THE WORLD BANK

Multiple Solutions to Address the Climate Change Challenge

SYNOPSIS

Climate change is calling for transformation in the development paths for many countries, and IBRD is supporting them by providing the financing, technical support, and convening power to address their needs in the face of this new challenge. This combination is helping many IBRD client countries undertake innovative approaches to development in a changing climate that increase resilience to climate risks and take advantage of climate finance, private sector resources and markets.

Challenge

Climate change is a major threat to the achievement of the Millennium Development Goals (MDGs) in developing countries and the hard-earned development gains in all regions of the world. With climate change already underway and with more severe impacts to follow, it is recognized that development, planning and financing strategies in all countries need to consider the risks associated with climate change.

Addressing the climate change challenge depends on developed countries taking the lead in the mitigation of climate change, while providing adaptation assistance and supporting and enabling nationally appropriate mitigation actions. At the same time, developing countries, and middle-income countries in particular, are increasingly seizing opportunities to advance economic development in less carbon-intensive ways that spur further growth and reduce the impact of, and vulnerability to, climate change. Ultimately, stabilizing atmospheric concentrations of greenhouse gases within acceptable levels and managing the residual climate impacts would require adequate, predictable and sustainable financial flows to developing countries, as well as policies and actions in all developed and middle-income economies.

The fragile recovery from the most recent financial crisis poses a double challenge of supporting robust economic recovery in the mid-term with ensuring long-term sustainability of economic growth and prosperity along lower emission and climate resilient pathways. The availability of additional financing from the International Bank for Reconstruction and Development (IBRD) to meet this twin challenge becomes critical.

Approach

The World Bank Group (WBG) has been actively engaged in building knowledge and helping developing countries maintain robust economic growth in a climate-constrained world. Building on the progress achieved with the 2006 Clean Energy Investment Framework, the WBG's climate actions are guided by the 2008 Strategic Framework on Development and Climate Change (SFDCC) with the twin objectives of:

- Effectively supporting sustainable development and poverty reduction in developing countries as climate risks and climate-related economic opportunities arise, and
- Facilitating global action and interactions among all countries.

The Bank Group's climate actions have been influenced by the 2008 global financial crisis and the global climate change dialogue within the United Nations Framework Convention on Climate Change (UNFCCC) and other forums, such as the G20. Overall**,** they contributed to increased awareness and exposure of WBG clients, particularly at the highest decision-making level, to climate change and development linkages. The *2010 World Development Report on Development and Climate Change* further reaffirmed that the status of the issue—inside and outside the WBG—as a development priority. As the financial crisis prompted a massive increase in WBG financial support, particularly IBRD lending (US$32.9 billion for 126 new operations in 42 countries in 2009 alone), it has underscored the WBG's potential to mobilize and leverage resources for climate action, increase efficiency, and apply its instruments innovatively towards achieving multiple strategic objectives.

IBRD Results

The World Bank Group's partnership with IBRD client countries in addressing climate change challenges has proven most productive in providing:

- Strategic policy support,
- Investing in climate resilience and low carbon growth,
- Carbon Finance and expanding client reach to carbon markets,
- Access to additional climate financing, including for accelerated deployment of new technologies,

- Expanded financing options, including leveraging of resources and enabling financial innovation for private sector investments, and
- Strengthened knowledge and capacity base.

The value created through this partnership will further grow as IBRD countries intensify their efforts to pursue a sustainable development pathway, taking advantage of expanding lower emission growth opportunities and building climate-resilience into their development planning.

