is necessary to build resilience into mainstream development activities, whether in the area of agriculture productivity, water resource management, urban development or health systems, to name a few of the key sectors that are expected to be impacted. A paper on IDA and climate change is being prepared for the IDA15 third replenishment meeting in November 2007.

43. ***While good progress can be reported on implementing the WBG Action Plan, the current scale of financial support is still not at the levels required to address the challenges ahead.*** Despite the recent GEF replenishment, the increased funds that have become available for adaptation through the UNFCCC, the rapidly growing carbon market, currently available IFI resources and instruments and the public and the private sectors are inadequate to meet the investment needs of low-carbon, climate-resilient development.

44. ***A priority task for the Bank and many public and private sector partners has been the further development of innovative financing mechanisms, designed to promote market-based solutions and trigger private sector investments.*** In March 2007, the UK announced a new £800 million (US\$1.6 billion) Environmental Transformation Fund (ETF). The UK has asked the Bank to help design and administer this international financing facility to advance its key objectives of co-financing new activities with strong development and environmental benefits and supporting developing countries' transformation to low-carbon, climate-resilient growth paths. Although this financing facility is still in the design phase, its core function will be to offer concessional finance to low- and middle-income countries at the scale and cost necessary to provide them incentives to integrate low-carbon strategies and build climate resilience into their

development plans and investment decisions. This facility could be further augmented by blending its resources with other resources, such as those of the GEF, carbon finance and MDB loans. This packaging approach is also expected to help attract the private sector and better tailor concessionality. Other complementary ideas for extending the reach of such a facility by “fast-forwarding” resources could be considered. Such ideas might include a climate change bond backed by “front-loaded” donor contributions (similar to the International Finance Facility for Immunization model). Another complementary solution could be to put such a fund on a more sustainable footing by transforming it into a concessional lending facility capitalized by a combination of public and private sources, serviced by loan repayments and backed by carbon credits.

## **B. Looking Forward**

45. *A broader approach, as outlined above, will guide WBG strategic thinking on climate change and help define priorities that most effectively meet developing country needs.* The CEIF is an enormously important first step in this direction, investing in low-carbon energy while advancing the WBG’s knowledge and action on climate adaptation. But for the WBG to be truly effective in responding to climate change, it needs to fully exploit its comparative advantages. The WBG’s ability to work across multiple sectors and to deal at both the policy and project level; its presence in the field; its ability to innovate; the leverage which its finance provides; and its convening power—all of these advantages need to be brought to bear on what is one of the largest and most complex problems the development community has faced. Effectively marshalling WBG efforts will, however, depend on the development of a comprehensive climate change strategy.

46. *The WBG is presented with a unique opportunity to contribute to long-term decisions on the global response to climate change.* The intervening period from the Spring 2007 to the Fall 2007 Meetings has been important from the standpoint of new scientific and policy analyses on climate change. The final stage in the roll out of the CEIF, from today until the Spring 2008 Meeting, is viewed as even more critical in terms of decision-making, since it will encompass events such as the high-level UN meeting, “Addressing the Leadership Challenge of Climate Change,” and the U.S.-led high-level meeting on “Major Economies on Energy Security and Climate Change,” in September 2007, together with the European Development Days in November and the Bali UNFCCC Conference in December 2007. The foundation has been laid for a scaled-up WBG climate change strategy and action plan, with a substantial work program already under way that is optimizing currently available resources. The WBG’s experience and lessons learned will also be important inputs in the technical and policy dialogue over subsequent months leading up to the Japan G8 Summit in June 2008.

47. *The value of the WBG contribution would be the extent to which it is able to implement a scaled-up strategy,* including technical and financial innovations, while balancing bottom-up (country-specific) and top-down (global) actions to address mitigation and adaptation. The strategy would seek to influence development pathways towards more sustainable and climate-resilient growth in a tangible manner, as well as mobilize additional resources for significantly scaled-up support for this agenda. It will further strengthen the role of the WBG and its partners (i.e., MDBs, bilateral agencies and the private sector) in expanding policy, institutional and financial assistance and accelerating the transfer of technology to developing countries. Such a

strategy would be based on the premise that climate change and development are inextricably linked for the Bank's client countries and will support efforts to move toward sustainable development pathways in ways that do not compromise, but rather reinforce, growth and poverty reduction.

### **C. Questions for the Development Committee**

1. Does the Development Committee endorse the assessment of progress-to-date in the implementation of the Action Plan for the Clean Energy Investment Framework, as presented in this report?
2. What guidance and suggestions would the Development Committee have for further scaling up and broadening WBG activities in addressing climate change as a development issue?



**ANNEX A. REPORTING PROGRESS ON THE  
WBG CLEAN ENERGY INVESTMENT FRAMEWORK ACTION PLAN**

**Table A1. Summary Table<sup>1</sup>**

<b>Impact</b>	<b>Commitments</b>	<b>Progress Update (current and planned up to September 2007)</b>
Total Energy Program  <i>Energy for economic growth and poverty alleviation, in an environmentally and socially sustainable manner.</i>	<b>Strategy, Knowledge and Policy</b> <ul style="list-style-type: none"> <li>Country-level policy and regulatory support to improve financing prospects and scale up investments.</li> </ul> <b>Project Investments and Lending</b> <ul style="list-style-type: none"> <li>Total energy lending/investments projected to increase from \$7 billion (FY03-05) to over \$10 billion (FY06-08).<sup>2</sup></li> </ul>	<b>Strategy, Knowledge and Policy</b> <ul style="list-style-type: none"> <li>Ongoing.</li> </ul> <b>Project Investments and Lending</b> <ul style="list-style-type: none"> <li>Likely to exceed the forecast for overall energy lending of \$10 billion for FY06-08 (WBG energy lending in FY06-07 = \$8 billion). Q1 lending for FY08 projected to be \$1 billion, leading to an estimated \$3-4 billion for the fiscal year.</li> </ul>
Increasing Energy Access in Sub-Saharan Africa  <i>Improve electricity access region-wide to enterprises, newly populated trading areas, and households with positive impact on economic growth and household welfare.</i>	<b>Strategy, Knowledge and Policy</b> <ul style="list-style-type: none"> <li>Target of increasing electricity access to 130 million more people in SSA by 2015 (Activities reported in Table A2).</li> </ul> <b>Project Investments and Lending</b> <ul style="list-style-type: none"> <li>Lending/investments for energy in SSA by the WBG are projected to increase from \$1.2 billion (FY03-05) to more than \$2 billion (FY06-08).</li> <li>Meeting targets of increasing electricity access in SSA requires increased funding from about \$2 to \$4 billion/year.</li> </ul>	<b>Strategy, Knowledge and Policy</b> <ul style="list-style-type: none"> <li>Progress Update reported in Table A2.</li> </ul> <b>Project Investments and Lending</b> <ul style="list-style-type: none"> <li>On track to meet SSA WBG energy lending of over \$2 billion for FY06-08.</li> <li>Continuing to experiencing a shortfall of donor funding to meet the \$4 billion/year investment needs to reach 47 percent of electricity access in SSA by 2030.</li> </ul>
Lowering Carbon Emissions  <i>Reduce carbon footprint through strong program of analytical work and scale-up of low-carbon investments; extend financing to buy down incremental costs via new methodologies and mechanisms for carbon financing.</i>	<b>Strategy, Knowledge and Policy</b> <ul style="list-style-type: none"> <li>Activities reported in Tables A3-1, A3-2, and A3-3.</li> </ul> <b>Project Investments and Lending</b> <ul style="list-style-type: none"> <li>Lending/investments for low-carbon projects projected to increase from \$2 billion (FY03-05) to over \$4 billion (FY06-08).</li> </ul>	<b>Strategy, Knowledge and Policy</b> <ul style="list-style-type: none"> <li>Low-carbon Country Growth Case Studies in G8+5 underway.</li> <li>Two new carbon facilities designed (Forest Carbon Partnership Facility and Carbon Partnership Facility).</li> <li>New financing approaches being designed.</li> </ul> <b>Project Investments and Lending</b> <ul style="list-style-type: none"> <li>On track to meet low-carbon energy lending of \$4 billion for FY06-08 (WBG lending in FY06 – \$1.7 billion; \$1.4 billion in FY07).</li> </ul>
Adaptation  <i>Scale up opportunities to implement screening tools, mainstreaming pilots, financing mechanisms, adaptation awareness, and results dissemination at the country and global levels.</i>	<b>Strategy, Knowledge and Policy</b> <ul style="list-style-type: none"> <li>Activities reported in Table A4.</li> </ul> <b>Project Investments and Lending</b> <ul style="list-style-type: none"> <li>GEF grant financing (\$50-60 million) expected to leverage about \$500 million in WBG investments (FY06-09).</li> </ul>	<b>Strategy, Knowledge and Policy</b> <ul style="list-style-type: none"> <li>First version of adaptation screening tool launched along with new regional initiatives.</li> <li>New studies on risk management completed.</li> <li>2 National Adaptation Programs of Action (NAPA) initiated.</li> <li>Mainstreaming in CASs (32% in FY07 vs. 15% in FY00-05).</li> </ul> <b>Project Investments and Lending</b> <ul style="list-style-type: none"> <li>In FY07, \$133 million in GEF grant financing leveraged about \$1.03 billion in WBG, private sector, and government cofinancing.</li> <li>Caribbean Catastrophe Risk Insurance Facility initiative launched.</li> </ul>

