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A Letter from the Vice President of Sustainable Development



Rachel Kyte
Vice President,
Sustainable Development
World Bank

No Time Like the Present

By the time this edition of *Environment Matters* hits the stands, the international community will be gathering in Rio, taking stock of what has been accomplished since 1992 and plotting a course for where we want and need to be in 2032. I am pleased that the World Bank Group is joining in that discussion, and that we, together with our clients and partners, will be part of concrete and specific action programs reflecting the sense of urgency we all feel today.

Since the 1992 Earth Summit, economic growth has lifted 660 million people out of poverty and raised incomes for millions more. There has been significant progress on life expectancy, literacy, and maternal and child health care.

Rio+20 presents an ideal opportunity to build on these achievements by focusing on the converging food, water, and energy crises that we face. We need to meet the needs of the 2.6 billion people without access to sanitation, the 1.3 billion without access to electricity, the 1 billion who are hungry, and the 900 million who lack safe drinking water. We must do so in an era of increased uncertainty as we adapt to climate change and unprecedented urbanization. And we must do so without sacrificing the environment.

To make progress, we must give equal attention to the economic, environmental, and social pillars of sustainable development. Inclusive green growth that takes into account the value of natural capital is the pathway to sustainable development for all.

There is increasing recognition that GDP alone is not a sufficient measure of progress toward sustainable development. The recent adoption by the UN Statistical Commission of the System of Environmental-Economic Accounts, a method to account for natural resources such as minerals, timber, and fisheries, is a major step forward. Rio+20 is an opportunity for countries and the private sector to step up their commitment to comprehensive wealth accounting and integrated reporting. A World Bank-initiated partnership, Wealth Accounting and the Valuation of Ecosystem Services, or WAVES, is helping countries incorporate natural capital into national accounts, and at Rio+20 we will be inviting more countries and the private sector to become WAVES partners.

The 70 million people who move into urban areas each year warrant particular attention. Urban infrastructure is long-lived and decisions made today will impact communities for 50 to 100 years to come. We have a historic opportunity to design, operate, and build smart cities with decisions based on good data providing for the needs of residents today without reducing options for future generations.



We also hope to see increasing support for the Global Partnership for Oceans (GPO) at Rio+20. The GPO is made up of public, private, and civil society interests that will be setting priorities for restoring ocean health, recognizing that healthy and economically productive oceans are essential for food security and for inclusive green growth.

Rio+20 can be instrumental in advancing other important goals led by like-minded groups. Two in particular come to mind—Sustainable Energy for All (SE4All) and the Climate Change Action Coalition (CCAC). SE4All aims to advance universal access to electricity and clean cooking fuels, double the share of the world's energy supplied by renewable sources from 15 percent to 30 percent, and double the rate of improvement in energy efficiency—all by 2030. The CCAC wants to attack short-lived climate pollutants that exacerbate the impacts of climate change. Black carbon, methane, and hydrofluorocarbons can be reduced substantially if we work together. The World Bank Group is mobilizing its knowledge and financing to help achieve these goals in an effort that would complement the emerging road map for Sustainable Development Goals.

Today's dynamic urbanization alters the ways we manage land more broadly. Integrated approaches to managing landscapes help countries better address food, water, and energy security. For many years, there was a notion that we had to choose between feeding the growing population and protecting the health of ecosystems. Now we

understand that you can't have one without the other. To ensure food security and green growth for all, we must take a geographical as well as a socioeconomic approach to managing the land, water, and forest resources that form the natural capital base.

It's past time for action. The world needs action on natural capital accounting, action on healthy productive oceans, action on policies that deliver access to energy, sanitation, clean water, and food for all. It needs action that will underpin greater inclusion, enabling people to lift themselves out of poverty. Public and private sectors must work with civil society as full partners in implementation.

Too often the struggle for sustainable development is boiled down to a false choice between poverty alleviation and environmental protection. Everything that we see in the world and everything our clients tell us make it clear that this is a false dichotomy. Protecting, maintaining, and investing in the natural resource base is essential for sustained economic success. That requires smart growth policies that are resource-efficient, work for everyone, and do not lock countries into irreversible investment decisions. There is no time like the present.

Two Decades On – A Personal Reflection



Andrew Steer
Special Envoy on Climate Change
World Bank

Not everybody at Rio in June 1992 believed that the World Bank was part of the solution. Our booth at the NGO Forum was burned down. And how vividly I remember being physically thrown off Greenpeace's *Rainbow Warrior* in Rio's harbor when they discovered I was a World Banker. (Happily, 12 years later when I was the Bank's Country Director in Indonesia we helped the *Rainbow Warrior* obtain permission for its surveillance of illegal log exports, and I was welcomed at a reception on the ship in Jakarta harbor as a guest of honor.)

Remember where we came from: In the early 1980s, when the world's longest-standing Environment Minister, Emil Salim of Indonesia, asked the Bank's President for help on environmental issues, he was told we were a development agency, so we didn't do the environment. That's what environment organizations are for! Fortunately, under the influence of the Brundtland Commission things changed in 1987, when the Environment Department was created and a first systematic set of safeguards established.

Eighteen months before Rio the President asked me to lead a team to prepare a *World Development Report* as a way of forging a Bank-wide position on development and the environment. This was easier said than done. Our goal was to persuade the Bank's core staff and managers, most of whom were economists deeply committed to poverty reduction, that environmental concerns must be integrated in all we do. To win this battle we needed to show with evidence that good environment is good economics and that smart environmental policies are strongly pro-poor. These propositions may seem obvious now, but they weren't then. This and other events associated with Rio helped shift perceptions and incentives.

The Bank's environmental portfolio rose sharply following Rio—accompanied by an extraordinary flowering of analytical work in dozens of countries. Not all of our investments worked out as well as hoped and in retrospect we perhaps grew a little too rapidly. We were climbing a very steep learning curve!

In 1993 a Vice Presidency for Environmentally Sustainable Development was created, and in 1994 we launched *Environment Matters at the World Bank*—a name chosen to capture our beliefs as well as our actions. We've come a long way since then. There have been dozens of important innovations, ranging from the creation of the Prototype Carbon Fund and the birth of the Social Development Department (an offshoot of the Environment Department) to the creation of the \$7 billion Climate Investment Funds and the widespread use of programmatic "direct access" financing through Environmental DPOs. We're now supporting climate change actions in 130 countries—representing a silent revolution in development priorities.

Disappointments since Rio? Yes. Several. Here are two. First, following Rio we launched a major program of work on the valuation of natural capital, and published a series of highly acclaimed volumes entitled *Where is the (True) Wealth of Nations?* Despite very high marks for quality, we failed to get serious take-up in either rich or poor countries. The WAVES program (see page 18) is vital to restart this effort. Second, in the spirit of Rio we worked hard with environment and natural resource ministries around the world in an effort to get them better equipped to play a more powerful role in development planning and execution. At best, success has been partial.

Overall, the needle has certainly shifted significantly in the right direction. But sadly it still doesn't point to a sustainable future—which is why such a heavy burden rests on the shoulders of the leaders and the rest of us who will attend Rio this June.

A handwritten signature in black ink, appearing to read 'Andrew Steer'.

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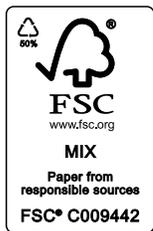
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Director's Overview



Mary Barton-Dock

*Director,
Environment Department
World Bank*

At the World Bank we take stock and, at times, celebrate the tremendous progress that's been made in attacking poverty. Developing countries now function as the engine of the global economy, attracting 40 percent of global investment and, over the past 10 years, growing at four times the rate of developed countries.

But the celebration stops when we look at how much still has to be done to effectively address environmental problems such as pollution, fish stock depletion, biodiversity loss, deforestation, and water scarcity. In addition, we anticipate a growing struggle to feed 8–9 billion people. Climate change is accelerating some of these threats and limiting the options for resolving all of them. If we fail to reverse these trends, many communities that have succeeded in climbing out of poverty will once again be vulnerable.

Twenty years ago, leaders gathered in Rio, drawing the world's attention to the full panoply of environmental challenges. Since then, much has happened to enshrine sustainable development at the level of international institutions, governments, and communities. But in this same period, the population has pushed from 5.5 billion past 7 billion. Hundreds of millions of people have migrated to cities within 100 miles of coastlines, and climate change is exacerbating weather extremes and increasing pressure on the ways humans interact with the environment. Forests, coral reefs, and coastal ecosystems have been wiped out at truly alarming rates.

Our actions now will determine how livable the planet will be for our children and grandchildren. Bold new approaches are needed, and many are within reach. We must be aware of the sustainability consequences of lifestyles that, to date, have resulted in overexploitation and degradation of our atmosphere, lands, and oceans. We must begin accounting accurately for natural resource wealth—including ecosystems—so that we make informed policy decisions country by country, sector by sector, and investment by investment.

We need economic growth to satisfy the needs of a growing population, but we understand that the nature of that growth matters. Growth derived from liquidating natural resources is a formula for future poverty and possibly irreversible damage to the planet. Growth that puts coastal and island states at risk by accelerating climate change is an irresponsible gamble. Growth that compromises the health of distant populations or future generations is unethical. The World Bank Group's environment strategy for the next 10 years calls for a "green, clean, and resilient world for all": green, with natural resources, including oceans, land, and forests, sustainably managed; clean, with smarter approaches for transport, agriculture, urban development, and energy, with a focus on managing the pollution released in the air and water and on land; and resilient, with a capacity to anticipate and manage more frequent natural disasters, more volatile weather patterns, and the long-term consequences of climate change.



CURT CARNEMARK/WORLD BANK

Achieving these goals will demand innovation, commitment, collaboration, and a willingness to learn and make mid-course corrections when necessary. I feel confident that we can meet this challenge because of what the world has done since leaders last gathered in Rio.

This issue of *Environment Matters* chronicles how the Bank and its partners responded to the global challenge set out 20 years ago. The learning curve was steep. Projects had to be rethought and restructured. Institutions had to adopt new ways of working. But in one region after another, governments took on the new challenges of improved environmental management, and their international partners developed new ways to support them.

