



**World
Bank
Group**

**Development and Climate
Change: a Strategic Framework
for the World Bank Group**

Completion Report, FY09–11

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List of Abbreviations and Acronyms

AAA	Analytical and advisory activities	EC	European Commission
ADB	Asian Development Bank	ECA	Europe and Central Asia Region
AF	Adaptation Fund	EE	Energy efficiency
AfD	Agence Française de Développement	ENV	Environment Department
AFR	Africa Region	ERPA	Emission Reduction Purchase Agreement
AGF	United Nations Secretary-General's High-Level Advisory Group on Climate Change Financing	ESMAP	Energy Sector Management Assistance Program
ARD	Agriculture and Rural Development Department	ESW	Economic and sector work
AusAID	Australian Agency for International Development	FAO	Food and Agriculture Organization
BioCF	BioCarbon Fund	FCPF	Forest Carbon Partnership Facility
BRT	Bus rapid transit	FIP	Forest Investment Program
CAADP	Comprehensive African Agriculture Development Programme	GCF	Green Climate Fund
CAS	Country Assistance Strategy	GEF	Global Environment Facility
Cat DDO	Catastrophe Deferred Drawdown Option	GFDRR	Global Facility for Disaster Risk Reduction
CCS	Carbon capture and storage	GHG	Greenhouse gas
CDM	Clean Development Mechanism	GIZ	Deutsche Gesellschaft fuer Internationale Zusammenarbeit
CEA	Country Environmental Assessment	HCFC	Hydrochlorofluorocarbon
CEET	Carbon emissions estimator tool	IBRD	International Bank for Reconstruction and Development
CER	Certified Emission Reduction	ICT	Information and communication technology
CFOs	Climate finance options	ICZM	Integrated coastal zone management
CGIAR	Consultative Group on International Agricultural Research	IDA	International Development Association
Ci-Dev	Carbon Initiative for Development	IEA	International Energy Agency
CIC	Climate Innovation Center	IEG	Independent Evaluation Group
CIF	Climate Investment Funds	IFC	International Finance Corporation
CNG	Compressed natural gas	IMF	International Monetary Fund
CODE	Committee on Development Effectiveness	JICA	Japan International Cooperation Agency
COP	Conference of Parties	KP	Knowledge product
CSP	Concentrated solar power	LAC	Latin America and the Caribbean
CTF	Clean Technology Fund	LCD	Low-carbon development
DAC	Development Assistance Committee	LCR	Latin America and the Caribbean Region
DPL	Development Policy Loan	LDCF	Least Developed Countries Fund
DPO	Development Policy Operation	LED	Low-emissions development
DRM	Disaster Risk Management	LULUCF	Land use, land-use change, and forestry
EAP	East Asia and the Pacific Region		

MAC	Marginal abatement cost	SCCF	Special Climate Change Fund
MAIN	Mitigation Action Implementation Network	SCF	Strategic Climate Fund
MDB	Multilateral development bank	SDV	Social Development Department
MDG	Millennium Development Goal	SIDS	Small-island developing states
MDTF	Multi-Donor Trust Fund	SIP	Strategic Investment Program
MENA	Middle East and North Africa	SLM	Sustainable land management
MIGA	Multilateral Investment Guarantee Agency	SMEs	Small and medium enterprises
MNA	Middle East and North Africa Region	SPCR	Strategic Program for Climate Resilience
MOU	Memorandum of Understanding	SREP	Scaling Up Renewable Energy in Low-Income Countries Program
MRV	Measurement, reporting, and verification	STAQ	Regional sustainable transport and air quality
NAMA	Nationally Appropriate Mitigation Action	TA	Technical assistance
NAP	National Adaptation Plan	TF	Trust fund
NAPA	National Adaptation Programme of Action	TTL	Task team leader
NCCAP	National Climate Change Action Plan	UN	United Nations
NEPAD	New Partnership for Africa's Development	UNCSD	United Nations Conference on Sustainable Development
OCHA	Office for the Coordination of Humanitarian Affairs	UNDP	United Nations Development Programme
ODA	Official Development Assistance	UNEP	United Nations Environment Programme
OECD	Organisation for Economic Co-operation and Development	UNFCCC	United Nations Framework Convention on Climate Change
OPCS	Operations policy and country services	UNICEF	United Nations Children's Fund
PIN	Project idea note	UNISDR	United Nations International Strategy for Disaster Reduction
PMR	Partnership for Market Readiness	VPU	Vice-Presidential Unit
PoA	Programme of Activities	WBG	World Bank Group
PPCR	Pilot Program for Climate Resilience	WBI	World Bank Institute
PPIAF	Public-Private Infrastructure Advisory Facility	WDI	World Development Indicators
PPP	Public-private partnership	WDR	World Development Report
PSIA	Poverty and Social Impact Analysis	WHO	World Health Organization
RE	Renewable energy	WSP	Water and Sanitation Program
REDD	Reducing Emissions from Deforestation and Forest Degradation		
REDD+	Reducing Emissions from Deforestation and Forest Degradation, forest carbon stock conservation, sustainable management of forests, and enhancement of forest carbon stocks		
SAR	South Asia Region		

Note: All dollars are U.S. dollars unless otherwise indicated.

Development and Climate Change: a Strategic Framework for the World Bank Group—Completion Report, FY09–11

1 Context

1. *The Strategic Framework on Development and Climate Change (SFDC) for the World Bank Group was requested by the Development Committee during the World Bank/IMF Annual Meeting in 2007 and endorsed by the Development Committee on October 12, 2008.*

2. The Framework provided a roadmap for climate action for the World Bank Group (WBG) over fiscal years 2009–11, setting out WBG’s objectives, principles, areas of focus, and major initiatives in the field of climate change.

3. Its starting point was a strong recognition that the core mission of the WBG is to promote inclusive growth and poverty reduction. Addressing climate change is an essential part of this mission. Particular attention was given to strengthening the resilience of economies and communities to increasing climate risks and adaptation.

4. The Framework was organized around six action areas:

1. Supporting climate actions in country-led development processes
2. Mobilizing additional concessional and innovative finance
3. Facilitating the development of market-based financing mechanisms
4. Leveraging private sector resources
5. Supporting accelerated development and deployment of new technologies
6. Stepping up policy research, knowledge, and capacity building.

5. It acknowledged the need for decision making under uncertainty about future climate change scenarios, and thus proposed a significant focus on improving knowledge, capacity, and learning-by-doing. It stressed the need for the WBG to be flexible to incorporating new developments in knowledge and negotiations into the Framework.

6. An interim progress report (May 2010)¹ documented the advances made in the WBG’s climate change agenda since approval of the Framework. It emphasized the need to refine priorities to respond to future internal and external developments, and highlighted progress on (a) mainstreaming climate actions; (b) continued growth in low-carbon financing; (c) scaling up new and innovative climate financing; and (d) building up and disseminating knowledge on climate change.

¹World Bank. 2010. “Development and Climate Change: A Strategic Framework for the World Bank Group – Interim Progress Report.” (SecM2010-0227) Washington, DC: World Bank.

2 A Changing Global Context

7. The WBG recognizes the primacy of the United Nations Framework Convention on Climate Change (UNFCCC) process for achieving long-term cooperative action on climate change. Deliberations under the UNFCCC have helped guide our fast-growing support to global climate action over fiscal years 2009–11, and will continue to do so in the future. When the Strategic Framework was launched, there were still expectations that a global agreement on climate would be forthcoming soon. The absence of such an agreement has made our engagement in climate change more challenging, but also more urgent and more productive. Global progress on mitigation has been less than expected and most experts now believe that it is very unlikely that increases in average global temperatures will be kept to the 2 degree goal. This poses a greater threat to developing countries, and their requests for WBG assistance for adaptation has grown more than expected. At the same time, a growing number of developing countries have indicated that they want to become part of the solution, and are seeking support for moving toward lower carbon growth. Today the WBG is providing support to 130 countries on climate change, and all country strategies include climate change as a core area for WBG support.

8. At the Durban COP in December 2011, the Parties agreed to reach an agreement with legal force by 2015, to become effective from 2020 (Box 1). While highly positive, this means that voluntary actions, supported by the WBG and others, are more important than ever. At the same time the WBG can—through demonstrating that success is possible at scale at reasonable costs—make a global deal more likely.

9. Based on the current status of UNFCCC negotiations, it does not appear that a globally binding regulatory regime setting forth emission reduction obligations will come into force until the end of this decade. Therefore voluntary action and leadership are needed if irreversible climate change impacts are to be avoided. There are, however, some promising signals. Nearly 90 countries have registered plans with the UNFCCC to address the emissions intensity of their growth by 2020. This includes 51 developing countries that have identified Nationally Appropriate Mitigation Actions (NAMAs), a quarter of which are low-income countries. At the same time, 48 least-developed countries (LDCs) have submitted their National Adaptation Plans of Action (NAPAs), which identify priority activities to adapt to climate change. The COP-17 decision calls for least-developed countries to develop national adaptation plans (NAPs), which will focus on medium and long-term adaptation needs.

3 Achievements and Lessons

10. Highlights of the WBG’s engagement across six action areas prioritized in the SFDC are presented in this section. Supporting information is provided in annexes 1 and 3.

Action Area 1: Support climate actions in country-led development processes

11. At the time of its approval, the SFDC committed to a demand-driven process to support country-led climate actions. It acknowledged that the WBG's response would depend on its ability to provide additional financing, facilitate technology transfer, and build knowledge and capacity. It identified a number of operational priorities, including (a) strengthening climate resilience, (b) realizing multiple benefits of sustainable development, and (c) taking advantage of low-carbon growth opportunities.

Box 1. The “Durban Package”

The “Durban Platform” at COP-17 outlined a path toward negotiating a global and legally binding agreement on emission reductions by 2015 that will include all countries in accordance with their common but differentiated responsibilities and respective capabilities. This global agreement would allow time for ratification and take effect from 2020. A second commitment period of the Kyoto Protocol was also agreed, as was the design instrument for the Green Climate Fund, which will take immediate steps toward full operationalization and capitalization. The details of the second commitment period of the Kyoto Protocol are to be negotiated in Doha (COP-18) at the end of 2012. The second commitment period will only enter into force when ratified by a sufficient number of countries. Further operationalization of the institutional modalities for the Technology Mechanism, the Adaptation Committee, and the establishment of a registry of developing country mitigation actions were similarly agreed. Other important decisions included (a) the establishment of a forum and work program on unintended consequences of climate change actions and policies; (b) procedures to allow carbon-capture and storage projects under the Kyoto Protocol's Clean Development Mechanism; and (c) development of a new market-based mechanism to assist developed countries in meeting part of their targets or commitments under the convention. COP17 also moved closer to including a work program on agriculture. The issue will be debated in June 2012, and a decision is expected at COP18.

12. ***Strong Mainstreaming across the WBG.*** One of the biggest achievements during the SFDC implementation period has been the growing integration of climate change considerations at the strategic level (Box 2). In fiscal 2011, 100 percent of approved country assistance or partnership strategies prepared in consultation with client countries included climate change as a priority. A growing number of sector strategies—ranging from social development such as education and social protection to urban and transport infrastructure—mainstreamed climate change considerations, making it easier to support climate action in regular operations. For example, the new World Bank Group Environment Strategy—which was endorsed by the Bank Board's Committee of Development Effectiveness in January 2012—

articulates a vision for a “*Green, Clean and Resilient World for All*” and prioritizes scaled-up action in the following key areas over the next 10 years: a new World Bank-led Global Partnership for Oceans; Wealth Accounting and Valuation of Ecosystem Services (WAVES); low-emission development; pollution management; adaptation to climate change; disaster risk management; and improving resilience of small-island states.

13. The infrastructure lending portfolio has also moved toward less-GHG intensive projects in response to country demand and new climate considerations in Bank strategies (Box 3). For example, there has been a significant increase in renewable energy investments and projects that facilitate a modal shift in transport. Another good example is the move toward integration of adaptation in disaster risk reduction programs in partnership with the Global Facility for Disaster Reduction and Recovery (GFDRR).

14. Similarly, in recognition of agriculture as a sector that both contributes to, and is impacted by climate change, the Bank’s upcoming Agriculture Action Plan will include an increased focus on environmental services and sustainability. This includes the use of climate-smart agriculture as a way to increase farm productivity and incomes and make agriculture more resilient to climate change while also contributing to mitigation.

15. Country demand for assistance to build climate resilience rose significantly, recognizing the urgent challenge posed to the well-being of the poorest communities. Climate Resilient Development is a special theme of IDA16, and additional resources are provided through the replenishment to support the incremental cost of addressing climate risks and impacts at a project level. The WBG is actively engaged in the \$1 billion Pilot Program for Climate Resilience (PPCR) to support efforts on adaptation.

16. The WBG also took action to reduce its corporate greenhouse gas emissions through a comprehensive program to measure and manage its emission sources. For example, technological upgrades and improvements in operational efficiency have helped reduce emissions by 7 percent compared to 2006 levels at the Bank’s headquarters in Washington, DC. To help maintain carbon neutrality, the WBG purchases verified emissions reduction credits for facilities and travel emissions, and renewable energy certificates for emissions related to electricity consumption. In fiscal 2011, the WBG maintained carbon neutrality for its global operations with the purchase of carbon credits from a composting project in Pakistan.

17. The WBG has successfully supported the SFDCC’s operational priority areas and mainstreamed climate considerations into the WBG’s core development agenda. The early establishment of a group-wide Climate Change Management Group and the appointment of regional climate change coordinators were fundamental in effectively translating SFDCC goals into tangible strategies and investment portfolios. The appointment of a WBG Vice-President-level Special Envoy on Climate Change in 2010 created a focal point for mainstreaming climate

change actions across the WBG, as well as the Group's support to clients and global processes. Moving forward and building on this experience, mainstreaming climate through the programs of all sectors is now the focus—supported by continued excellence and innovation in climate finance, management tools, data, and evidence.

Box 2. Highlights of World Bank Group’s implementation of the SFDCC (FY2009–11)

The WBG is working in 130 countries supporting climate adaptation and mitigation.

In fiscal 2011, 100 percent of the new Country Assistance Strategies (CASs) or Country Partnership Strategies (CPSs) prioritized climate change (compared to 32 percent in fiscal 2007, 63 percent in fiscal 2009, and 88 percent in fiscal 2010).

IDA 16 requires that all CASs and CPSs address climate resilience. Actions to address climate resilience were specified in 41 percent, 65 percent, and 76 percent of CASs/CPSs approved in fiscal 2009, 2010, and 2011 respectively.

Climate investment funds are up and running in 46 countries through 39 country and regional pilots that support transformations in clean technology, sustainable management of forests, increased energy access through renewable energy, and climate-resilient development.

The share of low-carbon projects in the WBG portfolio increased from \$6.76 billion (42 percent) in fiscal years 2006–08 to \$14.9 billion (51 percent) in fiscal years 2009–11. WBG's renewable energy portfolio increased from \$2.9 billion (18 percent of total lending) in fiscal years 2006–08 to \$6.6 billion (22 percent) in fiscal years 2009–11. In the same time period, the energy efficiency portfolio increased from \$3.0 billion (19 percent) to \$5.0 billion (17 percent).

WBG’s GEF portfolio supports climate change initiatives in 72 countries. The cumulative portfolio of GEF-supported projects incorporating climate change grew by \$229 million (board approvals) during the three years of SFDCC implementation.

The WBG is supporting carbon markets in 63 countries and expanding market reach and access through the Partnership for Market Readiness in 15 countries.

The WBG is working with 37 countries on the Forest Carbon Partnership Facility (FCPF) with 11 readiness grants signed. There are \$200 million in carbon funds that provide performance-based payments for five REDD+ ready countries.

There is greater emphasis on the “triple wins” of agriculture—productivity gains, resilience, and lower emissions—in China, Brazil, Kenya, and Yemen.

There is increasing work at the city level on climate change. Examples include the Mayors’ Task Force on Climate Change, a city-wide approach to carbon finance and GHG methodologies for cities.

Knowledge products include the WDR on *Development and Climate Change* in 2009, the *Economics of Adaptation to Climate Change* in 2010, regional reports such as *Adaptation to a Changing Climate in the Arab Countries* and *Winds of Change in East Asia*; and tools such as EFFECT for low-carbon development. The Climate Change Knowledge Portal and the Climate Finance Options (jointly managed with the UNDP) add to the global public knowledge goods.

Box 3. IEG review on mitigation

The phase II IEG evaluation report on mitigation recommended that the WBG rebalance its efforts toward higher-impact sectors and instruments, with relatively greater emphasis on energy efficiency, such as lighting and improvements in electricity transmission and distribution. The report also emphasizes the need for the Bank to actively assist clients to move away from coal, as well as using systemwide energy analyses to find cleaner, more cost-effective, and financeable alternatives. It urges the Bank Group to take a public venture capital approach, incubating a portfolio of promising investments and rapidly scaling up the successful ones. This approach to replication and scaling up is reflected in the Bank's work both under the GEF, the climate investment funds, and the various carbon funds it manages.

Action Area 2: Mobilize additional concessional and innovative finance

18. International funding for climate action in developing countries, while growing, covers about 5 percent of finance needed to build climate-resilient futures.² The SFDC had mandated the WBG to utilize financing instruments like climate investment funds to not just address the financing needs, but to also develop capacity in client countries to address climate action at scale.

19. *The current resource gap.* To address the looming financing gap, developed countries committed under the Copenhagen Accord and Cancun Agreements to provide new and additional resources for climate change activities in developing countries. This approaches \$30 billion for the period 2010–12. By 2020—the same year a global agreement on climate change is expected to enter into force—it will provide \$100 billion per year, drawing on a wide range of conventional and innovative resources, including public and private, bilateral, and multilateral sources.

20. A Green Climate Fund (GCF) is now being operationalized under the UNFCCC to help disburse these flows. The World Bank has a limited role as an interim trustee for the GCF in its first three years of operation. The Bank has been working with the UNFCCC to support the design of the GCF and ensure it is both nimble and efficient. It is also trustee of the Adaptation Fund, monetizing Certified Emission Reductions (CERs).

21. Under the most optimistic assumptions, the GCF is expected to start disbursing small amounts of project preparation funds in two to three years, but it may take five or six years

² A World Bank study on *Economics of Adaptation to Climate Change* estimates that it will cost \$70–\$100 billion per year for developing countries to adapt.

before this begins to result in scaled-up investment finance. To reach \$100 billion annually by 2020 requires an upward trajectory in financing to 2020 that is not yet clearly understood.

22. ***The World Bank Group response.*** The main channels for mobilizing concessional and innovative climate finance have been the Climate Investment Funds (CIFs) jointly managed by the multilateral development banks, the Global Environment Facility (GEF) and its associated Least Developed Countries Fund (LDCF) and Special Climate Change Fund (SCCF), and IDA—the WBG’s fund for the poorest countries.

23. The CIFs³ have demonstrated what can be done to support transformative adaptation and mitigation action at scale (Box 4) and offer valuable lessons for the GCF design. CIF innovations in country-led processes, programming, and governance arrangements have required substantial groundwork and time by all involved partners for each and every investment program. The Clean Technology Fund, one of several funds under the CIFs, have a projected leveraging ratio of more than 1:7, and have so far led to estimated CO₂ reductions or avoidance of 1.56 billion tons. This shows a significant investment in climate mitigation in 46 CIF partner countries. However, current demand for CIF assistance outweighs available resources, indicating a need for additional financing to cover the gap before the GCF is fully operational.

24. Nearly \$2 billion in GEF financing has supported renewable energy, energy efficiency, and sustainable transport projects. The GEF received a record boost from donor countries in May 2010. GEF subsequently expanded support to recipient countries for capacity building, climate friendly technologies, and sustainable development. After nearly 20 years of operation, the Bank remains the GEF’s largest implementing agency partner in the climate change focal area. Approaches and concepts supported by early GEF initiatives have laid the foundation for much of the Bank’s current low-carbon development work.

25. The current (sixteenth) replenishment of IDA includes a special theme on “achieving climate resilient development.” It recommends that all IDA projects in climate-change-sensitive sectors analyze the potential climate impact of project activities to ensure they are consistent with national climate mitigation and adaptation strategies. This is a clear indication of the mainstreaming of climate change concerns in the largest fund for the poorest countries. There have been successful efforts to increase funding for adaptation through GEF-operated funds like the Least Developed Country Fund (LDCF) and the Special Climate Change Fund. But uptake for the LDCF by the poorest countries has been slow.

³ All information on the CIFs in this report is current as of February 2012.

Action Area 3: Facilitate the development of market-based financing mechanisms

26. Market-based financing mechanisms have the potential to contribute significantly as a source of finance for scaled-up climate action. But clear market signals, enabling environments, safeguards, and strong, predictable and transparent regulatory frameworks are important prerequisites for helping countries opt for low-emission pathways. The SFDCC committed to explore and pilot avenues to deepen the reach of the carbon market, and expand work on climate risk insurance and capital markets. It recognized the important role the WBG was playing in supporting client countries' access and effectively using market-based instruments.

27. ***Current carbon market trends.*** Although the carbon market was worth \$142 billion in 2011, confidence in the post-2012 market—when the first Kyoto Protocol Commitment period comes to an end—is low. However, countries like China, Chile, Colombia, Costa Rica, Indonesia, Mexico, Thailand, and Turkey are adopting cap and trade systems, which they feel will boost technology and competitiveness. The private sector has been showing increasing interest in investing in green projects, especially related to energy efficiency.

28. ***The World Bank Group response.*** Carbon finance has been integrated into the assistance programs of all World Bank operational regions—from forest restoration in Ethiopia to clean energy in Sub-Saharan Africa and capacity building in Latin America. The aim is to deepen and broaden the Bank's response to climate change, helping poor communities and countries cope with climate change while still achieving economic growth, poverty reduction, and sustainable development. For example, the Community Development Carbon Fund and the Biocarbon Fund show that carbon markets can work to bring in revenue streams to rural communities that otherwise have limited sources of income. It has demonstrated that these initiatives are not only mitigating climate change but also improving rural livelihoods, improving resilience to climate change, conserving biodiversity, and restoring degraded lands.

29. The Bank's carbon funds have employed a learning-by-doing approach, testing innovative market approaches and contributing to global knowledge through the development of new methodologies. For example, a soil carbon methodology was approved recently that involved working with experts across the world, the validating entity in the U.S., and farmers in Ethiopia over several years. This will now enable smallholders in Kenya to get revenues from the carbon market for improved soil management.

30. The Bank continues to explore new opportunities to broaden the scope of carbon finance. For example, the Partnership for Market Readiness (PMR), a grant based capacity-building fund, has made significant progress since its launch in Cancun in 2010. PMR is becoming one of the most important platforms to discuss new market instruments and help prepare countries to scale up mitigation efforts through their use. Other more recent innovations include the Carbon Initiative for Development (Ci-Dev), which aims to build readiness and capacity to access carbon

markets in low-income countries and support a pipeline of low-carbon investment opportunities. Another is the third tranche of the BioCarbon Fund, which pilots soil carbon sequestration, explores landscape accounting approaches, and values ecosystem services.

Box 4. The Climate Investment Funds (CIF)

Climate Investment Funds (CIF)			
<p>Clean Technology Fund (CTF) <i>Demonstrate, deploy, and transfer low emissions technologies for low emissions development</i></p> <p>\$5.0 billion</p>	<p>Strategic Climate Fund (SCF) <i>Targeted programs to pilot new approaches to initiate transformation with potential for scaling up climate resilience</i></p> <p>\$ 2.2. billion</p>		
<p>Clean Technology Fund (CTF)</p> <p>Country and Regional Investment Plans</p>	<p>Pilot Program for Climate Resilience (PPCR)</p>	<p>Forest Investment Program (FIP)</p>	<p>Scaling Up Renewable Energy in Low Income Countries (SREP)</p>
<p>Demonstrate, deploy, and scale up renewable energy efficiency, urban transport, and commercialization of sustainable energy finance through local banks</p>	<p>Mainstream resilience in development planning</p>	<p>Reduce emissions from deforestation and forest degradation</p>	<p>Create economic opportunity, increase energy access through renewable</p>
<p>16 CTF Investment Plans: Chile, Colombia, Egypt, India, Indonesia, Kazakhstan, Mexico, Morocco, Nigeria, Philippines, South Africa, Thailand, Turkey, Ukraine, Vietnam, regional MENA Concentrated Solar Power (Algeria, Egypt, Jordan, Morocco, Tunisia)</p>	<p>9 PPCR countries, 2 regional pilots (\$1.2b): Bangladesh, Bolivia, Cambodia, Mozambique, Nepal, Niger, Tajikistan, Yemen, Zambia, Caribbean, S. Pacific</p>	<p>8 FIP pilots (\$639m): Brazil, Burkina Faso, Democratic Republic of Congo, Ghana, Indonesia, Laos, Mexico, Peru</p>	<p>6 SREP pilots (\$410m): Ethiopia, Honduras, Kenya, Maldives, Mali, Nepal, Tanzania</p>

Note: Information on CIFs current as of February 2012.

31. With an expected increase in the intensity and damage caused by natural disasters, the WBG is offering catastrophe-risk-financing products and advisory services tailored to provide relief for countries when they most need it. These include catastrophe bonds, catastrophe swaps, weather derivatives, and Catastrophe Risk Deferred Drawdown Options (CAT-DDOs). Two complementary products and services are available to countries: (a) sovereign risk financing for direct budget support (to provide immediate liquidity should a disaster occur while other resources are being mobilized); and (2) advisory services to strengthen domestic property

catastrophe insurance markets (to facilitate increased penetration of insurance in developing countries and access to re-insurance). Index-based agricultural insurance—to help farmers hedge against weather risk—has recently been extended. It is estimated that nearly 1 million farmers have benefited from such schemes since 2003.

32. The World Bank and IFC have successfully raised funds through capital markets by issuing “green bonds,” which support dedicated projects or programs that finance low-carbon or climate-resilient development activities in client countries. Fixed-income investors are increasingly familiar with World Bank green bonds, which now support 26 climate change projects and pave the way for green bonds to become an asset class of choice for investors interested in climate change and sustainability issues. The WBG is also working with the P8, a group of the world’s largest pension funds, to explore ways in which institutional financing can be directed to climate-friendly investment in emerging markets.

33. Collectively, the World Bank’s carbon finance operations have catalyzed and fostered the development of a global carbon market under the Kyoto Protocol. However, there are growing demands from client countries to help countries get ready for the growing menu of climate products, including those offered on insurance and capital markets.

Action Area 4: Leverage private sector resources

34. The private sector is a major investor in renewable energy and energy efficiency worldwide and in developing countries. With adequate policies and incentives in place, it is expected to contribute the larger share of mitigation-related financing and a significant share of adaptation financing. Since several of the poorest countries do not hold a private sector capital base, the WBG could help countries attain the scale required for adequate climate action. SFDCC agreed to innovatively apply or package WBG instruments to reduce barriers to private investments, with IFC and MIGA taking a leading role.

35. *Private sector plays a vital role.* The commitment by developed countries to provide \$100 billion annually by 2020 would include contributions from the private sector. Unlocking the substantial potential for private investment will require overcoming a range of barriers to investment. Engagement with the private sector will need to recognize different perspectives: institutional investors/pension funds, project developers, and financial intermediaries (FIs).

36. *The World Bank Group response.* IFC is seeking to enlarge its climate business from current levels of 14 percent to 20 percent of its long-term finance (and 10 percent of its trade finance) by 2015.

37. To better engage with the private sector, IFC established a Climate Business Group in fiscal 2011 for climate-related transactions and a new Climate Business Group Investment Team

to focus on late venture and growth stage cleantech companies in emerging markets. A Climate Risk and Adaptation Program was also launched in 2008. Colombian port authorities recently committed to invest \$30 million in adaptation measures as a result of joint work under this program, which has received national recognition as a guide and standard for private sector climate risk management.

38. Concessional investments and technical assistance grants aimed at climate change are managed by IFC's Financial Mechanisms for Sustainability Unit. A total of \$700 million from the Global Environment Facility, the CIFs, and the Canada Climate Change Fund have successfully leveraged over \$3 billion in investment from IFC and third parties. IFC has also helped leverage private sector funds in the CIF's Clean Technology Fund (CTF) at a 1:3 leverage ratio, representing 30 percent (or \$12.5 billion) of the total expected project financing. Despite these promising figures, private sector engagement in the CTF design phase has been uneven and has proven difficult for the Pilot Program for Climate Resilience.

39. Rapid growth in the use of WBG guarantees has helped support climate friendly investments and mobilize private capital into countries and sectors with a high risk perception. IFC and MIGA are working with financial institutions to help strengthen capital and financial markets and reach out to smaller clients. Between fiscal 2008 and the first half of fiscal 2012, MIGA issued \$402 million in new guarantees for a number of clean energy projects. These included guarantees for methane gas extraction and energy production in Rwanda; biofuel in Liberia; solid waste management and energy production in El Salvador; geothermal power in Kenya; and hydropower in Uganda.

Action Area 5: Support accelerated development and deployment of new technologies

40. The WBG sees technological innovation as a key driver to lower emissions and build resilience to climate impacts. SFDC has proposed to continue to support the commercialization, scale up, and demonstration of clean technologies and related research and development.

41. *The World Bank Group response.* IFC has led WBG efforts to accelerate the development and deployment of new climate technologies through eight climate change funds and innovations in clean energy technology. A Solar Investment Strategy has been adopted, together with a Cleantech Investment Program for early-stage clean technology companies in developing countries.