<sup>1</sup> System to measure results under development in FY08

<sup>2</sup> Total numbers include SSA and low-carbon projected estimates

**Table A2. Increasing Energy Access in Sub- Saharan Africa**

<p><b>Goal: Increase Access to Electricity in Sub-Saharan Africa (SSA) from about 25% to 35% by 2015 and 47% by 2030<sup>3</sup></b>  <b>Results: At least 30 countries increase generation capacity by &gt; 20% and utilities in 20 countries reduce losses by 10% or better</b></p>		
<i>Impact</i>	<i>Commitments</i>	<i>Progress Update (current and planned up to September 2007)</i>
<p><b>Alignment and harmonization of donor support</b></p> <p><i>Preparation of sector-wide programs (SWAPs) as first step toward implementing the five-track program, to make more efficient use of donor funding.</i></p>	<p><b>Strategy, Knowledge, and Policy</b></p> <ul style="list-style-type: none"> <li>▪ FY07/08: Country assessments and preliminary work on access cost estimates in two pilot countries (Senegal and Zambia).</li> <li>▪ FY08: SWAPs and prospectuses prepared for two pilot countries: Senegal and Zambia.</li> <li>▪ Mix of donor, IDA, and ESMAP resources required to develop SWAPs and prepare sector prospectuses.</li> </ul>	<p><b>Strategy, Knowledge and Policy</b></p> <ul style="list-style-type: none"> <li>▪ Preparation of access cost estimates under implementation in Senegal and Kenya.</li> <li>▪ Delivery expected by the end of FY08.</li> <li>▪ Donor support through ESMAP is expected to be approximately \$3 million in FY08.</li> </ul>
<p><b>Mainstream SSA Energy Access Plan</b></p> <p><i>Bank will accelerate lending for projects for improved household access and additional commercial and industrial consumer connections. Region-wide performance milestones: at least 30 countries increase generation capacity by 20% or more (FY07- FY11) and utilities in 20 countries reduce their losses (technical and non-technical) by 10% or better by FY11.</i></p>	<p><b>Strategy, Knowledge, and Policy</b></p> <ul style="list-style-type: none"> <li>▪ Approx. \$0.5 million/year in ESW activities to support diagnostic and capacity building interventions to improve policy development update legal framework and strengthen public utilities.</li> <li>▪ FY07/08: Disseminate sector wide approach (SWAP) principles and promote discussion and adoption of approach among SSA countries.</li> <li>▪ FY 08/09: GIS based methodology for least-cost grid planning (being piloted in Kenya and Senegal) will be disseminated region-wide.</li> </ul> <p><b>Project Investments and Lending</b></p> <ul style="list-style-type: none"> <li>▪ FY07-FY10: IDA plans to prepare about 10 investment projects/year (between \$700 and \$800 million/year).</li> </ul>	<p><b>Strategy, Knowledge and Policy</b></p> <ul style="list-style-type: none"> <li>▪ Actual disbursement for ESW activities in FY07 = \$683,000. Current FY08 commitments = \$733,000.</li> <li>▪ Examples of ongoing dissemination activities: Energy Planning/Costing Workshop (June 2007 at Earth Institute with participation of electricity system planners from Zambia, Tanzania, Rwanda and Uganda).</li> </ul> <p><b>Project Investments and Lending</b></p> <ul style="list-style-type: none"> <li>▪ IDA commitments for energy sector investments in SSA in FY07 = \$0.8 billion. An additional \$410 million for 6 projects was approved in Q1 FY08. IDA support has been catalytic in leveraging additional finance. For example US\$116 million of IDA guarantees for the Bujagali project leverages additional financing of US\$750 million from IFC, bilaterals and private/commercial sources and complements AfDB investment of \$55 million for a transmission line to evacuate the power from the plant.</li> <li>▪ IFC commitments for energy sector investments in SSA in FY07 were \$130 million.</li> </ul>
<p><b>Increase Energy Services to Public Facilities (e.g., schools and medical clinics )</b></p> <p><i>Program will focus on improving service delivery to health and education facilities to meet the goals</i></p>	<p><b>Strategy, Knowledge, and Policy</b></p> <ul style="list-style-type: none"> <li>▪ FY08: TTL Guidance note will be prepared.</li> </ul> <p><b>Project Investments and Lending</b></p> <ul style="list-style-type: none"> <li>▪ FY08: Electrification of public facilities will begin to be mainstreamed into Bank SILs.</li> </ul>	<p><b>Strategy, Knowledge, and Policy</b></p> <ul style="list-style-type: none"> <li>▪ Guidance Note is programmed in FY08 workplan.</li> </ul> <p><b>Project Investments and Lending</b></p> <ul style="list-style-type: none"> <li>▪ Work is underway to deliver on this.</li> </ul>

<sup>3</sup> Limited donor funding for electricity access in SSA continues to be a constraining factor. A strong IDA replenishment will be needed, together with renewed efforts to develop innovative approaches to overcome funding constraints. The Africa region will conduct analytic work in FY08 to support a more aggressive scale-up.