Moving to a green, clean, and resilient development paradigm presents a new set of challenges. But I would say that based on the achievements since the first Rio Summit, we have reason to be guardedly optimistic. The World Bank Group started off with policies to “do no harm”—that is, to avoid or mitigate environmental damage arising from Bank-funded projects. But we soon moved into funding more projects to attack pollution problems at the source or to roll back environmental damage incurred over the years.

Work to revive the northern Black Sea, to clean up the Ganga River, and to protect Indonesia’s coral reefs is making a huge

difference. Bank-funded programs have helped to slow deforestation in Brazil and to manage depleted fish stocks in Africa. The World Bank Group has supported partner governments in phasing out ozone-destroying chemicals and leaded petroleum.

But the response to Rio+20 will need to go much further to address the impacts of climate change and population pressure and to identify growth strategies that generate opportunities without damaging the environment, exacerbating climate change effects, or depleting critical natural assets. We must be open to learning and relearning. We must leverage intellectual and financial resources. We must collaborate.

What the record since the first Rio Summit tells us is that we can do all those things. I hope that the stories we read at Rio+40 will show that what we learned in the last 20 years helped us to reverse the trends and manage the risks from environmental degradation in the next 20 years.



Reconciling Growth, Social Inclusion, and Environmental Protection

Izabella Teixeira

Minister of Environment, Brazil



Twenty years ago, the United Nations Conference on Environment and Development, the Rio Earth Summit, provided a staging ground for a global conversation on sustainable development that continues to this day, enhancing the appreciation of the importance of healthy ecosystems, a healthy environment, and improved human well-being for present and future generations, in keeping with countries' needs for economic growth. This June, the world gathers again in Rio to look at progress to date, assess the remaining gaps and challenges, and secure renewed political commitment for sustainable development. In the last 20 years, Brazil has made a lot of progress in this area and we are fully committed to the goals of sustainable development, which is the main reason why Brazil decided to host Rio+20.

Brazil has made remarkable economic and social progress in the last decade and is on a path of inclusive and environmentally sustainable growth. Between 2003 and 2009, poverty fell by 40 percent and extreme poverty by 52 percent. Some 22 million Brazilians emerged from poverty and almost 13 million rose from extreme poverty. It is the only major middle-income country to have combined economic growth with reduced inequality and environmental protection, under a solidly



democratic regime. We are building a stable economy, which was able to recover decisively from impacts of the recent global economic crisis.

The annual rate of deforestation in the Brazilian Amazon is decreasing as a result of a strong enforcement program combined with land regularization. Concrete achievements include a reduction in the rate of deforestation to 620,000 hectares in 2010. Deforestation has been reduced by 66 percent since 2005. To give an idea of the importance of this commitment, 74 percent of all protected areas created in the world from 2003 to 2008 were established in Brazil, with a combined area of over 500,000 square kilometers. Brazil continues to implement its national policy for prevention and control of deforestation in the Amazon and is expanding this initiative to other biomes, such as the Cerrado (Brazilian savanna) and the Caatinga (the Brazilian semiarid region).

The areas under sustainable forest management have also expanded to reach 3.3 million hectares of public/private lands. The National Development Bank, BNDES, has played a key role in this and other aspects of the environment agenda, including as the implementing agent of the Amazon Fund, one of the most innovative and effective initiatives of international cooperation to tackle deforestation in developing countries. BNDES also led efforts to introduce sustainable forest management of private and public lands with programs that include concessional loans for small farmers to establish forest plantations and for the restoration of deforested areas in private lands.

The country has been making significant contributions to global climate change mitigation and, under its National Policy for Climate Change, it has adopted voluntary goals of reducing greenhouse gas (GHG) emissions by 36 to 39 percent by 2020. Brazil continues to have one of the “cleanest” energy matrices in the world and is

implementing new programs to finance renewable energy production and energy efficiency projects.

Increasing Brazil’s resilience to climatic shocks is another government priority. The country faces the challenge of enhancing its institutional capabilities and protecting its population and infrastructure from the anticipated impacts of climate change. Negative effects include prolonged droughts, reduced potential for agriculture production, and increased evaporation from lakes, dams, and reservoirs. Moreover, long periods without rain will be punctuated by brief torrential downpours resulting in floods. Some of these effects are already evident in the increased recurrence of flooding and droughts that have caused significant social and economic impacts in recent years. The government is currently developing a systematic and coordinated approach to disaster risk management, integrating all the sectors involved in this complex issue.

These facts are a clear message that a developing country such as Brazil can effectively design development policies that reconcile economic growth with social inclusion and environmental protection. The recent economic crisis made it evident that we cannot run the planet the way we have been, and this is the main reason we are committed to tangible outcomes in Rio. The conference must pave the road for a paradigm shift to a more inclusive and green economy for all. The success or failure of sustainable development depends on political commitment at global level and implementation at national and local levels. Brazil has done its homework and is ready to continue leading the way.

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The Spirit of Rio Is Alive

Eduardo Paes

Mayor of Rio de Janeiro



The year 1992 was a remarkable chapter in the life of the city: for 11 days, Rio de Janeiro became the capital of the world. Over 100 world leaders put their differences aside and spoke one message: development has to come in harmony with the environment. The Earth Summit represented a landmark in the evolving relationship between humanity and our home, Earth.

The 11 days spurred a new way of thinking about what we are doing. Climate change, biodiversity, and desertification became international concerns. The Earth Summit is considered by many to be the most successful leaders' summit meeting ever convened. It also kindled a great deal of reflection within the host city itself: *We cariocas*, people from Rio, became more aware of the natural wealth for which we are responsible.

Two decades later, the "spirit of Rio" is more alive than ever. The concern with sustainable development has spread among citizens, representatives from all levels of governments, companies, and nongovernmental organizations. The search for alternative strategies that advance greener growth and lasting poverty eradication has evolved since then. That search will be the focus of discussions in June 2012, when again the city of Rio will be the main stage for important decisions on the future we want for the world.

Rio de Janeiro is a special part of the world's natural heritage. Rio combines a large metropolis that developed around a unique cultural and natural environment. With over 100 kilometers of ocean shore, the city encloses the world's two largest urban forests, Pedra Branca and Tijuca. Most of our energy comes from renewable resources. Biofuels drive a large part of our transportation fleet and carbon dioxide emissions are 1.9 tons per capita, one of the lowest among the largest cities in the world.



In the city administration, we are working hard to protect our natural assets. It is not an easy task. Urban development frequently happens at a scale and pace, and in directions, that challenge the environment. But we accept our responsibility to promote growth with social inclusion, while preserving the natural patrimony.

I am convinced we are making progress. Sustainability is central to our strategic vision for our city's future, and it will be prominent when we host the World Cup in 2014 and the Olympic Games in 2016. I am honored to be part of this transformation and confident that the city is taking advantage of this critical moment, as the world faces the need to grow, but grow sustainably.

The social and environmental legacies are among the most important of Rio's "Olympic goals." With the new Waste Treatment Center of Seropedica, built with the best technology available in Latin America, we have definitively resolved a long-standing disposal problem, reaching our 2012 goal of reducing greenhouse gas emissions in the city by 8 percent from 2005 levels.

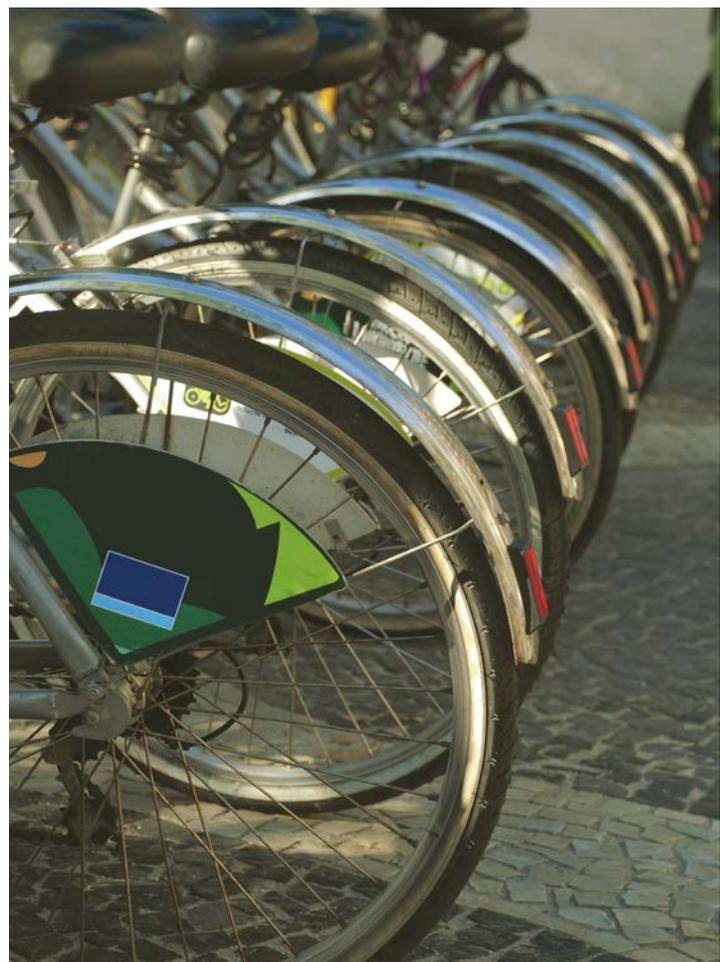
We are currently doubling our cycling lanes—already the second most extensive in Latin America—to 300 kilometers. Public transport also will expand: by 2016, 63 percent of the population will have access to high-quality public transportation, up from only 18 percent today. Investments in sanitation are growing. Still, 1.4 million of our 6 million inhabitants live in informal settlements. Our goal is to urbanize all favelas in Rio by 2020—an ambitious challenge, but possible with sustained effort and focused investments. A big part of the city's transformation involves the expectations of entrepreneurs, institutions, and civil society, all of which have important roles to play.

Growth and low-carbon development go hand in hand in Rio. Among Latin America's cities, we come out number one in

attracting outside investment, and number four in the world, according to the *Financial Times*. We benefit from strategic partnerships with a number of international organizations, including the World Bank, which has supported our push for environmentally sustainable growth and social inclusion.