42. The World Bank and IFC have jointly launched *infoDev*, a trust fund to support the establishment of a network of Climate Innovation Centers to accelerate locally relevant climate technologies (Box 5). Climate Innovation Centers are being introduced in Kenya, India, South Africa, Ethiopia, and Vietnam, and other countries are seeking such support.

43. The CIFs are supporting the deployment of new climate technologies such as, for example, concentrated solar power in Morocco. However, more needs to be done to address the gap in the scale of support required for new climate technologies from the R&D stage to commercialization, particularly for climate adaptation.

Action Area 6: Step up policy research, knowledge, and capacity building

44. At the time of SFDC approval, the WBG had already stepped up its analytical work on climate change across sectors and regions. The SFDC committed to further scale up the knowledge agenda by building effective partnerships and capitalizing on synergies, with work being carried out inside and outside the WBG.

45. *The World Bank Group response.* Several key knowledge products have been delivered that have helped raise awareness of the costs and impacts of climate change. The 2010 *World Development Report* showed that a “climate-smart” world is possible if the world decides to “act now, act together, act differently.” The subsequent *Economics of Adaptation to Climate Change* estimated global costs of \$75 to \$100 billion to adapt to a 2-degree warmer world over 2010–50. The recent WB-UN report on the *Economics of Effective Risk Prevention* made the economic case for investing in ex-ante risk reduction and disaster prevention.

Box 5. infoDev and innovation in climate technologies

Through *infoDev*, the WBG is rolling out Climate Innovation Centers (CICs) in a number of countries, including Kenya, India, South Africa, Ethiopia, and Vietnam. The \$15 million Kenya CIC is currently under implementation, with launch expected in early CY2012. The center will provide, among other services, proof of concept and seed financing, advisory services, market intelligence, policy support, and access to technical facilities. The center’s priority sectors include off-grid renewables, water management and purification, micro-hydro, and technologies for adaptation. When operational, the Kenya CIC will fund up to 70 climate entrepreneurs, create up to 4,000 jobs in the first 5 years, and mitigate a projected 1.5 to 2 MtCO₂ over 10 years. Implementation activities for Ethiopia and India CICs will begin in CY2012, and CIC business plans are being developed in Vietnam and South Africa. Future CIC development is scheduled for Morocco and the Caribbean in CY2012.

46. The WBG has developed a range of complementary products and tools to inform and implement climate change projects and policies. Examples include the Climate Change Knowledge Portal, which provides interactive climate-related spatial data sets and tools (Box 6); the Climate Finance Options platform, which serves as a one-stop virtual knowledge center on climate finance sources; and the MACTool, which brings to the public domain a free, user-

friendly, open-source tool to help countries build and master their own marginal abatement cost curves.

47. In 2009, the WBG also established global expert teams for disaster risk management and climate change adaptation to ensure that the best expertise (internal and external) is available to country teams and clients and deployed quickly and flexibly to the right problem. The subsequent appointment of a World Bank Fellow for climate adaptation in 2011 will help connect global expertise and world class ideas in the science community to move research and dialogue on this issue forward.

48. In parallel, the World Bank Institute has scaled up engagement with developing country stakeholders on climate change, providing a range of services from e-learning to face-to-face exchanges such as the Mitigation Actions Implementation Network (MAIN), which delivers regional peer-to-peer learning on climate change. Social media—including blogs, twitter, and multimedia—have become integral parts of the communication strategy, enabling the WBG to expand its reach on climate change to a younger and wider audience in a more interactive way.

49. Overall, the WBG has expanded its “footprint” as a generator, broker, and connector of knowledge. It is well-positioned to push the frontiers of accessibility of products, tools, and services to its clients and others in an open and transparent manner.

4 Where we are headed

50. Climate change is one of the multiple stressors that affect the environment and impact on income and welfare. Further, its impact is worsened by other environmental damages. Looking ahead, strategies to combat climate change have to account for the continued need for rapid growth in developing countries. In this context, the World Bank is now looking at climate change in a holistic manner, bringing together climate change efforts with work on growth and broader management of natural resources and pollution.

51. As climate change considerations have increasingly been mainstreamed into the WBG’s business, SFDR implementation has demonstrated what can be achieved with clients and partners through focused and comprehensive action. Yet the demand for WBG support continues to grow, and the sheer pace of change in tools and technologies requires continued ramping up of our capacity and effectiveness. Reaching scale, leverage, and impact will require knowledge to be built and shared, climate action “readiness” to be supported among clients, and innovative financing modalities to be developed.

Box 6. Climate risk screening

Achieving climate-resilient development is one of the special themes for IDA16. Among other things, it requires the Bank to (a) include a discussion of climate change mitigation/adaptation in 100 percent of IDA CASs/CPSs; (b) analyze the climate impacts of projects in sensitive sectors; and (c) ensure they are consistent with country climate change strategies.

The WBG Climate Change Knowledge Portal (CCKP)* is a web-based tool that can assist in furthering the screening of the Bank portfolio of country strategies (sector, CASs) and in some cases at the project level to take better account of risks to development planning and implementation that arise from climate variability and climate change. In partnership with GFDRR, the CCKP has successfully supported risk assessment and upstream planning by providing rapid access to synthesis material—including national climate risk and adaptation profiles** and existing national planning documents such as national communications to the UNFCCC, NAPAs, Poverty Reduction Strategy Papers, and regional strategies—at different levels of aggregation. The CCKP is also part of the newest WB Open Climate Data Initiative, launched at COP17 in South Africa. Through the Open Data Initiative, users will have improved access, synthesis, and usability of bank-wide development data to support the design of risk management, adaptation, and mitigation actions. The CCKP is now moving to a more strategic and focused phase. It will seek to scale up efforts at the country level, but with greater attention to outreach dissemination and increasing user penetration, as well as wider partnership support.

*:<http://climateknowledgeportal.worldbank.org>

**:<http://countryadaptationprofiles.gfdr.org>

52. **Climate Readiness.** As countries develop nationally appropriate mitigation actions (NAMAs) and National Adaptation Plans (NAPs) in response to UNFCCC requirements, and put in place the supportive policies and programs for their implementation, more help is needed for readiness and the design of financeable investments.

53. Many developing countries face challenges in scaling up low-carbon, climate-resilient actions due to analytic and institutional capacity constraints, inadequate enabling policies and regulations, and a lack of baseline finance within the public and private sectors. No single solution is available because of large differences in country geophysical and terrestrial circumstances; exposure to climate impacts; and the mix of—and access to—energy resources and development progress. Tailored support is needed at a country level to develop a medium-to-long-term “bankable” project pipeline for financing from the Green Climate Fund and other sources. This needs to be complemented by coordination and collaboration among partners (south-north, south-south) on diagnostics, knowledge sharing, technology innovation and take-up, and innovative financing from multiple sources.

54. The WBG is, for these reasons, placing readiness at the heart of its support to clients on climate change. This responds to exponential growth in demand for support from all types of

clients, exemplified by the more than 80 additional countries seeking support from the CIFs alone (demand that cannot be met with existing CIF resources). With decades of experience in financing country development efforts and piloting climate action through dedicated instruments—such as the CIFs, GFDRR, ESMAP, and the carbon finance portfolio—the WBG is well-placed to further scale up readiness support for actions on adaptation and low-emissions development (LED), including landscape-based approaches.

55. To achieve these objectives, the WBG will enhance its operational and analytical capacity to leverage its adaptation and LED portfolio for the benefit of its client countries. The World Bank will scale up lending for clean energy by identifying additional capital for dedicated instruments, by strengthening the support that the Bank provides to relevant sectors through various advisory services, and by internalizing and replicating learning derived from climate finance instruments.

56. A number of readiness support instruments have been launched to support this objective. They include market mechanisms such as the Partnership for Market Readiness, the Carbon Initiative for Development (Ci-Dev), the Forest Carbon Partnership Facility, and the IFC Post-2012 Carbon Facility. Initiatives supporting clean energy include the SIDS-DOCK Fund for renewable energy and energy efficiency in the small-island states, ESMAP's ongoing engagement in low-carbon development planning, and *infoDev*'s Climate Information Centers. More programs will be tailored to regional needs. In Africa, for example, a \$63 million Investment Readiness Fund is under development, and an Early Action Program on Climate Smart Agriculture for Africa has recently been launched under the Comprehensive Africa Agriculture Development Program (CAADP). A number of complementary readiness initiatives are emerging under the Rio+20 agenda, such as the focus on green growth, the Sustainable Energy for All Initiative, and the (re-)emerging focus on water, biodiversity, and natural capital accounting.

57. **Knowledge.** Reaching scale, leverage, and impact will require knowledge to be built and shared. To support this objective, the World Bank has created a new position within the Sustainable Development Network—a Knowledge Management Director—to advance the knowledge agenda, implement the knowledge strategy, and lead the coordination of sustainable development knowledge activities across the Bank.

58. Under the modernization agenda, the World Bank is committed to greater openness in its knowledge, operations, and partnerships. The Bank's new Open Access policy marks a significant shift in how Bank content is disseminated and shared. The Bank will now have an aggregated portal for research and knowledge products, where the metadata is curated, the content is discoverable and easily downloaded, and third parties are free to use, reuse, and build on it.

59. As climate change considerations are increasingly reflected in the Bank's portfolio, there is an urgent need for knowledge tools to understand and assess climate risk and integrate climate change information into decision making. Building on its role as a global connector, the World Bank has developed a Green Growth Knowledge Platform (GGKP) in partnership with OECD, UNEP, and the Global Green Growth Institute. While this covers more than climate change, climate change concerns are very much at the heart of the work that the platform will support. In particular, the goal is to establish a program on data and tools that will link with the Open Data Climate Initiative and includes the Climate Change Knowledge Portal and the Open Data for Resilience Initiative. It will additionally support development of a concept for an open platform of climate-smart development tools, data, and capacity support to help developing countries create viable plans for low-emissions, climate-resilient growth that are tailored to local needs, capacities, and challenges. The joint World Bank-UNDP Climate Finance Operations Platform⁴ is another hub for information on sources of climate finance.

60. It remains a key role for the WBG in coming years to help support clients and all other relevant stakeholders climb a global learning curve for climate finance or country-led programs on climate action. For this, every knowledge exchange and communication tool will need to be used, including WBI's e-institute platform⁵, the regionally based Mitigation Actions Implementation Networks,⁶ South-South and South-North exchanges, and using the reach of social media. The last few years have seen the success in reaching a global audience through blogs, facebook, and twitter. These will continue to be used extensively for sharing lessons from climate change projects that help build awareness on climate change impacts.

61. The World Bank also launched WAVES, a partnership to promote sustainable development by ensuring that national accounts used to measure and plan for economic growth include the value of natural capital. Incorporating natural capital in national income accounts will help support better decisions on issues that are a development priority for countries, including issues related to climate change such as renewable energy and water resources management. Under the partnership, for example, Botswana wants to understand the role of their coal reserves in a green economy and plans to create energy and water accounts to help determine the country's optimal energy mix, considering the costs and benefits of coal and the impact on already stressed water resources.

⁴ The CFO aims to improved access by policy makers and project leaders in developing countries to information on various sources of climate finance for making more informed decisions on mitigation and adaptation investments, and to develop an interactive South-South community of practice.

⁵ LED, energy efficiency, carbon markets, etc.

⁶ This WBI initiative is already active in Latin America and the Caribbean, East Asia and Pacific. Plans are under way to expand to the Middle East and North Africa and Africa.

62. As adaptation becomes an imperative for our client countries, there will be increased demand for science-based work to assess ramifications of a 3 to 4+ degree Celsius warmer world. The Global Expert Team on Climate Change Adaptation is embarking on a strategic analytical study to understand what a warmer world means for development to help guide the WBG's operations. Stronger attention will also be given to integrating disaster risk reduction and climate adaptation in WBG's policy and investment work, in line with the IPCC consensus that low-regrets measures for managing current disaster risks are starting points for addressing projected trends in exposure, vulnerability, and climate extremes. Building evidence on the impacts of climate change and creating proof of concept on climate action is becoming important for informing the UNFCCC negotiations. The WBG can play a vital role in this area in the next few years.

63. **Partnerships.** The WBG is experiencing increasing demand to join, help forge, or lead new climate action coalitions. It is increasingly engaging in major joint initiatives with the UN system, other multilateral development banks, the OECD, civil society, and the private sector to widen our reach and service client demand. Examples of new partnerships are outlined below.

64. Within the UN framework, there are a number of strategic climate change partnerships. The World Bank has close working relations with the UN Secretary General's High Level Panel on Global Sustainability, as well as the UNSG's High Level Panel on Sustainable Energy to advance the Sustainable Energy for all and UN-Energy. In 2010 the WBG was actively engaged in the UNSG's High Level Advisory Panel on Climate Finance, and subsequently on the same topic under the French Presidency of the G20 in 2011 with the IMF, MDBs, OECD, and select UN agencies. At the level of the Chief Executives Board, the World Bank maintains regular interaction through the UN HLCP Working Group on Climate Change.

65. At an operational level, UNDP and the World Bank are partners on the Climate Finance Options (CFO) Platform. Pooling resources and delivering joint services has proven cost-effective and the modality could be replicated to provide access to other types of information, tools, and instruments. The World Bank and UNDP are also collaborating on the \$25 million "SIDS DOCK" Support Program to help the small-island states "dock into" carbon markets and climate finance sources and develop renewable energy.

66. Outside the UN system, the World Bank is actively engaged with the G20 and B20 on climate finance, and with the G20 on energy subsidies, infrastructure financing, and green growth, among other issues. The WBG is engaged with other MDBs on the CIFs, with MDBs and bilaterals in exchanging knowledge and practice on GHG accounting, and with the OECD-DAC and MDBs on tracking climate finance.

67. The WBG is also reaching out to non-traditional partners. For example, the World Bank has signed an MOU with the C40, a consortium of the 40 largest cities globally, to further the cities and climate change agenda. With the Organisation for Economic Co-operation and Development (OECD), the United Nations Environment Programme (UNEP), UN-Habitat and the World Resources Institute (WRI), the WBG has supported the Global Protocol for Community-scale Greenhouse Gas Emissions. The protocol was released by ICLEI's Local Governments for Sustainability and the C40 Cities Climate Leadership Group to help cities around the world measure and report GHG emissions. The OECD, UNEP, and Global Green Growth Institute are working with the World Bank on the Green Growth Knowledge Platform.

68. On finance issues, the WBG is working with P8, a group of the world's largest pension funds, to explore ways in which institutional financing can be directed to climate-friendly investment in emerging markets. The Bank Group is also a partner in the San Georgio Group with Climate Policy Initiative (CPI), China Light & Power (CLP), and the Organisation for Economic Co-operation and Development (OECD). This new working group of key financial intermediaries and institutions is actively engaged in extracting lessons on effective green, low-emissions finance.

69. **Finance.** The WBG recognizes five immediate challenges to financing climate action, among others:

1. Operationalizing the Green Climate Fund (GCF) due to the extensive amount of work placed with the GCF Board and the Secretariat as mandated by the UNFCCC COP.
2. Delivering in full the \$30 billion in fast-start finance by the end of 2012. About \$22 billion is so far committed.
3. Avoiding a gap in financing after 2012 due to the need for an upward trajectory toward the target of \$100 billion annually by 2020. A related challenge is the sourcing of these funds.
4. Ensuring legitimacy and adequacy of climate finance by building transparent frameworks for accounting, given the methodological complexity involved and the multifaceted nature of these flows.
5. Ensuring country readiness due to the relative absence of adequate enabling environments for investments, and instruments for leveraging with private sector and carbon market flows.

70. The WBG can play a major role in addressing these challenges due to its technical capacity across sectors and on an economy-wide basis, its pivotal role and experience with innovative development and climate finance, and its global reach and local presence.

71. The WBG remains fully committed to support the immediate operationalization and capitalization of the GCF. A substantial work program is being launched under the UNFCCC to advance this, and the WBG will support global efforts by sharing relevant expertise and experience. The WBG will continue serving as interim trustee to the Adaptation Fund, trustee to the GEFs dedicated climate funds, and potentially as interim trustee for the GCF.

72. To help address the risk of a financing gap after 2012, the WBG will scale up efforts to accelerate disbursement of dedicated climate and development finance instruments. The WBG will continue to maximize its convening power and market presence to (a) mobilize additional concessional and innovative finance, (b) facilitate the development of innovative market-based financing mechanisms, and (c) leverage private sector resources.

73. To drive leverage, scale, and impact, a particular effort will be invested to refine, develop, and execute financing instruments that attract the private sector. IFC expects to increase climate-related investments to at least 20 percent of its annual long-term commitments and 10 per cent of its short-term commitments within three years—increasing its annual climate-related investments by more than 50 percent to about \$3 billion. While domestic and international frameworks to advance carbon market solutions progressively solidify, the WBG continues to innovate and build readiness for future scaled-up markets, leveraging its decades-long experience on the ground.

74. The WBG will continue efforts to put capital markets to work. The variety of IBRD, MIGA, and IFC guarantee instruments can be further scaled up to strengthen capital and financial markets as an integral element of wholesale approaches to governments and the private sector. Efforts are also under way—for example, in the Latin America and Caribbean Region—to develop asset-backed green bonds, an innovative climate financing instrument. Drawing on the best expertise available, it is expected that this first-of-a-kind security will be launched in the international bond market by a Latin American energy company.

75. **Measuring Progress.** For the WBG going forward, important objectives include tracking progress in the delivery of finance (with climate cobenefits), the climate impacts of operations, and the achievement of climate outcomes.

76. A new Climate Coding System to track the climate (mitigation and adaptation) cobenefits of the Bank's portfolio will be made mandatory starting in fiscal 2013. The system provides detailed guidance to World Bank task teams to assess and record the share of investments (dollars) that provide (a) direct climate adaptation benefits; and/or (b) direct climate mitigation

benefits for each component of the project.⁷ The new system will enable the Bank to report climate-related activities in a consistent and transparent manner across the entire portfolio. It is based on the OECD DAC Rio markers, which classify projects based on the overall objectives of the project.⁸ The system has been developed in consultation with other MDBs and the OECD DAC Secretariat.⁹

77. A corporate commitment to better understand the GHG footprint of the WBG portfolio is articulated in the SFDCC. In February 2009, IFC began estimating GHG emissions for all new, real-sector projects.¹⁰ IFC is now introducing methodologies for GHG emission reduction calculation for its climate-related projects. GHG analysis has been piloted in select energy, transport, and forestry sector projects at the World Bank. It is expected the GHG footprint of investments will become a business requirement for the World Bank starting January 2013 in select sectors, and will be introduced across the Bank over a period of two years. The purpose of this analysis is to understand the Bank's carbon footprint, help client countries seek and obtain concessional finance where GHG analysis suggests that there is scope for financial assistance, and learn from such analysis. It is not intended to guide project selection.

78. A two-track approach to climate change results measurement has been employed. In 2008, the SFDCC adopted an immediate set of actions to measure WBG progress over fiscal years 2009–11. An update on the status of these actions is provided in annex 2. It demonstrates the strong mainstreaming and scaling-up of actions that were envisaged to be undertaken on climate change when the SFDCC was prepared in 2008. A process was also initiated to develop a forward-looking results framework for climate change, included in annex 4. This results framework has been developed through a consultative exercise with all relevant sectors, drawing on indicators that are already in use to measure progress and performance. This will continue to evolve as improved measurement and data becomes available to track outcomes from the WBG's portfolio.

5 Conclusion

79. At the UNFCCC meeting in Durban in December 2011, governments decided that by 2015 they will arrive at a global agreement on climate change. The agreement will require all countries to combat climate change in accordance with the goals, principles, and means set out in

⁷ The system does not measure/report the amount of avoided carbon emissions or increases in climate resilience. The shares for mitigation and adaptation are independent of each other and are made using a “without project” situation baseline.

⁸ All assessments are carried out at the project subcomponent level, the lowest level for which costs are available.

⁹ Retroactive coding of all World Bank lending approved in fiscal 2011 shows that 25 percent of activities are expected to provide climate change cobenefits in over 60 countries; almost \$7 billion in funding commitments support mitigation cobenefits; and over \$2 billion support adaptation cobenefits, with a stronger focus on adaptation in IDA and mitigation in IBRD countries.

¹⁰ Not for financial intermediary or advisory services.

the UNFCCC framework. The agreement would enter into force by 2020. Additional modalities to support climate action in developing countries will flow from this agreement, but it may take time to operationalize new instruments.

80. The WBG has successfully worked with clients and partners to mainstream climate considerations into the WBG's core business and strategies to reach impact on the ground. Yet this remains a make-or-break decade for climate action despite escalating levels of engagement within and outside the WBG. The window of opportunity to curb emissions, limit the rise in global temperatures, and build climate resilience among clients is closing. The looming gap in climate finance and lack of a legal framework in the near term will require voluntary action and leadership to accelerate efforts and maximize the use of existing instruments.

81. Countries are demonstrating firm commitment to a global transformation process but lack tailored tools, policies, capacity, and resources to enable green, clean, and resilient development at scale. They are concerned about (a) the development ramifications of increased climatic variability within sectors such as agricultural production, human and animal health, infrastructure, and urban development; (b) issues of energy, water and food security, and migration; and (c) the cost of delayed action and policy lock-in.

82. The urgency and scale of the challenge requires a continued learning-by-doing approach as we respond to the immediate needs and opportunities of our clients and prepare for longer term transformation. The importance of sustaining strong diagnostics and knowledge management, and effectively applying achieved learning is fundamental to realizing this transformation.

83. The SFDCC has helped position the WBG at the forefront of knowledge generation, innovation, and financing for climate change. But more needs to be done. While adhering to its mission of promoting inclusive growth and poverty reduction, the WBG is committed to work with its public and private sector clients to support readiness efforts by scaling up financial innovation and building capacity to deliver transformational climate action that supports inclusive and sustainable development. In doing so, the WBG will place particular emphasis on strengthening adaptation mechanisms and partnerships with the private sector. The WBG will continue to support the exchange of best practice and knowledge with clients and partners and ensure full integration of learning across WBG tools and instruments. The WBG will measure progress through systems to track financial flows, impacts and the outcomes of climate support across its portfolio, retaining flexibility to adjust interventions as needed.

Annex 1. Highlights of WBG Engagement across the SFDC Action Areas

Action Area 1: Supporting Climate Actions in Country-led Development Processes

1. When the World Bank Group approved the SFDC in 2008, a broad commitment was to mainstream climate change considerations into lending and operations. Three years later, there is overwhelming evidence that climate change has become central to the country-led development agenda supported by the WBG. In 2011, the WBG is supporting mitigation and adaptation activities in nearly 130 countries. Over 45 additional countries are requesting support from the Climate Investment Funds (CIFs), and there is demand for support that is vastly greater than available resources. In the Latin America and Caribbean region, the Bank is funding over 180 country-led activities that will provide climate change adaptation and mitigation cobenefits estimated to be worth more than \$7.3 billion.¹ In the Middle East and North Africa, almost 60 percent of the active portfolio is supporting investments related to climate change, and more than 75 percent of the pipeline is related to either mitigation or adaptation projects.²

Providing Strategy and Policy Support

2. The WBG has moved from piecemeal climate projects to a broader approach that impacts country plans. Almost 100 percent of new country assistance and country partnership strategies in FY11 include climate action, up from 63 percent in fiscal 2009 and 88 percent in fiscal 2010. Country Assistance Strategies (CASs) are prepared in close consultation with the country governments and form the foundation of the WBG's support to country-led reforms and programs. Internally, WBG's corporate review functions are increasingly including climate risk screening in their Country Assistance Strategies.

3. Development Policy Operations (DPO) are emerging as a major vehicle for supporting clients' climate change policy and institutional developments needed to tackle climate change. During fiscal years 2009–11, the WBG provided over \$11.4 billion in such operations in 15 countries, including loans to Brazil, Mexico, Morocco, Indonesia, and Turkey. In support of the “Energy Policy of Poland Until 2030” program, a Development Policy Loan for Poland (\$1.11

¹ All dollars are U.S. dollars unless otherwise indicated.

² As per analysis carried out by regional staff.

billion) was approved in June 2011 to support the program's energy efficiency and renewable energy components.

4. The WBG has initiated innovative work in cities. A DPL is under preparation to help Mexico City improve its climate-resilience, which will pioneer the use of social accountability approaches to ensure that incremental climate finance is put to effective use. The \$200m loan (Mexico: Strengthening Social Resilience to Climate Change) is the first DPL in the Bank designed primarily to address the impact of climate change on vulnerable groups. It was prepared as part of a multisectoral effort involving urban development, forestry, environment, disaster risk management, and social development. The operation will include policy actions at the federal, provincial, sector, and municipal level and involves both state and non-state actors to ensure an emphasis on vulnerable groups in Mexico's impressive efforts to address the impacts of climate change.

Supporting Low-Emissions Development

5. Client demand for low-carbon development is growing. The WBG's renewable energy portfolio increased from a total of \$2.9 billion (18 percent of overall lending) in Fiscal years 2006–08 to \$6.6 billion (22 percent) in fiscal years 2009–11. The energy efficiency portfolio increased from \$3.0 billion (19 percent) to \$5.0 billion (17 percent) in the same time period. The share of low-carbon projects³ increased from \$6.76 billion (42 percent) in fiscal years 2006–08 to \$14.9 billion (51 percent) in fiscal years 2009–11.

6. Fiscal 2011 marked an all-time record in WBG low-carbon financing, with \$5.9 billion in new commitments. The WBG's financing for new renewable energy (RE) and energy efficiency (EE) exceeded targets, increasing by about 48 percent per annum (totaling \$9.2 billion) compared to a target average annual increase of 30 percent to fiscal 11 (or \$6 billion over fiscal years 2009–11).⁴ The WBG's renewable energy portfolio more than doubled, increasing from \$2.9 billion in fiscal years 2006–08 (18 percent of total WBG energy financing in the period) to \$6.6 billion in fiscal years 2009–11 (22 percent).

7. Transport and water projects are now routinely screened for EE opportunities. A primer on EE for municipal water and wastewater utilities (jointly undertaken by ESMAP, the Water Anchor, and the Water and Sanitation Program) provides information on opportunities and good practices for improving EE and reducing energy costs in municipal water and wastewater utilities. A comprehensive assessment of projects screened for EE opportunities was conducted during 2010–11. Of the 63 projects screened, two-thirds were found to have built-in EE

³ Defined as renewable energy projects (including all sizes of hydropower projects); energy efficiency improvements; power plant rehabilitation to improve efficiency; district heating; biomass waste-fueled energy; gas-flaring reduction; and increased use of cleaner fuels to displace more carbon intensive fuels.

⁴ Following a review completed in fiscal 2011, it was discovered that WBG financing for new RE and EE over fiscal years 2005–07 was under-reported. Therefore, the baseline against which WBG increases in financing for new RE and EE are measured was revised from \$600 million to \$898 million.

measures, and just five were found to have missed opportunities. The transport sector is moving increasingly toward low-carbon options (Box 1).

8. The WBG is providing upstream support to integrate climate considerations into long-term planning processes. Over 2008–11, ESMAP and the WBG supported in-depth low-carbon development studies in seven major emerging economies—Brazil, China, India, Indonesia, Mexico, South Africa, and Poland. These studies have provided data and tools to support client countries in formulating and implementing their national climate change action plans. Responding to growing demand, that work is now being replicated by the WB in eight additional countries.⁵

9. Countries designing Nationally Appropriate Mitigation Actions (NAMAs) are increasingly seeking support including for policy and institutional reforms and investment programs that can be presented for international funding, such as under the Green Climate Fund. For example, Jordan is utilizing support from the World Bank and PPIAF to prioritize its NAMAs.

10. The Bank has seen a significant growth in its work on mitigation in cities. This includes the ECO2 Cities program, where ecological and economic cities combine energy efficiency design with environmentally sound technologies. Through the C40 group partnership, the WBG is focusing on city climate action plans and standardized reporting of city greenhouse gas emissions.

Strengthening Resilience to Climate Risks

11. It is now widely accepted that the world is likely to experience a 3–4 degree Celsius increase in average temperatures relative to pre-industrial levels. This has potentially catastrophic implications for developing countries, particularly the poorest economies, as a result of climate-induced impacts and variability. To sustain and secure development gains, adaptation and climate-resilient development must be a core part of the Bank’s development agenda.

12. To inform and enhance decision making and the design and delivery of investments, the Bank is deepening its engagement by (a) mainstreaming climate adaptation in strategically targeted policy and project interventions (CASS, DPOs, SILs); (b) demonstrating action and learning through strategic partnerships like the \$1 billion Pilot Program for Climate Resilience; and (c) mobilizing world-class expertise for climate impact and risk assessment and the development of knowledge products such as the Climate Change Knowledge Portal.

13. A World Bank study on *Economics of Adaptation to Climate Change* estimates that it will cost \$70–\$100 billion per year for developing countries to adapt to climate impacts (under a 2 Celsius average temperature rise). More needs to be done to further integrate climate

⁵ Nigeria, Morocco, Tunisia, Macedonia, Colombia, Uruguay, Vietnam, and Costa Rica.

considerations into operations; significant potential exists across all programs and sectors. The Bank continues to leverage various sources of adaptation finance (PPCR, GEF, LDCF, and SCCF) to support client countries as the Green Climate Fund is being established.