**Goal: Increase Access to Electricity in Sub-Saharan Africa (SSA) from about 25% to 35% by 2015 and 47% by 2030<sup>3</sup>**  
**Results: At least 30 countries increase generation capacity by > 20% and utilities in 20 countries reduce losses by 10% or better**

<i>Impact</i>	<i>Commitments</i>	<i>Progress Update (current and planned up to September 2007)</i>
<i>of the MDGs.</i>		
<p><b>Accelerate the take-up of modern lighting services in mainly rural households and enterprises</b></p> <p><i>The provision of access to modern lighting is 250 million people by 2030.  “Lighting Africa” program will accelerate the benefits associated with lighting (education, health, and productivity).</i></p>	<p><b>Strategy, Knowledge, and Policy</b></p> <ul style="list-style-type: none"> <li>▪ FY07: Three-year “Lighting Africa” Program will be launched as a joint World Bank and IFC initiative, with ESMAP and other donor support.</li> <li>▪ FY07: Lending components designed in potential two investment projects.</li> <li>▪ FY07/08: IFC-support for private sector delivery of low-cost off-grid light products in Kenya and Ghana.</li> </ul>	<p><b>Strategy, Knowledge, and Policy</b></p> <ul style="list-style-type: none"> <li>▪ Lighting Africa program jointly managed by the Bank and the IFC is under implementation (<a href="http://lightingafrica.org">http://lightingafrica.org</a>).</li> <li>▪ Projects are under preparation.</li> <li>▪ Work ongoing (3 year program).</li> </ul>
<p><b>Access to clean cooking and heating fuels</b></p> <p><i>Develop sustainable woodfuel supplies, complemented by measures to improve the efficiency and safety of biomass use.  Reduce indoor air pollution and its health impacts, especially on women and children, who are disproportionately affected.  Increase LPG and kerosene use by households with positive impacts on health and productivity.</i></p>	<p><b>Strategy, Knowledge, and Policy</b></p> <ul style="list-style-type: none"> <li>▪ FY07 and ongoing: The Bank will advise governments on fuel pricing to remove barriers to prudent LPG and kerosene use by households.</li> <li>▪ FY08: Provide policy note for Bank staff and support for national and regional initiatives for sustainable land management, including forestry.</li> <li>▪ FY08: Investigate potential for bio-energy in Ethiopia and Mozambique (AAA activity).</li> </ul> <p><b>Project Investments and Lending</b></p> <ul style="list-style-type: none"> <li>▪ FY07: Eight projects under preparation with forestry components, five of which are proposed for GEF.</li> <li>▪ FY08: Three projects in pipeline, two funded by IDA and one by carbon finance.</li> </ul>	<p><b>Strategy, Knowledge, and Policy</b></p> <ul style="list-style-type: none"> <li>▪ Work ongoing.</li> <li>▪ Forthcoming.</li> <li>▪ Bio-energy assessments in Ethiopia and Mozambique initiated.</li> <li>▪ Pilot to use biofuels implemented in Kenya (Using <i>Jatropha Curcas</i> (physic nut) as an energy crop).</li> </ul> <p><b>Project Investments and Lending</b></p> <ul style="list-style-type: none"> <li>▪ Eight projects with forestry components were approved in FY07.</li> <li>▪ Projects under preparation.</li> </ul>

**Table A3-1. Transition to a Low Carbon Economy – Goal: Support Countries to Move to a Low-Carbon Energy Path**

<b>Goal: Support Countries to Move to a Low-Carbon Energy Path</b>		
<b>Results: Improvements in Energy Efficiency, Reduce Local &amp; Regional Pollution, and Reduced GHG Emissions</b>		
<b>Impact</b>	<b>Commitments</b>	<b>Progress Update (current and planned up to September 2007)</b>
<p><b>Energy Efficiency (EE)</b></p> <p><i>WBG committed in 2004 at Bonn to increase its lending for energy efficiency by 20%/ year, reducing the need for additional power generation and thus reducing the financing gap.</i></p>	<p><b>Strategy, Knowledge, and Policy</b></p> <ul style="list-style-type: none"> <li>▪ FY08: Finalize Energy Efficiency (EE) Action Plan.</li> <li>▪ FY08 A regional report on energy efficiency prospects for MNA.</li> <li>▪ FY09: Continue working with IEA to (a) prepare an “Energy Efficiency Indicator” program— report due by end 2008; and (b) identify specific sectoral and equipment opportunities for EE.</li> </ul> <p><b>Project Investments and Lending</b></p> <ul style="list-style-type: none"> <li>▪ FY07 and ongoing: EE programs—e.g. Africa lighting program.</li> </ul>	<p><b>Strategy, Knowledge and Policy</b></p> <ul style="list-style-type: none"> <li>▪ Action Plan finalized and delivered.</li> <li>▪ Work on “Energy Efficiency Indicator” program has started in Mexico, China and South Africa (work in India and Brazil is under development).</li> <li>▪ Joint Govt. of Japan-World Bank "Energy Efficiency" Roundtable (July 19, Tokyo) delivered.</li> </ul> <p><b>Project Investments and Lending</b></p> <ul style="list-style-type: none"> <li>▪ <b><i>In FY07 we have reached the Bonn Commitment with \$262 WBG lending for EE</i></b></li> <li>▪ Highlights of EE projects approved in FY07: <ul style="list-style-type: none"> <li>- Macedonia: Sustainable Energy (GEF)</li> <li>- Serbia: Energy Efficiency Additional Financing (IBRD/IDA)</li> <li>- Morocco: Development Policy Loan (IBRD/IDA) (with major policy reform components to develop 1000MW of renewable energy and increase energy efficiency)</li> <li>- Argentina: Energy Efficiency (GEF)</li> <li>- Colombia: Furatena Energy Efficiency Project (Carbon Finance)</li> <li>- Philippines: Sustainable Energy Financing Program (IFC/GEF)</li> <li>- China: Energy Efficiency Financing (IBRD/GEF)</li> </ul> </li> </ul>
<p><b>Renewable Energy (RE)</b></p> <p><i>Bank committed in 2004 at Bonn to increase its lending for new renewable energy by 20%/ year, displacing fossil fuel production and reducing GHG emissions. Activities require removal of policy and market distortions, increased capacity in planning and implementation, increased access to technology, and access to long-term financing.</i></p>	<p><b>Strategy, Knowledge, and Policy</b></p> <ul style="list-style-type: none"> <li>▪ FY07 and ongoing: ESMAP support to strategic planning, policy support, and pre-investment studies.</li> <li>▪ FY 07/08: Carbon Finance for Bagasse Cogeneration in Brazil.</li> <li>▪ FY07-08: WBI to prepare handbooks &amp; toolkits to support operational implementation of renewable energy projects in the Regions.</li> <li>▪ FY08-09: IFC Sri Lanka Distributed Generation Project will include new contracting/financing models for small scale power generation.</li> </ul> <p><b>Project Investments and Lending</b></p> <ul style="list-style-type: none"> <li>▪ Lending/investments for RE increases from \$1 billion (FY03-05) to nearly \$2 billion (FY06-08).</li> </ul>	<p><b>Strategy, Knowledge and Policy</b></p> <ul style="list-style-type: none"> <li>▪ Work ongoing; 25 renewable energy projects in progress being financed by ESMAP.</li> <li>▪ Awaiting the signing of letter of intention.</li> <li>▪ Updated RE Toolkit scheduled to be complete in FY08.</li> <li>▪ Work ongoing.</li> </ul> <p><b>Project Investments and Lending</b></p> <ul style="list-style-type: none"> <li>▪ <b><i>In FY07 we have reached the Bonn Commitment with \$420 WBG lending for New RE.</i></b></li> <li>▪ Highlights of RE projects approved in FY07: <ul style="list-style-type: none"> <li>- India: Scale-up of windpower development (IFC)</li> <li>- Philippines: Reduction the country’s reliance on imported fossil fuel, related emissions of pollutants and greenhouse gases (IFC)</li> <li>- ECA: Geothermal Energy Development Project (GEF)</li> </ul> </li> </ul>