Eduardo Paes

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Looking through the NGO Lens

Manish Bapna

*Interim President,
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WORLD
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In 1992, over 100 world leaders mingled with thousands of representatives from NGOs, community and indigenous groups, and trade unions at the Earth Summit in Rio de Janeiro. The summit proved to be a turning point for global cooperation on the environment and development. But at the World Bank—a critical actor for putting the post-Rio agenda into practice—relations with civil society at that time had reached a nadir.

Two highly controversial Bank-financed projects were in part to blame. The first was the Polonoroeste highway in the Brazilian Amazon, which the Bank had supported in the mid-1980s. Designed to combat poverty, the 1,500-kilometer highway allowed loggers and prospectors to colonize the rain forest, often in indigenous territories. Ultimately, the highway affected an area the size of Great Britain. The second controversial project was the 455-foot-high Sardar Sarovar dam on India's Narmada River, which displaced more than 300,000 people. An international NGO campaign resulted in U.S. congressional hearings and the eventual suspension of Bank support in 1993. These episodes left the Bank's image battered—its practices seemingly out of touch with the emerging environmental zeitgeist.

Responding to the Critics

To its credit, the World Bank responded to the hard lessons of that turbulent era. Over the past 20 years, the Bank has strengthened its approach to environmentally and socially sustainable development.

After the 1992 summit, the Bank created a Vice Presidency for Environmentally Sustainable Development and began to integrate environmental concerns into

macroeconomic and sectoral interventions and into country analysis, adopting its first formal environment strategy in 2001.

In parallel, the Bank strengthened project level safeguards with respect to the environment, Indigenous Peoples, and involuntary resettlement. It also took steps regarded as critically important by civil society to improve transparency and accountability, establishing a disclosure policy and becoming the first multilateral institution to provide a grievance mechanism—the Inspection Panel—for people harmfully affected by its actions.

More recently, there has been an encouraging, if incomplete, shift in the Bank’s energy investments—away from fossil fuels and toward clean energy projects. The Bank has also been proactive in building support for climate finance to help developing countries mitigate greenhouse gas emissions and adapt to a warming world.

Many of these constructive changes were triggered by grassroots advocacy from civil society, coupled with experimentation from champions inside the Bank and leadership from certain World Bank shareholders.

Facing a New World

Even as the World Bank has shifted, however, the global agenda has moved on. As national leaders gather for Rio+20 in June 2012, the world is a very different place than it was in 1992.

First, and most worryingly, environmental conditions have worsened. A few significant victories—including protecting the ozone layer and cleaner air and water in industrialized countries—have been eclipsed by the losing battle against resource depletion, ecosystem breakdown, and accelerating climate change. Worldwide, 2.7 billion people face water shortages today. Global carbon dioxide emissions from fossil fuels jumped 5.9 percent in 2010.

Second, we are moving ever faster to a multipolar world. In 1992, at the end of the Cold War, the United States was at the height of its global influence. By 2020, China is expected to be the world’s largest economy, India the third largest. China, India, Brazil, and Indonesia all rank in the top 10 nations for greenhouse gas emissions.

Third, the rise of the urban middle class will put new voices and values in the global driver’s seat. Experts project the middle class will increase from 1.8 billion people in 2010 to 4.8 billion in 2030. Most of this shift will occur in emerging world cities, yet sustainability has been historically framed as a rural issue.

Beyond Rio+20

Thus, as nations gather for Rio+20, a fundamental question confronting the World Bank is how to stay relevant in this new world order. Three recommendations come to mind.

First, the Bank can play a pivotal role in making the economic case for sustainability. The mainstream view among policy makers is that sustainability is too expensive. As one of the few international actors that finance and planning ministries listen to, the Bank should redouble its efforts to build the evidence base for the economic benefits of sustainability and how to best assist potential losers in this transition. This is especially urgent as the emerging multipolar world has produced new international financial actors less wedded to environmental and social safeguards. Only if governments and financial institutions deeply integrate sustainability into development planning will the environmental threats outlined above be reversed.

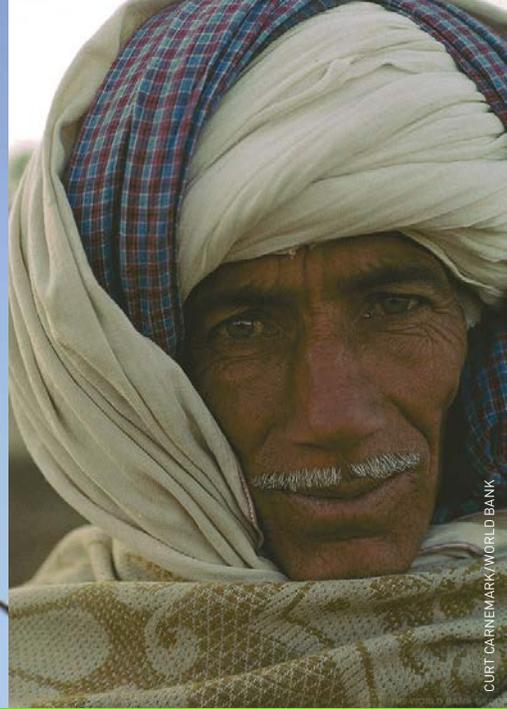
Second, the Bank should help build the institutions to implement sustainability policies, especially in developing countries on the front lines of degrading ecosystems and most directly confronting the impacts of climate change. Do electricity regulators in these countries have the technical capacity to assess options for generating power for their rapidly growing economies sustainably yet cost-effectively? Can their forest agencies identify and value the multiple benefits that forest ecosystems provide society? The World Bank can play an important role in helping these emerging economies build institutions to turn good policy on paper into good practice on the ground.

Finally, the Bank should prioritize further advancing transparency and accountability through its policy and investment lending. Put simply, the main barrier to advancing sustainability is one of political economy. Powerful vested interests often resist investments in more sustainable sectors, the prime example being fossil fuel industry opposition to clean energy. By using its influence to support access to information, participation, and justice, the Bank can help citizens and governments drive through needed changes despite such vested interests.

The World Bank must also practice what it preaches in its own portfolio. While it has come a long way since Narmada, it can do more on sustainability, for example, by putting a price on carbon and ensuring that its cost-benefit analysis takes this into account when making investment decisions.

In short, the World Bank has an opportunity waiting to be grasped. Civil society expects it to place sustainability at the center of its agenda and will support genuine efforts to do so. The Bank came from behind on environmental issues after the original Earth Summit. The question today is whether the Bank will follow or help lead the world as it continues to reach for the elusive yet essential goal of sustainable development.

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Unpacking Green Growth – Greener Isn't Necessarily Slower, Just More Efficient



Marianne Fay, chief economist for the World Bank Sustainable Development Network, led a study on green growth, defined as growth that is efficient, clean, and resilient: efficient in its use of natural resources, clean in minimizing pollution and environmental impacts, and resilient in fully accounting for natural hazards. Here, *Environment Matters* interviews Fay on what the study means.

You've studied green growth intensively, reviewing experiences across the world and analyzing the economics. What do you know today about green growth that you didn't know when you started?

MF: When I started out, I saw it as an aspirational goal: We all want green

growth, but the question was, Is there economic validity to it? I am convinced now, after a year of looking at it with mainstream economic frameworks, that there is tremendous validity to it. I see green growth—or rather inclusive green growth, as we now prefer to cast it—as something that makes

economic sense. There are plenty of opportunities to implement growth that is greener without being slower.

What made such a convincing case that growth can be greener without being slower?

MF: We have growth patterns that are deeply inefficient, which means they can be improved without sacrificing anything. For example, urban sprawl and congestion are not just bad for the environment. They also make cities less efficient and workers less productive. There are immediate public health impacts. By addressing these sorts of problems, you improve the environment as you eliminate inefficiencies that weigh down economic performance.

Many environmental policies enhance income generation and poverty alleviation. One of the world's most successful green programs is the mass reforestation of China's Loess Plateau, which, in addition to improving the environment locally and regionally, contributed to significant increases in local incomes.

Even so, aren't there many developing countries that tend to view growth and job creation as their first priority, with at least an unstated assumption that they can deal with the green agenda later?

MF: "Grow dirty and clean up later" may not be an option. The argument that poor countries should focus on

satisfying basic needs, rather than on the environment, is misleading. First, clean air and water and solid waste management are basic needs. Second, environmental performance does not automatically improve as income rises, so the cleanup stage may not really materialize. It might be impossible or truly unaffordable to "clean up later," because some environmental damages, like biodiversity loss, are irreversible or because structures get locked in, as happens with a sprawling, poorly planned city.

What would happen if current patterns of growth continued, at least for another 30 years?

MF: If you just look at climate change, which is only part of the picture, we see that if all current patterns continue, we'll have increases of 4 to 5 degrees Celsius from preindustrial temperatures. And then we enter a world very different from what we have known. Water is perhaps the most urgent and scary part of the environment debate. We tend to think of water as renewable, but a lot of it is not.

When you look at a sector that is growing, or an entire economy that is growing, what helps you determine whether the growth is green, partly green, or something else?

MF: That is one of the most difficult questions for green growth at the moment. We're all convinced we can

advance green growth and that we should do it, and we more or less have a common definition. But we still have work to do on agreeing upon a good set of indicators. The natural capital accounting and valuation of ecosystem services that our WAVES partnership colleagues are developing is a critical part of the answer, and one hope is that Rio could lead to the mainstreaming of natural capital accounting.

Are there examples of economies that somehow went green at the start of, or early into, the process of urbanizing, industrializing, and expanding economically?

MF: A very interesting case is Brazil, where so much of what is going on is green growth. They have reasonably sustainable biofuels—even if that industry didn't start for green reasons but for energy security reasons. Other examples would include their management of the Amazon. There also seems to be so much awareness of the need for progress on both inclusion and the environment—even if a lot remains to be done. In the last election, the green candidate got 20 percent of the vote. And then there's this green entrepreneurial spirit.

The study concludes that "Most if not all green policies incur short-term economic costs, such as higher investment or operational costs, or involve redistribution from one group





In the push for sustainable, green economic expansion, how important is the question of energy?