Box 1. Reducing Emissions from the Transport Sector: Facilitating a Modal Shift

Changes in the World Bank transport portfolio reflect the importance given to the modal shift—from road to rail, inland waterways, and maritime transport—in reducing GHG emissions in transport:

- The share of the roads and highways subsector has decreased (from 88 percent in fiscal 2001 and 76 percent in fiscal 2006 to 50 percent in fiscal 2010 and 65 percent in fiscal 2011)
- The share of the railways subsector has increased (from 1 percent in fiscal 2001 and 6 percent in fiscal 2006 to 14 percent in fiscal 2010 and 16 percent in fiscal 2011)
- Engagement in the urban transport subsector has increased over time. (“General Transport,” with an urban transport majority, increased from 9 percent in fiscal 2001 and 13 percent in fiscal 2006 to 29 percent in fiscal 2010).

Two large projects that are making a difference are India's Dedicated Freight Corridor and an Urban Transport project in Lagos, Nigeria. In India, the Dedicated Freight Corridor (DFC) program will enable the country to create one of the largest rail freight operations in the world. The DFC shifts freight transportation from road and conventional rail to the more energy-efficient DFC rail, therefore lowering energy consumption in India's transport sector. The corridor will operate entirely through electric locomotives, reducing carbon emissions by more than 50 percent over a 30-year period compared to business as usual.

The Lagos Urban Transport partnership between the World Bank and Federal Republic of Nigeria led in 2007 to a new bus rapid transit line. Building on the BRT project, a new project approved in 2010 blends IDA and GEF resources to emphasize GHG emission reductions. It is expected to increase the percentage of trips made by BRT among households owning cars or motor bikes from 10 to 20 percent and reduce CO₂ emissions from vehicles along BRT corridors from 1.1 to 1.06 million tons CO₂. The Clean Technology Fund (CTF) support expands climate action in transport to other aspects of the modal shift.

14. Vulnerability to climate-induced risks is a main concern of many countries. It is being addressed by scaling up lending and analytical work. The MNA Region is producing a flagship report on *Adaptation to Climate Change in Arab Countries* in partnership with the League of Arab States. In ECA, Tajikistan is moving forward as a leader in implementing the pilot program for climate resilience (PPCR).

15. Agriculture and the broader sustainable land and water management agenda plays a key role in climate resilience. This is especially true for countries where a large proportion of the population is dependent on natural resources for their livelihoods. Its importance in country-driven agendas is demonstrated by the priority given in the design and implementation of

Strategic Programs for Climate Resilience (SPCRs) under the PPCR. SPCR support activities such as agricultural insurance and risk management; community-based land, water, and pasture management; increased private sector engagement; drought and flood resilient seed production and farm systems support; conservation tillage; adaptive research; water harvesting; and a range of improved irrigation and agricultural water management measures and measures to protect agricultural land from flooding. These activities are additional to existing programs like the Global Food Crisis Response Program (GFRP) and the Global Agricultural and Food Security Program (GAFSP). These programs help client countries deal with spikes caused by extreme weather events, which are becoming more frequent as a result of climate change. For example, the MNA Region is working on import supply chains to reduce regional vulnerability to changes in food import pricing.

16. Screening projects for climate risks is becoming increasingly important. In the water sector, significant progress has been made for hydropower projects. Work has been published on the impact of climate change on hydrologic indicators and exposure risk at the catchment level (8,400 catchments in six Bank regions). This body of work will form the basis for project-level screening for climate risk that will soon be introduced.

17. An Urban Risk Assessment (URA) framework has been developed as a tool to assess disaster and climate risk in cities (box 2). URA will inform decision making and urban planning in the design of risk management programs. Under the Mayors' Task Force on Climate Change, Disaster Risk, and the Urban Poor, the URA framework has shown very positive results when applied to Dar es Salaam, Jakarta, Mexico City, and Sao Paulo. Plans are under way to introduce the URA framework in additional cities around the world.

18. Working closely with the Global Facility for Disaster Risk Reduction (GFDRR), the WBG has strengthened operational links between climate adaptation and disaster risk management (box 3). GFDRR has been financing disaster risk reduction programs that build adaptive capacity in its 31 disaster-prone priority countries. Close to two-thirds of all projects supported by GFDRR to mainstream disaster risk reduction considerations also promote the formulation and implementation of climate change adaptation strategies and plans. The \$47 million Regional Disaster Vulnerability Reduction projects for Grenada and St. Vincent and the Grenadines is one of the first truly integrated adaptation and disaster vulnerability reduction projects in GFDRR's portfolio. It is cofinanced by regional IDA and the PPCR.

19. Support to strengthen national climate and weather information services and adopt finance options for risk reduction and transfer increasingly are seen as integral to national climate adaptation programs. Examples include the Catastrophe Risk Insurance Facility for South Eastern and Central Europe, the Catastrophe Deferred Drawdown Option (CAT-DDO), and the launch of the MultiCat platform. The working connections between climate adaptation and disaster risk management has good traction with the government of the Philippines, as

exemplified by the approval of the largest ever CAT-DDO (\$500 million, approved September 2011).

Box 2. Cities and Climate Change: A Growing Agenda

A Greenhouse Gas Standard for Cities. The Global Protocol for Community-scale Greenhouse Gas Emissions has been released by ICLEI-Local Governments for Sustainability and the C40 Cities Climate Leadership Group to help cities around the world measure and report GHG emissions. This effort has been closely supported by the World Bank, the Organisation for Economic Co-operation and Development (OECD), the United Nations Environment Programme (UNEP), UN-Habitat, and the World Resources Institute (WRI). The community protocol has three main components: (1) guiding principles and a policy framework to link the efforts across local and national governments and the private sector; (2) the 2012 Accounting and Reporting Standard, with supplemental guidance on methodologies and reporting templates; and (3) a roadmap for institutionalizing the process for updating the standard on an ongoing basis. The community protocol integrates seamlessly with national and corporate GHG accounting methodologies, facilitating linkages between these entities for improved coordination to reduce GHG emissions.

Urban Risk Assessments (URAs). URAs provide a framework for assessing disaster and climate risk in cities to enable informed decision making and urban planning in the design of risk-management programs. It has been developed and piloted with the support and guidance of a number of agencies, including the GIZ, International Development Research Centre, United Nations Environment Programme, U.S. Department of State, United Nations University, Arizona State University, Cisco, United Nations Human Settlements Programme, and International Institute for Environment and Development. URAs are based on four principal building blocks to improve the understanding of urban risk: (1) historical incidence of hazards, (2) geospatial data, (3) institutional mapping, (4) and community participation. It is designed to allow flexibility in how it is applied, depending on a city's needs, available financial resources, available data, and institutional capacity. The URA tool has been implemented in several cities—such as Dar es Salaam, Jakarta, Mexico City, and São Paulo—over the past year with very positive results. The risk assessments provide a full picture of hazard risk at the city level, an assessment of vulnerable populations, and a mapping of relevant institutions pointing to gaps and duplications in roles and responsibilities. URAs lay the groundwork for collaboration across city governments, the private sector, and development agencies to begin benchmarking their own progress toward the reduction of urban vulnerability.

Box 3. Making Climate Change Explicit in Disaster Risk Reduction

In line with the SFDC commitments, GFDRR has further strengthened its climate risk management and financing work across five core program areas to (a) provide a comprehensive climate change baseline to facilitate “climate-smart” mainstreaming; (b) help countries better assess climate risks and inform development decision making, including during post-disaster reconstruction; (c) strengthen countries’ climate and weather information services and early warning systems; (d) scale up community adaptation action, in partnership with CSOs; and (e) promote innovation and facilitate access to climate risk financing and transfer solutions.

Realizing Multiple Benefits

20. There are important synergies between adaptation and mitigation that need to be considered when designing and planning climate actions and evaluating their results. Examples include interventions in forestry such as forest carbon projects (reforestation and forest protection). Such projects are funded using mitigation incentives and increase the resilience of local environments and communities by recovering severely degraded lands, protecting water resources, and conserving biodiversity. Another example is climate-smart agriculture, where the focus is on the triple-win: carbon sequestration, food security, and climate-resilient livelihoods (box 4).

21. With a 70 percent increase in food production needed by 2050, IDA and IBRD support for agriculture is projected to increase from an average of \$2.9 billion over fiscal years 2006–08 to \$4.5–\$6.4 billion in fiscal 2012 and beyond. Approaches vary by country and subregion. Africa is focusing on enhanced productivity and land and water management. In Kenya, programs include support to community-based flood and watershed management, arid lands management, weather and climate services, agricultural productivity, and commercial agriculture, as well as pilot investments on agriculture and forest carbon.

22. Morocco faces increasing water stress and a dual approach is being employed to support diversification in irrigated agriculture and poverty reduction and sustainable natural resource management in the rain-fed sector. Similarly, in Yemen support is being provided to enhance coping strategies for adaptation for farmers who rely on rain-fed agriculture in the Yemen highlands through the conservation and use of biodiversity important to agriculture and associated local traditional knowledge. In Mexico, the Agricultural Sector and Water Program supports enhanced agricultural water management, integrated soil fertility management and conservation tillage, targeted research and seed reserves, and wild land conservation, together with programs to enhance agri-business and increase social protection for the vulnerable.

23. The African Union has committed to integrating climate-smart agriculture into the Comprehensive African Agricultural Development Program. Approaches to agricultural strategy

and investment planning have been endorsed by African Heads of State. The World Bank Group is supporting this approach with a range of development partners and additional financing.

Box 4. Climate-Smart Agriculture: An Integrated Approach to Agriculture, Forestry, and Landscape Management

Climate-smart agriculture seeks to increase sustainable productivity, strengthen farmers' resilience, reduce greenhouse gas emissions, and increase carbon sequestration. It takes a landscape approach, recognizing the inter-dependencies among land, water, and forests over space and time.

Agricultural and forest landscapes play a key role in watershed protection in Mexico. Agriculture accounts for 15 percent of jobs, 77 percent of water withdrawals and, with forest degradation and deforestation, 21 percent of GHG emissions. Mexico's agricultural sector and water programs focus on adaptation but also adaptation-mitigation cobenefits. These programs support improved watershed management, improved irrigation management, fire management, zero tillage, methane capture from livestock, and improved energy efficiency in agriculture and fishing. There is also support for sustainable agri-business development, social protection, and insurance programs. The World Bank has supported Mexico in program implementation through a series of development policy loans focused on low-carbon growth, adaptation, and green growth, as well as investment operations. These were complemented in 2011 by the Forest Investment Program (FIP), which supports community-based sustainable forest and landscape management.

As is evident in the Mexico case, climate-smart agriculture works best when mainstreamed into broader agriculture and natural resource development and poverty reduction programs. It is an integrated approach on agriculture, forestry, and landscape management.

Mainstreaming Climate Concerns in Internal Strategies

24. Recent sector strategies—including social and environment—in the WBG have a substantial focus on climate risks and support to climate action. WBG's Environment Strategy articulates a vision for a green, clean, and resilient world for all. Specifically, the clean agenda promotes mitigation or low-carbon growth in developing countries, in addition to low-pollution objectives. The resilient agenda focuses on helping developing countries to become better able to handle sudden change and avoid collapse by anticipating shocks and adapting to climate change.

25. The Social Development Strategy is based on three pillars: social inclusion, social cohesion, and social accountability. The mid-cycle implementation review added a fourth pillar on social resilience this year, which recognizes explicitly the social and distributional (including gender) dimensions of the climate change, disaster risk reduction, and green growth agendas as a core part of the social development agenda.

26. The transport sector's follow-up to the SFDCC was framed and supported by the World Bank Group Transport Business Strategy for 2008–12, which established climate change as one

of its five strategic areas for action. This includes adaptation and mitigation measures. A flagship report on *Transport and Climate Change* is being finalized that emphasizes the need for a broad sector reform agenda to motivate local action and account for cobenefits of climate policies and innovative finance based on fiscal incentives.

27. The new World Bank urban and local government strategy—*Systems of Cities: Harnessing Urbanization for Growth and Poverty Alleviation*—was launched at the end of 2009. One of its five business lines—promoting a safe and sustainable urban environment—advocates a focus on urban form and design to achieve efficiency gains, reduce a city’s GHG emissions, and take advantage of the cobenefits of climate change mitigation and adaptation. Within two years, progress has already been made on access to finance (a city-wide approach to carbon finance, with a pilot in Amman, Jordan), monitoring of GHG emissions (standard for accounting and reporting community-scale emissions), and urban risk assessment (standardized, cost-effective tool for climate and disaster-related risks in cities).

28. The World Bank Group is currently developing a new sector strategy for Information and Communication Technologies (ICTs). The ICT strategy is organized along three pillars—Connect, Innovate, Transform—and will elaborate how ICT infrastructure development may contribute to climate change mitigation—for example, through energy-efficient data centers and transmission stations or through ICT-enabled renewable energy—and adaptation—for example, through new ways to deliver services to constituents and partners in such areas as disaster risk management and climate-resilient water management.

29. In a similar fashion, the World Bank Group Education Strategy 2020—*Learning for All: Investing in People’s Knowledge and Skills to Promote Development*—highlights cross-linkages among sector strategies and emphasizes that higher-order skills ensure adequate capacity to plan and prepare for anticipated climate changes.

30. The draft Energy Sector Strategy, which proposes improving access to reliable modern energy services and facilitating the shift to environmentally sustainable energy development as the two overall objectives, is under consideration by the Board of Executive Directors. The energy sector will continue to give priority to projects that promote both objectives, such as extending access to electricity using additional power made available through supply efficiency improvement and protecting tree resources and health through adoption of high-performance cookstoves. Building on the principles set forth in the SFDCC, the energy sector has issued an operational guidance note for screening coal projects and steadily scaled up engagement in renewable energy.

31. The SFDCC has helped mainstream climate action across the WBG’s portfolio, but challenges remain to furthering the climate agenda that need to be addressed as we scale up action going forward (box 5).

Box 5. Feedback from Staff: Challenges to Furthering the Climate Change Agenda

1. **The WBG faces increasing demand** for grant-based support to help develop plans and projects that support climate action, and for scaled-up knowledge exchange on “what has worked elsewhere.”
2. **Making robust investment decisions is challenged** by the uncertainty about climate change impacts and precise data and down-scaled models. For example, the state of the science on short-term, localized forecasts of climate change is insufficiently precise to allow for financial modeling, yet extreme climate events are already sources of large financial losses that justify adaptive measures.
3. **More needs to be done to respond to the demand for climate readiness** support, including: helping clients to develop a solid pipeline of “bankable” projects; building the capacity to design and execute adaptation and low-emission projects in a cost-effective manner; and optimizing the distribution of efforts across regional, subregional and national levels and to capture economies of scale in knowledge generation and diffusion.
4. **Mobilizing “baseline” financing** for low-emission investments has proved difficult due to the lumpiness of many low-carbon investment projects, the long lead time in preparation, limits to absorptive capacity, and other factors. Looking forward, the Bank could look more closely into mechanisms to leverage private investment and manage risks.
5. **Carbon market activity**, particularly in LDCs, has also proved challenging due to rules about project eligibility, regional programs, and the evaluation of additionality. Dedicated instruments such as the recently established Carbon Initiative for Development can help overcome these obstacles going forward.
6. **Engaging the private sector** in climate change projects, especially when concessional funds are involved, has been an ongoing challenge for the IFC, particularly in terms of defining common principles for engagement. Internalizing and operationalizing lessons about the risks of climate change for investments through the development of tools and procedures to incorporate knowledge from ongoing investments and advice to clients has proved difficult.
7. **The flat-budget** environment has made it more challenging for task team leaders to focus on climate action, though climate change is acknowledged as a broad priority for all sectors and regions.
8. **Realizing climate cobenefits** of local development priorities (e.g., flood prevention, energy security) should be supported, as it provides an easier way to engage with clients on climate change.
9. **Staff training** to re-tool teams on climate change best practices and incentives to work thematically—across traditional sector boundaries such as energy, water, and agriculture—is required.

Action Areas 2, 3, and 4: Mobilize Finance and Markets

32. Though growing, current international funding dedicated to climate action in developing countries covers only about 5 percent of their anticipated needs. The Copenhagen Accord sent an important political signal in 2009 with the commitment by developed countries to provide new and additional resources approaching \$30 billion for the 2010–12 period (so-called Fast Start Finance) and to mobilize \$100 billion per year by 2020 from a wide variety of sources, public and private, bilateral and multilateral, including alternative sources. This commitment was confirmed one year later in the Cancun Agreements.

33. In Cancun, the Parties decided to establish a Green Climate Fund (GCF) to provide financing to projects, programs, policies, and other activities in developing countries via thematic funding windows. In Durban, the Parties endorsed the design instrument for the GCF, which had been prepared by the Transitional Committee established in Cancun, and decided for expeditious operationalization and early capitalization. In Durban, the Parties established the Board of the GCF and requested the UNFCCC secretariat—jointly with the Global Environment Facility secretariat—to take the necessary administrative steps to set up the interim secretariat of the GCF as an autonomous unit within the UNFCCC secretariat premises without delay. The interim secretariat will provide technical, administrative, and logistical support to the GCF’s Board until the independent secretariat is established. The Parties furthermore invited the Board to select the Trustee of the GCF through an open, transparent, and competitive bidding process to ensure there is no discontinuity in trustee services. The COP decided to invite the World Bank to assume the role of interim Trustee for a period of 3 years. The invitation was subsequently received and a note to that effect was presented to the WBG’s Board in April 2012. While there is uncertainty on the exact timing of the availability of this fund, the WBG has demonstrated innovative ways to mobilize additional resources and leverage private sector investment to finance climate action with considerable success.

Climate Investment Funds⁶

34. As momentum grows on the ground, the CIFs are emerging as real game-changers. A partnership of five multilateral development banks (MDBs)⁷ is demonstrating what can be done for adaptation and mitigation at scale with significant funding. For example, the CIF’s Strategic Climate Fund (SCF) gives priority to highly vulnerable least-developed countries, including the small-island developing states, to strengthen the knowledge base for low-carbon and climate-resilient growth through three programs: the Pilot Program for Climate Resilience (PPCR), the Forest Investment Program (FIP), and the Program on Scaling Up Renewable Energy in Low-Income Countries (SREP).

⁶ All information on the CIFs in this report is current as of February 2012.

⁷ Namely, the African Development Bank, the Asian Development Bank, the European Bank for Reconstruction and Development, the Inter-American Development Bank, and the World Bank Group.

35. Within three years, the CIFs have moved swiftly to operations with activities in 46 middle- and low-income countries implemented through country and regional pilots. They are beginning to have impacts with operational work to transform policy, institutions, and markets and build readiness for climate finance and action. The CIFs are providing valuable lessons on equitable governance, planning, and implementation of climate-smart development, and the importance of engaging a range of stakeholders such as governments, local communities, NGOs, indigenous peoples groups, other development partners, and the private sector. At this point, demand for CIF assistance exceeds current funding levels of about \$7 billion in pledges. As implementation moves forward, there is a need for additional financing—at least to cover the gap between now and the time that the Green Climate Fund is fully operational.

36. The Pilot Program for Climate Resilience (PPCR) is a program under the SCF to pilot and demonstrate ways to integrate climate risk and resilience into countries' core development planning processes. The pilot programs implemented under the PPCR are country-led, build on National Adaptation Programs of Action, and are strategically aligned with other sources of adaptation finance, such as the Adaptation Fund, UNDP, and other donor-funded activities. The PPCR operates through nine country and two regional pilots. Under these programs, approximately \$1 billion in PPCR funding is expected to be channeled through the MDBs for projects and programs that address the impacts of climate variability and change through mainstreaming of adaptation to climate change in development activities.

37. In 2011, seven nationwide strategic programs for climate resilience were endorsed, including a program in (1) Cambodia to improve irrigation, flood, and drought management; (2) (the Plurinational State of) Bolivia, to integrate resilience in water and sanitation services, food security, and priority production systems, as well as drought and flood management; (3) Mozambique, to improve the capacity of roads and coastal cities to withstand climate change; (4) Nepal, to build the climate resilience of watersheds in mountain regions; (5) Samoa, to build the resilience of coastal infrastructure, resources, and communities (as part of the South Pacific Regional Program); (6) St. Lucia, Grenada, St. Vincent and the Grenadines to build national climate resilience (as part of the Caribbean Regional Program) ; and (7) Zambia, to strengthen climate resilience in Barotse and the Kafue River Basin. The funding envelope for the programs is nearly half grant-based, with the rest being near-zero-interest credits. These countries join Bangladesh, Niger, and Tajikistan, as the first 13 countries in the world to create strategic programs for climate resilience (SPCRs) linked to their development plans with CIF support. Seven projects have been approved by the PPCR Sub-Committee for approximately \$121 million in PPCR funding (four projects in fiscal 2011, three in fiscal 2012). This includes four projects approved subsequently by the World Bank's Board (in fiscal years 2011 and 2012) for about \$96 million in PCCR funding, with cofinancing amounting to \$27 million from IBRD/IDA and \$21 million from other sources.

38. The Clean Technology Fund (CTF) offers countries incentives to move forward with the demonstration, deployment, transfer, and replication of clean technologies that reduce

greenhouse gas emissions. The CTF Trust Fund Committee has endorsed 13 CTF investment plans with funding allocations (and two additional investment plans without funding allocations) that are projected to leverage an additional \$36 billion in cofinancing on a \$4.5 billion CTF investment. This projected leveraging ratio of more than 1:8 represents a significant investment in climate change mitigation in CTF partner countries. It is estimated that current CTF programs will result in 1.56 billion tons of CO₂ reductions or avoidance. As of December 31, 2011, more than 25 projects in 12 countries have been approved by the CTF Sub-Committee totaling \$1.9 billion in CTF funding. This includes seven projects approved subsequently by the World Bank Board for about \$972 million in CTF funding, with cofinancing amounting to \$1.6 billion from IBRD/IDA and \$6.3 billion from other sources.

39. The CTF has demonstrated that in underdeveloped but promising niche markets, even limited CTF resources can significantly increase low baseline investments and lay the groundwork for transformational change. For example, in Mexico, the CTF is accelerating the development of Mexico's private wind market by targeting the untapped wind power potential in the state of Oaxaca (more than 5,000 megawatts of world-class wind potential, of which only 88 megawatts are currently operational). The government plans to use the CTF funds to build a wind power generation plant and attract private commercial banks to provide debt financing for the construction and implementation of wind projects.

40. The CTF investment in the MNA regional project is expected to support the deployment of about one gigawatt of CSP generation capacity, almost tripling current global levels. The project is expected to produce higher capacity plants with state-of-the-art technologies, reduce the costs of concentrated solar power technology, build technical capacity, and establish performance benchmarks. These advances are expected to transform the regional market for large-scale solar technology.

41. The Forest Investment Program (FIP) has selected eight pilots to promote sustainable management of forests that lead to emission reductions and the protection of carbon reservoirs. The FIP endorsed four new investment plans in 2011 for Burkina Faso and the Democratic Republic of Congo, Lao PDR, and Mexico for a total of \$180 million in grants and concessional finance. Local communities and indigenous peoples' groups have finalized the design of a dedicated grant mechanism under the FIP.

42. The Scaling Up Renewable Energy Program in Low-Income Countries (SREP) is supporting six low-income countries (Ethiopia, Honduras, Kenya, the Maldives, Mali, and Nepal) to invest in renewable energy services as a means to expand their citizens' much-needed energy access and leapfrog into climate-friendly development. Kenya has submitted its investment plan for endorsement by the Trust Fund Committee.

The Global Environment Facility

43. After nearly 20 years of operation, the Bank remains the Global Environment Facility's (GEF) largest implementing agency in the climate change focal area. Nearly \$2 billion of GEF financing has been allocated to World Bank renewable energy, energy efficiency, and sustainable transport projects. Current evaluations of completed GEF projects indicate that GEF resources totaling about \$480 million have leveraged another \$4.1 billion of financing. This has delivered direct GHG emission reductions of over 250 million metric tons of CO₂ equivalent. The project approaches and concepts supported by early GEF initiatives have laid the foundation and provided models for much of the Bank's current low-carbon development work, making use of CIF, IDA, or IBRD resources.

44. GEF received a record boost from donor countries in May 2010, when more than 30 nations pledged \$4.25 billion. The 52 percent increase compared with the previous replenishment period allowed GEF to expand its support to recipient countries with capacity building, climate friendly technologies, and sustainable development. The continued uncertainty about future climate policy and financing mechanisms means the successful GEF replenishment and IDA funds offer immediate steps to program additional resources.

45. During fiscal 2011 (the first year of GEF 5), over \$61 million of mitigation projects were endorsed by the GEF Council and approved by the Bank's Board. Over \$11 million of adaptation projects were endorsed by the LDCF and SCCF and approved by the Bank's board in the same year. The GEF Council also approved \$60 million of Bank-initiated mitigation projects and \$30 million of Bank-implemented adaptation projects. The Bank's Africa unit developed the Sudan-Saharan Program, a multi-focal area program worth \$111 million that combines \$14 million from the LDCF, \$4.6 million from the SCCF, and \$81 million from the GEF Trust Fund. Altogether, the Bank's GEF program, combining efforts in 12 countries, is valued at \$1.997 billion.

Facilitating Client Access to Multiple Sources of Financing for Adaptation

46. It is clear that the poorest and most vulnerable countries will suffer the most from the impacts of climate change. In the past year IDA has seen unprecedented demand from many countries for support in their efforts to address development and climate change challenges. Trust funds have emerged as a useful complementary source of financing in many cases.

47. Since 2007, lending for post-disaster recovery projects alone has reached \$9.2 billion for 215 projects. In fiscal years 2009–11, close to two-thirds of all GFDRR-financed technical assistance initiatives supported climate adaptation cobenefits, providing more than \$63 million in over 50 disaster-prone low- and middle-income countries across all Bank Regions. This support leveraged an additional \$153 million in cofinancing from development partners, as well as much larger amounts in World Bank investments.

48. The World Bank is the Trustee for the Adaptation Fund. Presently, the World Bank as a Trustee monetizes certified emission reductions (CERs), receives funds from other sources, holds proceeds in a trust fund, and disburses funds to implementing entities at the instruction of the Adaptation Fund Board. From its inception in May 2009 through June 2011, 9.5 million CERs have been sold and \$163 million in associated revenue raised.

Expanding the Carbon Markets

49. Today, the Bank is the Trustee of 12 carbon funds and facilities that support the mitigation of climate change through carbon finance, including two new facilities that focus on post-2012 activities. Together these funds and facilities amount to \$2.7 billion under management, of which \$1.9 billion has been committed to purchasing emissions reductions. Over 170 active projects in more than 50 countries are expected to reduce emissions by an estimated 220 million metric tons of carbon dioxide or its equivalent in other greenhouse gases.

50. From forest restoration in Ethiopia to clean energy in Sub-Saharan Africa and capacity building in Latin America, carbon finance has been integrated into the assistance programs of all World Bank operational regions. The aim is to deepen and broaden the Bank's response to climate change, helping poor communities and countries cope with climate change while still achieving economic growth, poverty reduction, and sustainable development. For example, the Community Development Carbon Fund and the Biocarbon Fund show that carbon markets can work to bring in revenue streams to rural communities that otherwise have limited sources of income. These initiatives not only mitigate climate change, but also improve rural livelihoods and resilience to climate change, conserve biodiversity, and restore degraded lands.

51. Overall, the World Bank's carbon finance operations have catalyzed and fostered the development of a global market for carbon assets under the Kyoto Protocol. Through learning-by-doing and diversification, and resource mobilization via its carbon funds, they have tested innovative approaches and explored new opportunities. For instance, they have developed or contributed to new methodologies that open new potential for market innovation. The funds and facilities have pioneered legal work on carbon finance transactions, drafting prototype agreements for purchase of emission reductions in the context of programmatic CDM and of assigned amount units (AAUs) in the context of Eastern European countries' Green Investment Schemes. They demonstrated a successful mediation process as an alternative dispute resolution tool to settle a dispute with a public entity that was the counterparty in an emission reduction purchase agreement. The process itself and the outcome were used for the first time at the Bank to settle a contractual matter and the settlement documents have been made accessible to the public. Finally, carbon finance operations at the World Bank sought to strengthen the capacity of public, private, and financial stakeholders in developing countries to benefit from carbon asset transactions. This has been particularly demonstrated through the CF-Assist program, whose activities help strengthen national institutions, foster market development through knowledge

and business development platforms, and support strategic assessments and analytical work at the national and sector level.

52. New market initiatives emerging in developed and developing countries signal long-term interest in advancing carbon market solutions—such as emissions trading in Australia or California—and plans to pilot a broad range of market instruments in other countries, including Brazil, China, Chile, Colombia, Costa Rica, India, Indonesia, Korea, Morocco, Mexico, South Africa, Thailand, Turkey, Ukraine, and Vietnam. At the same time, uncertainties on future frameworks and associated demand for carbon assets beyond 2012 are hampering market activity, with serious implications in both capacity and confidence. While domestic and international frameworks progressively solidify, the World Bank continues to innovate and build readiness to support future scaled-up markets and leverage its decade-long experience, which combines cutting-edge analytical and advisory work and concrete piloting on the ground.

53. In 2007, the Bank established two new carbon facilities—the Forest Carbon Partnership Facility (FCPF) to assist developing countries reduce emissions from deforestation and forest degradation, and the Carbon Partnership Facility (CPF) to scale up the use of carbon finance through programmatic and sector-wide interventions. Both the CPF and the FCPF are unique partnerships among several stakeholders designed to broaden, deepen, and extend the duration of carbon finance, making them key instruments in bending greenhouse gas emission trajectories globally. The FCPF has pledged funding of \$436 million for capacity building and pilot performance-based payments for verified emission reductions from forest and land management activities. The CPF Carbon Fund has €133 million in commitments and another €11 million in donor contributions to the Carbon Asset Development Fund.