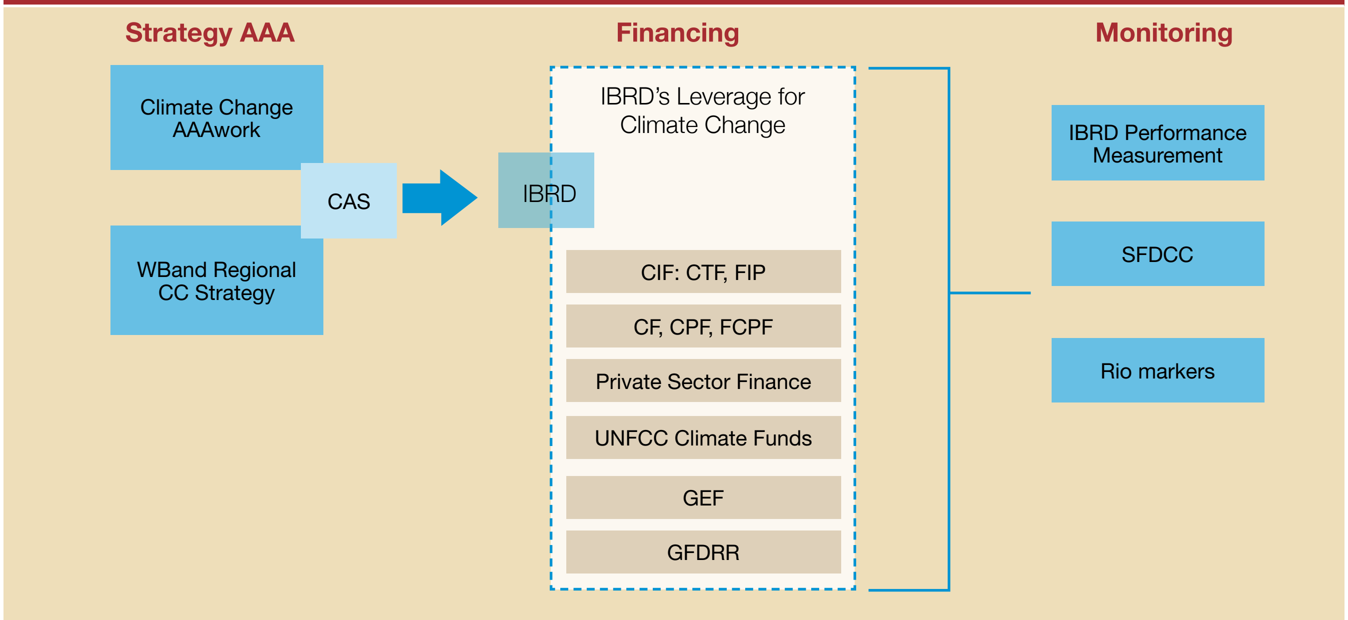
Strategic policy support

There has been an increased demand for the WBG to help multiple constituencies in IBRD client countries address development and climate change as inter-linked challenges. A strategic decision to put a country-based assistance model and client demand at the center of the SFDCC was essential for building deepening engagement with client countries. Early results include:

- Over 74 percent of all Fiscal Year 2009 IBRD Country Assistance or Partnership Strategies substantively address climate-related issues; and
- The International Finance Corporation (IFC), Multilateral Investment Guarantee Agency (MIGA) and all WBG regions have developed climate change strategies or/and business plans and climate change issues are being addressed in new sector strategies under preparation (e.g. Energy, Environment and Social). The SFDCC has further provided a platform for advancing coordination and joint work among the WBG, IFC, and MIGA.

Low-carbon growth country studies have been undertaken in partnership with seven IBRD countries—Brazil, China, India, Indonesia, Mexico, Poland and South Africa—in close collaboration with the respective governments, agencies and local stakeholders. Targeting specific needs and priority sectors of each country, the overall program covers energy efficiency in end user applications, power sector, transport, land use, and bio-energy, and is complemented by policy and implementation advice. Such studies provide data and tools that can support client countries in formulating and implementing their national climate change action plans. As IBRD clients advance the implementation of their ac-

Climate change Financing in IBRD Countries



tions plans, IBRD knowledge base, investment resources, and risk instruments can fulfill important leverage and risk management functions as demonstrated by several investment plans prepared for the Clean Technology Fund.