**Goal: Support Countries to Move to a Low-Carbon Energy Path**  
**Results: Improvements in Energy Efficiency, Reduce Local & Regional Pollution, and Reduced GHG Emissions**

<i>Impact</i>	<i>Commitments</i>	<i>Progress Update (current and planned up to September 2007)</i>
		<ul style="list-style-type: none"> <li>- Morocco: Integrated Solar Combined Cycle Power Project (GEF)</li> <li>- Uruguay: Montevideo Landfill Gas (Carbon Finance)</li> <li>- Brazil: Lages Woodwaste Cogeneration Facility (Carbon Finance)</li> <li>- Bolivia: Urban Wastewater Methane Gas Capture Project (Carbon Finance)</li> <li>- Chile: Pullihue Composting Project (Sustainable Waste Management in Santiago) (Carbon Finance)</li> <li>- Poland: Puck Wind Farm Project (Carbon Finance)</li> <li>- China: PCF-Tianjin Landfill Gas Recovery and Utilization Project (Carbon Finance)</li> <li>- Pacific Islands: Sustainable Energy Finance Project (GEF)</li> <li>- Sri Lanka Renewable Energy Project</li> </ul>
<b>Decreasing carbon emissions from thermal power plants</b>	<p><i>Strategy, Knowledge, and Policy</i></p> <ul style="list-style-type: none"> <li>▪ Continued TA &amp; dissemination of knowledge and research to increase efficiency of existing power plants (i.e. rehabilitation) and facilitate move to commercially available high efficiency power plants.</li> </ul>	<p><i>Strategy, Knowledge and Policy</i></p> <ul style="list-style-type: none"> <li>▪ Creation of cleanenergywiki.org website for information sharing completed in FY07.</li> <li>▪ Highlights of TA approved in FY07:</li> <li>- Kosovo Lignite Power TA project (IBRD/IDA)</li> <li>- Yemen: Gas Incentive Framework Study (IBRD/IDA)</li> </ul>
<b>Global Gas Flaring Reduction Program</b>	<p><i>Project Investments and Lending</i></p> <ul style="list-style-type: none"> <li>▪ Mobilizing private capital investments of \$1.9 billion in gas flaring reduction projects that offset some 22 MtCO<sub>2</sub> emissions by 2012 (Indonesia, Russia, Nigeria, and Ecuador).</li> </ul>	<p><i>Project Investments and Lending</i></p> <ul style="list-style-type: none"> <li>▪ On track to mobilize private capital investment; Projects under preparation:</li> <li>- Nigeria: Afam Integrated Gas and Power, approx. 3,750,000 tCO<sub>2</sub>e &lt; 2012</li> <li>- Ecuador: Sacha Associated Gas to LPG project, approx. 500,000 tCO<sub>2</sub>e &lt; 2012</li> <li>- Russia: Danilovsk Gas Flaring Reduction (Carbon Finance); 620,000 tCO<sub>2</sub>e</li> <li>- Russia: Rosneft Associated Gas Recovery (Carbon Finance); 3,360,000 tCO<sub>2</sub>e.</li> <li>- Uzbekistan: Uzbekneftegaz Associated Gas Recovery (Carbon Finance); 474,000 tCO<sub>2</sub>e</li> </ul>
<b>Accelerating Hydropower Projects</b>	<p><i>Strategy, Knowledge, and Policy</i></p> <ul style="list-style-type: none"> <li>▪ Hydropower development strategy to include rehabilitation of existing plants, small and run-of-river plants and multipurpose hydropower plants with reservoirs.</li> <li>▪ Supporting feasibility studies for technically, economically, and environmentally satisfactory projects (e.g. small hydro in China and Vietnam).</li> </ul> <p><i>Project Investments and Lending</i></p> <ul style="list-style-type: none"> <li>▪ New run-of-the-river (RoR) hydropower, new dam hydropower, and rehabilitation of hydropower projects.</li> </ul>	<p><i>Strategy, Knowledge and Policy</i></p> <ul style="list-style-type: none"> <li>▪ Hydropower action plan under preparation.</li> <li>▪ Ongoing.</li> </ul> <p><i>Project Investments and Lending</i></p> <ul style="list-style-type: none"> <li>▪ 9 hydropower projects were approved in FY07 with \$748 million in new WBG lending, of which \$115 million in loan guarantees, and \$66 million in carbon finance.</li> <li>▪ Highlights of Hydropower projects approved in FY07:</li> <li>- Uganda: Bujagali Power Generation Project (IBRD/IDA/IFC)</li> </ul>

**Goal: Support Countries to Move to a Low-Carbon Energy Path**  
**Results: Improvements in Energy Efficiency, Reduce Local & Regional Pollution, and Reduced GHG Emissions**

<i>Impact</i>	<i>Commitments</i>	<i>Progress Update (current and planned up to September 2007)</i>
<b>Reducing carbon emissions in transport projects</b>	<p><i>Strategy, Knowledge, and Policy</i></p> <ul style="list-style-type: none"> <li>▪ FY07: Trade policies for liquid biofuels.</li> <li>▪ FY07: Bio-diesel in Brazil.</li> <li>▪ FY07: Bangladesh Inland Water Transport.</li> <li>▪ FY08: Technical report on methodologies and data to assist with policy making and project design.</li> <li>▪ FY08: Policy paper on replicable best practices.</li> </ul> <p><i>Project Investments and Lending</i></p> <ul style="list-style-type: none"> <li>▪ FY08 pipeline of projects:</li> <li>- India Sustainable Urban Transport</li> <li>- China Urban Transport</li> <li>- LAC Regional Transport</li> </ul>	<p>- Democratic Republic of Congo : Inga Hydropower Rehabilitation Project (IDA)</p> <p>Ukraine: Hydropower Rehabilitation Proto-Carbon Finance Project (Carbon Finance)</p> <p>- India: Rampur Hydropower project (IBRD) [projected for Q1 FY08]</p> <p>- Iraq : Hydropower Rehabilitation Project (IDA)</p> <hr/> <p><i>Strategy, Knowledge and Policy</i></p> <ul style="list-style-type: none"> <li>▪ Trade policies for liquid biofuels report delivered.</li> <li>▪ Bio-diesel in Brazil Report to be delivered in Q1 FY08.</li> <li>▪ Bangladesh Inland Water Transport report delivered.</li> </ul> <p><i>Project Investments and Lending</i></p> <ul style="list-style-type: none"> <li>▪ Projects on track to be approved in FY08.</li> <li>▪ Projects under preparation:</li> <li>- Bangladesh Clean Air and Sustainable Energy Project (IBRD/IDA)</li> <li>- Philippines: Manila Transport Projects (Carbon Finance)</li> <li>- Vietnam: Northern Delta Transport Development Project (IBRD/IDA)</li> </ul>