54. The Partnership for Market Readiness (PMR), a grant based capacity-building fund, has made significant progress since its launch in Cancun in 2010. Twenty-five countries have now joined PMR, including all BASIC countries (Brazil, China, India and South Africa) and other major economies. With the objective to help countries pilot domestic emissions trading schemes and new crediting mechanisms, the PMR provides capacity building in areas such as baseline setting, MRV, GHG accounting, and institutional/policy frameworks. The PMR is becoming one of the most important platforms to discuss new market instruments and prepare countries to use them for scaling up mitigation efforts. The PMR has mobilized \$70 million and has a target funding size of \$100 million.

55. In Durban, the Bank launched the Carbon Initiative for Development (Ci-Dev) to build readiness and capacity in low-income countries to access carbon markets and support a pipeline of low-carbon investment opportunities. The Bank also launched the third tranche for the BioCF to pilot soil carbon sequestration and explore landscape accounting approaches with valuation of ecosystem services.

56. In February 2011, IFC launched the Post-2012 Carbon Facility with €150 million in capital—€15 million from IFC and the remainder from European power utilities and energy companies. The facility will forward purchase CERs that are expected to be produced over 2013–20 from projects directly financed by IFC or by local banks financed by IFC. IFC is exploring innovative debt financing to frontload firm carbon off-take agreements and help carbon finance projects and programs of activities (PoAs) reach financial closure, despite few or no fixed assets and substantial dependence on a future generation of emission reduction credits.

Expanding Catastrophe Risk Financing

57. Over the past decade there has been an increase in the intensity and damage caused by natural disasters worldwide. Developing countries have suffering the most. The WBG is offering two complementary lines of catastrophe risk financing products and advisory services to countries, as part of their broader disaster risk management strategies: (1) sovereign risk financing for direct budget support to provide immediate liquidity should a disaster occur while other resources are being mobilized; and (2) advisory services to strengthen domestic property catastrophe insurance markets to facilitate increased penetration of insurance in developing countries and access to re-insurance markets.

58. Progress over the past 18 months includes the extension of index-based agriculture insurance to help farmers hedge against weather risk. Weather risk management work progressed in Africa and Latin America. In Africa, the World Bank is working with the Africa Union, the World Food Programme, and DFID to explore the feasibility of establishing a Pan-African disaster risk pool, the Africa Drought Risk Financing facility. The Malawi Weather derivative has been renewed for the fourth time. It is estimated that since 2003 about 1 million farmers and herders worldwide benefit from similar schemes supported in some sort by the World Bank Group.

59. With regard to sovereign catastrophe risk financing, two Catastrophe Risk Deferred Drawdown Options (CAT-DDO) were closed in the same period for Peru (\$100 million, December 2010) and El Salvador (\$50 million, February 2011). Two more, for the Philippines and Panama, were closed in fiscal 2012. This brings the number of governments covered through WBG operations to 24 (since 2005). This includes provision of financial services (catastrophe swaps) to the Caribbean Catastrophe Risk Insurance Facility, a mutual insurance pool covering hurricane and earthquake risks to several Caribbean island states by facilitating the transfer of that risk to capital markets (through cat swaps, and conventional reinsurance markets), as well as the MultiCat Program. The MultiCat Program is the first catastrophe bond issuance platform to help governments from developing countries access affordable insurance coverage against natural disasters through the capital markets with an inaugural issuance for Mexico (\$290 million) in October 2009.

Putting Capital Markets to Work for Climate-smart Investment

60. The World Bank has been working with private banks to develop on-lending product lines, particularly for energy efficiency in countries such as China. The World Bank Treasury is engaging with investors looking for climate-related, long-term sustainable investment opportunities in the capital markets. Fiscal 2009 saw the launch of the World Bank's Green Bonds, which dedicate funding raised to projects or programs that finance low-carbon or climate-resilient development activities in client countries. To date, over \$2.3 billion in Green Bonds have been issued through 46 transactions in 17 currencies. Fixed-income investors are becoming increasingly familiar with the World Bank's Green Bonds, supporting 26 climate change projects and paving the way for Green Bonds to become an asset class of choice for investors interested in climate change and sustainability issues. Efforts are under way in LAC to develop an innovative climate financing instrument called "Asset-Backed Green Bonds." Drawing on the best expertise available, it is expected that this first-of-a-kind security will be launched in the international bond market by a Latin American energy company.

61. The IFC to date has issued five Green Bonds valued at \$500 million. It is working with Treasury and the P8, a group of the world's largest pension funds, to explore ways in which institutional financing can be directed to climate-friendly investment in emerging markets. Recognizing the role that MDBs can play in channeling funds and financial structuring, the WBG participates in P8 meetings with selected representatives of the financial community. The IFC has engaged with Standard & Poors to develop the first Global Emerging Market Carbon Efficient Index. Launched in December 2009 at COP-15 in Copenhagen, this new index aims to encourage carbon-based competition among emerging market companies and give carbon-efficient companies access to long-term investors. The model has been replicated in Brazil, Japan, and the UK.

Using Guarantee Instruments

62. The WBG guarantee portfolio for climate-friendly investments has been growing rapidly in recent years. Guarantees mobilize private capital into countries and sectors with a high risk perception and improve the viability of infrastructure projects by significantly extending debt tenors and lowering the cost of borrowing.

63. The guarantee menu of the WBG includes primarily partial risk guarantees (PRGs), which support private sector projects by covering the risk of debt service default caused by government nonperformance of its contractual obligations; partial credit guarantees (PCGs), which cover part of debt service default/credit risks of project and public-sector borrowers; and policy-based guarantees (PBGs), which cover part of debt service default/credit risk of sovereign borrowers for fiscal support. The World Bank has issued 37 guarantees in 30 countries since 1994 for a total amount of \$4.5 billion; \$27 billion in project financing has been mobilized by \$3 billion in PRGs.

64. By supporting financial institutions, IFC and MIGA help strengthen capital and financial markets and reach out to smaller clients (microfinance, leasing, trade finance, guarantees, housing finance, and consumer finance). MIGA has guaranteed several clean energy projects, including methane gas extraction and energy production in Rwanda; bio-fuel in Liberia; solid waste management and energy production in El Salvador; a geothermal power plant in Kenya; and a hydropower plant in Uganda. MIGA issued \$402 million in new guarantees during the period from fiscal 2008 and the 1st half of fiscal 2012. MIGA is currently assessing new applications to support renewable projects (such as PV, wind farms, and bio-fuels), REDD initiatives, energy efficiency programs, and carbon sequestration. Experience has shown that MIGA's stamp of approval is important for a project's "license to operate"—especially in complex oil/gas, mining, and infrastructure projects. MIGA may be particularly relevant for developing countries with limited baseline finance for climate action but with opportunities for FDIs into these countries, since MIGA can provide political risk insurance for cross-border investments into the agency's member countries.

65. Between 1997 and 2011, IFC launched fifteen sustainable energy finance programs supported with concessional funding. This includes engagements with thirty financial intermediaries resulting in over twenty risk-sharing facilities, six credit lines, and one funded mezzanine facility. For the IFC, the risk-sharing facilities allow financial intermediaries to cover a portion of their risk. Concessional credit lines, on the other hand, address the high cost of early market entrants. Risk-sharing facilities have evolved from first-loss individual loan guarantees to guarantees on a portfolio basis, with concessional funds covering all or part of the first loss. Risks and donor first losses have been explicitly integrated into the pricing methodology for risk-sharing facilities, leading to a clearer risk-return for first and second losses. Donor funds for first losses have evolved from pure grants to concessional funding receiving a fee.

66. The role of guarantees in these projects is to help convince banks that their losses will not exceed those typical of their portfolio. In each project, an agreement is reached on the accepted level of loss and risk sharing (between IFC and the bank) for losses above that amount. Concessional funds are essential for structuring the risk-sharing facility because they can assume a portion of the portfolio first losses. As of February 2011, a total of \$60 million of lending had been mobilized for risk sharing and \$65 million sourced in concessional donor funds, including \$44 million for guarantees and risk-sharing facilities; \$18 million for credit lines; and €3.4 million for funded mezzanine financing. The losses average less than 0.05 percent over IFC's exposure of \$302 million in risk-sharing facilities over 14 years.

Action Area 5: Support to Accelerated Development and Deployment of New Technologies

67. While financing is the key, it will need to be complemented with technological development and innovation, coupled with large-scale deployment to have a transformational impact on the trajectory of GHG emissions and resilience to climate impacts.

68. Support to accelerate development and deployment of new and innovative climate technologies is led by the IFC, with dedicated units in the new Climate Business Group and the Funds Department. A total of \$154 million has been invested in eight climate change focused funds. The clean tech investment program reached \$70 million in fiscal 2011 with new staff added and a future target of \$150 million per year. IFC is increasingly promoting clean energy technology innovation through its advisory work, such as support for building code reform, sustainable forestry, and public-private partnerships such as advising Gujarat (India) on policies to achieve an ambitious rooftop solar photovoltaic program

69. IFC adopted a Solar Investment Strategy and initiated a Cleantech Investment Program for early-stage clean technology companies in developing countries in fiscal 2009. Three technology innovation models (e.g., regional energy innovation centers, technology policy support, and strengthening client's science and technology capacity) have been developed and presented in a technical briefing to the Board in January 2009.

70. Substantial work is being done to accelerate the development of new emerging technologies, including concentrated solar power (CSP) and carbon capture and storage (CCS). This can fill an important gap in the climate change area, since development, diffusion, and financing of CCS technology is one of the most promising means of mitigation. The World Bank has been managing a multi-donor CCS Trust Fund since December 2009 that supports capacity and knowledge sharing, assessment of the technology's potential, and facilitates its inclusion in low-carbon growth strategies. The CCS trust fund finances programs in the Mahgreb region (Morocco, Algeria and Tunisia) and eight other countries: Mexico, South Africa, Botswana, Egypt, Jordan, Kosovo, China, and Indonesia. In addition, the Bank has examined impacts of potential CCS deployment on electricity prices in Southern Africa and the Balkans.

71. As a unit of the Bank's Financial and Private Sector Development Vice Presidency, *infoDev* is designing and launching a network of Climate Innovation Centers (CICs) to accelerate the innovation of locally relevant climate technologies. CICs address barriers to innovation by offering venture financing and business acceleration services to support local entrepreneurs and small and medium enterprises (SMEs). This allows developing countries to achieve their green growth objectives by promoting new domestic clean technology industries and creating employment opportunities. Currently, *infoDev* is developing both regional and global CIC networking strategies to link each center and promote knowledge sharing, codevelopment of technologies, B2B linkages, and trade facilitation. The CIC network will be

linked to *infoDev*'s global network of 400 business incubators, which supports more than 20,000 SMEs in over 100 countries.

72. During fiscal 2010, the ICT Sector Unit prepared a knowledge product entitled *ICT Linkages to Climate Change—Potential WBG Interventions*, in which the role of ICTs in mitigating climate change and adapting to its impacts was assessed as the basis for identifying possible areas of focus for WBG interventions. The assessment framework that was applied demonstrated that ICTs have the potential to make a significant impact (both in mitigation and adaptation aspects) across multiple sectors of the economy and segments of the population, and that there were many specific opportunities and possible interventions. Among the identified action items, it was determined that more rigorous efforts were needed to create awareness among WBG sector experts, launch analytical work products to build credibility, and measure the impact of ICTs across multiple sectors and types of interventions.

Action Area 6: Step Up Policy Research, Knowledge, and Capacity Building

73. The WBG has stepped up its analytical work across sectors and issues so that client countries can use new knowledge for informed decision-making. There is a concerted effort to bridge the knowledge gap that exists in several areas of climate change, particularly in adaptation. In addition to several flagship reports and analytical work, the WBG is actively focusing on increasing climate change awareness and the skills of development practitioners.

Global Analytical Work

74. The 2010 *WDR on Development and Climate Change* was launched in September 2009. It points to the massive funding requirements for mitigation, adaptation, and technology of roughly \$300 billion a year. Moreover, current efforts to mobilize funding for mitigation and adaptation stand at less than 5 percent of projected needs. The report shows that a “climate-smart world” is possible if the world decides to “act now, together and differently.”

75. The *Economics of Adaptation and Climate Change* identifies development as a critical imperative in scaling up adaptation financing needs. The global report estimates that the cost for developing countries to adapt to climate change in a 2-degree warmer world would be \$75–100 billion per year during the period 2010–50. Seven country studies—Bangladesh, Bolivia, Ethiopia, Ghana, Mozambique, Samoa, and Vietnam—as well as the synthesis report are being integrated into the development programs of the countries to varying degrees. For example, the report for Bangladesh has been instrumental in the formulation of activities being undertaken as part of the PPCR.

76. *Low-carbon growth studies* provided knowledge of the incremental costs and benefits of development programs with lower GHG emissions. Studies have been completed for Brazil, China, India, Mexico, South Africa, Indonesia, and Poland; additional studies are under way in

Nigeria, Morocco, Tunisia, Macedonia, Colombia, Uruguay, Vietnam, and Costa Rica. The studies directly contributed to the development of a series of modeling tools that are now being deployed to support future low-carbon development planning. Findings from the seven individual country studies provide a foundation for Nationally Appropriate Mitigation Actions.

77. The 5th Urban Research Symposium on *Cities and Climate Change* was held in Marseille, France in June 2009 and attended by more than 700 people from 70 countries. It featured eight teams of commissioned researchers and 200 research papers selected from more than 500 initial proposals; the publication from the symposium features edited volumes in print and online. The knowledge product—*Cities and Climate Change: An Urgent Agenda*—describes the challenges and impacts that climate change poses for cities worldwide, the opportunities and benefits for cities taking action, and the support available from the World Bank and other development partners. The *Guide to Climate Change Adaptation in Cities* (2011) and the *Climate Resilient Cities Primer* (2009) together provide practical guidance on adaptation in cities. The *Mayors' Task Force on Climate Change, Disaster Risk and the Urban Poor* featured a global report and four city case studies (2011).

Region- and Country-Specific Analytical Work

78. The WBG has been working with client countries to inform and support development planning. To further this effort, the WBG has scaled up regional-scale work with client countries. There is a special emphasis on defining and quantifying adaptation for several countries. For example, a forthcoming report on *Adaptation to a Changing Climate in the Arab Countries* will address climate change adaptation for all 22 Arab countries, and provide strategic guidance on climate change. *Climate Risk and Adaptation in Asian Coastal Cities* is another example of work on adaptation. There is additional country-specific analytical work on adaptation options at the subregional level, such as cities in MNA and the Sundarbans in India, as well as the country level such as Bangladesh.

79. On low-carbon development, there is work on identifying new methodologies and tools for countries interested in moving to that path. One report—*Low-carbon Energy Projects for Development in Sub-Saharan Africa: Unveiling the Potential, Addressing the Barriers*—presents a first-of-a-kind inventory of clean energy projects in 44 countries in Sub-Saharan Africa that could receive support from CDM/Carbon Finance and possibly the new Climate Investment Funds. *Meeting East Asia's Growing Energy Needs in a Sustainable Manner* sets the strategic direction of a sustainable energy path for East Asia and presents policy tools and financing mechanisms that could help in implementation. *Greening the Wind: Environmental and Social Considerations for Wind Power Development in Latin America and Beyond* describes the key environmental and social impacts that are associated with large-scale, grid-connected wind power development.

Tools, Methodology, and Guidance Notes

80. To complement its analytical work, the WBG has been developing a wide range of instruments that could be used by policy makers and development planners to inform and implement climate change projects and policies. Some make information and data more accessible, others focus on the “how-to” of a climate-friendly policy.

81. The Climate Change Knowledge Portal has been developed to provide World Bank staff and development practitioners with access to climate change and climate-related spatial data sets and tools for operationalizing climate resilience and low-carbon opportunities in development projects. The Climate Finance Options Platform—a partnership between UNDP and the World Bank—is serving as a one-stop knowledge virtual center on climate finance, offering practitioners detailed and up-to-date information for better decision making. There are 61 climate funding sources analyzed together with 23 in-depth case studies and 90 climate finance publications in the library, plus guides and project analysis tools in the knowledge center.

82. The *MACTool* builds on a prototypical version developed under the Brazil and Mexico Low-Carbon Country Case Studies to bring to the public domain a free, user-friendly, open-code tool aimed at enabling countries to build and master their own marginal abatement cost (MAC) curve. It provides an economic instrument to compare low-carbon options that has been popularized by McKinsey & Company at the global and country level. The *EFFEFFECT* model, originally developed with the government of India, has since been applied in a number of countries. It supports open and transparent modeling and comparison of emissions pathways associated with a range of development scenarios to facilitate consensus around and planning of low-emissions programs.

83. Good practice guidelines have been developed to help relevant operations account for social and gender dimensions of climate change. An operational toolkit has been prepared on the social dimensions of climate change that includes gender aspects.

84. Toolkits and decision-making guides for adaptation to climate change in the agriculture and water sectors have been developed and applied. For example, *Carbon Assessment in Croplands* provides estimates of soil carbon sequestration for more than 20 land management practices. Marginal abatement cost curves illustrate the cost-effectiveness of the practices in Africa, Asia, and Latin America.

85. On water, a flagship report assesses climate change and portfolio vulnerability at the regional level. A basin-level database of climate and hydrologic indicators has been developed. To supplement it, a methodology report provides guidance on uncertainties, decision making, and the use of tools. Case studies illustrating the uncertainties of the data with respect to five basins are also included in the report.

Capacity Development

86. Climate change competencies are being built and the knowledge base enhanced within the WBG. Dedicated programs were developed for staff with the objective of strengthening the WBG's internal capacity to provide quality advice and timely support to our clients across sectors and regions. The programs target WBG practitioners and leaders and development partners outside the Bank Group.

87. The World Bank Institute provides learning modules for government officials, policy makers, and development practitioners on various aspects of climate change work. For example, the Mitigation Actions Implementation Network (MAIN) is delivering regional peer-to-peer learning. An Energy Efficiency Program is being delivered to participating countries. Regulators and think tanks in Vietnam, Nigeria, and India have been trained to use the EFFECT model. The South-South Exchange on Agriculture is facilitating information and experience sharing between farmers from developing countries. Cities have benefited from sessions on carbon finance capacity building.

88. There is an emerging focus on facilitating dialogue and capacity development on Low-Emissions Development and NAMAs in response to the requirement of the Copenhagen Agreement. The Bank hosted a high-level dialogue with public and private sector players to ensure synergies and collaboration.

Communications and Outreach

89. The SFDCC had begun consultations with a wide range of stakeholders on climate change. Conversations with civil society continue in civil society forums convened during the WBG's Annual and Spring meetings. The WBG's commitment to such dialogue is further exemplified by the annual CIF Partnership Forum, a broad-based meeting of stakeholders, including contributing and eligible recipient countries, MDBs, UN, NGOs, and private sector entities held each year.

90. The World Bank Group has been developing communication strategies around COP meetings that include organizing events with stakeholder and client countries on relevant analytical work done through the year. The Africa Region provided technical and communication support to the Africa Union to make sure that COP-17 in Durban was "Africa's COP." It helped put forward the extent of climate change impacts on Africa and highlight innovations that could be scaled up to deal with adaptation and mitigation in Africa.

91. The climate change web site launched in July 2009 has more than 100,000 page views per year. This website is key to reporting the latest news and comments on climate change and disseminating various knowledge products. The blog on Development in a Changing Climate has 90,000 page views annually and is a forum where experts from within and outside the WBG can express their latest trials and triumphs on climate change. Social media—including blogs,

twitter, and multimedia—have been integral parts of the communication strategy, enabling it to reach to a younger audience willing to engage on climate change in a more interactive way.

Annex 2. Implementation Progress for Key Actions and Deliverables

SFDCC Objective	Action	Products/Processes/ Indicators	Time line	Deliverable status
Action Area 1: Support Climate Action in Country-led Development Processes	Enhance cooperation with development partners to facilitate global action	<ul style="list-style-type: none"> • Collaboration with the UN and its agencies on a coordinated approach to climate change, particularly financing, capacity building, and monitoring 	FY09–11	Completed: Regular interaction through the UN HLCP Working Group on Climate Change (WB & UNDP Co-Conveners for thematic group on finance), joint high-level and thematic events at COP-15 and COP-16, UNDP/WB Climate Finance Knowledge Platform launched in Nov. 2010.
		<ul style="list-style-type: none"> • Joint implementation of CIFs with other MDBs 	FY09–10	Completed: CIFs (\$7 billion in pledges) are now playing a key role in meeting international climate change objectives with activities in 46 countries through 39 country and regional pilots.
		<ul style="list-style-type: none"> • New partnerships established, particularly to facilitate the work on technology and adaptation 	FY09–10	Completed: Several new partnerships established around financial products, shared operational issues, and technical issues. For example, in partnership with GIZ, the WB organized a training workshop on adaptation tools for the government of Mexico. The WB has engaged in partnerships with University of Cape Town and Columbia University for climate data sharing and knowledge management.
	Support climate actions by operational strategies	<ul style="list-style-type: none"> • Actions to strengthen climate resilience are supported by several CASs, with an estimated demand by at least 10 countries with high vulnerability to climate risks 	FY09–11	Completed: Actions to address climate-resilience were specified ⁸ in 9 (41%), 11 (65%), and 13 (76%) of CASs/CPSs approved in FY09, FY10, and FY11 respectively.
		<ul style="list-style-type: none"> • Support to climate actions included in business strategies for WB regions, MIGA, and IFC 	FY09	Completed: The IFC has designated climate change as one of its corporate strategic priorities and adopted a new Solar Investment Strategy. A regional strategy for Climate Resilient Growth in Africa and a report on climate change in South Asia to guide SAR activities have been completed, as have climate change papers and/or business plans in EAP, ECA, LCR, and MNA. MIGA has added to its annual business plans its desire to support climate change projects when pursued by private sector investors.

⁸ Sufficient information about the actions was provided.

SFDCC Objective	Action	Products/Processes/ Indicators	Time line	Deliverable status
Support climate actions by operational strategies (continued)		<ul style="list-style-type: none"> Urban Strategy update includes consideration of climate risks and support to climate actions 	FY09	Completed: Urban Strategy includes climate change and disaster management as one of its five business lines.
		<ul style="list-style-type: none"> Energy Sector Strategy includes consideration of climate risks and support to climate actions 	FY10	Progress made: The proposed World Bank Group Energy Sector Strategy includes consideration of climate risks and support to low-carbon energy sector development efforts.
		<ul style="list-style-type: none"> Social Development Strategy update includes consideration of climate risks and support to climate actions 	FY10	Completed: Mid-Cycle Implementation Progress Review (MCIPR) of the Social Development Strategy was endorsed by CODE in May 2011. Alongside the existing three pillars of the strategy—social inclusion, social cohesion, and social accountability—the MCIPR adds a fourth pillar on social resilience, which recognizes explicitly the social and distributional (including gender) dimensions of the climate change, disaster risk reduction, and green growth agendas as a core part of the social development agenda.
		<ul style="list-style-type: none"> Environment Strategy update includes consideration of climate risks and support to climate actions 	FY11	Completed: New WBG Environment Strategy has been endorsed by CODE and will be delivered to the Board by March 2011. The Strategy articulates a vision for a green, clean, and resilient world for all. Two elements of this vision, namely clean and resilient, will directly address climate change concerns.
		<ul style="list-style-type: none"> ICT Strategy update includes consideration of climate risks and support to climate actions 	FY11	Progress made: New WBG Strategy for Information and Communication Technologies (ICTs) at consultation stage. The ICT Strategy will take a cross-sectoral approach, including climate change.
Support climate actions in lending programs		<ul style="list-style-type: none"> A plan for strengthening synergies between support to disaster risk management and support to adaptation developed and implementation started 	FY09–10	Completed: The Bank has adopted a comprehensive climate risk management approach focused on mainstreaming disaster risk management (DRM) and climate adaptation (CCA) in development as reflected in both the Cancun and Durban WBG adaptation building blocks and exemplified by the adoption of a joint GFDRR-ENV work program for FY12. Over two-thirds of CAS/CPSs adopted in FY10–11 recognized disasters as a challenge to the strategy's implementation, half identified DRM as a cross-cutting strategic issue, and 15 set DRM as a distinct pillar of their strategy. This strategic recognition of DRM is leading to major investment in disaster and climate resilient development, with real results on the ground. Reflecting this, in FY09-11 the WB has financed 15 operations totaling \$1.15 billion that pursue DRM and CCA objectives in an integrated manner across all Bank regions. Over the same period, CCA was firmly established and operationalized as an integral part of the GFDRR mandate and a core pillar of its business plans with a focus on providing country-level climate change information, strengthening weather and climate information systems, helping countries access climate risks, including post-disaster, promoting climate risk financing and transfer solutions, and scaling up community adaptation. For the 31 GFDRR priority
Support climate actions in lending				

SFDCC Objective	Action	Products/Processes/ Indicators	Time line	Deliverable status
programs (continued)				countries, 30 national DRM and CCA programs have been adopted and one is under completion. Close to 80% of the GFDRR portfolio and pipeline focus on climate change adaptation in AFR, EAP, LCR, MNA, SAR and globally, leveraging significant IDA, IBRD, and CIF resources.
		<ul style="list-style-type: none"> Screening of relevant projects for climate risks and sector-wide vulnerability assessments introduced 	FY09	<p>Progress made: Work has been carried out and published on the impact of climate change on hydrologic indicators and exposure risk at the level of catchments (8,400 catchments for six Bank regions). This will form the basis for project-level screening for climate risk. The specific mechanism for how to do so in a manner that is both robust and operationally relevant is currently under consideration.</p>
		- starting with hydropower projects		<p>Completed: A hydropower toolkit has been delivered. Gaps in global knowledge and analytical uncertainties necessitate additional work to develop operational applications.</p>
		- extending to other vulnerable sectors within regional context	FY10-11	<p>Progress made: Following the IDA16 replenishment that included climate resilient development as a special theme, work has begun on developing screening approaches to assess vulnerability of country assistance / partnership and sector strategies.</p>
		- methodology for city-wide climate vulnerability assessment developed	FY11	<p>Completed: The Urban Risk Assessment Framework has been developed for assessing disaster and climate risk in cities to enable informed decision making and urban planning in the design of risk-management programs. The URA provides a full picture of hazard risk at the city level, an assessment of vulnerable populations, and a mapping of relevant institutions pointing to gaps and duplications in roles and responsibilities. The URA tool has been implemented in several cities, such as Dar es Salaam, Jakarta, Mexico City, and São Paulo over the past year with very positive results.</p>
		<ul style="list-style-type: none"> Screening for EE opportunities in infrastructure projects introduced 	FY09	<p>Completed: A comprehensive assessment of opportunities for screening for EE was implemented during CY 2010. The activity looked at all projects categorized as having an energy component and evaluating these projects for missed EE opportunities. Of the 63 projects screened, two-thirds were found to have EE built in, and just five were found to have missed opportunities. However, coding of projects remains an issue, as it was noted that a third of these reviewed energy sector projects had EE components but were not reported as EE projects in terms of coding. The detailed findings of the EE screening evaluation are provided in the final report, which can be downloaded at: http://intresources.worldbank.org/INTENERGY/Resources/Energy_Efficiency_Screening_FINAL.pdf.</p>
		- starting with energy sector projects		
	- extending to transport, water, and urban projects	FY10-11	<p>Progress made: A primer on EE for municipal water and wastewater utilities jointly undertaken by ESMAP, Water Anchor, and WSP provides information on opportunities and good practices for improving EE and reducing energy cost in municipal water and wastewater utilities. The primer highlights energy saving opportunities and viable potential in water and wastewater utilities.</p>	

SFDCC Objective	Action	Products/Processes/ Indicators	Time line	Deliverable status
Support climate actions in lending programs (continued)		- comprehensive approach to promoting EE in WB operations developed	FY11	Progress made: In 2007, an EE Scale-up Action Plan for the World Bank was prepared to identify steps required to ramping up the scale and scope of EE in operations. This plan is in the process of being updated to incorporate lessons learned from the rapid expansion of the EE portfolio within the energy practice during the last few years. The update will include lessons learned from projects in recent years, and discuss the institutional, operational, and organizational issues and knowledge gaps that remain, and how they could be addressed to further support the scale-up of EE operations in the World Bank. The recommendations will also draw on the lessons learned from the EE screening exercise (CY11), and are expected to include steps to explore approaches to tap into more EE opportunities.
		• Increase in WBG financing for new RE and EE by an avg. of 30% per annum	FY09–11	Completed: The WBG's renewable energy portfolio more than doubled from \$2.9 billion in FY06–08 (18 percent of total WBG energy financing in the period) to \$6.6 billion in FY09–11 (22 percent). The share of total WBG energy financing for low-carbon projects rose from 42 percent to 51 percent. FY11 marked an all-time record in WBG low-carbon financing, with \$5.9 billion in new commitments. Compared to a target average annual increase of 30 percent in financing for new renewable energy (new RE) and energy efficiency (EE) to FY11, amounting to total financing of about \$6 billion over FY09–11, the WBG's financing for new RE and EE actually increased by about 48 percent per annum, and totaled some \$9.2 billion. ⁹
		• WBG low-carbon energy projects share reaches 50%	FY11	Completed: The share of low-carbon projects ¹⁰ increased from \$6.76 billion (42%) in FY2006–08 to \$14.9 billion (51%) in FY2009–11.
		• Increased demand for and lending in support of modal shifts in freight and public transport (as compared to FY06-08)	FY11	Completed: The share of the roads and highways subsector has decreased (from 88 % in FY01 and 76% in FY06 to 50% in FY10 and 65% in FY11). The share of the railways subsector has increased (from 1% in FY01 and 6% in FY06 to 14% in FY10 and 16% in FY11). Engagement in the urban transport subsector increased over time (“General Transport”, with an urban transport majority, from 9% in FY01 and 13% in FY06 to 29% in FY10).
		• A program to assist with sustainable urban investments is developed and piloted in at least 5 cities	FY09–11	Completed: Projects in more than 5 cities approved for sustainable urban investment: \$25 million IBRD for improved solid waste management and landfill operation in Amman, with associated carbon finance operation; \$200 million from CTF and \$200 million from IBRD for the transformation of urban transportation in Mexican cities, focusing on integrated mass transit corridors and low-carbon vehicle technologies; CTF Investment Plan for Thailand includes \$70 million for urban transformation in Bangkok to cofinance the development of a bus rapid transit (BRT) system, and investments in energy efficiency for municipal facilities and public spaces, focusing on electrical appliances and air-conditioning; Brazil integrated solid waste management and carbon finance project, \$50 million IBRD -- supports municipalities throughout Brazil to
Support climate actions in lending programs				

⁹ Following a review completed in FY11, it was discovered that WBG financing for New RE and EE over FY05–07 was under-reported. Therefore, the baseline against which WBG increases in financing for New RE and EE are measured is revised from \$600 million to \$898 million.