Financing

The WBG has expanded support to climate-resilient and low-carbon investments by *blending and leveraging a suite of financing instruments*, mobilizing and facilitating access to new additional resources, packaging "core" financial products with specialized climate resources, pioneering and broadening the reach of carbon markets, and complementing finance with technical assistance and policy advice. Building on a long tradition of packaging Global Environmental Facility (GEF) resources with those from IBRD, the International Development Association (IDA), or IFC, more innovation has taken place as the menu of instruments and climate needs have grown. The Latin America and Caribbean Region alone has developed an IBRD portfolio of approximately 180 activities with adaptation and mitigation co-benefits totaling over US$7 billion.

Financing Climate Resilient Development: The WBG has intensified its efforts to support climate risk management and adaptation, a growing priority for developing countries and a central focus of the SFDCC. The Bank Group's approach is founded on the recognition that development is key to improved climate resilience while better climate risk management is increasingly important for sustaining development outcomes. In FY09, the IBRD commitments to climate-affected sectors, such as agriculture, flood protection, water supply, and health, have reached US$9.3 billion, or more than triple the US$3 billion of average annual engagement in those sectors across the preceding

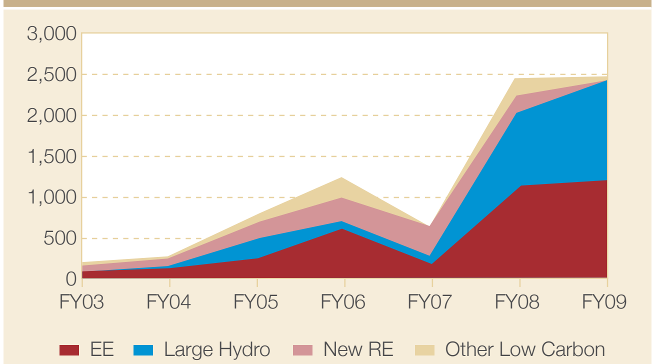
> Projects that address climate risks span a range of interventions across all client countries and use a variety of financial instruments and facilities, as well as their combinations: from agriculture and rural development projects considering adaptation to increasing climate variability (India); to natural resources and water resource management programs dealing with the impact of rapid glacier retreat in the Tropical Andes (Peru), or current and future irrigation water deficit in Morocco and Tunisia; or strengthening coastal and marine biodiversity to increase resilience in India, the Maldives, and the Gulf of Mexico.

three fiscal years. This highlights an important role—and a responsibility of—of the IBRD in helping "climate proof" these investments, making them resilient to aggravating climate risks. To increase support for climate resilience and address the additional costs of building capacity, generating data to inform decision, and developing institutions, IBRD has been using a growing menu of instruments, such as the GEF-administered Special Climate Change Fund, to complement and strengthen its own investments. The WBG is also expanding its risk-management assistance to developing countries while increasingly tightening operational links with adaptation, supporting clients with risk assessment, technical expertise, resource mobilization, and the structuring of complex risk-management products. Examples include the development of a regional risk management program in Central America or the MultiCat Program, a catastrophe bond issuance platform to give public entities access to international capital markets to insure themselves against the risk of natural disasters. IBRD capital has been instrumental in mobilizing the needed private capital to make such products possible. As a trustee for the Adaptation Fund, the WBG is also monetizing Certified Emission Reductions (CERs) for the Fund, having already raised close to US$40 million.

Investing in Low Carbon Growth: FY09 marked an all-time record in IBRD new renewable energy (RE) and energy efficiency (EE) financing of US$1.3 billion, more than doubling FY08 investment. The IFC has strengthened its engagement with the private sector through advisory services and support for clean production and technology innovation, leveraging five dollars of private sector financing for every dollar it invests. In fiscal 2009, IFC RE and EE investments in IBRD countries reached a total of US$981million, of which US$691 million supporting renewable energy. IFC has also quantified growth targets for increasing clean energy lending for FY09–11 and now all real sector investments include carbon footprint estimates.