MF: It's huge, but it's not everything. We must not forget transport and urban design, which together can have a phenomenal lock-in effect. For electricity production, there are a lot of technological options, whereas with transport it's a lot more complicated. You've got to change the behavior of millions of individuals who may be locked into a particular lifestyle.

Within the World Bank, what is needed to establish green growth as a way of approaching development?

MF: When I came to the Bank in the early 1990s, there were units concerned about social issues and others whose job was to worry about economic growth and management. In the mid-1990s that changed quite dramatically. Poverty reduction and economic management are now integrated into a single network [PREM]. You no longer have the person who thinks about growth strategy without thinking about the human implications. What we're after is a similar culture shift to integrate growth thinking with environmental management. Some of our SDN colleagues say, Why do we need growth? and some of our macro colleagues ask, Why can't we let countries grow first and clean up later like Europe, the United States, Canada, et cetera did? They might say that environmentally sustainable growth will be expensive, even unaffordable. In the green growth strategy, we need both these communities working together. We don't need to have an environmental camp and a growth camp. Our Green Growth Knowledge Platform is full of insights from both, and hopefully this has enabled us to be rigorous on both the green and the growth side.

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to another." How significant are these short-term costs, and how much resistance will those costs generate within governments or affected industries?

MF: What's important to understand is whether there is an increase in net cost or just a change in the financing profile of the investment. If the former, we need new and additional resources. If the latter, we need

adequate financing instruments. To take a concrete example, when you switch from a thermal plant to wind or solar or hydro, you're switching from an investment with low capital costs and low operating costs to something with relatively high investment costs and virtually no operating costs. You need to think about the financing problem in a different way.

How do you talk to skeptical governments about what green growth really means to them?

MF: In advocating green growth, it is crucial to avoid hype or patterns of overpromising. Green growth is affordable and need not destroy jobs or harm the poor. But green growth policies are no substitute for good growth policies. If you're maintaining regulatory obstacles that stymie small and medium enterprises, or if your workforce lacks the necessary skills to compete, a green growth program isn't going to solve the full scope of your problems. Then, we can't assume green growth policies will necessarily be inclusive. Let's say a country decides to remove subsidies for fossil fuels. That's green, but poor people could be hurt in the transition. So it would be important to think about a complementary set of interventions to protect the poor or particular social groups that were vulnerable.



Oceans Support Nutrition, Trade, and Eco-services, but They're in Trouble

The World Bank Group, edging toward its 70th birthday, has evolved, refocused, and redeployed through a progression of global shifts.

Born at the close of World War II, the Bank embraced the goal of helping to rebuild Europe and jump-start exhausted economies. Later, as former colonies gained independence and sought to feed growing populations, the focus on physical capital gave way to rural development and agriculture. The late 1960s and '70s saw an emphasis on education and health, while the 1980s addressed economic reforms, with an emphasis on financial capital flows and new lending instruments to help countries make the transition into industrializing nations.

The environment was conspicuously absent from the agenda during each of these chapters, though virtually every building block of economic development both influenced and was influenced by the state of ecosystems and natural resources. The 1990s brought the full panoply of environmental stresses into focus, with the Earth Summit in Rio not only capturing global attention but, through *Agenda 21*, committing the Bank and others in the UN family to a road map to sustainability. To many analysts and advocates, the environment presented challenges of comparable urgency to the postwar reconstruction needs that headed the agenda at the 1944 Bretton Woods meeting.

The world also was beginning to assume greater responsibility for global commons, or public goods, where environmental concerns were mounting. Chapter 17 of *Agenda 21*

called on signatories to “protect the oceans, all kinds of seas, and coastal areas ... and to foster rationale use of their resources.” The Bank formed its first Blue Team in 1994, adding a blue dimension to the green agenda embraced at Rio. The Blue Team connected aquatic habitats to the ecological integrity of the larger hydrological system—from its origins high in the sierras, through river basins, lakes, aquifers, and lower watersheds flowing to the sea. The intricately linked ecosystems supported life, biodiversity, and produc-

Sub-Saharan Africa and Southeast Asia, where burgeoning cities were overwhelming both coastal ecosystems and local public services and where impacts from upstream development were contributing to loss of water quality and productivity and to coastal erosion downstream.

Coastal areas can expect continuing stresses, as populations shift from rural to urban and from hinterland to coast. By 2050 an estimated 6.4 billion people will be living in cities, the majority located on or near coastlines.

shell-bearing organisms. The rapid buildup of CO₂ in surface waters alters ocean chemistry, making it very difficult for these organisms to calcify and ultimately causing their shells to dissolve. The unprecedented speed of these changes in ocean temperature and chemistry is reason for alarm.

For developing countries, the stakes are significant. One billion people in developing countries depend upon fish and seafood for their primary source of protein. Over half a billion people in these countries depend on fishing as a livelihood. For developing countries, including many island and coastal nations, fish represent the single most traded food product, valued at \$25 billion a year, and for many Pacific Island countries, fish make up 80 percent of total exports. Worldwide, coral reef-based tourism—a major source of livelihoods for tens of millions of people—is estimated at nearly \$10 billion a year.

Scientists documented the trend and warned that business as usual was no longer viable. Countries signed declarations and protocols for ocean conservation, but a gaping implementation deficit has meant that, despite some clear successes in marine protection and fisheries restoration, the global trend lines showed continuing pillage and degradation.

Supported by financing from the Global Environment Facility, the Bank has increased its support for marine protected areas and biodiversity conservation, coastal zone management, environmental education, and reduction of land-based pollution. Because few countries were willing to borrow for marine conservation and coastal resources management, investments were largely grant-financed, opportunistic, and donor-driven. An early exception was the Coral Reef Rehabilitation and Management Program in Indonesia (COREMAP), which strengthened local capacity to restore coral reef health in the heart of the Coral Triangle through community empowerment and comanagement with local government.

tivity—necessarily playing a central role in economic development.

The Blue Team trained Bank staff and client country officials in integrated management of water resources and coastal zones. The analytical tool of Strategic Environmental Assessments took a “ridge to reef” approach, recognizing that hydrological systems expanded beyond national boundaries. The Global Environment Facility’s program in international waters promoted transboundary water resources management, financing some of the Bank’s first operations in integrated coastal zone management. The early oceans work drew attention to gathering risks along the coasts of

Population pressure and pollution have translated to overexploited fisheries, a proliferation of marine dead zones, and biodiversity loss. Climate change compounds the threats, as was apparent when the El Niño effects in 1997–98 pushed up sea surface temperatures in the tropics for a period of several weeks, generating the first observed global-scale bleaching of coral reefs. Afterward, scientists recorded the death of 16 percent of the world’s coral reefs. Climate change had arrived, they concluded. Since then, global warming’s evil twin—ocean acidification, the result of increasing levels of CO₂ being taken up by the world’s oceans—has emerged as a major threat to coral reefs and most



The Bank ramped up its coastal management portfolio, invested in marine science and knowledge networks, and reengaged in the fisheries sector with the establishment of PROFISH (the Global Program on Fisheries). An important catalyst for this reengagement was economic analysis that began to define the full costs of neglect and degradation of the marine sector. Research by the World Bank and the Food and Agriculture Organization showed that mismanagement of fisheries alone has cost the world an estimated \$2.2 trillion in lost income and opportunity over the past 30 years.

In 2009 the Bank Board approved a \$220 million loan to India, the largest investment to date in integrated coastal zone management, and a new project in Brazil (another of the BRICs) is in the works to establish a system of marine protected areas over 5 percent of Brazil's marine space—at a cost of \$100 million.

The Bank's most far-reaching commitment to healthy and productive oceans emerged this year in the formation of the Global Partnership for Oceans, an alliance of international agencies, governments, civil society organizations, and private sector organizations. Speaking at *The Economist's* World Oceans Summit in Singapore in February, World Bank president

Robert B. Zoellick said the partnership aims to mobilize at least \$300 million, which would leverage another \$1.2 billion in investments over five years.

Once it is fully operational, the partnership will focus on three spheres of support:

- Valuation of ocean ecosystem services and identification of reforms, to better inform decisions about the use of the oceans and prioritize needed investments
- Investments in reforms to support rights-based fisheries, sustainable aquaculture, pollution control, and habitat protection
- Knowledge and advocacy for the living oceans, to lock in support for sustainable fishing, reduced degradation, and expanded marine protection.

Participating organizations will establish shared goals, including:

- Rebuilding strategies for half the fish stocks now identified as depleted
- Reducing state subsidies that have created overcapacity in commercial fishing, thereby cutting in half the economic losses that fisheries incur

- Doubling marine protected areas
- Harmonizing certification procedures for aquaculture and wild fisheries
- Tripling the combined length of coastlines under active management.

The new partnership will be assessed according to what it accomplishes. But the Bank's expanding commitment to healthy oceans—and its alliance with dozens of like-minded partners, from civil society to the private sector, foundations, and others in the donor community, to achieve this—signals a paradigm shift for this institution. With the understanding that green growth relies on healthy ecosystems as a foundation for economic development and human well-being, the wealth that healthy ocean ecosystems provide is potentially transformative. It means finding a green economy in a blue world.

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KIRK HAMILTON

Natural Capital Accounting – The Need for Informed Policies



Environment Matters interviews Glenn-Marie Lange, program leader, WAVES, and team leader, Policy and Economics, at the World Bank’s Environment Department, on the progress made in establishing global accounting systems that incorporate natural capital.

Twenty years ago at Rio, leaders called for better measurement of the role that the environment plays in national economies. Why was this important?

GML: It was important because it was the first time you had an international agreement that we needed to systematically take natural capital into account in our economic decision making. It is particularly important to target national accounts, because they are so widely used in evaluating national economic performance.

What was wrong with the existing set of measures?

GML: Let’s look at the measure of the gross domestic product, which has a number of well-known shortcomings. When you have a nonrenewable resource like minerals, the depletion

of that resource isn’t accounted for. The same is true for natural forests—overharvesting adds to national income, but there is no entry for any depletion of natural capital. There is something missing there. We also didn’t have good tools for linking economic activity with the use of materials and pollution. Many critical ecosystem services, like carbon storage, pollination services, or flood mitigation by wetlands, aren’t explicitly represented.