¹⁰ Defined as: Renewable energy projects (including all sizes of hydropower projects), energy efficiency improvement, power plant rehabilitation to improve efficiency; district heating; biomass waste-fueled energy; gas-flaring reduction; and increased use of cleaner fuels to displace more carbon intensive fuels.

SFDCC Objective	Action	Products/Processes/ Indicators	Time line	Deliverable status
	(continued)			invest in solid-waste-related infrastructure, which also reduces methane emissions.
	Develop an outcome-based results framework	<ul style="list-style-type: none"> A set of definitions and outcomes developed by the WBG 	FY09	Completed: development of both actions. Outcome-based results framework completed and included as part of this report.
		<ul style="list-style-type: none"> Improved climate-related portfolio tracking 	FY10	Improved climate-related portfolio tracking system has been developed and adopted to track IDA and IBRD lending and non-lending activities. New system will be fully integrated into Bank operating systems by the beginning of FY13.
	Increase access to additional finance to cover higher costs and risks	<ul style="list-style-type: none"> Maintained or increased IDA replenishment levels, and improved tracking of ODA to climate-related actions, mitigation, and adaptation (with DAC) 	FY11	Successful IDA replenishment based partially on increased needs for supporting climate-resilience in client countries. Completed: System for tracking climate cobenefits in the IDA portfolio developed during FY11, to be piloted in FY12, and will be introduced Bank-wide at the beginning of FY13.
		<ul style="list-style-type: none"> Climate Investment Funds operational with a target of \$6 billion 	FY09	Completed: CTF and PPCR became operational in FY09, with pledges of over \$6 billion (now \$7 billion). The FIP and SREP under the SCF became operational in the first half of FY10. \$4.4 billion has been allocated for CTF investment plans leveraging other resources 1 to 8. Across the CTF and PPCR, activities are ongoing in over 20 countries.
		<ul style="list-style-type: none"> Country-level activities start under FIP and SREP; implementation of strategic programs starts under PPCR 	FY11	Completed for all programs under the SCF PPCR: <ul style="list-style-type: none"> 13 Strategic Programs for Climate Resilience endorsed by Sub-Committee for approximately \$1 billion in PPCR funding: Bangladesh, Cambodia, Grenada, Mozambique, Nepal, Niger, Samoa, St. Lucia, St. Vincent and the Grenadines, Tajikistan, and Zambia (FY 11); the Plurinational State of Bolivia and Jamaica (FY12); 7 projects approved by Sub-Committee for approximately \$121 million in PPCR funding (4 projects in FY11, 3 in FY12); of which 4 projects approved by World Bank Board (in FY11&12) for about \$96 million in PCCR funding (cofinancing: \$27 million from IBRD/IDA and \$21 million from other sources). FIP: <ul style="list-style-type: none"> 4 Investment Plans endorsed by Sub Committee for \$180 million in FIP funding: Burkina Faso and Democratic Republic of Congo (FY11), Mexico and Lao PDR (FY12); 1 project approved by Sub-Committee for approximately \$42 million in FIP funding (FY12), and subsequently approved by World Bank Board (co-financing: \$350 million from IBRD/IDA and \$333 million from other sources); local communities and indigenous peoples' groups are in the process of finalizing the design of a Dedicated Grant Mechanism for Indigenous Peoples and Local Communities.
	Increase access to additional finance to			SREP: <ul style="list-style-type: none"> 4 Investment Plans endorsed by the SREP Sub-

SFDCC Objective	Action	Products/Processes/ Indicators	Time line	Deliverable status
Action Area 2: Mobilize Additional Concessional and Innovative Finance (continued)	cover higher costs and risks (continued)			Committee for \$160 million in SREP funding: Honduras, Kenya, Mali and Nepal (FY12) • 1 project approved by Sub-Committee for approximately \$25 million in SREP funding (FY12).
		• Increased leverage of GEF funds through programmatic approaches	FY09–11	Completed: • Over FY09–11, \$239 million in GEF, LDCF, and SCCF funding helped green World Bank and IFC projects worth \$979 million, with other cofinancing of \$1,602 million. • In FY11, the Bank's Africa unit developed the Sudan-Sahelian Program, a multi-focal area program worth \$111 million, combining \$14 million from the LDCF, \$4.6 million from the SCCF, and \$81 million from the GEF Trust Fund. Altogether the program, combining efforts in 12 countries, is valued at \$1,997 million.
		• Guidelines to help access various financing instruments and reduce transaction costs prepared	FY09	Completed: Draft paper comparing use of GEF, CTF, and CF instruments prepared in June 2009. Prototype Climate Finance Knowledge Platform developed.
		• Guidelines extended to a broader range of instruments	FY11	Completed: Knowledge Product— <i>Concessional Climate Finance: MDB Experience and Opportunities</i> —completed in FY11. Climate Finance Options Knowledge Platform developed as joint product by WB and UNDP, launched at COP-16 in Nov. 2010 and WB DGFR funding provided 2011–2013 for continuous expansion and fundraising for long-term sustainability. Country-specific versions under development. WBG-wide Ad-hoc Climate Finance Expert Group established in FY10.
Action Area 3: Facilitate the Development of Market-based Financing Mechanisms	Increase access to market products, including for REDD and adaptation	• FCPF rolled-out:		Progress made: Key milestones, on the path from REDD+ Readiness to carbon finance:
		- at least 18 readiness grants provided;	FY09	• Out of 37 developing forest countries participating in the FCPF: 16 Readiness Preparation Proposal (R-PP) Formulation grants signed;
		- at least 5 countries have successfully built FCPF capacity;	FY10	27 countries have prepared R-PPs, with 19 R-PPs assessed and Readiness Preparation Grants allocated;
	- Readiness Preparation Proposals assessed, national working groups on REDD-Plus to guide policy dialogue established, and broad-scoped consultations on REDD-Plus strategy initiated, in 15 countries	FY11	4 Readiness Preparation Grants signed: Democratic Republic of Congo, Indonesia, and Nepal (FY11), Ghana (FY12); Common Approach to Environmental and Social Safeguards for Multiple Delivery Partners approved, for enhanced Readiness service coverage. • Carbon Fund operational since May 2011 with \$206 million in pledges • Pledged funding to FCPF amounts to \$436 million, for initial target of \$385 million; request to approve higher ceilings for Readiness Fund (\$300 million) and Carbon Fund (\$350 million).	

SFDCC Objective	Action	Products/Processes/ Indicators	Time line	Deliverable status
	Increase access to market products, including for REDD and adaptation (continued)	<ul style="list-style-type: none"> CPF operationalized: <ul style="list-style-type: none"> - initial capitalization of at least / about €350 million - 12–16 CPF Emission Reduction Programs developed 	FY09	<p>Progress made: CPF Carbon Fund operational May 2010.</p> <p>€133 million in commitments to Carbon Fund and €11 million in donor contributions to Carbon Asset Development Fund.</p> <p>8 emission reduction programs under development with 7 CPF Seller Participation Agreements signed and 1 program formally included in Carbon Fund portfolio FY11.</p>
		<ul style="list-style-type: none"> Access to climate risk management products and reinsurance markets increased 	FY10	<p>Progress made: Weather Risk Management for the period 2010–2011:</p> <ul style="list-style-type: none"> - Weather Risk Management work in progress in LAC Region (hedging products); - Africa Drought Risk Financing facility: The World Bank is currently working with the Africa Union, the World Food Programme, and DFID to explore the feasibility of establishing a Pan-African disaster risk pool; - 4th renewal of the Malawi Weather derivative.
Action Area 4: Leverage Private Sector Resources	Increase leveraging of private investments	<ul style="list-style-type: none"> MIGA guarantee instruments increasingly used for 2 low-carbon (RE/EE) investments over FY09–11 	FY09-11	<p>Progress made: Market conditions after 2008 financial crisis led the private sector to defer investment decisions in infrastructure and low-carbon projects. The 2012–13 pipeline includes several projects deferred from earlier years.</p>
		<ul style="list-style-type: none"> Innovative financing packages combining CF, GEF, and/or CIF to leverage private investments structured and applied by IFC (at least 10 during FY09–11) 	FY09–11	<p>Completed: Growing portfolio of low-emission projects with innovative financial structures achieve high leverage. These projects at IFC are managed by the "FinMech" group: two such projects were approved in FY09, 3 in FY10, and 9 in FY11. Leverage over the 3 fiscal years was over 9.6 and in FY11 over 12.</p>
		<ul style="list-style-type: none"> IFC leverage of low-carbon private investment is at least 4 to 1 in dollar values 	FY11	<p>Completed: Preliminary results for FY 11 exceed 4 to 1 (\$11 billion in clean energy investments with IFC participation of \$1.6 billion, or 7 to 1 ratio)</p>
		<ul style="list-style-type: none"> Subnational-level application of financial tools is tested for projects with climate cobenefits—at least 3 in a pilot phase (further estimates to be provided if/when post-pilot stage approved) 	FY09	<p>Completed: Three subnational operations with climate change cobenefits approved by the Board in FY09:</p> <p>Panama Canal expansion, where the water-saving design of the new locks will make canal operations more resilient to climate variability and the wider locks will allow larger, more fuel-efficient shipping (\$300 million as part of a consortium funding this \$5 billion investment).</p> <p>Istanbul metro project finances a 22 km extension of the existing system, allowing an estimated daily ridership of 450,000 by 2012 to avoid a heavily congested traffic corridor (€50 million as part of a consortium funding this €750 million investment).</p> <p>Mytisch Heating (Russia) aimed at expansion and</p>
	Increase leveraging of private investments (continued)			

SFDCC Objective	Action	Products/Processes/ Indicators	Time line	Deliverable status
				refurbishment of district heating system, leading to savings of 5 million m ³ of natural gas annually and 3,000 MWh of electricity, while improving heat services for 10,000 people (\$9 million investment as an expansion of an earlier Bank-financed upgrade project).
Action Area 5: Support Accelerated Development and Deployment of New Technologies	Develop new partnerships and approaches for technology cooperation	<ul style="list-style-type: none"> Proposals for supporting clean energy technology innovation prepared by IFC and WB 	FY09	Completed: IFC Solar Investment Strategy adopted and a Cleantech Investment Program initiated for early stage cleantech companies in developing countries (FY09). Three technology innovation models (e.g., regional energy innovation centers, technology policy support, and strengthening client’s science and technology capacity) developed and presented in a technical briefing to the Board in January 2009; ongoing and growing within IFC with dedicated units in the new Climate Business Group and the Funds Department.
		<ul style="list-style-type: none"> Program to support technology innovation piloted 	FY10	Progress made: Climate Innovation Center (CIC) global report delivered. CIC country business plans developed for India and Kenya. CIC’s feasibility under way in Ethiopia, Vietnam, and South Africa. Funding secured for Kenya CIC launch in late 2011. Ethiopia and India CICs to follow in 2012.
		<ul style="list-style-type: none"> Work by CGIAR on climate-resilient agriculture technologies scaled up (measured by increase in funding) 	FY09–11	Progress made: Climate Change Agriculture and Food Security CGIAR Research Program approved by a CGIAR Fund Council Nov. 10—a 3-year program, total budget of \$392 million focused on delivering technologies and policies that support smallholder farmers adapt to climate change. Preliminary work had begun in 2009 and 2010 in preparation of approval of this program.
Action Area 6: Step Up Policy Research, Knowledge, and Capacity Building	Advance knowledge on climate and development	<ul style="list-style-type: none"> The global economics of adaptation study completed and improved the knowledge of adaptation processes, costs, and benefits 	FY10	Completed. December 2010. Additional dissemination activities ongoing. Global report and 11 background reports completed September 2009. Seven country reports and associated background papers completed December 2010. Country studies have been integrated into development programs of the countries to varying degrees. Synthesis report completed December 2010.
		<ul style="list-style-type: none"> Low-carbon growth studies provided knowledge of the incremental costs and benefits of development programs with lower GHG emissions—at least 5 studies completed in FY09 	FY09	Progress made: Low-carbon growth studies were under way in Brazil, China, India, Mexico, and South Africa in FY09, but due to a variety of factors (including enhanced remits, national political considerations, and challenges obtaining data) the studies were completed in FY10 and FY11. Indonesia and Poland were added to the group of countries being supported, resulting in the completion of seven studies as of FY11.

SFDCC Objective	Action	Products/Processes/ Indicators	Time line	Deliverable status
Advance knowledge on climate and development (continued)	Develop and test new analytical tools	<ul style="list-style-type: none"> WDR 2010 on climate change launched and contributed to global knowledge and dialogue 	FY10	Completed: WDR 2010 launched September 2009.
		<ul style="list-style-type: none"> Monitoring on global climate action improved, through joint effort with the UN and OECD, and reported in flagship WBG knowledge products (such as WDI) 	FY10	Completed: Tracking system for climate cobenefits to be introduced as mandatory in World Bank in FY13. Shared with MDBs and OECD DAC in March 2011 as basis for harmonizing systems worldwide.
	Develop and test new analytical tools	<ul style="list-style-type: none"> Good practice guidelines to help relevant operations account for social and gender dimensions of climate change prepared 	FY09	Completed: Operational toolkit prepared on the social dimensions of climate change (including gender aspects). In addition, more specific sets of guidance notes have been completed or are under preparation based on good practices in addressing social aspects of the following types of operations: <ul style="list-style-type: none"> Poverty and Social Impact Analysis (PSIA) for climate change and green growth development policy operations (DPOs) Community-Driven Development (CDD) and climate resilience Climate-responsive social protection Social risks and opportunities in carbon finance Benefit sharing and carbon rights in REDD+.
		<ul style="list-style-type: none"> Toolkits and decision-making guides for adaptation / mitigation to climate change in agriculture and water sectors developed and applied 	FY09–10	Completed: A flagship report that assesses climate change risks and portfolio vulnerability at the regional level has been delivered for the water sector. A basin-level database of climate and hydrologic indicators was developed with the methodology report that provides guidance on uncertainties, decision making, and use of tools. Case studies illustrating the uncertainties of the data with respect to five basins were also presented.
			FY09–10	Progress made: ESW on carbon assessment in croplands produced bounded estimates of soil carbon sequestration for more than 20 land management practices; geospatial modeling/database revealed mitigation potential of key land management practices; Marginal abatement cost curves illustrated cost-effectiveness of the practices in Africa, Asia, and Latin America. Will be delivered in FY12.
			FY10–11	Progress made: KP on piloting the ex ante carbon balance tool developed by FAO in the WB regions. KP in the form of a report with case studies of the appraisals performed, and would include analysis on the advantages and shortcoming of the EX-ACT in assessing the carbon balance of ARD projects, along with an assessment of their cost-effectiveness. To be delivered in FY12.
	Develop and test new analytical tools (continued)	<ul style="list-style-type: none"> GHG analysis is developed and applied in IFC real investment portfolio and select WB energy, transport, and forestry sector projects 	FY09-11	Completed: IFC's analysis ongoing and expanded plans going forward. 1. Carbon Emissions Estimator Tool now online; 2. Analytical methods for evaluating financial sector and advisory services under development; 3. Back-fill analysis completed to review 1,300 real sector projects in IFC's portfolio as of July 1, 2009; 4. Pilot project under way is testing methodologies for evaluating GHG abatement from climate-related investments. GHG analysis piloted in select energy, transport, and forestry

SFDCC Objective	Action	Products/Processes/ Indicators	Time line	Deliverable status
				sector projects at the World Bank. Progress made: Tools and methodologies identified for a number of WB projects across energy, transport, and forestry. GHG emissions assessment from investment lending operations in the three sectors likely to be phased in as a World Bank business requirement over two years starting in mid-FY13.
Capacity building		<ul style="list-style-type: none"> Country-level expertise and capacity to manage development-climate linkages and access to additional finance strengthened 	FY09-11	<p>Progress made: Carbon Finance Capacity Building (CFCB) program in Emerging Megacities of the South: 4 cities - Dar es Salaam; Jakarta; Quezon City; Sao Paulo - are participating; capacity building to facilitate inclusion of carbon finance options in low-emission development; PINs developed.</p> <p>Progress made: Climate-smart agriculture project in Kenya; provided support for methodology development; additional TA to be delivered.</p> <p>Completed: PoA Rural Energy Agency in Tanzania; provided TA including 3 tailor-made trainings on know-how/tools to support establishment of coordinating entity; 2 PINs were created.</p>
		<ul style="list-style-type: none"> Potential of existing programs reviewed and enhanced, and a coordinated program with UN agencies developed 	FY09	Completed: A new joint program with UNDP to develop a Climate Finance Knowledge Platform established and generated broad support and interest from other development partners.
		<ul style="list-style-type: none"> Wide coverage of staff and managers by specialized training programs on development and climate change; climate issues included in other training programs, as appropriate 	FY 09–11	<p>Progress made: Mitigation Actions Implementation Network (MAIN): LAC delivered to 9+ countries.</p> <p>Progress made: Energy Efficiency Program for E. Europe: 3 participating countries.</p> <p>Progress made: South-South Exchange on Agriculture: India-Kenya exchange on SRI; 2,000 farmers benefited.</p> <p>Progress made: Cities and Climate Change Program: 4 participating cities.</p> <p>Completed: Development Marketplace (DM) for Adaptation: 27 DM finalists selected and grant agreements completed.</p> <p>Progress made: Global and regional carbon forums: 3 global and 9 regional forums.</p> <p>Progress made: Regional CDM workshops: 12+ regional workshops (but moving from CDM to LED/NAMA content).</p> <p>Progress made: E-learning platforms: E-courses in 4 thematic areas.</p>
Capacity building (continued)		<ul style="list-style-type: none"> Number of training sessions held in client countries (and staff covered) 	FY09–11	Completed: 10 in-country training sessions in FY 11; 7 in FY10; 14 in FY 09 (gradual shift toward regional deliveries and through e-learning).

SFDCC Objective	Action	Products/Processes/ Indicators	Time line	Deliverable status
Action Area 6: Step Up Policy Research, Knowledge, and Capacity Building (continued)		<ul style="list-style-type: none"> Enhanced skill mix to support climate actions (in client countries) 	FY10	<p>Completed: 1. First Mitigation Actions Implementation Network (MAIN) workshop focused on supporting development of NAMAs: 9+ LAC countries; 2. Global Carbon Expo: 2600+ private sector and government participants (38 countries hosted official pavilions) plus regional forums.; 3. E-Learning Platform; 4. Cities and Climate Change program (carbon finance capacity building) established; 5. South-South Knowledge Exchange Program (Kenya-India) established for agriculture.</p>
	Outreach and communication	<ul style="list-style-type: none"> Communication and outreach plans for the implementation phase developed and implemented 	FY09–10	<p>Progress made: 1. Delivery of COP and other event/report-related communication strategies designed and implemented; 2. Climate change website fully operational with nearly a 100,000 page views per year; 3. Social media integrated into all communication plans related to climate change. The Climate change blog has nearly 90,000 page views annually. The climate change twitter feed has 5,000 followers; 4. A mechanism set up to integrate all Bank regions working on messaging around the SFDCC with an effort to develop a common climate change communication strategy by the Sustainable Development Network of the Bank.</p>
		<ul style="list-style-type: none"> GHG emissions for all WBG offices enrolled in the carbon-neutral program reduced by 7 % by 2011 & remaining emissions offset by purchase of carbon credits 	FY 11	<p>Completed: The WBG is committed to reducing its corporate GHG emissions from daily operations supported by a comprehensive program to measure and manage its emission sources. The WBG enrolled offices (i.e. HQ) achieved more than a 7% reduction in GHG emissions by 2011 and all WBG offices globally have maintained carbon neutrality since 2009.</p>

Annex 3. Highlights of Addressing Climate Change-related Programs in the World Bank Regions

Africa Region (AFR)

1. *Making Development Climate-Resilient.* A World Bank Strategy for Sub-Saharan Africa, the Region's climate change strategy, operationalizes the climate action framework defined at a corporate level by the SFDCCC. The regional strategy calls for support to mainstream climate action into country and regional programs across four pillars: (1) making adaptation and climate risk management a core developmental component; (2) taking advantage of mitigation opportunities; (3) focusing on knowledge and capacity development; and (4) scaling up financing opportunities.

2. Implementation of the strategy over the last three fiscal years has resulted in significant scaling up of the Bank's work on the climate agenda. Climate change has been included as a major theme in the CAS/ CPS of over 13 countries in Sub-Saharan Africa (during fiscal years 2009–10), laying the ground for strategic engagement through analytical work, lending, and technical assistance. A preliminary review of the region's work program suggests that some 60 percent of the projects in the pipeline for fiscal years 2009–12 and 30 percent of the AAA tasks contribute (directly or indirectly) to implementation of the strategy. Highlights of the Bank's engagement in the African climate agenda follow.

Supporting Low-Carbon Growth

3. *Forests and REDD+.* Deforestation, forest degradation, and land-use changes represent the major source of greenhouse gas emissions (75 percent) in the region. Sustainable management of forests is therefore a major avenue for mitigating climate change and ensuring the sustained carbon sink function of the Congo basins and other major forested areas. It is a good strategy for African countries to adapt to climate changes and preserve environmental services.

4. The Bank has been working closely with countries in the Congo basin and with dry forest countries (e.g., Burkina Faso) to help them seize opportunities afforded by the REDD+ mechanism. The World Bank's assistance materializes through a range of instruments, including (a) analytical work on current and future drivers of deforestation in the Congo Basin, (b) technical assistance for REDD-readiness (through the \$35 million for FCPF for country-level work and \$13 million from the GEF for regional work in the Congo Basin); and (c) investments (through the FIP, \$100 million in DRC, Burkina Faso, and Ghana) (box 1).

Box 1. Humbo (Ethiopia), a BioCF Project

The Humbo Project (Ethiopia) is the first large-scale forestry Clean Development Mechanism (CDM) project in Africa to be registered with the United Nations Framework Convention on Climate Change (UNFCCC). Humbo is 420 km southwest of the Ethiopian capital of Addis Ababa, with a population of 48,893. More than 85 percent of its residents live below the poverty line. Three decades ago, this area in the Great Rift Valley was covered with a dense jungle but with variable rainfall, environmental degradation, and (in the 1980s) severe food shortages. The lush green forests had turned into a barren stretch. Seven forest cooperatives were legally established—with local communities, representatives from World Vision, and the Ethiopian Forestry Department—to manage and reforest the land surrounding Humbo. The project uses a technique called farmer-managed natural regeneration (FMNR), which is a system of farm tree and forest regeneration that has been developed and refined for over 20 years in West Africa. The WBG’s BioCarbon Fund will purchase 165,000 metric tons worth of these credits and will provide an income stream of more than \$700,000 to the local communities over a minimum of 10 years. The regeneration project has resulted in an increased production of wood and tree products, such as honey and fruit, which contribute to household economies. Improved land management has also stimulated grass growth, providing fodder for livestock. The money from carbon credits is being used for social benefits like building a granary for the local community.

5. ***Agriculture.*** The Bank is promoting the “climate-smart agriculture” agenda (higher yields, higher climate resilience, and reduced emissions) through IDA financing for the investment frameworks that countries are developing under the Comprehensive African Agriculture Development Programme (CAADP). In Kenya, the Bank is supporting a pilot program aimed at supporting the adoption by smallholder farmers of innovative sustainable agricultural land management practices. These practices will raise farm productivity levels, enhance their resilience to climate shocks, and enable them to receive payments from carbon markets for enhancing the storage of carbon in agriculture soils. This can pave the way to develop a broader soil carbon market in Africa, which according to one estimate, has the potential to mobilize resources of the same order of magnitude as current Official Development Assistance (ODA) to the region’s agriculture.

6. ***Energy and Transport.*** Bank lending in energy and transport averages \$2 billion per year to support the region’s effort to fill the gap in infrastructure stock and the quality of service provision. Increasing efforts have been devoted to promote low-carbon solutions for the region’s infrastructure development challenges. For example, the Lagos Bus Rapid Transit project in Nigeria has provided \$100 million to transform a congested system into a model that is faster and cheaper, creating jobs and reducing carbon emissions by 20 percent. In the energy sector, the Lighting Africa initiative aims to bring light to 250 million Sub-Saharan Africans by 2030 through high-tech compact fluorescent lamps and light-emitting diodes powered by renewable energy sources and mechanical means. The Bank is engaged in promoting geothermal

energy developments in the east Africa Rift Valley, and supporting hydropower expansion or rehabilitation (for example in Ethiopia and Nigeria).

7. An important impetus for the Bank's work on low-carbon development has been provided by the CIFs. The Bank has mobilized, in partnership with the Africa Development Bank, resources to finance a \$2.3 billion Investment Plan in South Africa (including a \$500 million contribution from the Clean Technology Fund). The plan supports a grid-connected solar thermal power plant, utility-scale wind power development, solar water heaters, and energy efficiency. In Nigeria, a \$250 million CTF investment has been approved, and will finance low-carbon growth in urban transport, clean energy, and energy efficiency through financial intermediation. The SREP program is promoting low-carbon energy access through smaller scale or off-grid solutions, working in particular with Ethiopia, Kenya, and Mali.

Building Climate Resilience

8. The Bank is engaged in strengthening the climate resilience of sectors vulnerable to drought, floods, and other climate hazards, such as agriculture and urban development. Under the Pilot Program for Climate Resilience, the Bank is assisting (with financial packages of \$50–\$100 million per country) Mozambique, Zambia, and Niger to mainstream adaptation to climate variability and change in core development programs. The PPCR provides support for improved weather forecasting and information, improved land and water management, enhanced agricultural productivity and intensification, enhanced climate resilience in infrastructure design and management, and reduced vulnerability of coastal zone development to floods and sea level rise.

9. In drought-prone Ethiopia, the Bank is supporting government efforts through the Productive Safety Net Program worth \$2.1 billion (of which \$480 million is World Bank financing) to improve the effectiveness of the country's system to assist chronically food-insecure rural households. The Bank is working with the government to integrate additional drought risk management measures into the program. In Madagascar (a country chronically exposed to cyclones), the Bank has been supporting hydro-meteorological risk assessment for agriculture, cyclone impact modeling, updating of infrastructure norms and standards, vulnerability analysis for drought-prone areas, an analysis of historical and projected climate change, and technical assistance and capacity building for local entities.

Box 2. Supporting Climate-resilient Development in the Sahel and West Africa

The 2011 GEF Council approved the Sahel and West Africa Multisectoral Program. The program addresses major land degradation challenges common across the region. These include economic issues, such as food security and environmental concerns like climate change. The countries in the program include those in the Sahel/Sahara region: Burkina Faso, Chad, Ethiopia, Mali, Mauritania, Niger, Nigeria, Senegal, Sudan, as well as Benin, Togo and Ghana, which have important savannah and forest systems linked to the Sahel/Sahara region. The goal is to expand sustainable land and water management (SLWM) in targeted landscapes and in climate-vulnerable areas in West African and Sahelian countries through expansion of investments in sustainable land and water management technologies, as well as improving land use spatial planning at the watershed scale. It will use a “mosaic approach” linking productive landscapes, rangelands, parks, reserve, and communal lands and consider increased productivity, adaptation, and mitigation to climate change. The focus will be on managing trade-offs between multiple uses such as demand for rich floodplains for grazing or crops or woodlands’ value for fuelwood, and the need for retaining watershed functions and protected areas.

10. Through the TerrAfrica partnership (kick-started by the Bank and currently housed in NEPAD/ Africa Union), the Bank has helped prepare and finance two umbrella investment programs to improve land management and support climate resilience. The first is the \$1.25 billion Strategic Investment Program (SIP) for Sustainable Land Management (SLM), which has 36 operations in 26 countries (12 of which are Bank-financed). The SIP has expanded SLM practices on an estimated 250,000 hectares of land. The second umbrella is the nearly \$2 billion WB-GEF Sahel and West Africa Program (SAWAP) in support of the Great Green Wall Initiative, which was approved in May 2011 (box 2). The 12 countries participating in SAWAP are rolling out the program through preparation of individual projects.

11. The Bank is also helping to enhance climate resilience by integrating flood and drought management and broader climate and watershed management in Kenya and Malawi (\$75.5 million), as well as agricultural, irrigation, and rangeland management operations in Ethiopia, Kenya, Uganda, Burkina Faso, Niger, Madagascar, Mozambique, Nigeria, Ghana, and Rwanda.