World Bank Group Low Carbon Energy Investment

IBRF/Blend Countries, All Product Lines



Financial intermediation for energy efficiency: In partnership with the GEF, the IFC pioneered the use of a guarantee mechanism through selected domestic banks in Hungary, followed by an operation in China. In Hungary, a GEF grant of US$17 million guaranteed US$93 million in loans for EE investments, giving local banks confidence in and familiarity with energy-efficiency lending. Similarly, the World Bank project has played a key role in increasing Chinese local banks' confidence and capacity in EE financing and creating a robust line of business, through learning by doing. Participating domestic banks on-lend IBRD funds (US $200 million) to large industrial enterprises and ESCOs for EE investments, while using a GEF grant (US$14 million) to prepare the project pipeline and build capacity. Key lessons of this experience is the importance of technical assistance, particularly at the beginning, to raise awareness, provide training and advisory services to the banks in developing financial structures, and build the capacity of project developers.

Carbon Finance: By the end of FY09, ten World Bank-managed carbon funds had purchased emission reductions in IBRD clients from 208 projects with an estimated carbon asset value of US$2.5 billion. IBRD countries account for 83 percent or $2.09 billion of this portfolio. Two new facilities, the Forest Carbon Partnership Facility (FCPF)—for reduced deforestation and land degradation (REDD)—and the Carbon Partnership Facility (CPF)—for programmatic and sector-wide intervention—broaden the reach of carbon finance for developing countries and test future opportunities for the market development.

The CPF was launched at the 2009 Copenhagen UNFCCC Conference of the Parties (COP) with 100 million Euros in commitments. It is positioned to provide much needed bridging solutions as the post- 2012 carbon finance architecture continues to evolve. Pipeline operations under the CPF look into combining carbon finance and other sources of finance (IBRD, GEF or CTF) to enhance the impact of carbon finance on supporting sustainable development investment. Seller participation agreements are signed with entities in Morocco, Brazil and Vietnam, and about 10 programs are under design in IBRD countries across all regions.

The FCPF is operational with commitments of US$110 million for "readiness proposals" for 37 REDD country participants. The readiness funds support country capacity building, including elaborating REDDS strategies, developing reference scenario, and setting up a monitoring system. Looking ahead, the WBG is building on complementarities between multiple instruments to support efforts to reduce emissions for deforestation, forest degradation, and improved land use management (REDD-Plus). For instance, capacity building grants from the Readiness Fund of the FCPF can be complemented by other concessional and innovative finance to support the creation of an enabling environment and required investment, with further performance-based incentives, through the Carbon Fund of the FCPF.

Morocco Solid Waste DPO: connecting carbon finance and sectoral policy reform: The objective of this DPO is to support the Government of Morocco in implementing its program of reforms aimed at improving the financial, environmental and social performance of the municipal solid waste sector in Morocco. Carbon Finance was introduced at an early stage in the program of reforms as a means to improve financial sustainability and promote environmental practices in the sector. Additional resources resulting from the sale of certified emission reductions (CERs) generated by investment in landfill gas elimination or reuse projects will create an incentive for municipalities to invest in such projects. This operation illustrates the synergies between the World Bank lending and carbon finance activities with the packaging of different financing instruments to support a policy reform and an investment program in the solid waste sector. Moreover, the involvement of a local bank to coordinate the program and channel the carbon finance revenues could help leverage more financing for the sector.

IFC's carbon finance strategy is focused on facilitating carbon market access and buying down risk. Having already committed over US$135 million in 40 projects, IFC's primary focus now is on structuring on-balance sheet financial products including the flagship Carbon Delivery Guarantee (CDG). Three CDG transactions have been committed for over US$100 million and several are under consideration. IFC also offers carbon finance advisory services, primarily to domestic banks, where IFC can leverage its experience in the carbon markets and energy efficiency transactions to build bank capacity and help channel investments into low carbon projects.

Climate Investment Funds: Launched in record time, in FY09 the *Climate Investment Funds* (CIF) have mobilized over US$6 billion for climate investment in developing countries. The *Clean Technology Fund* (CTF) has already endorsed nine investment plans in IBRD countries with an overall envelope of US$3.25 billion to leverage over US$30.6 billion of investments with mitigation benefits, including US$4.3 billion co-financing from IBRD funds. An important leverage of new and additional climate financing, IBRD is supporting the depth of strategic planning and reform agenda needed to operationalize such financing in real time. Any increase in climate-specific financing will require a corresponding increase in the availability of core funds that it leverages.