**Table A3-2. Transition to a Low-Carbon Economy; Goal: Prepare Low-Carbon Country Case Studies in G8+5 countries**

<p><b>Goal: Prepare Low-Carbon Country Case Studies in G8+5 countries that identify a development path that respects poverty alleviation and economic growth targets with lower carbon emissions</b></p> <p><b>Results: Intermediate results for India low-carbon study expected by October 2007; Mexico and China studies started in Q4 FY07; Brazil and South Africa are in the early phases of discussion</b></p>		
<i>Impact</i>	<i>Target Commitments</i>	<i>Progress Update (current and planned up to September 2007)</i>
<p><b>India</b></p> <p><i>Maintain India's relatively low-carbon intensity in context of high economic growth.</i></p>	<p><b>Strategy, Knowledge, and Policy</b></p> <ul style="list-style-type: none"> <li>▪ FY08: India Low Carbon Growth Strategy.</li> <li>▪ FY08: Identify opportunities for large hydropower generation in NE India.</li> <li>▪ FY08: Assess opportunities to improve investments in renewable energy.</li> </ul> <p><b>Project Investments and Lending</b></p> <ul style="list-style-type: none"> <li>▪ Possible clean energy lending program of up to \$4 billion for FY07–FY09.</li> <li>▪ Projected programmatic lending to states (\$1–2 billion over 2008–13 period).</li> </ul>	<p><b>Strategy, Knowledge and Policy</b></p> <ul style="list-style-type: none"> <li>▪ India ESW program on going. New ESW added on transport and climate change.</li> </ul> <p><b>Project Investments and Lending</b></p> <ul style="list-style-type: none"> <li>▪ Projects to be approved in FY08: <ul style="list-style-type: none"> <li>- Rampur Hydropower Project (IBRD/IDA)</li> <li>- Coal –Fired Power Rehabilitation project (IBRD/IDA)</li> </ul> </li> <li>▪ Carbon Finance: LOIs signed for hydro (Rampur) and new transmission; total projects under supervision 3 (\$8.6 million); projects under preparation—16 (\$241 million).</li> </ul>
<p><b>China</b></p> <p><i>China's economic growth, coupled with relatively high dependence on coal for power supply will make it the world's largest emitter of GHGs before 2010. Study will focus on ways to mitigate this trend.</i></p>	<p><b>Strategy, Knowledge, and Policy</b></p> <ul style="list-style-type: none"> <li>▪ FY08: ESW – China Low Carbon Development Strategy.</li> <li>▪ FY08 China Coal Sector Strategy.</li> <li>▪ FY08: AAA Reform of district heating sector.</li> <li>▪ FY08: AAA Economic dispatch of power plants – potential reduction in coal consumption estimated to be over 150 mt/ year.</li> <li>▪ FY08: National- and provincial-level guidelines and regulations for coal mine methane collection and utilization.</li> </ul> <p><b>Project Investments and Lending</b></p> <ul style="list-style-type: none"> <li>▪ FY08-09: \$500 million (IBRD).</li> <li>▪ FY08-09: \$34 million (GEF or GEF/IBRD grants/lending).</li> <li>▪ FY08-09: Avg. 4 projects/year (Carbon Finance).</li> </ul>	<p><b>Strategy, Knowledge and Policy</b></p> <ul style="list-style-type: none"> <li>▪ All ESWs on track.</li> </ul> <p><b>Project Investments and Lending</b></p> <ul style="list-style-type: none"> <li>▪ Projects to be considered by the board in FY08: <ul style="list-style-type: none"> <li>- China Energy Efficiency Financing (IBRD/GEF)</li> <li>- Thermal Power Efficiency Project (GEF)</li> <li>- China Xinjiang Aksu Pig Farm Biogas Project(Carbon Finance)</li> <li>- Shanghai Laogang Landfill Carbon Finance (Carbon Finance)</li> </ul> </li> </ul>
<p><b>Brazil</b></p> <p><i>Bioenergy and forestry programs may be important component of the potential to reduce global carbon concentrations.</i></p>	<p><b>Strategy, Knowledge, and Policy</b></p> <ul style="list-style-type: none"> <li>▪ FY07 and ongoing: Activities include energy efficiency, cogeneration, renewable energy, rehabilitating inefficient thermal and hydropower plants, and building new hydropower plants to be included within the Low-Carbon Country Case Study.</li> <li>▪ FY07/08: Work in Amazon focuses on reducing pressures on standing forests, sustainable management of forests, and avoided deforestation.</li> </ul> <p><b>Project Investments and Lending</b></p> <ul style="list-style-type: none"> <li>▪ FY07-09: IBRD program to be discussed with GoB.</li> </ul>	<p><b>Strategy, Knowledge and Policy</b></p> <ul style="list-style-type: none"> <li>▪ Avoided deforestation proposals from Mato Grosso and Amazonas State being discussed.</li> <li>▪ Low Carbon Country Case Study under discussion (Concept note reviewed).</li> <li>▪ MoU on refurbishment of Hydro dams to be signed.</li> <li>▪ Study on biodiesel under way.</li> </ul> <p><b>Project Investments and Lending</b></p> <ul style="list-style-type: none"> <li>▪ Preparation of loan for a national solid waste program with focus on</li> </ul>

**Goal: Prepare Low-Carbon Country Case Studies in G8+5 countries that identify a development path that respects poverty alleviation and economic growth targets with lower carbon emissions**

**Results: Intermediate results for India low-carbon study expected by October 2007; Mexico and China studies started in Q4 FY07; Brazil and South Africa are in the early phases of discussion**