12. ***Integrating Climate Change Adaptation and Disaster Risk Management.*** In eight focus countries (Burkina Faso, Ethiopia, Ghana, Mali, Malawi, Mozambique, Senegal, and Togo), National Plans for Disaster Risk Management (DRM) have been agreed with national governments. Implementation of these plans will reinforce countries’ ability to respond to climate variability and improve their readiness for higher climatic variability in the future.

13. The Bank has been supporting post-disaster recovery and reconstruction through GFDRR-sponsored assessments in Namibia, Central African Republic, Senegal, and Burkina Faso. DRM Country Plans—in initial implementation for Senegal, Mali, Ethiopia, and Mozambique; and in preparation for Burkina Faso, Togo, Ghana, Malawi, and Madagascar—also identify strategic investment needs for DRM and for adaptation to climate-related disasters.

Knowledge and Capacity Development

14. A strong program of analytical and advisory activities (AAA) has underpinned the Bank's dialogue at the regional, subregional, and country level, and is now laying the groundwork for further operational engagement of the Bank in climate-related action. A particular focus is on a "second generation" type of analysis, which addresses more explicitly future climate variability and opportunities for low-carbon growth.

- At the request of Heads of State of the Niger Basin riparian countries, the Bank is completing a major climate risk analysis to enhance the resilience of the basin's \$8 billion investment plan for irrigation, hydropower, and other infrastructure.
- Under the TerrAfrica program, the Bank has helped develop knowledge products with broad regional applicability such as the book *Sustainable Land Management in Practice: Guidelines and Best Practices*.
- At the country level, the Bank is close to delivering a climate change assessment for Nigeria that organizes and enhances knowledge and policy insights on low-carbon, climate-resilient growth. The results are being used to inform the design of a \$500 million operation to support soil erosion and climate change priorities.
- Other noteworthy knowledge products include reports on the economics of adaptation to climate change (Ethiopia, Mozambique, Ghana); on the economic and trade implications of a carbon tax (South Africa); on the drivers of deforestation (the Congo Basin); on water resources (Zambezi, Uganda, the Nile); on improved charcoal management in Tanzania; on flood risk mapping in Luanda and Dakar; and on the implications of climate change on fisheries, gender, youth, communities, coastal cities, migration, and health (in particular malaria) in selected African countries.

East Asia and the Pacific (EAP)

15. The region is highly diverse in terms of countries' climate change exposure and their contribution to GHG emissions. Adaptation takes precedence over mitigation in many countries, particularly in the Pacific Islands, but also in other countries—such as Vietnam and the Philippines—where a large part of the population is located in coastal zones.

16. EAP has a solid and well-diversified climate change portfolio with a wide range of products and sectors. Over fiscal years 2008–11, EAP averaged an approval rate of 12–16 climate-change-related projects a year. Initially the assistance program was dominated by carbon finance; as this tapered off in fiscal 2010, lending under IBRD/GEF and GEF picked up. Of the projects approved during this period, carbon finance and IBRD/IDA made up 36 percent each of the lending program. Energy leads with 44 percent, followed by ENV and ARD at 20 and 18 percent respectively. The climate change lending portfolio is expected to further grow in

the next two years and has about 64 projects in the pipeline representing a commitment of about \$3.961 billion. Of this, about \$1.93 billion (49 percent) is dedicated to climate change. China has the largest portfolio of projects with climate change content under lending and supervision, both in terms of numbers and commitment amounts (box 3).

Supporting Low-Carbon Growth

17. **Regional Analysis.** A regional flagship study—*Winds of Change: East Asia’s Sustainable Energy Future*—supported high-level policy dialogue on sustainable energy and led to follow-up policy advice to implement the Renewable Energy Law in the Philippines and green energy subsidies in Indonesia. A follow-up flagship study—*One Goal Two Paths: Increasing Access to Electricity and Clean Cooking Fuels*—was also successfully launched in Jakarta.

18. **Energy Efficiency.** The bulk of EAP’s energy efficiency portfolio is in China. The Bank introduced market-based delivery models and financing mechanisms to help the government achieve its ambitious energy intensity reduction targets. Portfolio highlights include (a) the China Energy Efficiency Financing Project, a \$300 million IBRD loan on-lent to three Chinese banks for industrial energy efficiency investments, plus a \$13.5 million GEF grant to the participating banks for technical assistance and to the government for supporting the 12th Five-Year Plan; and (b) the Shandong Energy Efficiency Project, a \$150 million IBRD loan to support energy service companies for energy efficiency investments that was approved by the Board in fiscal 2011 (box 4).

19. **Renewable Energy.** Almost all countries in EAP have adopted ambitious medium- and long-term renewable energy targets and put in place policy and regulatory frameworks to support implementation. Portfolio highlights are (a) the China Renewable Energy Scale-Up program (CRESP). Phase I—a \$40 million GEF grant and \$200 million IBRD loan—was completed at the end of 2011, and the GEF approved \$30 million for CRESP Phase II. CRESP Phase I has made important contributions to the scale up of renewable energy in China through policy support, RE technology improvements, and large-scale investments; (b) the Indonesia Geothermal Clean Energy Investment Project, supported by \$175 million of IBRD and \$125 million of CTF funds approved by the Board in July 2011; and (c) the Indonesia Upper Cisokan Pumped Storage Hydroelectric Power Project, with an IBRD loan of \$640 million.

Box 3. China, the World Bank Group, and Climate Change

China is embarking on an ambitious national climate change action plan. This includes national and provincial caps on energy and carbon intensity, the piloting of domestic emissions trading systems for carbon dioxide in several provinces and large cities, and possibly absolute caps on coal use and/or carbon emissions in the next few years. In addition, it is increasingly serious about both low-carbon (“green”) development at the policy and investment levels, and climate adaptation, primarily in the water and agricultural sectors. Finally, China is highly motivated to raise its profile as a pro-active and innovative partner to developing countries in achieving carbon mitigation, and is increasingly doing so through demonstration projects and expanded south-south cooperation.

The World Bank is a strong partner in China’s climate change efforts. In terms of investments, China has the World Bank’s largest climate change investment program, covering almost every aspect of climate change mitigation in the energy, urban, transport, agriculture, and forestry sectors. Currently, over 79 percent of the future three-year WB lending pipeline (including GEF) has environmental objectives, and 43 percent of the projects will have positive climate change impacts.*

In addition, World Bank carbon finance in China totals nearly \$1.3 billion (in addition to loans, since many carbon finance projects are blended with investment projects). This represents two-thirds of the Bank’s Clean Development Mechanism (CDM) commitments worldwide. New programmatic carbon finance investments are being prepared under the Carbon Partnership Facility (CPF) with purchase of credits extending to 2022. For example, the Hebei Regional Farm Biogas Program will improve manure management systems in about 40 livestock farms in 11 prefectures of Hebei Province. The World Bank has developed and will continue to develop new carbon finance methodologies in China for possible future projects, including in the energy (CCS-ready IGCC) and forestry (grassland) sectors.

In terms of World Bank implementation of GEF climate change financing, the GEF is a successful “platform of engagement,” with climate initiatives at both the national level (programmatic projects with multiple subprojects) and at subnational levels. The GEF-financed climate change portfolio currently under implementation is worth \$320 million. Furthermore, 14 of 18 ongoing GEF projects are fully blended with IBRD loans, which provide additional potential for promoting innovation, policy dialogue, and capacity building.

Apart from project finance, the World Bank is highly involved in three new areas of technical assistance. The first, via the “China 2030” AAA, is to model a major rebalancing of the economy toward green growth, including a fiscally neutral introduction of carbon taxes generating 5 percent or more of all public revenues. The second, via the Partnership for Market Readiness, is to support the creation of domestic trading platforms, including standards, registration, and MRV protocols. The third is to support the multi-billion dollar “China CDM Fund” in developing its early investments in climate finance in China.

Finally, IFC is very involved in energy efficiency, renewable energy, clean technology, and forestry activities in China, all contributing to carbon emission reductions. It is also supporting green finance and the Equator Principles in the banking sector, including regulators. MIGA, at the moment, is not active in China domestically, but is seeking to support Chinese enterprises investing in Africa.

Box 4. Leveraging Domestic Banks for Energy Conservation Investments in China

The China Energy Efficiency Financing Project (CHEEF, Phase I and II) (a) on-lends IBRD Loans of \$300 million to support energy conservation investments in industrial enterprises through three domestic participating banks; and (b) provides a GEF Grant of \$13.5 million for technical assistance to support the government's energy conservation priority programs under the 12th Five-Year Plan and assist the participating banks in developing and sustaining energy conservation lending business lines.

CHEEF Phase I has disbursed \$106 million, more than half of the allocated IBRD funds, which leveraged \$430 million from participating banks and industrial enterprises. The total subprojects are expected to save energy of 1.6 million tons of coal equivalent and reduce CO₂ emissions by 4.2 million tons per year. More importantly, the CHEEF project has substantially increased participating banks' capacity in identifying and appraising EE investments, and their commitment in mainstreaming EE lending as one of their main business lines. Experience to date with the ongoing CHEEF project offers a few valuable lessons learned: (a) the government's EE commitments and policies drive demand for EE services and investments; (b) technical assistance and capacity building for participating banks to defray upfront "learning curve" expenses are an essential ingredient to success; and (c) dedicated credit lines through local banks are effective at mainstreaming energy efficiency investments. But they tend to favor large and medium-size enterprises and projects, and changing local banks' underwriting criteria from balance-sheet financing that heavily relies on sub-borrowers credit ranking to project-based financing that focuses on energy savings has been a major challenge.

20. ***Low-Carbon Cities.*** Cities are at the center stage of GHG reduction in EAP. Given the rapid urbanization in EAP region, assisting the clients in building low-carbon cities is an emerging business line. Highlights include (a) the Green Energy Scheme for a Low-carbon City in Shanghai, a \$100 million IBRD loan and a \$5 million GEF grant under preparation. To help clients set low-carbon targets and identify cost-effective abatement options, the abatement potential, cost, and ease of implementation of various mitigation options were developed with three alternative abatement scenarios to deliver an ambitious low-carbon target. This proposed project plans to adopt a multisectoral approach to integrate energy efficiency, clean energy technologies, and sustainable transport to achieve low-carbon objective; and (2) the region also undertook a study with the TRACE model to identify sustainable energy and emission reduction opportunities in three Southeast Asian cities (Cebu, the Philippines; DaNang, Vietnam; and Surabaya, Indonesia).

21. ***Carbon Finance.*** EAP has built a strong carbon finance portfolio in terms of the number and value of projects. EAP accounts for 65 percent of the Bank's active carbon finance portfolio, with a total value of approximately \$1.5 billion. The largest share belongs to China, while half of the projects are broadly distributed across the region, including the Philippines, Indonesia, Thailand, Malaysia, and Vietnam. The overall EAP portfolio is well-diversified and includes renewable energy, industrial gas, energy efficiency, waste management, and reforestation.

22. Over the past two years, EAP has expanded and enriched its portfolio by signing nine Emission Reduction Purchase Agreements (ERPAs). New sectors such as energy distribution have been added to the portfolio, and animal waste and wastewater treatment projects have been popular due to the high global warming potential of methane emissions. Significant progress has been made in the CDM process: two projects were registered, and seven projects delivered their first CERs.

23. The largest part of the EAP portfolio is supported by carbon funds that deliver Kyoto compliant credits. In the last two years, new instruments such as the FCPF and the CPF gained importance through readiness activities and the development of CDM programs. In fiscal 2012, EAP's carbon finance activities were further enhanced through the Partnership for Market Readiness and new business development for projects in the post-2012 period.

24. **Montreal Protocol.** The Bank's East Asia Montreal Protocol Program contributed to the successful phaseout of production and consumption of chlorofluorocarbons, halons, carbon tetrachloride, and methyl chloroform—ozone-depleting substances controlled by the Montreal Protocol —by January 2010 in China, Indonesia, Malaysia, the Philippines, Thailand, and Vietnam. The combined consumption of these countries was 59 percent of developing country consumption and 57 percent of overall production. More than 200,000 tons of ozone-depleting substances were phased out in the production and consumption sectors of the Bank's East Asia Montreal Protocol Program. This is a significant contribution to the recovery of the stratospheric ozone layer. It is expected that the stratospheric ozone layer will return to its 1970s condition by 2050. As global warming potentials of ozone-depleting substances are 1,000 to 10,000 times higher than CO₂, phasing out these chemicals has delivered an additional climate benefit equivalent to emission reduction of more than 10 GtCO₂.

25. Since 2009, the region's Montreal Protocol Program has engaged in development of HCFC Phase-out Management Plans in China, Indonesia, the Philippines, Thailand, and Vietnam. HCFCs (hydrochlorofluorocarbons) are another set of ozone-depleting substances controlled by the Montreal Protocol. HCFCs have a high global warming potential, several hundred times higher than CO₂. The Bank has secured grant funds of \$85 million to support three HCFC phaseout programs in the consumption sector in China, Indonesia, and Vietnam over 2012–16. These three programs will permanently phaseout more than 13,000 MT of HCFCs in the consumption sector, and contribute to reductions of approximately 12 million tCO₂ equivalent per year. The World Bank's East Asia Montreal Protocol Program expects to deliver additional HCFC phaseout programs in the consumption sector in Thailand and the Philippines in fiscal 2012. To ensure the sustainable phaseout of these chemicals, the Bank is working closely with China to develop an HCFC production phaseout program. This program is expected to cover permanent production phaseout of 75,000 metric tons per year of HCFCs by 2015.

26. **CTF Investment Plans** have been elaborated for Indonesia, the Philippines, Thailand, and Vietnam. Projects are now proceeding to implementation.

- The Indonesia Geothermal Investment Project is scheduled for board approval in fiscal 2012.
- The Philippines CTF-supported Renewable Energy Program is due for fiscal 2012 delivery, while the Cebu Bus Rapid Transit Project is due in fiscal 2013.
- China is the Bank's largest climate change investment program (excluding DPLs). Twenty-seven projects under supervision have low-carbon (climate mitigation) benefits. Of these, 17 are IBRD loans with climate and development cobenefits and 10 are GEF grants.

Building Climate Resilience

27. ***Kiribati GEF Adaptation Phase II***. This program has helped climate-proof national water management policies and plans, increase the climate resilience of freshwater supply systems, improve government capacity for risk assessment and adaptation planning of coastal public assets, and support consultation and public education on climate change vulnerability and adaptation.

28. ***Philippines Country Assistance Strategy***. The Philippines CAS for 2010–12 has climate change as one of its five strategic objectives. Climate adaptation and disaster risk management have good traction with the government under the soon-to-be approved CAT-DDO DPL. The proposed Central Philippines Rural Development Project will assist the government in making the agricultural sector more climate resilient.

29. ***PPCR in Cambodia and Samoa***. A Civil Society Facility has been established to support engagement and integration of civil society knowledge, experience, and capacity in implementation of the PPCR. A report has been prepared to establish an “agreed position” on the scope and type of support required by civil society. The Asian Development Bank has established the facility and leads the PPCR in Cambodia.

30. ***Poverty and Social Impact Analysis (PSIA)***. A PSIA was undertaken for a Climate Change Development Policy Operation to help the government of Vietnam implement its National Target Program to Respond to Climate Change. The PSIA helped the government and partners assess the potential impacts of policy reforms on the poor and vulnerable.

31. The PSIA found that the poor are likely to be highly vulnerable to the future effects of climate change, and some negative effects are already being felt. Key factors impacting the poor are likely to be changes in water regimes that have negative implications for agriculture and crop yields; increases in the frequency and intensity of storms and floods; sea level rise; and associated impacts such as salinity intrusion. Incomes, livelihoods, housing, health, water availability, and access of the poor to other assets are likely to be affected by climate change in some way. Overall, the DPO actions did not introduce strong negative impacts, but some adjustments of the DPO approaches were made to make them more pro-poor. Positive impacts on the poor are likely for several policy actions, including the expansion of participatory

irrigation management and community-based disaster risk management plans. The PSIA process provided an opportunity to deepen the consultations on the policy reforms and solicit meaningful feedback from key stakeholders.

32. Further PSIA research will focus on the institutional mechanism for financing under the DPO to ensure that the mechanism and criteria for the use of funds have a pro-poor dimension while meeting public investment management standards and ensuring transparency and accountability. This research is financed through the PSIA MDTF; findings will feed into the policy dialogue.

Increasing Access to Finance

33. China is the largest user of the Bank's carbon finance instruments, with a total of 20 projects (4 in the pipeline and 16 under supervision) and \$1.3 billion in financing. Sectors covered include energy efficiency, renewable energy, hydropower, coal-bed methane, landfill and livestock waste gas recovery, reforestation, and HFC destruction. This program covers the CDM and the Carbon Partnership Facility.

34. ***PMR Readiness Plans.*** PMR Readiness Plans for Thailand, China, and Indonesia received funding to help think through and plan how they will design, pilot, and eventually implement market-based instruments for greenhouse gas mitigation.

35. ***Accessing CDM for Bank-Financed Projects.*** The Laguna de Bay Institutional Strengthening and Community Participation Project supported access to carbon finance through the Bank-managed Community Development Carbon Fund.

36. ***Forest Carbon Partnership Facility Portfolio.*** Indonesia is leading the readiness process, signing a grant agreement for \$ 3.6 million in mid-2011. Lao PDR, Vietnam, and Cambodia are closely following Indonesia's footsteps. They submitted good-quality Readiness-Preparation Proposals (R-PPs) for consideration to the Participants Committee. Lao PDR and Vietnam are expected to sign their preparation grant with the World Bank in fiscal 2012, and Cambodia has chosen the UNDP as delivery partner. Other FCPF participant countries from the EAP region are Vanuatu, Thailand, and Papua New Guinea. Vanuatu signed the grant agreement for the R-PP in May 2010, but implementation has been delayed due to the inability to appoint a project coordinator. Thailand submitted a formal request to access the formulation grant in April 2011; it is expected to be signed in fiscal 2012. PNG has not formally expressed an interest to engage in the FCPF, but signaled that it might do so soon.

37. ***Development Policy Loans for Climate Change.*** Indonesia delivered a DPL in fiscal 2010. A new operation is coming onstream in fiscal 2012 in Vietnam. Both budget-support operations are being undertaken in partnership with other donors, including JICA, AfD, AusAID, Korea, and CIDA.

Supporting Knowledge and Capacity Building

38. *TA for Vietnam Energy Efficiency Program.* The Bank supported a number of consultations led by the Climate Change Commission in the development of the NCCAP, including consultation with development partners, government agencies, local government units, and civil society organizations.

39. *Tonga Renewable Energy Development.* Tonga renewable energy development funded a report under the “Tonga Energy Roadmap.” Recognizing the vulnerability of Tonga’s electric sector to the price of oil, the government has set a target of 50 percent renewable energy for the grid-based electricity supply in three years. The study identifies the options available, evaluates their potential role in grid electricity supplies, and determines the best combination of renewable energy projects to meet the target. The work was completed early in 2010.

40. *Climate Change Scale-up in the Mekong Delta.* The Bank helped advance understanding of climate change issues in the Mekong Delta to build considerations into the Mekong Water Resources Development Project. Analytical work was conducted on climate change issues in the Mekong on agriculture, water, aquaculture, and urban areas. Some work was supported by the MCSUF, but a lot was accomplished under the EACC country sector studies and the Bank’s support for the Vietnam Climate Change Strategy.

41. *Philippine National Climate Change Action Plan (NCCAP).* The Bank supported consultations led by the Climate Change Commission in NCCAP development, including with development partners, government agencies, local government units, and civil society organizations.

Europe and Central Asia (ECA)

42. The ECA region addresses both adaptation and mitigation. Reduction in greenhouse gas emissions from large emitters in ECA can help achieve global targets and energy efficiency improvements have already proven to be cost-effective investments. The WBG is helping partner countries build their knowledge base on climate science, assess the consequences and adaptation approaches, and strengthen the climate resilience of investments.

Supporting Low Carbon Growth

43. *The Russia Energy Efficiency Financing Project.* This project (box 5) comprises an IBRD loan of \$300–\$500 million and a GEF grant of \$22.7 million. It applies a financial intermediary approach through selected banks, as well as significant technical assistance to the banks, project owners, and service providers. Sectors with significant mitigation potential that appear ready for commercial investments are heavy industry, municipal heating and power networks, and public buildings.

Box 5. Supporting Russia in Implementing EE Measures and Reducing GHG Emissions

According to recent IBRD/IFC estimates, Russia can cut its energy consumption by about 45% percent, or some 300 mtoe. This amount exceeds the annual energy consumption of France. This would translate into a CO₂ emissions reduction of about 800 million tons per year. The largest technical EE potential can be found in residential and public buildings (53.4 mtoe and 15.2 mtoe correspondingly), electricity generation (44.4 mtoe), industry (41.5 mtoe), transport (38.8 mtoe), and heat supply systems (31.2 mtoe). However, if Russia's EE potential and related economic and environmental benefits are to be realized, the country will need to mobilize about \$300 billion for EE investments.

The Russian authorities have recognized the importance of EE for sustained economic growth. President Medvedev signed a decree in 2008 calling for an action plan to cut the energy intensity of Russia's economy by 40 percent by 2020. It was followed by a number of actions, including a state program—Energy Savings and Increase in Energy Efficiency through 2020—approved by the government in December 2010. The objective of the program is to reduce the energy intensity of the economy by 13.5 percent by 2020, which would make great strides toward the 2020 goal.

Russia's interest in IFI support for EE has increased over the last two years. The ECA region is about to appraise the Russia Energy Efficiency Financing Project, which will comprise an IBRD loan of \$300–\$500 million and a GEF grant of \$22.7 million. It focuses on a financial intermediary approach through selected banks, as well as through the provision of significant technical assistance to these banks, to project owners, and to service providers. In terms of target sectors, those that possess significant savings potential and appear ready for commercial investments include heavy industry, municipal heating and power networks, and public buildings.

44. ***Turkey Private Sector Renewable Energy and Energy Efficiency Project.*** This project combines CTF financing (\$100 million) with IBRD financing (\$500 million). With IBRD support, the government is transforming its energy sector to increase competition, expand private investment, and promote sustainable use of its renewable energy resources.

45. ***Rosneft Gas Flaring Reduction Project.*** This project will eliminate 6.65 million tons of CO₂, which is equivalent to Russia's first Kyoto Protocol commitment period (2009–11). The project treats associated petroleum gas onsite and transmits it through a new 5.5 km pipeline to Gazprom's natural gas pipeline.

46. ***Energy Efficiency and Renewable Energy Development Policy Loan.*** This loan followed Poland's enactment of an energy efficiency law that introduces a "white certificates" scheme. This scheme places an obligation on energy suppliers to achieve specific annual energy savings targets. The suppliers work with consumers to help them achieve such reductions.

Box 6. Low-carbon Development in Poland: Supporting Diagnostics and Implementation

Poland recognized the need to build up its analytic capacity to examine tradeoffs integral to low-carbon development. Could the country commit to ambitious overall greenhouse gas mitigation targets for the longer term—to 2030 and beyond? Questions arose such as what technological options were available, and how expensive were they compared with existing technologies? Would there be high costs in lost growth and employment? Over a shorter horizon, to 2020, what were the implications for Poland of implementing EU policies on climate change? To support Poland’s decision making, the World Bank helped the country develop a suite of economic tools to analyze policy options. The results are captured in the report entitled *Transition to a Low-Emissions Economy in Poland*, which was published in February 2011. The team integrated “bottom-up” engineering analyses with “top-down” economy-wide modeling to allow the government to assess tradeoffs across technological options, while looking at economic and fiscal ramifications.

While energy efficiency is the cornerstone of the government’s energy strategy, with only nine more years to go the country is already falling behind on its interim energy savings targets. Similarly, the share of renewable energy is today only about 7.5 percent of Poland’s final energy consumption. The government realized that further piecemeal efforts to enhance energy efficiency would not do and that it first needed to put in place the enabling framework, which had been lacking. It also needed to formulate a coherent and comprehensive plan on how to achieve its renewable energy target. The Energy Efficiency and Renewable Energy Development Policy Loan (Board date of June 2011) followed Poland’s enactment of an Energy Efficiency Law that introduces notably a “white certificates” scheme. This scheme will put an obligation on the suppliers of energy to achieve specific annual energy savings targets. In turn, the suppliers will work with consumers to help them achieve such reductions.

Building Climate Resilience

47. ***Tajikistan PPCR.*** Five of six Phase 1 technical assistance projects are under way and slated to be completed by the end of fiscal 2011. The first Phase 2 investment project (climate and weather services) was approved by the Bank’s Board in late fiscal 2011 (box 6).

48. ***Central Asia Hydrometeorology Modernization Project.*** This project supports the Hydromet services in Tajikistan and Kyrgyzstan to build the capacity of local staff and provide funds for new equipment. It links these Hydromet services with others in the region (International Fund for Saving the Aral Sea, Kazakhstan and Uzbekistan) and with the global meteorological system.

49. ***ECCU2 Climate Change Action Plan.*** This plan aims to provide the underpinnings to operationalize the climate change adaptation agenda in Ukraine, Belarus, and Moldova. The plan

has generated considerable knowledge on vulnerabilities and priorities as well as perceptions, understanding, and attitudes to climate change.

50. ***Adapting Vulnerable Energy Infrastructure to Climate Change.*** This initiative identifies and prioritizes hazards and vulnerabilities to projected climate scenarios for the period 2030–50. It identified adaptation options with their costs and benefits.

51. ***Increasing Capacity to Adapt Water Resources Management, Planning, and Operations to Climate Change in SE Europe.*** A study is being conducted on the mechanisms to adapt water resource management to climate change in the Sava River Basin. A Water and Climate Adaptation Plan will be developed to help distinguish the character of water resources in the basin.

Supporting Knowledge and Capacity Building

52. ***Agricultural Vulnerability.*** The World Bank has teamed-up with Albania, FYR Macedonia, Moldova, and Uzbekistan to increase the resilience of agricultural systems to climate change. Work includes recommendations to address specific vulnerabilities of countries' agricultural sectors and awareness raising initiatives. It is being scaled up to Armenia, Azerbaijan, and Georgia.

53. ***Transition to a Low-emissions Economy in Poland.*** This effort integrates “bottom-up” engineering analyses with “top-down” economy-wide modeling to allow the government to assess tradeoffs across technological options, while looking at economic and fiscal ramifications (box 7). The approach is setting the stage for follow-on work in other EU member states and candidate countries.

54. ***Lights Out? The Outlook for Energy in Eastern Europe and Central Asia.*** This initiative outlines significant needs in building energy security while exploring policies and instruments that take advantage of enhancing energy efficiencies, reducing GHG emissions, and furthering global efforts to address climate change

Box 7. PPCR in Tajikistan

Tajikistan was selected as one of the first countries under the Pilot Program for Climate Resilience (PPCR), the flagship multi-donor effort on climate adaptation. The program has been recognized for its innovative approach on climate action. The World Bank brought together all three MDBs working in the country, as well as key bilateral agencies to form one cross-sectoral, cross-institutional partnership supported by around \$52 million in grants. A consensus for joint multisectoral action was built through continuous dialogue with all stakeholders. A Secretariat is now in place to foster mainstreaming of climate resilience across national development policies and programs.

Tajikistan already suffers from droughts and floods, severely constraining development. With high natural sensitivities and weak institutional capacity, it is also the most vulnerable country in the ECA region to future climate change. To be effective, new climate funding required close donor coordination and alignment of donors' efforts with the government strategy. The coordinated approach is starting to have an impact. Technical assistance grants managed by the MDBs are now (a) building awareness of climate resilience across government and stakeholder communities; (b) assessing appropriate measures to enhance resilience in the agriculture, energy, and water sectors; and (c) building the scientific basis for addressing risks from melting glaciers and changing temperature and climate regimes.

In the next few years, investments initiated and implemented in fiscal years 2011–13 through MDB support will vastly improve weather and climate services to better manage flood and drought risk, while improving climate science. It is expected to scale up the most effective technologies and policies to enhance sustainable land and water management under new climate threats. The program is expected to bolster resilience of hydropower plants for national and international energy security.

55. *Adapting to Climate Change in Europe and Central Asia.* This report summarizes in a non-technical manner what is known about climate change and its likely impacts in ECA, and draws conclusions about the associated needs and options for adaptation in client countries.

56. *The Macedonia Green Growth and Climate Change Analytic and Advisory Support Program.* This is an umbrella program of analytic work and non-lending technical assistance. It supports the Macedonian government in (a) assessing the economic costs and benefits of a shift to greener growth, taking into account projected climate change; and (b) prioritizing implementation actions identified by the National Strategy for Sustainable Development and supplemented by the program's recommendations.

Latin America and the Caribbean Region (LCR)

57. The LCR Climate Change Program is characterized by innovation.¹¹ Responding to demand from sophisticated middle-income country clients or the small-island developing states, the LCR Region is developing new products and ways of doing business. This spans citywide approaches to carbon finance, the development of green bonds and mortgages, and support for the Bank's first water sector DPLs and for social resilience.

58. All new Country Partnership Strategies tackle climate change. For example, the Belize CPS, approved by the Board in September 2011, has a central theme: to support the government to achieve “inclusive and sustainable natural resource-based growth and enhanced climate resilience.” The main results areas are (a) policies and strategies for climate resilience; (b) institutional capacity strengthening; and (c) investments to strengthen climate resilience.