The Bank has always played a role in helping countries measure what was happening in their economies. What did the Bank do to help with the challenge of measuring the role the environment plays in national economies?

GML: The World Bank and the IMF are participants in the London Group that the UN Statistical Commission formed in 1994 to develop the

methodology for environmental accounting. Even before then, the Bank supported work on the foundations for the conceptual methodology for environmental accounting. The Bank supported some of the piloting of environmental accounts in developing countries in the early 1990s. The Bank also developed green accounting indicators and began using them—adjusted net savings and comprehensive wealth; more recently, adjusted net national income. These use data that are publicly available for a large number of countries. Within World Bank country work, these figures can give you a first crack at the issue of whether a country’s development is sustainable long term.

Like many other initiatives following Rio, this was challenging. What are some of the main obstacles that have been addressed?

GML: There are institutional challenges. Everyone said, “This is a great idea, but I think that this or that other ministry should do it.” There was apprehension. The focus in the 1990s was on how we’re using up our natural capital, and there was a lot of emphasis on the bad news. Some countries were concerned that natural capital accounting could make their indicators look worse, and possibly increase their costs of borrowing or affect their eligibility for certain international programs. There have been fears that this could somehow become part of conditionality. Plus there was no agreement of methodology. So a lot of countries were reluctant to stick their necks out.

How did advocates of natural capital accounting manage to push beyond the apparent impasse?

GML: Under the auspices of the UN Statistical Commission, experts were exploring—and debating—alternative environmental accounting approaches throughout the 1990s. A new framework emerged that came to be known as the System of Environmental-Economic Accounts (SEEA), with a draft manual coming out in 2003, built on a much briefer interim manual published in 1993.

Then the more important milestone was in February this year, when the UN Statistical Commission established SEEA-2012, whose central framework provides an internationally agreed approach—a “statistical standard”—for accounting for material natural resources. This is solid and can be put into practice. In addition, there is a call for more work, and experimentation, on accounting for ecosystems, and guidance on the application and policy uses of the SEEA will be provided in an additional component of the SEEA in 2013.

But in 2010, at the Convention on Biological Diversity in Nagoya, Japan, the World Bank launched WAVES, Wealth Accounting and the Valuation of Ecosystem Services. A partnership funded by France, Japan, Norway, and the United Kingdom, this effort is designed to make natural capital

“A first step towards the integration of sustainability into economic management is the establishment of better measurement of the crucial role of the environment as a source of natural capital and as a sink for by-products generated during the production of man-made capital and other human activities. ... A programme to develop national systems of integrated environmental and economic accounting in all countries is proposed.”

— Chapter 8, *Agenda 21*

accounting—as articulated in SEEA-2012—the norm, to make it the basis for policy decisions. We want to see the framework for material natural resources implemented, and we want real progress on developing an approach for ecosystem accounting.

What do you understand now about this challenge that you didn’t understand in 1992?

GML: The big change is that the understanding is much broader than it was in 1992, when this was still very much within the environmental community. The idea of accounting for natural capital and the importance of this for long-term sustainable development is much more widespread than it was. Finance and national planning agencies see that this is a way to manage the economy better.

Plus we can analyze much more experience of countries that have established some form of environmental accounting. There now is valuable experience among a mix of countries, including a number of European Union countries, Australia, Canada, Colombia, Mexico, the Philippines, and South Africa. Their experience is crucial in showing the ways that governments can tailor the available methodologies to support better-informed decisions in the context of their own economies.

What are the priorities now?

GML: The agenda for the next 20 years starts with countries implementing what we have in place, namely the SEEA central framework that sets out a

clear methodology for material natural resources. Then we need demonstrations of how the data can strengthen policy making, and we need to develop the methodology for ecosystem accounting.

What would you say to a finance minister from a country that is considering environmental accounting?

GML: I would say that what you need to do first is assemble a steering committee that includes the agencies that deal with different aspects of natural resources. The committee would be led by a major user of the data, such as the ministry of finance or planning, or a ministry of environment, with close collaboration with a national statistical office to ensure integration with the national accounts. The question to examine would be: What are the critical issues holding back our development? It could be managing scarce water resources; it could be the depletion of mineral resources or land management. Then you figure out what the data gaps are, and also look at what is coming up, to know where the entry points for decision making are. You might have a new draft water bill or a national development plan. The key question is, What is coming up where you really want to have this input? The nice thing about SEEA is that it can be implemented incrementally. It’s a flexible framework.

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Countries Make Good Use of Environmental Impact Assessments

Over the last 40 years, various forms of the Environmental and Social Impact Assessment have been the primary instrument used worldwide to inform decision makers and the public about the impacts and risks of proposed policies, plans, programs, and projects. In operations, impact assessments provide a mechanism to integrate environmental and social dimensions into project design and implementation. Frequently, they also serve as the entry point for transparency in decision making through public consultations and disclosure of information to stakeholders.

The World Bank adopted the instrument of environmental and social assessment in 1989, when the Board of Executive Directors endorsed Operational Directive 4.00 on Environmental Assessment. The policy not only mandated the use of environmental assessment in Bank-supported operations but also required public consultation and disclosure while the studies were being prepared and considered. The Operational Directive provided the basis for integrated examination of potential physical, biological, socioeconomic, and cultural heritage impacts and risks, including evaluation of alternatives, measures for avoidance or mitigation, and monitoring. Since 1989, additional Operational Directives or Operational Policies have been adopted by the Bank to address in further detail specific environmental and social issues, and they collectively have become known as the

Safeguard Policies. The Safeguard Policies reflect important values held by the Bank, its development partners, and borrowers. The Safeguard Policies also reflect a commitment to make these safeguards an integral element of support for sustainable development and responsible economic growth.

A Requirement of Borrowers

Today nearly every country where the World Bank Group operates has policies, laws, and procedures mandating the use of impact assessments to evaluate potential environmental and social impacts and risks. Our borrowers increasingly use strategic environmental and social assessments in policies, plans, and programs. In the case of involuntary resettlement and land acquisition, significant changes have occurred in domestically supported projects, with governments making greater efforts to avoid or minimize negative impacts in the early phases of planning and to use compensation rates more effectively to support livelihood restoration in affected communities. Borrowers have also shown progress in addressing the rights and concerns of Indigenous Peoples through policy and legal measures.

Over the last decade, the Bank's public and private sector partners have been increasingly committed to incorporating sustainable development as a core value. This has led to the adoption of frameworks and procedures to manage environmental and social impacts and risks. The decision of borrowers to internalize the use of environmental and social assessment, progressive approaches to land acquisition and involuntary resettlement, and engagement with local communities and Indigenous Peoples has made a major difference in achieving sustainable development. This approach has been most noticeable in the private sector and in government-owned corporations (inspired by IFC's risk management approaches) that have used their corporate environmental and social management systems to move these

concerns into the mainstream of project development, implementation, and operation.

Broad Alignment by Development Partners

As development partners have aligned their policies with those of the World Bank Group, the approach has been used with a broader array of projects. Environmental and social impact assessment policies of the multilateral development banks, OECD bilateral donors and export credit agencies, and the Equator Principles Banks are now broadly aligned with those of the Bank and IFC/MIGA. By adopting compatible policies, donors have facilitated cofinancing and increased consistency in projects. There is still a need to improve the alignment between policies used for public and private sector operations, given the increase in public-private partnerships. The emerging bilateral donors and export credit agencies are also considering ways to address these issues as integral elements of their operations.

Moving Forward — A Shift to Risk Management

Since the impact assessment policy and other safeguard policies were adopted, there have been significant investments in developing legislative frameworks, client capacity, and increased country ownership. Today it is possible to explore some new directions. International good practice in identifying and managing environmental and social impacts has also evolved, with development partners focusing on aid effectiveness and harmonization. These changes enable the Bank to shift from risk avoidance and mitigation to informed risk-taking in return for higher development impact, while transparently managing associated environmental and social risks. As a result the Bank's main risk management activities, long defined by "do no harm," will be seen as moving from risk avoidance toward a greater focus on risk management and more proactive

measures to "do good." The increased emphasis on risk identification and management and "doing good" will not eliminate the need for careful impact assessment; however, it will open up the opportunity to test and adopt new approaches to address environmental and social issues in policies, programs, and projects through recognized principles of risk management.

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Climate Change Comes of Age as a Priority

The World Bank Group's climate change program underscores the institution's willingness to change, take on new challenges, and innovate. In 1991, with the creation of the Global Environment Facility as a pilot program in the Bank, climate change emerged as one of its principal priorities. But the Bank's engagement in global public goods was new, with the staff's attention mostly directed to country operations.

The idea was that the GEF funds could offset the incremental costs of technologies for climate mitigation. Soon it was clear that there were not nearly enough funds in the GEF to achieve mitigation at scale. The "incremental cost" concept, theoretically interesting, was impractical. The Bank and GEF reoriented their approach, addressing policy reforms and piloting low-carbon development. Together, these would enable the scaling up of mitigation investments.

The next evolution came in response to the 1992 Rio Earth Summit. Amid growing awareness of the role of a healthy environment in achieving sustainable development and shared concern about a rapidly deteriorating local and global environmental outlook, the Bank dedicated the 1992 *World Development Report* to "Development and Environment." The study raised

awareness of the threats of climate change, among other issues, stating, "Enough is known to discern a threat of climate change from increasing concentration of greenhouse gases, but not enough to predict how much will occur or how fast, the regional distribution of change, or the implications for human societies."

The 1992 *WDR* proposed a threefold climate change strategy that has largely been followed since:

1. Countries should adopt measures that can be justified on the basis of efficiency gains and reductions in local pollution.
2. Research should continue on the magnitude of the climate change, especially the potential impacts on developing nations, and on possible solutions.

3. Developed countries need to finance pilot programs and test innovative approaches that could lead to lasting solutions.

The 1992 Rio Summit created the United Nations Framework Convention on Climate Change (UNFCCC), which came into effect in 1994. That same year the GEF became an independent agency, with the Bank as its largest implementing agency. The Bank, with GEF financing, undertook a series of groundbreaking pilot projects, with potential for replication and scaling up. The effort showed ways of lowering the costs of technologies; it demonstrated the potential of lowering carbon levels through forest conservation; and it highlighted land-use management practices to reduce GHG emissions.