The Forest Investment Program (FIP), which cooperates closely with the FCPF and the UN-REDD Program, offers another opportunity to learn how additional grant support for investments can complement capacity-building and performance-based incentives to enable transformational action for reducing emissions from REDD while protecting biodiversity and supporting rural livelihoods. Innovative work to explore agricultural opportunities for reducing greenhouse gas emissions outside of the forest sector while enhancing

Turkey Environment Sustainability and Energy Sector DPO is the second project in a programmatic series that is now expanded into climate change and environmental management. The overarching objective of the ESES DPO program is to balance socio-economic development with environmental protection by: (a) integrating principles of sustainable development, including climate change considerations, in sectoral policies and programs of key sectors; and (b) improving the efficiency and effectiveness of environmental management processes and the supply and consumption of energy. The CTF Investment Plan for Turkey ($250 million for a total envelope of $2.1 billion) will provide additional resources to support expansion of energy efficiency, notably through intermediation with domestic financial institutions to promote the engagement of private sector. These DPO and CTF investments are part of a broader energy reform, for which Turkey has utilized the Bank's support strategically by combining of analytical and investment instruments.

food production is also eligible as potentially transformational investments under the FIP and underlying carbon finance transactions under the FCPF's Carbon Fund.

Integrating Finance with Policy and Institutional Support: Growing client demand is positioning *Development Policy Operations* (DPO) as potential integrating platforms for climate finance instruments. In FY09 alone, a number of new DPOs in IBRD country clients included climate change considerations, representing scaled-up investments of more than US$2.5 billion. A series of programmatic energy sector DPOs in Turkey illustrates a successful leveraging of Climate Technology Fund resources to promote inclusion of sustainable development principles, including climate change considerations in sector policies and programs. Three DPOs with a Catastrophe Deferred Drawdown Option (CAT-DDO), totaling US$300 million, were approved in FY09 in Colombia, Costa Rica and Guatemala, increasing support for weather risk management. The Morocco Solid Waste Management DPO is the first development policy operation linked to a carbon finance program. This new generation of DPOs tackling climate change is setting an example of a developing country's efforts to integrate climate-related considerations into the broader economic growth and poverty reduction agenda.

Mobilizing climate change finance in the capital markets: Through its advisory services, IFC is working with Standard and Poor's (S&P) to develop the first Global Emerging Market Carbon Efficient Index (with GEF and bilateral donor support). The WBG has further pioneered mobilizing climate change finance in the capital markets through multiple offerings of "Green Bonds" along with Certified Emissions Reductions-linked Uridashi Bond ("Cool Bond") and the WB Eco-3Plus Note. Examples of project supported by the Green Bonds include renewable energy expansion in rural markets in Argentina or biogas programs in rural areas in China. More innovation has taken place over the past few years and is accelerating, as a menu of instruments and client needs grow while climate finance remains scarce and development finance has been squeezed by the financial crisis.

Fostering Innovation, Knowledge, and Capacity

In response to the rapidly expanding client demand, the WBG is stepping up its work across all its entities and areas of expertise, building and disseminating knowledge, testing new approaches and rolling out innovative financing. A significant emphasis has been given to producing knowledge as exemplified by the *2010 WDR on Development and Climate Change*, and the IBRD-focused *Low-carbon country studies* (Brazil, China, India, Indonesia, Mexico, Poland, and South Africa), among others:

- World Development Report 2010 on Development and Climate Change launched in September 2009, complemented by the Economics of Adaptation to climate Change global report and a series of flagship regional, sector, and country reports on low carbon growth (LCR), adaptation (ECA), as well as on water and transport sectors and climate change, trade, distributional and macro-economic climate change issues, social dimensions of climate change, and eco-system based approaches to adaptation.
- A suite of global public knowledge goods delivered and in preparation, including a Climate Change Data Por-

tal, a multi-donor Global Climate Finance Knowledge Platform, and a series of targeted Adaptation Guidance Notes.