59. The government of Mexico successfully hosted the 16th Conference of the Parties (COP-16) to the UNFCCC in 2010. The Bank established a strong partnership with the government on strategic aspects of the COP and supported the organization of several events such as Water Days and Forest Day. Help was provided to convene representatives of Indigenous Peoples to enable them to articulate their vision and position on issues of climate change in the run-up to COP-16. During the COP, the Bank was represented by a high-level delegation led by the Bank President, Robert Zoellick. One of the highlights of the Bank's participation at the COP was the signing by Presidents Calderon and Zoellick of the Mexico Low Carbon Development Policy Loan and the innovative Mexico Energy Efficiency and Efficient Appliances project—one of the first Bank projects to combine financing from the Clean Technology Fund (CTF), IBRD, and GEF.

Supporting Low-Carbon Growth

60. ***Brazil Interaguas.*** This is a \$100 million TA Loan on water resources, irrigation, urban water supply, and disaster risk management that builds on our long-term engagement with Brazil.

61. ***Partnership for Market Readiness (PMR).*** PMR assists client countries to think through and pilot the development of the next generation of climate finance products in support of greenhouse gas mitigation. Funded by a multi-donor trust fund established by the Bank as a follow-up to the Cancun climate talks, PMR is being used by Brazil, Chile, Colombia, Costa Rica, and Mexico to design market instruments in key economic sectors with mitigation potential.

¹¹ The Bank's first flagship report on climate change—*Low Carbon, High Growth: Latin American Responses to Climate Change*—was undertaken in LCR in 2009. This was followed by a companion technical volume—*Low-Carbon Development in the LCR*—in 2010. The Bank's first paper on decision making under uncertainty (for sea level rise adaptation in Campeche) was also undertaken in LCR.

62. ***Low-Carbon City Development Program in Rio de Janeiro.*** This program is helping to identify and quantify the GHG mitigation potential of an umbrella of planned city-level investments across different sectors ahead of the mega events like Rio+20, the Soccer World Cup (2014), and the Summer Olympics (2016). The carbon finance perspective on new investments acts as a catalyst for green, low-carbon growth for at least part of the estimated \$200 billion that Rio will likely receive over the next 5 to 10 years. Other initiatives include support for the development of the Brazilian carbon market (box 8).

63. ***Integrated and Sustainable Mass Transit Programs.*** These programs have advanced methodologies and monitoring mechanisms to reduce combined GHG and local particulate emissions. This has taken place under the urban transport programs in Mexico (box 9), Brazil, and Argentina. These efforts have seen results in Lima, the fifth largest city in the region, where the Metropolitan Bus Rapid Transit, partially financed with a Bank loan, is handling 350,000 trips per day.

64. ***Sustainably Extending Energy Services.*** The Peru Rural Energy Project (\$50 million) focuses on poverty reduction and new energy innovation. This operation will not only provide thousands of poor people access to electricity, but will also promote productive use to improve income generation and foster the use of new and renewable energy (photovoltaics) in remote poor areas of Peru.

65. ***Mexico Efficient Lighting and Appliances Project.*** This project is a catalyst for the transformation of residential lighting and refrigeration subsectors. It supports replacement of 45 million inefficient incandescent light bulbs and 1.7 million old and inefficient refrigerators and air conditioners with more efficient models across a range of beneficiaries, mostly lower income groups.

Box 8. Supporting the Development of the Brazilian Carbon Market

Executed by the Brazilian São Paulo Stock exchange, this \$1 million grant (a) built a database of more than 18,000 potential emissions reduction projects (61 kind of technologies/activities, five different sectors), including the identification of sites and firms that could implement them—such as power utilities, breweries, cement and paper factories, steel industries, rural producers, and transport companies—corresponding to an abatement potential of up to 4 billion tCO₂ in 10 years and an additional generation capacity of around 450 GW; (b) performed a diagnosis of the barriers preventing the development of a program of activities (PoAs) under the CDM; (c) elaborated proposals for improving the legal and regulatory framework for certified emission reductions (CERs) and associated transactions in Brazil; (d) elaborated a guide for facilitating the participation of municipal governments and other public entities in the CERs market; and (e) studied and proposed options for the development of an organized forward market for CERs and a domestic carbon credits market in Brazil.

66. *A \$100m Low-Carbon DPL (FY11).* This DPL supports a transition to low-carbon growth, particularly in the forestry, energy, and mining sectors.

67. *Brazil N₂O Emission Reduction Project.* This project helps reduce 6 million tCO_{2e} through avoided emissions of N₂O, a powerful greenhouse gas, which would have been emitted into the atmosphere contributing to the damaging effects of climate change. This is among the first industrial projects explicitly combining brown environment and climate change.

68. *Argentina GEF Energy Efficiency Project.* The Bank provided assistance to the government to design and implement a national program on efficient and rational use of energy, including passing a law to phase out incandescent bulbs by 2011. The project promotes energy efficiency activities in SMEs through a credit line, develops an EE standard and labeling program and carries out an information and education campaign.

Building Climate Resilience

69. *Caribbean Regional Pilot Program for Climate Resilience.* The Bank has taken the lead on five of the six pilot projects (Haiti, Dominica, St. Vincent and the Grenadines, Grenada and St. Lucia). The \$47 million Regional Disaster Vulnerability Reduction projects for Grenada and St. Vincent and the Grenadines is one of the first truly integrated adaptation/disaster vulnerability reduction projects in the region. It is cofinanced by regional IDA, IDA, and the PPCR. Several governments have taken Cat DDO loans that function as a line of credit to provide countries with immediate access to financing following a natural disaster.

70. ***Social Resilience to Climate Change.*** This \$200 million loan—Mexico: Strengthening Social Resilience to Climate Change—is the first DPL designed primarily to address the impact of climate change on vulnerable groups. It was prepared as part of a multisectoral effort involving urban development, forestry, environment, disaster risk management, and social development.

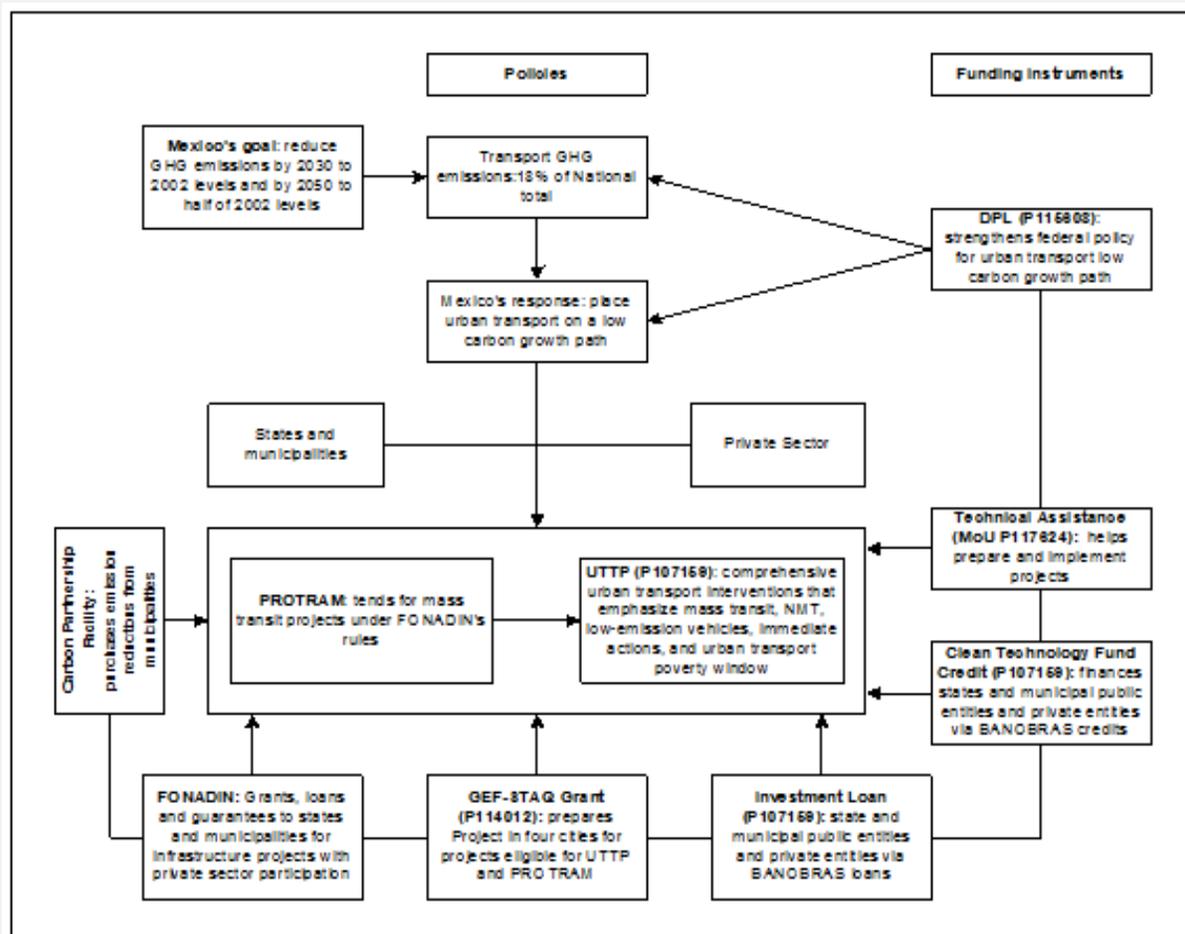
71. ***Subnational Support on Climate Change.*** The Region has supported Mexico’s subnational agenda related to climate change; for example, in Michoacan, Campeche, and lately in Zacatecas. Engagement is built on the Yaqui River basin, a targeted hands-on approach to address climate change at the basin level.

72. ***Natural Resource Management and Climate Change Project.*** In Uruguay, the sustainability of on-farm investments had been highly influenced by extreme climatic events, particularly droughts. This project was approved in 2010 and constitutes the first IBRD lending focused on adaptation. It supports “climate-smart agriculture” by promoting technologies that can enhance productivity, improve sustainable development and resilience, and support low-carbon growth. The project will create a unique opportunity to enhance synergies and cobenefits between adaptation and mitigation actions at the farm level and improve access to capacity building and knowledge sharing.

73. ***Columbia Weather Derivative.*** A Disaster Risk Management DPL with Catastrophe Deferred Draw Down Option (CAT DDO) loan provided Columbia with a line of credit in 2010 when it faced one of the worst humanitarian emergencies after an unusual rainfall (box 10).

Box 9. A Comprehensive Approach to Support Mexico in Reducing Emissions from Urban Transport

Mexico has voluntarily established the goal of reducing its GHG emissions by 2030 to 2002 levels and by 2050 to half the 2002 levels. Urban transport accounts for 18 percent of all emissions, and these emissions are growing faster than other sectors. Mexico, in collaboration with the World Bank, has launched a comprehensive strategy to reduce the carbon growth path of urban-transport-related emissions. As part of the National Infrastructure Fund, Mexico created the National Mass Transit Support Program to help cities improve their public transport. In addition, Mexico submitted to the Clean Technology Fund a proposal with ambitious goals for urban transport. The CTF awarded \$200 million for this effort, which was complemented by \$150 million from IBRD to create the Urban Transport Transformation Project. The Urban Transport Transformation Project (UTTP) seeks specifically to reduce the carbon growth path of urban transport by improving public transport with the hope of inducing a significant shift of users from cars to mass transit and of preserving the share of trips done by mass transit. The World Bank has deployed other instruments to help Mexico, including the GEF-financed Sustainable Transport and Air Quality Project, and technical assistance. The following chart shows the range of instruments deployed by Mexico and the World Bank to try to curb urban transport emissions.



Carbon Finance

74. The Region supports the REDD agenda through the Forest Carbon Partnership Facility (FCPF). Fifteen of the 37 pilot countries are in LAC. The FCPF will help countries participate in negotiations and take advantage of opportunities to reduce emissions through avoided deforestation in the post-2012 global climate change framework. The Region is working with Mexico and Brazil under the FIP, which is part of the CIF. A complex financing package in Mexico blends a \$300 million forest investment loan with \$43 million in FIP concessional financing. It is linked to the social resilience DPL focused on forestry and blends financing from the French Government and from the FCPF.

75. The Carbon Partnership Facility pipeline includes a program in Brazil for the capture of methane from landfills, associated with a Bank loan to Caixa Economica Federal to strengthen environmental practices in solid waste management.

Box 10. Colombia Weather Derivative

In 2008, the Government of Colombia chose to use a Catastrophe Deferred Drawdown Option (CAT DDO) loan, which functions as a line of credit to provide countries with immediate access to financing following a natural disaster. In 2010, when it faced one of the worst humanitarian emergencies after an unusual rainfall, the World Bank disbursed \$150 million to support the 2 million affected people. CAT DDO funds can be disbursed (partially or in full) when the occurrence of a natural disaster leads to the declaration of a state of emergency. The government had requested the use of this instrument from the WB as it gives the authorities the flexibility to use the funds only if needed. The CAT DDO complements Colombia's existing disaster risk management program. The Bank's engagement in the area of disaster risk management seeks to coordinate national efforts to respond to emergencies. The \$150 million disbursement supported the government in addressing immediate needs. The engagement also seeks to improve prevention, reduce vulnerability to natural disasters, and improve the quality of services delivered by the National Disaster Prevention and Management System.

Supporting Knowledge and Capacity Building

76. **Low-Carbon Studies.** Low-carbon studies are under way in Colombia and Uruguay and focus on emissions from the agricultural sector.

77. **Regional Agriculture and Climate Change Study.** This study developed a user-friendly model to simulate and assess the impact of climate change on agro-ecological zones and component land uses linked to other global models. For example, the model can help a farmer to determine what crops to grow when, where, and with what risks.

78. ***Green and Efficient Cities—The Energy Dimension.*** This study was conducted in partnership with the U.S. Department of Energy. The study will develop a compendium of existing information that highlights the relevance and strengthens knowledge on the energy dimension for green and resilient cities.

79. ***Greening the Wind: Environmental and Social Considerations for Wind Power Development in Latin America and Beyond.*** This study describes the key environmental and social impacts associated with large-scale, grid-connected wind power development. It builds on recent World Bank experience with wind power development in Latin America and other regions where wind power is growing rapidly.

80. As a follow-up to the successful dissemination of the Brazil low-carbon study in 2010, four low-carbon sectoral technical reports—on LULUCF, transport, waste management, and energy—were published both in Portuguese and English. The MACTool builds on the prototypical version developed under the Brazil and Mexico low-carbon country case studies to provide a free, user-friendly, open-code tool for marginal abatement cost curve analysis.

Middle East and North Africa (MNA)

81. The MNA Strategic Framework for Climate Action for fiscal years 2011–13 forms the World Bank response to a growing, client-driven demand for climate-smart development. It is supported by “four pillars” of action that offer a solid foundation for climate action. The first two pillars, “building resilience” and “reducing emissions,” provide the broad goals for the region’s adaptation and mitigation needs. The third and fourth pillars, “leveraging funding” and “generating and sharing knowledge,” frame the Bank’s financial and institutional capacity to implement opportunities for climate action.

82. Over the past five fiscal years, the Bank has been financing (through its IBRD and IDA lending) investment in the MNA region of around \$3.5 billion to adapt and mitigate climate change in the water, urban development, agriculture, energy, and transport sectors. Over 60 percent of active lending and nearly 80 percent of the lending value in the pipeline support investments with cobenefits for the adaptation and mitigation agenda. The active lending portfolio on climate change numbers 55 projects, or roughly 40 percent of all sustainable development projects in the region. MNA is financing \$1.1 billion in adaptation projects and \$2.2 billion in mitigation projects. A small category of projects are related to both adaptation and mitigation.

Supporting Low-Carbon Growth

83. ***Concentrated Solar Power (CSP).*** CSP has the potential to be a major part of MNA countries’ contribution to global GHG emission reductions. The CTF Investment Plan aims to mobilize nearly \$6 billion (including \$750 million from the CTF) to accelerate deployment of

CSP projects in Algeria, Egypt, Jordan, Morocco, and Tunisia (box 11). The investment plan aims at a private sector demonstration effort by cofinancing 11 commercial-scale power plants totaling around 1 gigawatt of generation capacity over a 3-to-5-year timeframe, and two transmission projects that contribute to Mediterranean grid enhancement and exports.

84. **Wind Energy.** The region has begun to make investments in wind power. Three projects are under way: the Al-Mokha wind park in Yemen, one in Jordan, and another in Egypt. There is potential for further expansion in wind power, particularly in coastal areas.

Box 11. CTF in Morocco

A planned 500 megawatt concentrated solar power (CSP) plant at Ouarzazate in Morocco is the first big piece of a greater vision for the expansion of this renewable energy technology across North Africa and the Middle East, a vision engaging Algeria, Egypt, Jordan, Morocco and Tunisia and multiple global partners with names like Desertec and Medgrid.

The Clean Technology Fund has endorsed the Investment Plan for MNA CSP with a commitment of \$750 million and the aim of mobilizing nearly \$6 billion. Ouarzazate, planned in phases, will be one of the biggest CSP plants in the world but, perhaps more importantly, will begin to build the MNA region into a major global climate change mitigation player with the installation of over 1GW of CSP generation capacity in the next five years, doubling worldwide capacity. By 2020, capacity could reach 5GW, according to a progress report made to the Clean Technology Fund (CTF) Committee in November last year.

The CTF is designed to finance transformational actions with global impact. MNA's unique geography makes it the perfect spot: abundant sunshine, low humidity, and plenty of flat, unused land near road networks and transmission grids. The CSP is easy to integrate into conventional electricity systems and is relatively simple technology. MNA is one of the fastest-growing electricity consumers in the world looking to scale up its supply, diversify away from hydrocarbons, and increase its energy security.

Morocco imports 97 percent of its energy needs, currently dominated by coal. Its forward-looking energy policy focuses on two key objectives: improving energy security while addressing climate change mitigation, but also ensuring energy access for all citizens and businesses at the lowest possible cost.

85. **Tunisia Sustainable Agricultural Land Management.** This carbon finance project is a pilot—the second in the world—designed to reduce emissions from agriculture and increase the sequestration of carbon in soils through more sustainable and lower-emitting agricultural practices.

86. **Sustainably Used and Reinforced Coastal Zones.** The Yemen Climate Resilient Integrated Coastal Zone Management (ICZM) project is financed by the Least Developed Countries Fund (LDCF) under the supervision of the GEF Secretariat. The objective is to (a) enhance capacity and awareness on climate-resilient ICZM at national and local levels in

selected coastal governorates; and (b) demonstrate benefits of implementing climate-resilient ICZM in three target areas.

87. ***Greening Cities.*** To fully capture the mitigation potential of cities—which account for around 70 percent of GHG emissions in the region—an innovative city-wide approach—the Amman Green Growth Program—is being developed with the Greater Municipality of Amman. Its objective is to promote low-carbon investments and policies that sustain economic growth in the city.

88. ***Moving People and Goods.*** The WBG is assisting Egypt in mobilizing carbon finance resources to support the taxi and bus renewal program in Cairo. A similar study is under way in Yemen. The use of alternative fuels—such as CNG and LPG—has been studied in some countries in MNA, particularly Palestine. The recent Morocco Urban Transport DPL (approved by the Board in 2011) supports implementation of the national urban transport strategy and the restructuring of public bus transport systems in Casablanca and Rabat.

Building Climate Resilience

89. ***Increase Agricultural Resilience to Climate Change in Morocco.*** This project, funded by SCCF, aims to integrate climate change into the implementation of the national agricultural strategy, the Plan Maroc Vert (PMV). The PMV aims to create the conditions in which rain-fed farmers can thrive, but the adverse impacts of climate change threaten to overrun the positive impacts of these investments (box 12).

90. ***Tunisia Second Natural Resource Management Project.*** This project includes a \$10 million GEF grant to integrate climate change adaptation into a \$68 million community-driven natural resource management and rural development project. The overall objective is to improve the living conditions of rural communities in the project areas by increasing access to basic infrastructure and services, sustainably increasing incomes, and improving natural resource management practices.

91. ***Augmenting Water Supplies.*** The region faces a scarcity of water. Water therefore plays a central role in core development choices. The Bank is investing in water efficiency and conservation measures (i.e., demand side management) and measures to increase water supply (i.e., supply side management) from unconventional sources such as desalinization and reuse.

92. ***Pilot Program for Climate Resilience.*** The Strategic Plan for Climate Resilience for Yemen, currently under preparation, sets forth a \$110 million suite of investments and technical assistance to help make the transition to a more climate-resilient development pathway.

93. ***Adaptation to Climate Change Using Agrobiodiversity Resources in the Rain-fed Highlands of Yemen.*** Aimed at farmers who rely on rain-fed agriculture in the Yemen highlands, this project aims to enhance coping strategies for climate adaptation through the

conservation and utilization of biodiversity important to agriculture and associated local traditional knowledge.

Box 12. Increase Agricultural Resilience to Climate Change in Morocco

In Morocco, a project funded by SCCF (GEF) aims to integrate climate change into the implementation of the national agricultural strategy, the Plan Maroc Vert (PMV). The PMV aims to create the conditions in which rain-fed farmers can thrive, but the adverse impacts of climate change threaten to overrun the positive impacts of these investments. The SCCF project targets government investments directed to smallholders, and finances the incremental costs for the implementation of climate change adaptations to enhance the agriculture sector's resilience. The project addresses the knowledge and capacity gap of stakeholders to face the new climate scenario in a flexible and dynamic way. It will constitute a catalyst for the spread of climate change adaptation in vulnerable regions of Morocco and in relevant agri-food chains. In addition, the climate change adaptations will be evaluated in terms of their contributions to increase the soil carbon stock, addressing in an innovative way the potential interactions between adaptation and mitigation actions in agriculture.

94. *The Oum Er Rbia Basin (Morocco) Irrigated Agriculture Modernization Project.* The objective is for participating farmers in the Oum Er Rbia basin to increase the productivity and promote more sustainable use of irrigation water to overcome current and future water deficits. Financing is provided for modernization of off-farm irrigation networks to make pressurized water suitable for on-farm micro irrigation equipment.

95. *Integrated Ecosystem Management in the Jordan Rift Valley.* This GEF project, with a component on climate change impacts on biodiversity conservation, supports conservation planning and assessment.

96. *Improving Food Import Supply Chains in Arab Countries.* An objective is to improve food security and reduce the vulnerability of Arab countries to climate-induced food price spikes. The potential benefits of improving food import supply chain efficiency are large and offer a promising way for Arab countries to minimize the costs of adaptation.

Supporting Knowledge and Capacity Building

97. *Adaptation to a Changing Climate in the Arab Countries.* This MNA flagship report aims to provide information on climate change in the Arab region and technical guidance on adaptation to climate change. It is the first report to address climate change adaptation for all 22 Arab countries, and provides strategic guidance on short-term adaptation, while taking longer term climate change projections into account.

98. *Reducing Vulnerability to Climate Change in Agricultural Systems.* The study aims to develop agricultural response strategies for three different production systems in three countries

in the Middle East, by using the best available knowledge and tools to assess the effects of climate change and bringing these together with inputs from experts, stakeholders, and decision makers.

99. ***Support Climate Downscaling in the MNA Region.*** The Bank is supporting a regional study on climate change downscaling to enhance the ability of decision makers and resource managers to adopt an improved methodology for assessing climate change impacts in various sectors. It will provide better quality and useable climate change data at detailed spatial and temporal scales, which will eventually contribute to integration of climate change resilience into overall development policies and programs.

100. ***The Cairo Congestion Study*** is preparing policy recommendations and an action plan to reduce traffic congestion and GHG emissions in the Greater Cairo Metropolitan Area.

101. ***Climate-Induced Migration in MNA.*** This initiative is undertaking studies in Algeria, Egypt, Morocco, Syria, and Yemen to (a) assess the role of climate shocks on households' migration decisions; (b) analyze the role of mobility and remittances in facilitating adaptation to climate shocks; and (c) suggest policy options to enhance the role of migration as an adaptation tool and manage migration through infrastructure investments and public services.

102. ***Adapting to Climate Change and Preparing for Natural Disasters in the Coastal Cities of North Africa.*** This work was completed in 2011 for Alexandria, Casablanca, Tunis, and for the urban development area of the Bouregreg Valley in Morocco. It included in-depth identification of the main challenges and supported preparation of adaptation and preparedness action plans. It is being extended to Amman and Algiers.

103. ***Enhancing Jordan's Capacity for Undertaking Nationally Appropriate Mitigation Actions.*** This work assists the government in defining and prioritizing nationally appropriate mitigation actions and climate finance instruments while demonstrating the possibility to integrate public-private partnerships.

South Asia Region (SAR)

104. SAR's climate change activities are guided by five pillars: (1) promoting "no-regrets" approaches, given the uncertainty of impacts; (2) building resilience of the climate-vulnerable poor; (3) investing in knowledge to address critical information gaps; (4) regional cooperation to deal with cross-border climate-related challenges; and (5) maintaining the integrity of environmental services to ensure that development is rendered more resilient.

105. Climate change investment in SAR has had steady growth. In fiscal 2011, 30 percent of the IBRD/IDA projects approved had mitigation and/ or adaptation cobenefits, with 20 percent of funds categorized as mitigation cobenefits and a quarter as adaptation cobenefits. Countries such as Bhutan and the Maldives, where lending was inactive, did not have any adaptation

projects, but all other countries had adaptation projects approved in fiscal 2011. Bangladesh had the highest ratio—three out of seven projects had an adaptation component.

Supporting Low-Carbon Growth

106. ***India's Application for Clean Technology Fund.*** India has become the first country among the BRICs to request funding from the CTF. The \$775 million CTF investment plan was endorsed by the CTF Trust Fund Committee in November 2011. India's Low-Carbon Growth Study, which targeted energy intensive sectors, was used in the plan as one of the key elements.

107. ***Low-Carbon Development Study.*** This study was undertaken to develop the analytical capacity to identify low-carbon growth opportunities using a bottom-up approach up to the end of the 15th Five-Year Plan (March 2032). It facilitates informed decision making by improving the knowledge base and awareness of India's challenges to address low carbon growth.

108. ***Sustainable Energy.*** The engagement in the energy sector has three components that are consistent with low-carbon growth: (1) promote cleaner and lower emitting technologies such as hydropower (Nepal, India), wind power (India), small-scale hydropower, and solar (Nepal, Bangladesh) and cleaner coal (GEF Project in India); (2) promote high efficiency transmission; and (3) promote the institutional capacity to address India's energy and low-carbon growth challenges. Nepal and the Maldives are also among the pilot countries for the Scaling-up Renewable Energy Program.

109. ***Sustainable Transport.*** SAR is providing investment assistance in a dedicated freight corridor in India to support a modal shift from road to rail transport, and in sustainable urban transport, and sustainable transport solutions in Sri Lanka (Metro Colombo Project) and various second-tier cities in India (Sustainable Urban Transport cofinanced with GEF).

110. ***GEF Energy Efficiency Program.*** During the GEF4 period (2006–10), the Bank pioneered two major programmatic approaches in India. One of these, the Energy Efficiency Program, which supports SME energy efficiency projects and chiller projects, is being implemented. The Bureau of Energy Efficiency (BEE) is the main counterpart of this program. BEE has helped establish priorities and integrate GEF activities more strategically with their domestic energy efficiency programs.

111. ***Carbon Finance.*** As of June 2011, SAR had 18 projects in the carbon finance portfolio, covering sectors such as industry, forestry, urban development, and transportation. They are projected to lead to a total reduction of approximately 12 million tons of greenhouse gases. Some carbon finance projects—such as the FaL-G Bricks and Blocks Project in India (box 13) and the Lahore Composting Project in Pakistan—demonstrate important development impacts while reducing greenhouse gas emissions.

Box 13. Carbon Finance Delivers Community Benefits

The FaL-G Bricks and Blocks Project in India is a carbon finance project that reduces GHG emissions and has a positive development impact. FaL-G stands for fly ash, lime, and gypsum, all of which are either waste or byproducts from thermal power plants or the chemical industry. Unlike conventional clay bricks, FaL-G technology enables construction material production through chemical reaction. Under this CDM project, the CO₂ emissions are approximately 70 percent less per production volume than conventional technologies. So far, 234,000 tons of carbon credits have been generated, with a total expected volume of approximately 450,000 tons of carbon dioxide equivalent (tCO₂e). In addition to such global benefits, FaL-G technology also avoids air pollutant emissions and disposes/utilizes industrial waste in an environmentally sustainable manner.

Most importantly, unlike the traditional brick making industry, which stops production during the rainy season, the FaL-G technology enables year-round brick production and employment for more than 1,000 workers. Year-round employment for brick workers, which are often among the landless poor in India, allows their children to pursue formal education.

Building Climate Resilience

112. *Multi-Donor Trust Funds to Address Climate Resilience and Adaptation.* The Bank established multi-donor trust funds in Bangladesh (\$125 million) and the Maldives (\$8.6 million) to assist adaptation efforts and build resilient infrastructure and livelihoods (box 14). This enables a coordinated effort of donors to address critical change issues in the respective countries, and ensure country ownership in identifying priorities.

113. *Pilot Program for Climate Resilience.* The Strategic Plans for Climate Resilience for Bangladesh and Nepal are approved, and preparation of projects such as coastal adaptation, watershed management, and flood information systems are under way. The volume of assistance is a \$50 million grant and \$60 million concessional lending for each country.