<i>Impact</i>	<i>Target Commitments</i>	<i>Progress Update (current and planned up to September 2007)</i>
<p><b>Mexico</b></p> <p><i>Significant potential for energy efficiency as well as large wind and solar resources can contribute to Mexico's development and lower global GHG emissions.</i></p>	<p><b>Strategy, Knowledge, and Policy</b></p> <ul style="list-style-type: none"> <li>▪ FY07/08: Low-Carbon Country Case Study.</li> <li>▪ FY08: Energy Security and Climate Change.</li> </ul> <p><b>Project Investments and Lending</b></p> <ul style="list-style-type: none"> <li>▪ FY07-09: IBRD program to be discussed with GoM.</li> </ul>	<p>climate change.</p> <p><b>Strategy, Knowledge and Policy</b></p> <ul style="list-style-type: none"> <li>▪ Low Carbon Country Case under advanced preparation.</li> <li>▪ On track for delivery in FY08.</li> </ul> <p><b>Project Investments and Lending</b></p> <ul style="list-style-type: none"> <li>▪ Project approved in FY07: Mexico Hybrid Solar Thermal Integrated Cycle (GEF).</li> </ul>
<p><b>South Africa</b></p> <p><i>Significant potential for reducing the growth of GHG emissions, in light of the power expansion plan and heavy reliance on coal.</i></p>	<p><b>Strategy, Knowledge, and Policy</b></p> <ul style="list-style-type: none"> <li>▪ ESW (FY08) South Africa Low-Carbon Country Case Study.</li> </ul> <p><b>Project Investments and Lending</b></p> <ul style="list-style-type: none"> <li>▪ Potential GEF and carbon projects.</li> </ul>	<p><b>Strategy, Knowledge and Policy</b></p> <ul style="list-style-type: none"> <li>▪ Low Carbon Country Case under preparation.</li> </ul> <p><b>Project Investments and Lending</b></p> <ul style="list-style-type: none"> <li>▪ Project approved in FY07: South Africa Renewable Energy Market Transformation Project (GEF).</li> </ul>

**Table A3-3. Transition to a Low-Carbon Economy; Goal: Develop New Methodologies and Mechanisms**

<b>Goal: Develop New Methodologies and Mechanisms for Carbon Financing and Innovative Mechanisms to Blend Existing Financing</b>		
<b>Impact</b>	<b>Target Commitments</b>	<b>Progress Update (current and planned up to September 2007)</b>
<i>Facilitate programmatic and sectoral investments through the carbon market and demonstrate that carbon credits from deforestation are verifiable.</i>	<p><b>Strategy, Knowledge and Policy</b></p> <ul style="list-style-type: none"> <li>▪ FY08: Board paper to propose development of two new carbon facilities focusing on a post-2012 market.</li> <li>▪ FY07/08: Develop methodology for avoided deforestation; new initiatives to develop capacity, pilot policy reforms and invest to reduce emissions from deforestation and forest degradation.</li> </ul>	<p><b>Strategy, Knowledge and Policy</b></p> <ul style="list-style-type: none"> <li>▪ Two new carbon facilities, namely the Carbon Partnership Facility (CPF) and the Forest Carbon Partnership Facility (FCPF), are being prepared and planned to be proposed to the Board in September 2007 and could be launched during the 13th UNFCCC conference in Bali in December 2007.</li> <li>- CPF aims at scaling up the impact of carbon finance on climate change mitigation in the longer term and post-2012.</li> <li>- FCPF aims at piloting programs that avoid deforestation and land degradation.</li> <li>▪ Highlights of projects approved in FY07:               <ul style="list-style-type: none"> <li>- Colombia: San Nicolas Carbon Sequestration Project (Carbon Finance)</li> <li>- Colombia: Caribbean Savannah Carbon Sink Project (Carbon Finance)</li> </ul> </li> </ul>
<i>Green investment schemes will expand the opportunities to cost-effectively reduce GHG emissions.</i>	<ul style="list-style-type: none"> <li>▪ FY07/08: Develop methodology for Green Investment Schemes.</li> <li>▪ FY08-09: Latvia and Ukraine Green Investment Schemes expected to become operational through pilot transactions initiated by governments in Central and Eastern Europe, including Latvia and Ukraine.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Green Investment Scheme (GIS) Options Studies, including work on methodology, completed for Latvia and Ukraine, and follow up TA and PHRD grants to support implementation of GIS ongoing. Similar work with Russia to start by September.</li> <li>▪ Highlights of GIS projects approved in FY07:               <ul style="list-style-type: none"> <li>- Ukraine: Green Investments Scheme Options Study</li> <li>- Latvia: Green Investment Scheme Options Study</li> <li>- Bulgaria: Green Investments Funding Framework Development</li> </ul> </li> <li>▪ GIS Projects under implementation in FY08:               <ul style="list-style-type: none"> <li>- Latvia - Reimbursable TA to support the Government of Latvia with GIS Implementation – under implementation.</li> </ul> </li> </ul>
<i>Demonstrate that energy efficiency projects can qualify for carbon financing.</i>	<ul style="list-style-type: none"> <li>▪ FY07/08: Issues paper to develop methodology for energy efficiency.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Carbon Finance/ Energy Efficiency network being developed with launch of network tentatively planned for the UNFCCC Conference in Bali.</li> <li>▪ Study on scaling-up demand-side Energy Efficiency (EE) improvements is near completion. Paper on achieving greenhouse gas emissions reductions through EE lighting projects was published. Work plan for scaling-up EE and CF, including new methodologies is under development.</li> </ul>
<i>Reduce costs of carbon offsets through auction mechanisms</i>	<ul style="list-style-type: none"> <li>▪ FY07: Develop auction platform and related legal documentation— first auction conducted by end of FY07.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Development of the platform completed. Pilot projects to be developed.</li> </ul>
<i>Efficient and innovative uses of existing financing mechanisms</i>	<ul style="list-style-type: none"> <li>▪ FY08: Design of country-specific clean energy financing programs that combine IBRD, IFC, MIGA, GEF, and carbon financing.</li> <li>▪ FY07/08: Design innovative approaches to support clean energy investments via blending of existing financial instruments.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Paper on design of country-specific clean energy financing programs in draft form and low-carbon studies underway.</li> <li>▪ Included in the Progress Report.</li> </ul>
<i>Design new and innovative mechanisms that can provide the scale of investments needed to transition to a low-carbon economy</i>	<ul style="list-style-type: none"> <li>▪ FY08: Further evaluation and design of clean energy financing mechanisms in consultation with governments, GEF, and the private sector.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Participation in CEIF Financial Institutions working group meetings in London.</li> </ul>