The Bank was an early supporter of the UNFCCC, participating in the

UNFCCC pilot initiative for carbon trading, the basis for the Kyoto Protocol. One upshot of the Bank's involvement was the creation of a core team of "climate-development" staff and managers.

In 2000 a dedicated Bank team launched the Prototype Carbon Fund (PCF), providing a framework for action, learning, and research to demonstrate how greenhouse gas reduction could contribute to sustainable development while lowering the costs of complying with the Kyoto Protocol, which eventually took effect in 2005. Established with \$145 million in contributions from six governments and 17 private companies, the PCF began operations in April 2000, growing to \$180 million by June 2002 and ultimately capitalized at \$220 million.

As the groundbreaking experiment in creating a market in emission reductions, the PCF set the stage for other pioneering carbon funds managed at the World Bank. Eventually, carbon funds under management rose to \$3 billion, with \$1.9 billion committed to purchase reductions in carbon emissions, mostly through the Clean Development Mechanism (CDM). With the support of government, private sector, and civil society organizations, the Bank continued to pioneer new approaches to carbon finance and carbon reduction markets. The Community Development Carbon Fund explored ways to generate local development benefits in poor countries and communities that had previously benefited little from the CDM. The BioCarbon Fund showed how carbon finance can support agricultural and forest initiatives that sequester carbon and generate finance for poor rural households, achieving cobenefits such as improved water management and biodiversity conservation.

The Bank's 2001 *Environment Strategy* included a commitment to "address the vulnerability and adaptation needs of developing countries" as one of its five principles, but the bulk of climate operations supported climate change mitigation. Meanwhile, analyses

highlighted the risks that climate change posed to development, with adaptation emerging as a strategic priority in 2005, and in 2006 the Bank hosted the Global Facility for Disaster Reduction and Recovery.

In 2002 the environment portfolio of the Bank was about \$14 billion, of which about 11 percent related to climate change. Projects included innovative investments with GEF support, such as solar thermal power in India. Meanwhile, by helping countries meet the Montreal Protocol phaseout of ozone-depleting substances, the Bank was also supporting substantial reductions in GHG emissions.

In 2007 the Clean Energy Investment Framework (CEIF) was adopted. The CEIF—which was actually a climate strategy in disguise, not simply focused on clean energy—called for mainstreaming adaptation into routine operations. The 2007 Bali Conference of Parties (COP) brought finance ministries into the climate dialogue and launched the Forest Carbon Partnership Facility, to pilot Reducing Emissions from Deforestation and Forest Degradation (REDD). There, President Robert B. Zoellick described climate change as "a critical pillar of the development agenda."

With the support of GEF and some key donors, including Finland, the Netherlands, Norway, and the United Kingdom, the Bank scaled up analytical work. In 2008 the CEIF was replaced with the Strategic Framework on Development and Climate Change, integrating climate action as a cross-cutting development objective. The framework also stressed the need to strengthen resilience to climate risks and to tailor programs to local conditions.

In 2008 the Bank, initially working with Japan, the United Kingdom, and the United States, led talks to establish the Climate Investment Funds (CIF), with pledges today of about \$7.2 billion from 14 donor countries. The Clean Technology Fund, Pilot Program for Climate Resilience, Forest Investment Program, and Scaling-up Renewable



Energy for Poor Countries have already had significant impact and strengthened collaboration among multilateral development banks.

Recently, the WBG has supported the international negotiating process, at the request of the COP hosts, bringing lessons learned from working in 130 countries supporting climate adaptation and mitigation. Climate change is understood to be a central development issue not only at the World Bank but among donor governments and client countries. The last two International Development Association replenishments succeeded partly because of Bank-generated evidence that climate change will increase the resources needed to maintain current levels of development support. Today, 25 percent of Bank lending projects approved in 2011 in over 60 countries are expected to provide climate change cobenefits.

The future will involve difficult trade-offs and competing demands. Now is the time to integrate climate action into the green growth and sustainable development agenda. The most important contributions that we can make at this stage would be to ensure that the WBG successfully completes programs already under way, continuing to generate and share knowledge, and to accelerate support for innovative financing solutions, particularly by scaling up work with private sector actors.

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World Bank Group Environmental Policy Highlights from Two Eventful Decades



In 1987 the World Bank establishes central Environment Department and regional environment divisions with focus on strengthened safeguards and support for environmental investments.



UN Framework Convention on Climate Change and UN Convention on Biological Diversity in effect.

The World Bank and the Environment reports fourfold approach for the rest of the decade—stewardship, safeguards, mainstreaming, and global sustainability.

1993

Bank's active environmental portfolio almost \$12 billion for 153 projects in 62 countries.

1996



MIGA establishes environmental office.
IFC establishes safeguard policies.

1998



Bank launches Prototype Carbon Fund, pioneering a global carbon market to transfer finance and climate-friendly technology to developing countries.

2000

1992



- WDR 1992 *Development and the Environment*.
- Bank creates Environmentally Sustainable Development Vice Presidency.
- Bank issues an Operational Directive on Environmental Action Plans.
- IFC creates a Technical and Environmental Department.
- Global population, 5.5 billion; WBG lending, \$121.5 billion, of which 8.5% is for environment.

1994

- International Coral Reef Initiative is launched with Bank as founding partner.
- Bank first publishes *Environment Matters*, its annual report on its work in the environment.
- Bank-led partnership is established to support UN Convention to Combat Desertification.



1997

- World Wide Fund for Nature and World Bank launch Global Forest Alliance.



- The PROFOR (Program on Forests) partnership for sustainable forest management is established in Bank.



1999

- WBG's *Pollution Prevention and Abatement Handbook* adopted.
- MIGA's Environmental Assessment and Disclosure Policies are approved.



2001



- Bank adopts *Environment Strategy* to further integrate environmental concerns into the Bank's projects and programs, with focus on poverty/environment nexus.

United Nations Conference on Environment and Development (the Earth Summit) in Rio de Janeiro.

World Summit on Sustainable Development is held in Johannesburg.



\$100 million each from the Community Development Carbon Fund and the BioCarbon Fund are to provide financing to reduce greenhouse gas emissions.

MIGA safeguard policies are approved on an interim basis in 2002.

Global population, 6.3 billion; WBG lending, \$100.3 billion, of which 4% is for environment and, of that, 11% for climate change.



Millennium Ecosystem Assessment highlights severe degradation and accelerating loss of natural resources.

Kyoto Protocol becomes effective.

MIGA Policy on Environmental and Social Sustainability/Performance Standards become effective.

WDR 2009 Development and Climate Change.



IFC updated Sustainability Framework is adopted.

Partnership for Market Readiness is launched to support national carbon markets.

2002

2005

2007

2009

2011

2003

WBG endorses Extractive Industries Transparency Initiative.

Equator Principles are adopted by 10 global financial institutions and are based on WBG environmental and social safeguards.

2006

IFC adopts the Sustainability Framework, a strategic commitment to sustainable development.

WBG Kyoto funds reach \$2.5 billion.



2008



Establishment of the Climate Investment Funds with initial commitments of \$6.5 billion.

WBG approves a strategic framework on development and climate change.

Launch of Global Tiger Initiative. The Bank and GEF are founding partners.



2010



Launch of the Wealth Accounting and the Valuation of Ecosystem Services (WAVES) global partnership, with the Bank as a lead partner.

IFC creates the Climate Business Group.



2012



Global Partnership for Oceans launched.



WBG adopts new *Environment Strategy* for the next decade.

Global population, 7 billion; WBG lending, \$156.6 billion, of which 11% is for environment and, of that, 24% for climate change.

Rio+20 United Nations Conference on Sustainable Development





The World Bank Learns Hard-Won Lessons Incorporating Environment into New Development Paradigm

From Rio 1992 to Rio 2012 the World Bank has been working across all six Regions to support countries in their environmental management efforts and has evolved into a sustainable development agency. It has been a steep learning curve for the Bank. Here each Region tells a story of 20 years of learning and change.

Sub-Saharan Africa Region

The environment of Sub-Saharan Africa has been subject to radical shifts in understanding. The continent was seen as an untouched wilderness—a setting for films such as *Born Free*—with spectacular game parks and reserves. In the 1970s and 1980s Africa became associated with Malthusian hardship, with images emphasizing an arid, treeless landscape, exhausted by overfarming, overgrazing, and overpopulation. These shifting perceptions helped shape the response of Africa’s international partners, who moved from an emphasis on conservation to community-based efforts to address land degradation. More recently, Africa’s international partners are helping countries find ways to unlock natural resource wealth while managing the environment sustainably.

In the 1990s the World Bank focused on two programs: National Environmental Action Plans (NEAPs), which analyzed environmental threats and solutions, and Environmental Support Projects (ESPs), which helped countries gear up to take the actions called for in the NEAPs.

Madagascar was the first African country to express interest, preparing a NEAP in 1989 and an ESP in 1990. By 1995 22 African countries had approved NEAPs, and 18 others were preparing them. Eight countries, supported by \$123 million in financing from the Bank and other partners, had ESPs, which sought to establish the policies, laws, and reforms to advance the goals set by the NEAPs. Worries about expanding deserts and widespread land degradation influenced the Bank’s approach, and some ESPs included community-based natural resource management programs. Other ESPs supported conservation, management of protected areas, environmental information systems, and public awareness.

Alongside the ESPs was a new emphasis on strengthening capacity.

The 1996 World Bank book *Toward Environmentally Sustainable Development in Sub-Saharan Africa* examined demographic and environmental trends up to 2025, calling for stronger capacities in areas such as planning, environmental impact assessments, and environmental information systems.

In 1994 the Bank’s Kevin Cleaver and Götz Schreiber published a milestone study that helped define the environment as an integral development concern. *Reversing the Spiral: The Population, Agriculture, and Environment Nexus in Sub-Saharan Africa* focused on the linkages between rapid population growth, the degradation of the environment through nutrient depletion of soils, and the sluggish progress in agricultural productivity.