- Comprehensive analytical and methodological work for screening water sector investments for climate risks and advanced work on Agro-Eco Zone (AEZ) Model with an economic interface for assessing climate change impacts on agricultural systems and trade.

The WBG is actively engaged, in partnerships with the Global Environmental Facility (GEF), and the private sector, in promoting and facilitating access to and expanding the use of emerging technologies, (for exampe, concentrated solar power and "smart grids", photovoltaic, and energy efficiency in China, India, Mexico, Morocco, and Russia, among others). Additional grant financing is being mobilized to catalyze introduction and transfer of emerging energy sector technologies, including Carbon Capture and Storage (CCS). The recently launched Climate Technology Program explores the feasibility of *Climate Technology Innovation Centers* as a way to stimulate innovation in clean technologies in Brazil and India, among others.

The IFC/GEF Earth Fund of US$60 million is promoting clean technology and solar strategy. More recently, in 2009, IFC launched its *Cleantech Venture Investment Program* as a pan-IFC collaboration that leverages IFC's experience in venture investing originally in the IT sector with the organization's expertise in sectors such as energy efficiency, renewable energy, water, chemicals, manufacturing, and agribusiness. The Cleantech Program's early stage investments in highly innovative companies are expected to yield direct environmental benefits and also benefits from their demonstration effects.

Supporting Climate-Smart Decisions

Recognizing the particular threat that climate change may pose to climate-sensitive investments with long life spans, the WBG has advanced its work on assessing and addressing climate risks and uncertainties in investment projects, and undertaking vulnerability assessments at the sector level particularly focusing on agriculture, water, energy and urban sectors. The IFC has initiated a pilot program to evaluate methodologies for identifying the financial implications of climate risk.

On-going work focuses on identifying and promoting EE opportunities across IBRD sector investments, in addition to EE screening by IFC. In the energy sector, projects under preparation are being reviewed with a view to capturing missed and/or potential EE opportunities, on both the demand and the supply side. The pilot assessment also aims at articulating a broad-based WB approach to helping mainstream energy efficiency at a more strategic level, including sector-wide policy and institutional frameworks for promoting energy efficiency which could be more effective in terms of achieving sustainable impact at a larger scale.

A key priority for the WBG is assisting partner countries in balancing growth imperatives and climate change concerns through improving and enhancing reliable access to energy services while constraining the impact of global and local emissions. In this context, screening criteria have been put in place for all new coal-fired power projects, including an analysis of alternatives that incorporates environmental externalities and considerations of whether assistance has been provided with developing low-carbon projects and accessing additional climate finance. The WBG has further instituted the practice of engaging an External Panel of Experts to review any new proposed coal-fired power project at its concept stage in order to ensure the quality of compliance with the screening criteria.

The WBG is further exploring opportunities for "greening" infrastructure investments and promoting transformational changes with sustained economic and environmental benefits. As part of the WBG crisis response, the *Infrastructure Recovery and Assets Platform* (INFRA) was developed to bridge infrastructure financing, project preparation, and capacity gaps. In conjunction with this effort, the WBG developed a Guidance Note on greening infrastructure investments in order to assist Bank teams and clients with the design and implementation of infrastructure investments that increase resilience to climate change and, wherever possible, provide infrastructure services through lower emission alternatives.

The WBG has actively engaged, in consultation with development partners and OECD DAC in particular, the process of improving the tracking and monitoring of climate-related investments and analytical and advisory activities. Building

on the recently redefined Rio Markers for mitigation and adaptation ODA, the WBG's work takes a step further to improve the accuracy of tracking non-dedicated investments, which account for the largest portion of related ODA as well as any (potential) nationally financed NAMAs.