**Table A4. Adaptation to Climate Variability and Change**

<b>Goal: Pilot Instruments on a Country-by-Country Basis to Scale Up Adaptation Activities</b> <b>Results: Set the Stage for Mainstreaming Adaptation into the Development Process</b>		
<i>Impact</i>	<i>Target Commitments</i>	<i>Progress Update (current and planned up to September 2007)</i>
<p><b>Climate Risk Assessment</b></p> <p><i>Analytical studies, a climate risk screening tool and a database will deliver robust and easy-to-use methodologies and tools for assessing climate risks and suggesting adaptation options in development projects and programs in different Regions.</i></p>	<p><b>Strategy, Knowledge, and Policy</b></p> <ul style="list-style-type: none"> <li>▪ Approximately 25 TA or sector analytical work are planned or underway.</li> <li>▪ FY07-09: Complete the prototype screening tool for:               <ul style="list-style-type: none"> <li>- Agriculture-irrigation sectors for South Asia and Africa and biodiversity-NRM sector plus some aspects of infrastructure (i.e. coastal planning and rural roads) globally (FY08)</li> <li>- All sectors for Africa (FY08)</li> <li>- All sectors for all regions (FY09); about \$5 million/year grant funding for screening to be integrated in upstream analytical work such as CEAs</li> </ul> </li> <li>▪ FY07: Develop a systematic web/CD database for Africa including:               <ul style="list-style-type: none"> <li>- development of relevant experience on adaptation to climate risks</li> <li>- core climate data and associated risks FY08: complete web/CD database for all regions.</li> </ul> </li> </ul> <p><b>Project Investments and Lending</b></p>	<p><b>Strategy, Knowledge, and Policy</b></p> <ul style="list-style-type: none"> <li>▪ Highlights of analytical work in FY07:               <ul style="list-style-type: none"> <li>- Ethiopia: Weather Risk Management</li> <li>- India: Adaptation Strategies and Options to Address Climate Variability and Change in Rural India</li> </ul> </li> <li>▪ Highlights of analytical work underway:               <ul style="list-style-type: none"> <li>- Morocco: Adaptation to Climate Change in Agriculture</li> <li>- Morocco: Climate Change Impacts on City Development</li> <li>- Yemen: Adaptation to Climate Change (GEF)</li> <li>- Nepal: Adaptation to Climate Variability and Change</li> </ul> </li> <li>▪ Screening Tool – First release covering agriculture-irrigation sectors for South Asia and Africa and biodiversity-NRM sector plus some aspects of infrastructure (i.e. coastal planning and rural roads) globally.</li> <li>▪ Initiated development of systematic database.</li> </ul> <p><b>Project Investments and Lending</b></p> <ul style="list-style-type: none"> <li>▪ Highlights of projects under preparation:               <ul style="list-style-type: none"> <li>- Regional (Bolivia, Ecuador and Peru): Adaptation to the Impact of Rapid Glacier Retreat in the Tropical Andes (GEF)</li> <li>- Mexico: Adaptation to Climate Change in the Coastal Wetlands in the Gulf of Mexico (GEF)</li> <li>- Guyana: Adaptation to Climate Change (GEF)</li> </ul> </li> </ul>
<p><b>Good Practice Guidance and Capacity</b></p> <p><i>Guidance will be focused on selected countries and few priority sectors: i.e., water and agriculture, major infrastructure, and large coastal cities with a goal to identify specific achievable prioritized actions and</i></p>	<p><b>Strategy, Knowledge, and Policy</b></p> <ul style="list-style-type: none"> <li>▪ FY07/08: Three cross-sectoral country-wide risk assessments on climate variability/ change; FY08: Six cross sectoral assessments.</li> <li>▪ FY08: Incorporate adaptation in 5 Global Facility for Disaster Reduction and Recovery (GFDRR) Country Assessments; FY09: 10 adaptation assessments.</li> <li>▪ FY08: Good practice guidance in assessing and adapting to</li> </ul>	<p><b>Strategy, Knowledge, and Policy</b></p> <ul style="list-style-type: none"> <li>▪ Cross-sectoral studies initiated include:               <ul style="list-style-type: none"> <li>- Agriculture-NRM cross-sectoral study</li> <li>- Water sector study including all water sub-sectors</li> <li>- Coastal cities cross-sector study</li> <li>- Cross-sectoral social dimensions of climate change studies.</li> </ul> </li> <li>▪ Common template for Disaster Risk Reduction and Climate Risk Assessments under preparation and will be applied to five country case studies: Mozambique, Malawi, Nepal, Nicaragua and Vietnam.</li> <li>▪ Preparation of guidance in mainstreaming adaptation in different sectors</li> </ul>

<b>Goal: Pilot Instruments on a Country-by-Country Basis to Scale Up Adaptation Activities</b>		
<b>Results: Set the Stage for Mainstreaming Adaptation into the Development Process</b>		
<i>Impact</i>	<i>Target Commitments</i>	<i>Progress Update (current and planned up to September 2007)</i>
<i>opportunities</i>	climate risk: (i) water-agriculture-rural infrastructure; (ii) low-lying coastal cities; (iii) integration of adaptation into disaster reduction programs; and, (iv) large infrastructure including insurance models.	underway.
<b>Financing Climate Risk Assessment and Adaptation</b>  <i>Approximately 40 projects (loans and grants) in 30 countries are under way or planned</i>	<b>Strategy, Knowledge, and Policy</b> <ul style="list-style-type: none"> <li>▪ FY08: Economics of Climate Change analysis in LAC.</li> <li>▪ FY08: Joint IFC-IMF report to assess financial implications of climate proofing development.</li> <li>▪ FY08: Assess options for increasing the flow and reliability of funds for adaptation.</li> </ul> <b>Project Investments and Lending</b> <ul style="list-style-type: none"> <li>▪ FY07/08: Pilot projects to mainstream adaptation into Bank operations in Kenya, Tanzania, Burkina Faso; FY08: Additional three pilots in other regions.</li> <li>▪ Grant funding (including GEF) for adaptation projects expected to increase from \$5million (FY06/07) to \$60million (FY08/09) Expected to leverage: <ul style="list-style-type: none"> <li>- \$500 million in additional IBRD, IDA, and other funding</li> <li>- \$50 million/ year investments in related capacity development and institutional reform (FY09-12)</li> <li>- 10% to 20% increase in lending for irrigation, sustainable land management, flood control, coastal infrastructure (FY10).</li> </ul> </li> </ul>	<b>Strategy, Knowledge, and Policy</b> <ul style="list-style-type: none"> <li>▪ In preparation.</li> <li>▪ IMF assessments in India and Ethiopia under way; IFC consultancy in preparation; multi-donor workshop on economic analysis for adaptation held; cooperation with UNFCCC Secretariat on Financing Climate Change to be delivered in December '07.</li> <li>▪ Under preparation.</li> </ul> <b>Project Investments and Lending</b> <ul style="list-style-type: none"> <li>▪ Pilot Projects mainstreaming adaptation under preparation in different Regions include: <ul style="list-style-type: none"> <li>- LAC: Over 15 projects for coastal management, glacier retreat, water management, agriculture adaptation</li> <li>- MNA: Agrobiodiversity and adaptation (Yemen GEF)</li> <li>- AFR: Sustainable land management (Burkina Faso), Drought management (Kenya), Flood management (Mozambique)</li> <li>- ECA: Hydromet and early warning systems</li> <li>- EAP: Impact of climate change on large-scale irrigation in China; Small island risk management in the Pacific; Papua New Guinea CAS in preparation and to include adaptation section</li> <li>- SAR: Drought management and Natural Risk Management (Andra Pradesh). <ul style="list-style-type: none"> <li>▪ Highlights of adaptation projects in FY07:</li> </ul> </li> <li>- Morocco: Water Sector DPL (including reforms aimed at promoting water savings at the water basin level)</li> <li>- Jordan: Integrated Ecosystem Management in the Jordan Rift Valley Project (GEF).</li> </ul> </li> </ul>
<b>Adaptation Awareness, Capacity and Results Dissemination</b>  <i>Identify and deliver capacity and information needs directly into projects and facilitate the maintenance of capacity within countries</i>	<b>Strategy, Knowledge, and Policy</b> <ul style="list-style-type: none"> <li>▪ FY08: Customized awareness raising, capacity assessment and building tools in each Region.</li> <li>▪ FY08: Report on methods for delivery of focused capacity building at project and program level.</li> <li>▪ FY07-08: Develop information and trainer networks to maintain capacity. Example of African network with at least two core support institutions in Africa. 4 countries with active capacity maintenance programs.</li> </ul>	<b>Strategy, Knowledge, and Policy</b> <ul style="list-style-type: none"> <li>▪ Under development.</li> <li>▪ On track to be delivered.</li> <li>▪ Workshops with African and LDC delegates held in Nairobi (Nov 06) and Bonn (May 07) on building of regional networks to share experience.</li> <li>▪ East Asia Environment Monitor 2007, Adapting to Climate Change, a report on trends and projections of the expected impacts of climate change for all the countries of EAP, was approved and published in June 2007.</li> </ul>