114. *Andhra Pradesh Drought Adaptation Initiative (APDAI).* APDAI was launched in 2006 to find solutions to the frequent droughts in the drought-prone districts of the state. This recipient-executed technical assistance project implemented a number of field pilots with small and marginal landholders and landless residents to facilitate the integration of adaptation strategies, and reduce the vulnerability of the rural economy and population of Andhra Pradesh to climate variability and change. A key achievement has been the mainstreaming of adaptation strategies into the flagship wage employment program of India, the National Rural Employment Guarantee Scheme, through area-based planning. Lessons from the technical assistance project are used to design an adaptation component in the IDA National Rural Livelihood Project; a GEF grant is planned.

115. ***Integrated Coastal Zone Management (ICZM)***. This IDA project (\$222 million) invests in integrated management of India’s coastal zone, which is of crucial importance for ecosystems and the security of lives and livelihoods of coastal communities. The project involves national-level capacity and knowledge building to address the adaptation needs of communities from coastal hazards. It also includes state-level subprojects to pilot ICZM approaches. A number of these aim to build local resilience in coastal communities.

Box 14. Multi-donor Trust Funds (MDTF) in South Asia

Many donors are interested in channeling funds to assist adaptation (and mitigation) efforts in the South Asia region. The Bank is administering three such trust funds in the region. The Bangladesh Climate Change Resilience Fund (Denmark, EU, Sweden, Switzerland, and the UK—\$125 million) assists adaptation efforts and enables Bangladesh to effectively use international assistance. Under this trust fund, the following projects are being prepared: Cyclone Shelters, Agricultural Adaptation in Climate Risk Prone Areas, Climate-Resilient Participatory Afforestation/Reforestation, and Community Climate Change. The Maldives Climate Change Trust Fund (EC, AusAid—\$9.5 million) supports both adaptation and mitigation, responding to the context of a country facing sea level rise and aiming to become carbon-neutral by 2020. Under this trust fund, one project each for adaptation and mitigation was appraised in September (Wetlands Conservation and Coral Reef Monitoring for Adaptation to Climate Change, and Clean Energy for Climate Mitigation). The South Asia Water Initiative (UK, Australia, Norway—\$10 million) seeks to improve the management of water within and between South Asian countries, with an emphasis on promoting transboundary cooperation and enhanced resilience to climate change.

Supporting Knowledge and Capacity Building

116. ***Sundarbans Sustainable Socioeconomic Development***. Spanning India and Bangladesh, the Sundarbans is the largest mangrove system in the world and home to 4.4 million inhabitants; about half of these residents live below the poverty line. Historic sea level rise from deltaic subsidence, salinity intrusion, flooding, and nutrient loss in local soils have made this one of the most hazardous areas in the Indian subcontinent. The technical assistance will develop a strategy for biodiversity conservation; climate resilience, and socioeconomic development in the Sundarbans.

117. ***Climate Change Risks and Food Security in Bangladesh***. Bangladesh is a densely populated agriculture-dependent country with a high incidence of poverty. Adaptation to ensure food security is a high priority. The study examined the implications of climate change on food security and identified adaptation measures in the agriculture sector. A menu of adaptation responses identified potential options to enhance the resilience of Bangladesh's agriculture sector.

118. ***Ganges Strategic Basin Assessment.*** Completed in 2011, this assessment built knowledge and promoted dialogue on the risks and opportunities of cooperative management in the basin. The centerpiece of this regional research was the development of a set of nested hydrological and economic river basin models that can be used to examine alternative scenarios across a range of Ganges futures.

119. ***Climate Change Impact and Agriculture Adaptation (Pakistan).*** This study examines various drivers (including both climate risks and socioeconomic changes at the 20–30 year planning horizon) that impact allocations across water-related sectors in the Indus Basin system and result in changes in food and water security. A better understanding of tradeoffs will help guide prioritization and planning of future investments and ultimately strengthen water and food security.

120. ***Energy Efficiency and Cleaner Technology in Bangladesh Brick Manufacturing.*** Brick manufacturing is a major source of GHG emissions and air pollutants, especially in peri-urban areas of Dhaka. This study presented the benefits of low-carbon and less polluting brick technologies and provided concrete recommendations for their adoption in Bangladesh. The study included a cost-benefit analysis of the direct costs and benefits for the entrepreneur, the impacts of air pollution on health, and the effects of CO₂ emissions on climate change.

121. ***Vulnerability of Kolkata Metropolitan Area to Increased Precipitation in a Changing Climate (India).*** Using hydrological, hydraulic, and urban storm drainage models, this study identifies the likely impact of climate change on increased precipitation and flooding in Kolkata Metropolitan Area. Through a combination of social, land use, and flood vulnerability indices, the study identifies the wards that are most vulnerable to climate change. A damage assessment estimates the additional damages that are likely to occur because of climate change. The report concludes with an adaptation strategy that recommends basic actions to increase the resilience of Kolkata to flooding in general and to the added impact of climate change.

122. ***The Cost of Adapting to Climate Extremes in Bangladesh.*** This study assesses the potential intensification of inland monsoon floods and cyclones in a changing climate. It sheds light on potential damage from extreme weather events and associated adaptation costs. It identifies vulnerable populations and infrastructure, quantifies outstanding deficits in dealing with current climate-related risks, and estimates the cost of adaptation to avoid further damage due to climate change.

123. ***Regional Monitoring of Water Resources in the Greater Himalayan Region.*** The catchments of the Himalayas, including the glaciers, are a significant portion of the water budget in Asia. Baseline information describing glacier mass balance, the local and general mountain climate(s), and the hydrologic regime and resulting water resources volumes and timing for the Hindu Kush – Himalayan (HKH) mountain region is required before the implications of climate change on the rivers of south Asia can be assessed realistically. This study presents a first-order

synthesis of the quantity and quality of the existing monitoring in these areas, with recommendations for future monitoring investments.

Annex 4. Results Framework for Climate Change

Background

1. The *Strategic Framework for Development and Climate Change* adopted a dual-track approach to developing a results framework:¹² (a) a set of key actions, deliverables, and indicators to monitor WBG progress during fiscal years 2009–11 in six action areas;¹³ and (b) a longer-term process of developing, in a consultative manner, an outcome-oriented results framework to accommodate new developments in the global climate negotiations and knowledge. Annex 2 reports on progress made in delivering on the immediate action areas during fiscal years 2009–11.

2. This annex presents the Results Framework that will be used to monitor results beyond 2011. The Framework was developed through consultations with the World Bank network anchors, GFDRR, CIF, and IFC. It builds on existing efforts by sectors to mainstream climate into respective strategies. The framework conforms to recently proposed OPCS guidelines on the development and design of sector strategies.

3. The Results Framework is a “living document” that will evolve and improve over time as the World Bank’s ability to report on results expands. The current indicators are aligned with the availability of data based on the corporate scorecard, sector strategies, and core sector indicators. Going forward, the Bank aims to develop and update the framework as more or improved outcome indicators become available. For example, metrics for additional indicators (e.g. energy efficiency) are being developed separately under a parallel sector indicators initiative.

4. The Results Framework for climate change is anchored to achievements in four broad areas that are not mutually exclusive:

- i. Country-led climate actions to increase resilience to the impacts of climate change and variability so that development results are achieved even with a changing climate
- ii. Country-led climate actions to reduce or capture greenhouse gases
- iii. Mobilization of finance and markets (including private resources) for country-led climate actions on increasing resilience or mitigation, including setting up innovative

¹² World Bank. 2008. *Development and Climate Change: A Strategic Framework for the World Bank Group*. Technical Report. Washington, DC: World Bank.

¹³ The six action areas of the SFDC are to (1) support climate actions in country-led development; (2) mobilize additional concessional and innovative finance; (3) facilitate the development of market-based financing mechanisms; (4) leverage private resources; (5) support accelerated development and deployment of new technologies; and (6) step up policy research, knowledge, and capacity building. *Source: Development and Climate Change: A Strategic Framework for the World Bank Group*, p.5.

financing mechanisms, leveraging private sector resources, and taking a catalytic global role in increasing climate financing

- iv. Fostering innovation, knowledge, capacity, and partnerships in support of actions to increase resilience, mitigation, or climate finance; for example, advancing knowledge on climate and development; developing mitigation- and adaptation-related toolkits, guidelines, and products; building capacity and expertise; and working with development partners to facilitate global action.

5. The purpose of the Results Framework is to help monitor progress in these four areas over the coming decade. The Framework includes a three tier-structure that defines the results chain and specifies a set of indicators that will be used to measure progress and performance on the results for each tier (tables 1–3). The source for each indicator, the units of measurement, and the baseline values are also provided.

6. The first and highest tier sets the global context for the Results Framework organized around the four areas—climate resilience, climate mitigation, climate finance, and knowledge /capacity/innovation/partnerships. It includes indicators that show the status of high-level outcomes in each of these action areas. These high-level outcomes cannot be attributed to the World Bank Group; instead, countries and their development partners all contribute to these achievements through their interventions, actions, and policy decisions across multiple sectors. They can also be affected by external global shocks such as the recent financial crisis.

7. In the second tier, the focus is on outputs and outcomes supported by WBG operations, which include support to country programs, policies, and knowledge activities, as well as to global public goods. The results in this tier reflect the “contribution” of the WBG to the development efforts of the country. It includes development results that are low-carbon and/or climate-resilient—countries with disaster risk reduction programs, irrigation services provided with improved methods, avoided greenhouse gas (GHG) emissions, power generation from renewable sources, or adoption or scaling up of technologies that improve resilience or reduce emissions. In addition, it includes results on the mobilization of finance and the fostering of knowledge, innovation, and capacity, which are often not limited to country boundaries.

8. The third tier focuses on operational effectiveness of WBG programs to achieve low-carbon and climate-resilient development results. It includes the entire range of investment financing, programs, and strategies that are being adjusted to take into account climate change. For lending activities, this includes the quality and implementation performance of the climate-related portfolio, as defined by a new system the World Bank has adopted for tagging projects at Board approval as providing climate mitigation or climate adaptation cobenefits. For non-lending activities, this includes the integration of climate change considerations into country assistance strategies and sector strategies. Finally, Tier III includes the integration of climate change

considerations into various knowledge products, including analytic and advisory services, guidelines, and tools.

Results Framework on Climate Change
TIER I | CLIMATE IN A DEVELOPMENT CONTEXT

Indicators	Baseline	
	Value	Year
Increased climate resilience in country-led development process		
Population below \$1.25 (PPP) a day	% of total population	25.4
GDP per capita	constant 2000 \$	1,873
Cereal yield	kg per hectare	3,021
Countries with DRR programs addressing 5 HFA priority areas	%	
Access to an improved water source	% of population	84.5
Paved roads	% of total roads	35.3*
Protected terrestrial areas	% of total surface area	12.2
Increased climate mitigation in country-led development process		
CO ₂ emissions	metric tons per capita	3.0
Average annual deforestation	%	0.18
Access to electricity	% of population	75
Electricity production from renewable sources	billions kwh	3,839
Increased financing of climate actions in country-led development process		
International commitments for climate finance	billions of \$	2010
Increased climate knowledge, capacity, innovation and partnership in country-led development process		
Number of countries with National Adaptation Plans	# of countries	2010
Number of countries with Nationally Appropriate Mitigation Actions	# of countries	2010
Number of countries with Voluntary Partnership Agreements on forestry sector governance	# of countries	4
NOTES		
Data	[] IDA only { } IBRD only	
* Based on data covering less than 50% of countries in the group.		

Results Framework on Climate Change
TIER II | COUNTRY CLIMATE RESULTS SUPPORTED BY THE WBG

Indicators	Scope	Baseline*	
		Value	Year
Increased climate resilience in country-led development process from WBG-supported activities			
Development outcomes incorporating climate resilience			
People provided with access to improved water sources by WB operations incorporating climate resilience	million	IBRD	
Beneficiaries covered by social safety net programs supported by WB operations incorporating climate resilience	million	IBRD	
Countries with DRR programs addressing 5 HFA priority areas with WBG support	%	IBRD	
WBG-supported outputs with increased CC resilience			
Area provided with improved irrigation and drainage services and increased climate resilience	hectares	IBRD	
Collaborative agriculture research or extension subprojects that incorporate climate resilience	# of projects	IBRD	
Beneficiaries who have adopted improved technologies in agriculture operations that incorporate climate resilience	# beneficiaries	IBRD	
Hydropower projects that address river basin planning and water use management in planning and design	%	WBG	50 2009
Volume of wood-fuel produced in a sustainable manner	cu meters	WBG	
Increased climate mitigation actions in country-led development process from WBG supported activities			
CO₂ emissions from WBG activities			
Amount of emission reduction with support from special climate finance instruments	metric tons	WBG	
Amount of emissions from energy, transport, and forestry sector investment operations	metric tons/ \$	WB	
Amount of emissions from IFC investment operations	metric tons	IFC	
Population newly gaining access to renewable energy by household connection from WBG-supported operations	number	WBG	
Generation capacity of renewable energy constructed under WBG-supported project	MW	WBG	
Amount of energy saved through energy efficiency improvement under WBG-supported projects	MWh or MJ	IDA/IBRD	
Afforested or reforested	ha	WBG	
Protected area with strengthened management	ha	WBG	
Increased climate financing mobilized by WBG			
Commitments mobilized for climate finance	\$ million	WBG	
Increased climate knowledge, capacity, innovation and partnership in WBG-supported activities			
Countries with WBG-supported low-carbon strategies	# of countries	WBG	
Countries with WBG-supported climate-resilience strategies	# of countries	WBG	
Global/regional agreements with WBG on CC	# of agreements	WBG	
<i>Notes: * Baseline values are not currently available for some indicators. Their availability is appended to the definitions of indicators.</i>			

Results Framework on Climate Change
TIER III | OPERATIONAL AND ORGANIZATIONAL EFFECTIVENESS

Indicators	Baseline		Performance Standard
	Value	Year	
Increased operational effectiveness of climate actions			
Lending commitments			
- climate adaptation WB	\$ millions		Monitored
- climate mitigation IFC	\$ millions		Monitored
- climate adaptation WB	\$ millions		Monitored
- climate mitigation IFC	\$ millions		Monitored
Climate-related financial intermediary funds managed			
- WB	\$ millions		monitored
- IFC	\$ millions		monitored
Proportion of lending commitments			
- with adaptation cobenefits WB		%	monitored
- with adaptation cobenefits IFC		%	monitored
- with mitigation cobenefits WB		%	monitored
- with mitigation cobenefits IFC		%	monitored
Proportion of CASs that include climate considerations			
AAA activities with objectives accomplished:			
- with adaptation cobenefits WB	number		monitored
- with adaptation cobenefits IFC	number		monitored
- with mitigation cobenefits WB	number		monitored
- with mitigation cobenefits IFC	number		monitored
Satisfactory operation outcomes at completion:			
- Operations with adaptation cobenefits WB		%	monitored
- Operations with adaptation cobenefits IFC		%	monitored
- Operations with mitigation cobenefits WB		%	monitored
- Operations with mitigation cobenefits IFC		%	monitored
Staff trained on climate actions and programs	number		monitored
World Bank climate data accessed by global users	millions of visits		monitored
1.1			
<i>Notes:</i>			
Baseline values are not currently available for some indicators. Their availability is appended to the Definitions of Indicators.			
Performance Standards: Performance standards/targets are provided where available. Indicators are “monitored” where performance standard or target is not relevant. Blanks show that some standards are not developed.			

Definitions of Indicators

Tier I

9. **Population below \$1.25 (PPP) a day (%)**: Percentage of the population living on less than \$1.25 a day at 2005 international prices. As a result of revisions in PPP exchange rates, poverty rates for individual countries cannot be compared with poverty rates reported in earlier editions. Average, weighted by the total population. (*Data Source: Corporate Scorecard—World Bank staff calculation using PovcalNet tool. Data are based on primary household survey data obtained from government statistical agencies and World Bank country departments—June 2011.*)

10. **GDP per capita** (constant 2000 \$): Gross domestic product divided by midyear population. GDP is the sum of gross value added by all resident producers in the economy plus any product taxes and minus any subsidies not included in the value of the products. It is calculated without making deductions for depreciation of fabricated assets or for depletion and degradation of natural resources. Data are in constant 2000 U.S. dollars (*Data Source: Corporate Scorecard—World Bank staff estimates based on data from WDI, World Bank national accounts data, and OECD national accounts data files—June 2011.*)

11. **Cereal yield** (kg per hectare): Measured as kilograms per hectare of harvested land, includes wheat, rice, maize, barley, oats, rye, millet, sorghum, buckwheat, and mixed grains. Production data on cereals relate to crops harvested for dry grain only. Cereal crops harvested for hay or harvested green for food, feed, or silage and those used for grazing are excluded. Averaged, weighted by land under cereal production (*Data Source: Corporate Scorecard—World Bank staff estimates from WDI; Food and Agriculture Organization, electronic files and web site—June 2011.*)

12. **Percent of countries with DRR programs addressing five HFA priority areas (%)**: Number of GFDRR priority countries that are successfully implementing/completing comprehensive national DRR programs that adequately address all five HFA priority areas. The HFA priority areas are (a) ensuring DR is a national and local priority with strong institutional bases for implementation; (b) identifying, assessing, and monitoring disaster risks and enhancing early warning; (c) using knowledge, innovation, and education to build a culture of safety and resilience; (d) reducing underlying risk factors; and (e) strengthening disaster preparedness for effective response. (*Source: UNISDR*)

13. **Access to an improved water source** (% of population): Indicator refers to the percentage of the population with reasonable access to an adequate amount of water from an improved source, such as a household connection, public standpipe, borehole, protected well or

spring, and rainwater collection. Unimproved sources include vendors, tanker trucks, and unprotected wells and springs. Reasonable access is defined as the availability of at least 20 liters per person a day from a source within 1 kilometer of the dwelling. Average, weighted by the total population (*Data Source: Corporate Scorecard—World Bank staff estimates from WDI, World Health Organization and United Nations Children's Fund, Joint Measurement Programme (<http://www.wssinfo.org/> - June 2011.)*)

14. **Roads, Paved** (% of total roads): Paved roads are those surfaced with crushed stone (macadam) and hydrocarbon binder or bituminized agents, with concrete, or with cobblestones, as a percentage of all the country's roads, measured in length. Median, based on the most recent estimates available within the last 5-year period (*Data Source: Corporate Scorecard -- World Bank staff estimates based on data from WDI, International Road Federation, World Road Statistics and electronic files, except where noted—June 2011.*)

15. **Protected areas** (% of total terrestrial area): Terrestrial protected areas are those officially documented by national authorities. Average, weighted by land area (*Data Source: Corporate Scorecard—World Bank staff estimates from WDI, United Nations Environment Programme, and the World Conservation Monitoring Centre, as compiled by the World Resources Institute, based on data from national authorities, national legislation, and international agreements—June 2011.*)

16. **CO₂ emissions** (metric tons per capita): Carbon dioxide emissions are those stemming from the burning of fossil fuels and the manufacture of cement. They include carbon dioxide produced during consumption of solid, liquid, and gas fuels and gas flaring. Average, weighted by the total population (*Data Source: Corporate Scorecard—Carbon Dioxide Information Analysis Center, Environmental Sciences Division, Oak Ridge National Laboratory, Tennessee, United States—June 2011.*)

17. **Average annual deforestation** (% of total surface area): Permanent conversion of natural forest area to other uses, including agriculture, ranching, settlements, and infrastructure. Deforested areas do not include areas logged but intended for regeneration or areas degraded by fuel-wood gathering, acid precipitation, or forest fires. Average, weighted by forest area (*Data Source: Corporate Scorecard—World Bank staff estimates based on data from WDI. Food and Agriculture Organization, electronic files and web site—June 2011.*)

18. **Access to electricity (% of population)**: Indicator refers to the percentage of the population with access to an electricity either grid or off-grid. Data are compiled by IEA from a variety of data sources including national and local power utilities, household surveys, etc., and statistical techniques to fill gaps. Data quality may vary by country. Average, weighted by the total population (*Data Source: IEA database 2009.*)

19. **Electricity production from renewable sources (kWh):** Electricity production from renewable sources includes hydropower, geothermal, solar, tides, wind, biomass, and biofuels. (*Data Source:* IEA Statistics © OECD/IEA, <http://www.iea.org/stats/index.asp>; Energy Statistics and Balances of Non-OECD Countries; Energy Statistics of OECD Countries; and Energy Balances of OECD Countries; also available in World Development Indicators.)
20. **International commitments for climate finance** (billions \$): Target annual commitment levels agreed at UNFCCC by the parties for financing climate-related actions in developing countries (*Data Source:* UNFCCC website.)
21. **Number of countries with National Adaptation Programs of Action (#):** Number of countries that have prepared or updated their NAPA and submitted to the UNFCCC in the past 10 years (*Data Source:* UNFCCC website.)
22. **Number of countries with Nationally Appropriate Mitigation Actions (#):** Number of countries that have prepared or updated their NAMA and submitted to the UNFCCC in the past 10 years (*Data Source:* UNFCCC website.).
23. **Number of countries with Voluntary Partnership Agreements on forestry sector (#):** Voluntary Partnership Agreements are agreed between wood-producing countries and the EU or other international bodies. They aim to ensure that wood products being exported are legal and that forest governance in the exporting country is improved. A signed VPA indicates that the producer country has made a serious commitment to curtail illegal logging, which is one of the drivers of deforestation and forest degradation. (*Data source:* EU database 2010.)¹⁴

Tier II

24. **People provided with access to improved water sources by WB operations that incorporate climate resilience** (millions): Number of people who benefited from improved water supply services (following the UNICEF-WHO Joint Monitoring Program definition) that have been constructed under Bank-supported operations and have been identified as providing climate adaptation cobenefits. (*Data Source:* World Bank staff estimates based on last 4 years, available FY15.)
25. **Beneficiaries covered by social safety net programs supported by WB that incorporate climate resilience** (\$ millions): Number of individual beneficiaries from Bank-supported social safety net programs that that have been identified as providing climate

¹⁴ (http://ec.europa.eu/europeaid/what/development-policies/intervention-areas/environment/forestry_intro_en.htm) and European Forest Institute - FLEGT Facility (http://www.euflegt.efi.int/portal/home/vpa_countries/)

adaptation cobenefits. (*Data Source:* World Bank staff estimates based on operations closed in last 4 years, available FY15.)

26. Percent of countries with DRR programs addressing five HFA priority areas (%): Number of GFDRR priority countries that are successfully implementing/completing comprehensive national DRR programs that adequately address all five HFA priority areas through WBG Support. The HFA priority areas are (a) ensuring DR is a national and local priority with strong institutional bases for implementation, (b) identifying, assessing, and monitoring disaster risks and enhancing early warning, (c) using knowledge, innovation, and education to build culture of safety and resilience, (d) reducing underlying risk factors, and (e) strengthening disaster preparedness for effective response. (*Source:* World Bank staff estimated—GFDRR Results Framework.)

27. Area provided with improved irrigation and drainage service and increased climate resilience (hectares, million): Area provided with improved irrigation services by Bank-supported programs that have been identified as providing climate adaptation cobenefits. (*Data Source:* World Bank staff estimates based on last 4 years, available FY15.)

28. Collaborative agriculture research or extension subprojects focused on CC&CV (# of projects): Number of collaborative agriculture research or extension subprojects that have been identified as providing climate adaptation cobenefits. (*Data Source:* World Bank staff estimates based on last 4 years, available FY15.)

29. Clients in a project area who have adopted climate-smart technologies promoted by the project (# of clients): Number of clients in the project area who have adopted an improved agricultural technology promoted by the project for project operations that have been identified as providing climate adaptation cobenefits. (*Data Source:* World Bank staff estimates based on last 4 years, available FY15.)

30. Proportion of hydropower projects that address river basin planning and water use management in planning and design (# of projects): Percentage of total portfolio for which enhancing development benefits to local communities programs has been integrated into project planning, design, and implementation as defined in the Hydropower Business Plan: Sustainability Balanced Scorecard (Annex II), December 2008. (*Data Source:* World Bank Staff estimates based on active projects since 2003.)

31. Sustainable wood-fuel production (cubic meters) produced by WBG-supported project: Estimated volume of wood-fuel produced by WBG-supported project in a sustainable manner (*Data Source:* World Bank staff estimates—Forestry team.)

32. **CO₂ emissions reduction through special climate finance instruments** (metric tons): As per the WBG Environment Strategy. (*Data Source*: CIF Admin unit, IFC, World Bank staff estimates available FY15.)
33. **CO₂ emissions from investment operations** (metric tons): Description based on WBG Environment Strategy. (*Data Source*: IFC, World Bank staff estimates available FY15.)
34. **Number of people provided with access to electricity (through renewable energy)**: (total # of people): This indicator calculates the number of people that have received electricity access under the project by household connection. It is expected that the baseline value for this indicator will be zero. (*Data Source*: Energy Core Sector Indicator.)
35. **Generation capacity of renewable energy (megawatts) constructed or rehabilitated under the project**: Megawatts of generation capacity of renewable energy constructed under Bank-supported programs. (*Data Source*: Core Sector Indicator energy; World Bank staff estimates based on operations closed between FY01–FY10, last 3 years aggregate—June 2011.)
36. **Amount of energy saved through energy efficiency improvements under WBG-supported projects (MWh or MJ)**: This indicator calculates the amount of electricity (MWh) or fuel (MJ) saved through energy conservation measures. (*Data source*: energy core sector indicator.)
37. **Afforested or reforested area** (hectares, million): Area afforested or reforested by Bank-supported programs that have been identified as providing climate adaptation cobenefits. (*Data Source*: World Bank staff estimates—Forestry team.)
38. **Protected area with strengthened management** (hectares, million): Protected areas that have strengthened managements through Bank-supported programs. (*Data Source*: World Bank staff estimates—Forestry team.)
39. **Financing commitments mobilized by WBG for climate finance action in developing countries** (\$ million): Financing commitments mobilized by WBG for financing climate actions in developing countries during the past five years. (*Data Source*: World Bank Staff estimates.)
40. **Countries with WBG-supported low-carbon development strategies** (# of countries): Number of countries that have developed or updated their low-carbon development strategies with WBG support during the past five years. (*Data Source*: WBG staff estimates.)

41. **Countries with WBG-supported climate-resilience strategies** (# of countries): Number of countries that have developed or updated their climate resilience or adaptation strategies with WBG support during the past five years. (*Data Source:* WBG staff estimates.)

42. **Global/regional agreements with WBG on CC** (# of agreements): Number of global or regional agreements between the World Bank Group and other institutions on climate-related activities. (*Data Source:* World Bank staff estimates.)

Tier III

43. **Lending commitments for climate adaptation** (\$ million): Dollar value of the sum approved by the Board to be extended to the client in loan, credit, or grant terms from IBRD/IDA sources tagged as providing climate adaptation cobenefits. (*Data Source:* World Bank data system.)

44. **Lending commitments for climate mitigation** (IBRD/IDA, \$ million): Dollar value of the sum approved by the Board to be extended to the client in loan, credit, or grant terms from IBRD/IDA sources tagged as providing climate mitigation cobenefits. (*Data Source:* World Bank data system.)

45. **Climate-related financial intermediary funds managed** (Volume, \$ million): Climate-related financial instruments designed to support engagements with development partnerships and/or programs for which the Bank, as trustee, administrator, or treasury manager: (a) provides an agreed set of financial and administrative services, and (b) has no responsibility for supervision of funded activities. (*Data Source:* World Bank and IFC data system.)

46. **Proportion of WB lending commitments that provide climate adaptation cobenefits** (% of commitments): Dollar value of the sum approved by the Board to be extended to the client in loan, credit, or grant terms from IBRD/IDA sources tagged as providing climate adaptation cobenefits as a share of total sum approved by the Board. (*Data Source:* World Bank Data System.)

47. **Proportion of WB lending commitments that provide climate mitigation cobenefits** (% of commitments): Dollar value of the sum approved by the Board to be extended to the client in loan, credit, or grant terms from IBRD/IDA sources tagged as providing climate mitigation cobenefits as a share of total sum approved by the Board. (*Data Source:* World Bank Data System.)

48. **Proportion of CASs that includes climate considerations** (%): Percentage of country assistance strategies, country partnership strategies, or country interim strategies that analyze

climate change impacts and vulnerabilities, or nationally appropriate mitigation actions and propose subsequent actions in at least one sector or provides explanations as to why actions are not needed. (*Data Source*: World Bank staff estimates.)

49. **Analytic and advisory activities with climate cobenefits objectives accomplished** (% of activity completion summaries rating objectives fully or partially accomplished): Applies to AAA activities coded as having climate cobenefits only. (*Data Source*: World Bank data system.)

50. **Satisfactory operations outcomes at completion—operations with adaptation cobenefits** (%): Percentage of projects that provide climate adaptation or climate mitigation cobenefits that upon exit are rated marginally satisfactory, satisfactory, or highly satisfactory on achievement of outcomes by IEG. (*Data Source*: World Bank Staff estimates, annual reviews.)

51. **Satisfactory operations outcomes at completion—operations with mitigation cobenefits** (%): Percentage of projects that provide climate adaptation or climate mitigation cobenefits that upon exit are rated marginally satisfactory, satisfactory, or highly satisfactory on achievement of outcomes by IEG. (*Data Source*: World Bank Staff estimates, annual reviews.)

52. **Staff trained on climate actions and programs** (# of trained staff): Number of staff trained on climate information and programs as recorded in LMS system. (*Data Source*: World Bank data system.)

53. **World Bank climate data accessed by global users** (millions of visits): Number of unique visitors to the climate data websites managed by the WB, including climate change data portal, climate finance platform. (*Data Source*: World Bank data system.)