Criticism and Apprehension

Increased environmental awareness in the late 1980s intensified criticism of Bank-funded development projects in which the environment had been neglected or inadequately planned for. The U.S. Congress voted to require U.S.-supported international financial institutions to take into



account environmental and social consequences of development projects, and the environment commanded attention at summit meetings of the Group of Seven large industrial nations.

The Bank began to shy away from large, complex projects such as dams and power plants. Community-driven development projects proliferated, many focused on natural resource management. The natural resources projects, initially funded by the International Development Association, were increasingly picked up by the Global Environment Facility. Many of these efforts have been grouped under the programmatic structure of TerrAfrica, a partnership that aims to address land degradation by supporting sustainable land management.

Safeguards and What They Allow

As Africa’s population grew, the region’s leaders underscored the need for energy, power, and infrastructure—but without the environmental and social costs associated with some earlier projects. John Reed, former chief executive officer of Citibank, is quoted saying that “a car has brakes so that you can drive fast,” and in many ways the same concept applies to safeguards in large development projects. A rigorous safeguard policy enabled the Bank to help Africa address its energy and infrastructure deficit.

It took several rounds to create the safeguards structure. A 1989 policy

required an environmental impact assessment (EIA) for projects that could have a “significant negative effect on the environment.” The system evolved, by the late 1990s requiring protection of natural habitats, cultural property, and indigenous and vulnerable populations.

With tools for mitigating social and environmental risks, the Bank embarked on complex—and controversial—energy and power projects, including the Chad-Cameroon Oil Pipeline, the West Africa Gas Pipeline, the Songo Songo Gas Development and Power Generation Project in Tanzania, the Bujagali Dam in Uganda, the ilmenite mining project in Madagascar, and Cameroon’s Lom Pangar Hydroelectric Project (see box 1).

The Next Wave of Environmental Concerns

New environmental challenges are mounting in Africa, whose economic growth falls short of being green, clean, and resilient. Some prominent concerns for the next decades:

- **Land degradation.** Population growth continues to drive the conversion of natural habitats to farms, with the area of land farmed predicted to double by the year 2050. Africa shows the fastest degradation rate, with 70 percent of the cultivated land area degraded due to deforestation and poor agricultural practices.
- **Land deals.** A new land rush is under way, with foreign investors leasing large swathes of land for commercial agriculture, including biofuels. Comprehensive information on land investment doesn’t exist, but expressed demand for farmland comes to an estimated 60 million hectares. The land deals affect livelihoods, food security, and ecosystem services. Countries need to identify investment models that discourage land speculation and maximize benefits for local populations.
- **Urbanization.** Africa is rapidly urbanizing, with pressures on water, sanitation, and municipal services. In many societies, urbanization also has brought positive development results over time.

Forests and their environmental services are threatened, and the African wilderness is being shrunk. The challenge is to intensify agricultural production and limit the footprint of today’s farm sector. But such a shift requires capital that few countries have and massive social transformation.



BOX 1 More Protections, More Infrastructure – Lom Pangar Hydroelectric Project

A complex project with extensive safeguards, the Lom Pangar Hydroelectric Project calls for a large regulating dam in an ecologically sensitive area of Cameroon’s eastern woodlands and forests. The project involves the flooding of wooded lands, the relocation of communities, and the disruption of natural habitats. After standing apart from the project, the Bank got involved in 2005, advising the government of Cameroon on ways to adhere to Bank standards in the preparation. Assured that environmental and social safeguards were being applied, the Bank board agreed in March 2012 to help finance the project.

To offset disruptions associated with the project, the Bank assisted the government of Cameroon in establishing the 58,000-hectare Deng Deng National Park, providing unprecedented protection for a variety of local wildlife, including a population of western lowland gorillas and other primates. Moreover, in an innovation from the Africa Region, the recurring costs for managing the new national park are funded through the water tariff associated with the dam.



East Asia and Pacific Region

East Asia and the Pacific island states, home to 40 percent of the world's population, have registered some of the highest growth rates in human history—and face some of the world's most challenging environmental problems. Land degradation, deforestation, severe urban pollution, and rapid biodiversity loss present increasingly urgent priorities. Governments have come to understand that a “grow now, clean up later” approach is costly and unsustainable.

The region's political leaders view effective environmental management as a necessary part of their national development agendas. Policy, regulatory, and institutional frameworks have been established, and environmental action plans are a part of each country's overall development strategies.

Strategy, Analysis, and Capacity Development

In 1993 the World Bank published *Toward an Environmental Strategy for Asia*, outlining environmental challenges in the Region, and a dozen years later issued *Environment Strategy for the World Bank in the East Asia and Pacific Region*. This latter publication reviewed key trends, priorities, and Bank activities, setting key objectives and a course of action for Bank support. The program has included analytical work, advice, capacity building, and financing for environmental projects.

The Bank has devoted considerable effort to establishing the analytical basis for governments to set environmental priorities and shape the policy environment for controlling pollution and preserving natural habitats and biodiversity.

- *Clean Water, Blue Skies: China's Environment in the New Century* (1997) and *China—Air, Land, and Water: Environmental Priorities for a New*

Millennium (2001) together provided a framework for environmental action in the world's second largest economy.

- Similarly, environmental sector reports in Indonesia, the Philippines, and Vietnam set the stage for environmental projects that will follow in those countries. Multiyear and comprehensive studies—*Cost of Pollution in China: Economic Estimates of Physical Damages* and *Poverty-Environment Nexus in Cambodia, Lao PDR, and Vietnam*—documented the many linkages between environmental and development challenges. More recently, a series of studies on lowering carbon emissions provide options for adjusting development paths in China and Indonesia.
- The Bank's Environment Monitor series—launched in 2000 in Thailand and the Philippines and later extended to Cambodia, Indonesia, Lao PDR, Papua New Guinea, Thailand, and Vietnam—uses maps, charts, and graphs to illustrate environmental trends in accessible formats that inform the public debate on critical environmental issues.

Capacity building has been crucial to equipping government institutions with the knowledge and skills needed to formulate and implement effective



environmental policies. Regional programs such as the Metropolitan Environment Management Program, the Urban Air Quality Management Strategy for Asia, and the Clean Air Initiative Asia—all implemented in partnership with development partners—helped build capacities and enabled partnerships for the improvement of the urban environment. Country-specific projects, such as the Environmental Management Project in China and the BAPEDAL Development Technical Assistance Project in Indonesia, helped governments establish environmental management frameworks.

Financing Transformative Investments

The Region's portfolio of projects with environmental objectives and components has gradually grown to support sustainable natural resource management and biodiversity protection, urban environmental improvements, cleaner energy, and sustainable transport. The Global Environment Facility has helped support policy reform and innovative approaches to “greening” sector projects. In China, for example, GEF grants helped pilot energy efficiency and renewable energy programs, supporting important policy and institutional change toward more sustainable practices. In Indonesia they helped integrate coral reef protection with coastal livelihood improvement (see box 2).

The Region has also developed large global environmental programs,

including successful implementation of the Montreal Protocol for the phaseout of ozone-depleting substances (see box 3) and the largest carbon finance portfolio.

To address East Asia's environmental challenges, the Bank has actively recruited environment professionals, while decentralizing operations to place staff closer to clients.

Looking to the Future

As large parts of the region continue a fundamental rural-to-urban transformation, governments are seeking to manage the environmental challenges to ensure that development gains are sustainable. The 2008 financial crisis demonstrated the fragility of the global economy, while global climate change has introduced another set of long-term vulnerabilities, particularly for small island nations in the Pacific. Many leaders in the region are looking for a new development paradigm that uses environmental innovation—"green" and "smart" approaches—to get on a sustainable path that is consistent with continued economic growth. The main pillars of the Bank's new environment strategy—clean, green, and resilient development—are nowhere more relevant than in East Asia and the Pacific.

BOX 2 Indonesia Coral Reef Rehabilitation and Management Project

Indonesia's coral reefs are considered an epicenter of marine biodiversity, spanning an area of some 51,000 square kilometers. In the heart of the Coral Triangle, they represent about 18 percent of the world's coral reefs. Yet they are at increasing risk from escalating atmospheric CO₂ levels and climate change impacts, as well as population pressure, overfishing, and coastal development, which brings with it the side effects of pollution and habitat degradation.

For the last 15 years, the Coral Reef Rehabilitation and Management Project (COREMAP) has worked through decentralized governance and community co-management to address the various threats. Education and awareness raising, technical training, and community empowerment have led to local management of reef resources. Economic incentives such as community development grants and microloans offered fishers alternative strategies for income generation. Government, donors, and other partners have come to realize that participatory management by local communities of the resources they depend on for livelihoods and food security is essential to developing viable models for the sustainability of coral reefs. The approach has been applied in some 360 villages in eastern Indonesia with support from the World Bank. Communities have come to understand the importance of coral reefs and have curtailed destructive fishing practices and created new marine protected areas. Indonesia has recorded measurable improvements in the condition of reefs and net increases in household incomes in the majority of COREMAP sites since the start of the program.

A third phase is planned to ramp up these efforts across coastal districts in Indonesia, with a greater emphasis on rights-based approaches to managing coral reefs, marine spatial planning, and robust regulatory frameworks. These will be matched with scaled-up investments in alternative livelihoods linked to innovation in capturing wealth more sustainably from coral reef ecosystem goods and services to deliver benefits to the poor while safeguarding globally important biodiversity.



BOX 3 ODS Phaseout Program in East Asia to Implement the Montreal Protocol

The World Bank has assisted countries to implement the Montreal Protocol on Substances that Deplete the Ozone Layer—a measurable environmental achievement of the past two decades. The Bank's ozone-depleting substance (ODS) phaseout program in East Asia—implemented in China, Indonesia, Malaysia, the Philippines, Thailand, and Vietnam—represented 80 percent of the World Bank's Montreal Protocol portfolio (\$800 million). The phaseout of CFCs was completed in all countries by the end of 2009. Provided no other types of ozone-depleting substances are released to the atmosphere, the stratospheric ozone layer is expected to return to its 1970s conditions by 2050. Because CFCs are also potent greenhouse gases, with a global warming potential of as much as 10,000 times that of carbon dioxide, the phaseout carries significant climate benefits. The World Bank's ODS phaseout program in East Asia contributed to the total phaseout of more than 200,000 tons of CFCs a year and avoided emissions of high global warming potential gases of 500 million tCO₂ equivalent a year.