## ANNEX B. COORDINATION WITH MULTILATERAL DEVELOPMENT BANKS ON CLIMATE CHANGE

1. The 2005 Gleneagles communiqué on clean energy and climate change recognized the “serious and linked challenges of tackling climate change, promoting clean energy and achieving sustainable development globally”. The communiqué encouraged the MDBs to increase dialogue with client countries on climate change mitigation and adaptation activities. In response to this call, all the MDBs finalized new strategy papers and commenced implementation of their new policies and programs.

2. MDBs were encouraged to take this further by developing areas for joint action which would allow them to exploit synergies, identify gaps and agree on joint activities. To this end, a joint review was commissioned by the MDBs and is underway. A first draft has been completed and is being reviewed by the MDBs. It is expected to be finalized by October 2007.

3. The report has a number of specific purposes. These include: providing the MDBs shareholders and stakeholders with a summary and overview of the on-going and planned work of the MDBs on clean energy, climate change and adaptation; further strengthening the already considerable cooperation between the MDBs on this agenda, including the identification of gaps in their collective efforts together with opportunities for more systematic cooperation and leveraging of each others efforts; helping to develop a set of measurable indicators which would allow key stakeholders to monitor overall progress and identify problems; furthering the process of reaching a common understanding on key methodologies, e.g., calculation of carbon footprints, climate risk assessment tools; and encouraging the sharing of the lessons of experience and best practice across the MDBs. The study would also institutionalize a database template that is acceptable to all the MDBs as a means to update and exchange information on an ongoing basis.

4. This joint effort clearly shows that MDBs share a common vision regarding approaches and actions to tackle the challenge posed by climate change. Prior to the Gleneagles communiqué on climate change, MDBs had already cooperated closely on a number of issues. In the post-Gleneagles period, this cooperation has accelerated and has become much more intense. In particular, each MDB has consulted closely with its sister institutions in developing/revising its overall climate change/energy strategies to respond to the new global priorities. The result will be more consistency in policies, programs and instruments across the international financial institutions. Additional initiatives are being taken to increase the level of collaboration among the MDBs on climate change activities; these are seen to be particularly important as the MDBs move from strategy formulation to implementation.

5. The early findings of this work identifies areas where working together and enhanced cooperation could yield further dividends:

- *Measuring and monitoring performance.* All the MDBs and their shareholders have recognized the importance of setting monitorable targets.

Each MDB has enunciated specific targets and while these will be critical in assessing the MDBs collective and individual performance they are output as opposed to outcome targets and do not measure the carbon impact of the MDBs programs on the ground. Over time, it is suggested that the MDBs attempt to jointly articulate a clear set of outcome targets.

- *Strengthening the cooperative framework.* The report notes that the MDBs have established a close working relationship on their climate change activities. They have developed a coherent set of strategies designed to tackle the climate agenda and there are numerous examples of close cooperation in individual countries. However, as the emphasis shifts from strategy formulation to implementation, it is important that the lessons of experience are promptly shared across the institutions and more importantly the clients themselves. For example, key countries in Asia and Latin America could profit significantly from the knowledge gained by EBRD in implementing its energy efficiency programs and the lessons learned by the World Bank in developing low-carbon strategies for the G8+5 countries will be of direct relevance to many of the clients of the regional banks. In this connection, it is suggested that the MDBs develop mechanisms to more systematically share these lessons.
- *Building a more coherent framework for public-private partnership to address climate change.* In March 2007 the EBRD, the World Bank, the World Economic Forum, and the World Business Council for Sustainable Development sponsored a conference in London designed to identify steps for the private sector together with the MDBs to scale up investments designed to address climate change. Working groups on clean energy, renewable energy, energy efficiency, financial instruments, and adaptation, each co-chaired by MDB and private sector representatives, were formed as a result of this conference. The set of findings and recommendations of each working group are being developed over the coming months and will be presented at the Gleneagles Ministerial Meeting in Germany in September 2007 and at an event concurrent with the World Bank Annual Meeting in Washington in October 2007.
- *Measuring the IFI carbon footprint.* MDBs have also agreed to collaborate on developing a harmonized approach to assessment and reporting of portfolio GHG emissions. Most financial institutions are only at the beginning stages of assessing their portfolio emissions, and are still deciding key questions such as what methodology to use, what sectors to cover, and how to aggregate and report what they find.
- *Reducing emissions from thermal power plants.* Several of the MDBs have significant programs designed to reduce greenhouse gas emissions from thermal plants. Each MDB is currently undertaking major individual initiatives; however, it seems that there are also significant opportunities for

the MDBs to leverage their collective efforts on thermal power and to help their clients achieve significant GHG reductions per megawatt.

- *Promoting energy efficiency and renewables.* Some of the MDBs such as the EBRD, World Bank and EIB have already accumulated significant experience in promoting, designing and implementing EE and RE in Europe. As a result, it would be beneficial to developed mechanisms designed to allow the developing world to learn from this experience.
- *Reducing the rate of deforestation.* Despite the importance of deforestation as a major contributor to GHG (close to 20% of the total emissions) the MDBs assistance programs, advisory, and investment in this area remain quite modest. Reducing the rate of deforestation is an exceedingly complex policy, regulatory, and financial challenge for which the traditional products of the MDBs are not necessarily well suited to meet. However, given the importance of urgently tackling this global issue, it is suggested that the MDBs, individually and collectively, substantially raise the priority they attach to reducing the rate of deforestation and articulate a set of remedial strategies and programs.
- *Reducing carbon emissions in transport.* The transport sector is a major source of carbon emissions in the developing world; currently estimated at 13.5% of global emissions and rising rapidly as incomes increase. Given the critical impact of road transport on climate change in Asia, the ADB has completed an important analytical paper on this issue and is developing an action plan designed to address the problem. However, implementation has only just commenced and most of the other MDBs are only beginning to tackle this agenda item. And,
- *Increasing the work on adaptation.* The work of the MDBs on adaptation to climate change is quite modest relative both to their mitigation activities and the global adaptation challenge. This is not surprising given that adaptation is only just emerging as a major global priority. The impact of climate change varies significantly from one region to another; for example, the clients of the AfDB will be far more seriously affected than those of EBRD. However, it would seem to be prudent, for the MDBs, especially the World Bank, the ADB, the IDB and the AfDB to develop a more ambitious and coherent set of “adaptation products” (investment and policy) designed to leverage each others strengths and build the needed staff capacities.