In parallel, the WBG is advancing the development of a comprehensive results framework for the Bank Group's climate action in the longer term. Specific indicator development is on-going, in close coordination with the development of results measurement systems for the Climate Investment Funds. Thus, the CTF could provide a model for monitoring the extent to which client countries benefit from investments that help transition to lower greenhouse gas emission development while delivering economic and social benefits. PPCR, on the other hand, offers a learning platform for defining and measuring country-level adaptation actions and impacts. This pioneering work becomes critical as the flow of climate investments continues to increase and will provide a basis to build upon as other bilateral and multilateral agencies refine their monitoring and reporting systems.

The WBG is also advancing its work on GHG Analysis. The IFC has begun measuring the GHG footprint of all its real sector investments since February 2009 and is developing GHG analysis tools to be applied to financial intermediaries and advisory services in an attempt to cover 100 percent of GHG emissions associated with its portfolio. At the WB, six pilot studies focused in the energy, transport, and forestry sector that are to be completed in 2011. The studies will identify applicable methodologies for GHG analysis, focused on the specifics of IBRD support including scale, boundaries, scope, upstream and downstream impacts, net impact, and project life.

Following on its corporate values, WBG has further reduced office related emissions from its headquarters and is now committed to become 100 percent neutral including facilities, meetings and travel in all regions.

Partners

Strengthened partnerships with member countries and development partners are at the core of the WBG's progress in the area of climate change. Expanding climate change–related programs across regions and countries exemplify the growing trust and interest in collaborating with the WBG by developing country partners. The Bank Group has engaged in major joint initiatives with the UN, particularly the UNSG office, UNDP, UNEP and UNFCCC Secretariat that have resulted in tangible "global good" outcomes, such the Climate Finance Knowledge Platform. It has joined UN partners in supporting strong GEF-5 replenishment anticipated for early 2010. Partnerships and collaboration with the private sector, local governments, NGOs, and the research community have expanded markedly.

The development, piloting, and nurturing of new climate finance products all embody strong partnerships with contributing and recipient countries, and other stakeholders - as demonstrated through the CIF and Bank's two new Carbon Facilities, the FCPF and the CPF. The CIF has further enabled a high level of collaboration and coordination among the MDBs. Building on the CEIF foundation, the MDBs successfully combined efforts to design and implement the CIFs in record time and now work together to provide coordinated support to country-led programs, allowing each country to select assistance from the MDB based on their comparative advantages and to ensure co-financing.

Looking Ahead

The strong client country uptake of climate change issues, as reflected in new IBRD Country Partnership Strategies, has considerably increased the demand for policy, knowledge, and financing support in the areas of both low carbon growth and strengthening climate resilience. There is also be a growing demand from IBRD countries for identifying and facilitating access to technology and knowledge for lower emission growth and adaptation to climate change, assistance with identifying and sharing risks associated with the commercialization of new low emission technologies and with improving their capacity to cope with extreme weather conditions.

The WBG is well positioned to meet these diverse needs, building on the vast body of knowledge and analytical work undertaken over the last several years as well as on a growing experience with setting up, delivering, blending and leveraging innovative climate finance. As development-climate linkages are getting stronger and affecting poverty eradication prospects, the Bank Group will continue harnessing its capabilities in knowledge and innovation, combined with extensive experience in development and finance, to deliver effective support to developing countries.

In this context, IBRD resources can be expected to be called for supporting transformational programs with lower emissions catalyzed by l dedicated climate resources from carbon market, CPF or CPF. IBRD capital is also expected to be in greater demand for guarantees and insurance products to attract private sector investments in new technologies and in climate-vulnerable areas (locations and activities). Contributions to existing and emerging climate funds (through CIF and other mechanisms) are expected to leverage considerable underlying financing from public and private sources. Experience with the CTF has demonstrated that such funds can leverage other financing by bringing in 10 dollars for every single dollar invested, and that at least an equal share of IBRD core funds are needed to achieve the high overall leverage. Following the commitment by developed countries of additional resources for mitigation and adaptation investments approaching US$30 billion for the period 2010–2012 and growing top $100 billion by 2020, the demand for matching such underlying finance from IBRD, in addition to other MDB sources, will expand. Similarly, the roll-out of the CPF, launched in Copenhagen, will lead to a growing demand for underlying (project) and enabling (policy and technical assistance) financing.

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