In 2007 the Parties to the Protocol decided to accelerate the hydrochlorofluorocarbons (HCFCs) consumption and production phaseout schedule for both developed and developing countries. HCFCs are chemical substances used primarily as refrigerants in refrigeration and air-conditioning equipment and as blowing agents for producing insulation foam. HCFCs were introduced as transitional substances to replace CFCs.

The first measure for controlling the production and consumption of HCFCs will enter into force in 2013 for developing countries and complete phaseout by 2030, with a small allowance for servicing existing equipment until 2040. HCFCs also have significant global warming potential, which is a key consideration driving the accelerated phaseout. East Asian countries partnering with the Bank in addressing HCFC phaseout include China, Thailand, Indonesia, the Philippines, and Vietnam. HCFC consumption and production in these countries represent more than 60 percent and 90 percent, respectively, of total HCFC consumption and production in the developing world.

Europe and Central Asia Region

For the Europe and Central Asia (ECA) Region, the 20-year trajectory opened with the unique set of challenges posed by the rapid political changes in Central Europe in the late 1980s, followed almost immediately by the collapse of the Soviet Union. Three crises overlapped: extreme economic hardship brought about by the sudden withdrawal of Soviet subsidies, energy transfers, inputs, and markets; an institutional collapse occasioned by underfunded or fully bankrupted governments shutting down various functions; and an environmental crisis as failing factories wound down operations, sometimes adding to the extensive map of degraded, toxic waste sites left by neglect and mismanagement of the environment.

The Bank was actively engaged at different levels during this dynamic period, including the Environment for Europe process; regional environmental programs focused on trans-boundary river basins, lakes, and seas; national environmental strategies; and both investment and capacity-building projects. To take on this complex work, interdisciplinary teams formed from the Bank, development partners, and the country governments. A key challenge was integrating environmental priorities into governments' economic planning and resource allocation processes.

Governments had variable success in strengthening environmental management and incorporating environmental considerations into plans, programs, and projects. Estonia, Latvia, Lithuania, and Poland, for example, were able to make significant progress with Bank support, while others proceeded more slowly and faced greater challenges.

Many countries embarked on mass sell-offs of state assets, with little

consideration of environmental aspects. State enterprises changed hands quickly and without clarity on questions of responsibility for existing environmental damages. Moreover, as outmoded, uncompetitive factories shut down, countries turned to the intensive exploitation of natural resources such as forests, minerals, and oil to increase export earnings. These challenges extended to the restructuring of the agricultural sector, which faced a major problem of pollution from large-scale livestock operations.

The Bank had diverse experiences in working with governments to upgrade environmental management capacity in ministries of environment and other agencies responsible for key functions such as water and wastewater, solid waste, and air quality. Some investment and capacity-building projects were highly successful while others presented major obstacles, reflecting the diversity of political and economic settings in the post-Soviet ECA region.



Accelerated Management Support in Poland

In 1990 the Bank Board approved an \$18 million environmental management loan to Poland. The first project of its kind in the Region, the loan provided accelerated assistance in establishing new management systems for the environment. The project also focused on operational activities in three designated “ecological disaster” areas—Katowice, Krakow, and Legnica.

Unfolding in the early phases of Poland’s transition, the project faced challenges, but it benefited from the strong commitment of the Polish government—despite changes in government and shifting personnel. The model was understood to be one of cooperation rather than international assistance, and a shared vision soon emerged on the best ways to integrate environmental concerns into the larger process of Poland’s economic and political transition.

Poland required a new management structure for designing and implementing various activities and for allocating local and international resources. Key institutions, including structures in the designated ecological disaster areas, were strengthened, with dozens of officials receiving intensive training at facilities in Denmark, Sweden, and the United States.

When the project concluded six years later, the country had a set of functional institutions, using modern management approaches. In addition,

there were national environmental audit techniques, along with trained specialists to carry them out. Poland also had established a modern system of air quality monitoring, including a network of compatible monitoring stations, linked to environmental management programs, for the Katowice and Krakow regions. The government also had a comprehensive inventory of sources of air pollution and a data bank of pollution measurements established.

To address water pollution, the project demonstrated an integrated approach to water resources management in the upper Vistula River Basin and established regional water management boards in Katowice and Krakow. Modern environmental laboratories were operating in Katowice and Tarnow, with new computer-based quality control systems. Poland also gained new techniques for groundwater monitoring, along with 10 emergency warning stations and a flood forecasting and management system.

Challenges in Russia

The Bank's Environmental Management Project in Russia illustrates some of the challenges during the transition period. In 1992 staff began preparing the project, which became effective in 1995, aiming to incorporate sound environmental and natural resource management into Russia's

economic, social, and political adjustment.

Environmental data were unreliable. The legal and regulatory systems were ineffective, and command and control systems couldn't address industrial pollution. Appropriate standards for discharge and ambient environmental quality didn't exist, and companies lacked both financial resources and economic incentives to invest in pollution control systems.

The challenges multiplied. As the project was implemented, the Russian government repeatedly restructured institutions, laws, and regulations. For example, in 1996 the Ministry of Environment and Natural Resources was reorganized as the State Committee for Environmental Protection, which in turn was abolished in 2000, with its functions folded into the Ministry of Natural Resources, whose management expressed little interest in the project.

For these and other reasons, the Environmental Management Project was extended four times and amended 13 times, eventually closing in 2011, 11 years later than planned. Nonetheless, the project effectively created a framework in which various environmental efforts could be designed, including projects on biodiversity protection, environmental epidemiology, and decision systems for managing water resources.

Measurable Gains

Amid the difficult challenges associated with the sweeping transition, some measurable gains for the environment emerged, demonstrating that some inherited ecological problems could be reversed. The Aral Sea—virtually shrinking away in a widely documented eco-disaster—was helped by a \$86 million World Bank project in 2001, with counterpart funds provided by the government of Kazakhstan. The resulting Syr Darya Control and Northern Aral Sea Project brought in new hydraulic structures to support increased flows. The effort has essentially brought back the northern Aral Sea, restoring a number of critical ecological functions.

Another visible environmental disaster had appeared in the northern Black Sea. The Danube River, coursing through 17 countries, carried urban and industrial wastes to this body of water, along with high levels of nitrogen pollution from fertilizers used in Eastern Europe. The 1998 Danube River Protection Convention provided a legal framework for cooperation among the Danube countries, and a subsequent program led by the United Nations Development Programme helped identify the sources of degradation and invest in policies, regulations, and institutions responsible for managing the basin. Since 2002, 10 projects supported by the Investment Fund for Nutrient Reduction financed by the Global Environmental Facility



successfully piloted measures to reduce nutrient loads entering the Black Sea and Danube Basin—with projects in Bosnia and Herzegovina, Bulgaria, Croatia, Moldova, Romania, Serbia, and Turkey.

The World Bank assisted countries in phasing out ozone-depleting substances under the Montreal Protocol, projects whose success was assisted by the fact that a narrow set of pollutants and industries were involved.

Meanwhile, for a large group of countries, the prospect of European Union (EU) accession accelerated improvements in environmental management, with the EU accession process requiring investment in human capital and institutional strengthening.

Today's Emphases — Pollution, Natural Resources, Climate

The enormous diversity of ECA's 30 countries and 480 million people requires flexibility. The Bank tailors today's programs to individual country needs, organizing its environmental

support around three broad areas: pollution management, natural resources management, and climate change.

For pollution flows, the Bank is supporting improved environmental infrastructure, pollution management, and policy advice on regulations and economic incentives to address contamination from industry, energy, agriculture, and cities. Work to strengthen institutions in environmental management continues.

Within the natural resources management area, the Bank is supporting sustainable forest management, with an emphasis on governance, the role of communities and the private sector, conservation, and carbon sequestration. A major forest operation is being drawn up in Russia, with other operations under way throughout the region, including afforestation and carbon finance operations launched in Bulgaria, Central Asia, Czech Republic, Latvia, and Poland.

Meanwhile, the region's carbon emissions are among the highest in the

world. Countries are focused on energy security, and avoiding possible energy shortages, but they want to use the cleanest energy possible. In Turkey the Private Sector Renewable Energy and Energy Efficiency Project is helping increase privately owned and operated renewable energy production within a market-based framework. And in the Ukraine a new project supports investments in energy-saving actions for industry, municipalities, and municipally owned enterprises and energy companies.

Finally, governments are working with international partners to make their economies more resilient to climate change. These changes include managing water resources more wisely, upgrading transportation infrastructure, and making utilities run with greater efficiency. Hydro-meteorological services are being upgraded in Central Asia, Moldova, and Russia. Tajikistan, one of the most vulnerable countries, has tapped the Climate Investment Funds to invest in greater climate resilience across a range of development programs.



BORIS BALABANOV/WORLD BANK

Latin America and Caribbean Region

The Latin America and Caribbean (LAC) region presents a daunting mix of environmental challenges. The region is exceptionally well endowed with natural assets. It is home to five of the ten most biodiverse countries in the world (Brazil, Colombia, Ecuador, Mexico, and Peru). The fertile highland valleys in the Andes and the rich tropical belt support a buoyant agricultural sector. Likewise, the Amazon forests serve as a global sink of greenhouse gases and play an important role in climate regulation.

At the same time, Latin America has registered the world's highest rates of urbanization in the world, generating pressures involving water overuse and pollution, solid waste, land use, and transport-related pollution. The Region's challenge, therefore, involves simultaneously addressing the green challenges as well as the pollution impacts of growth and rapid urbanization.

Recognizing the global significance of LAC's natural assets, the World Bank has long played a pioneering role in developing innovative policies for environmental protection. The Bank has worked with partner governments to strengthen the institutions responsible for environmental management and to train the people who would run them. Because this effort has involved novel and experimental approaches, the learning curve has been steep, but the rewards have also been significant.

Costa Rica, for example, has gone from a country with high deforestation rates to one with net forest increases. Deforestation rates have also dropped significantly in Mexico and Brazil. Many cities in LAC have

led the developing world in reducing harmful urban pollution and providing clean water and sanitation services.

Instruments to Enhance Sustainability

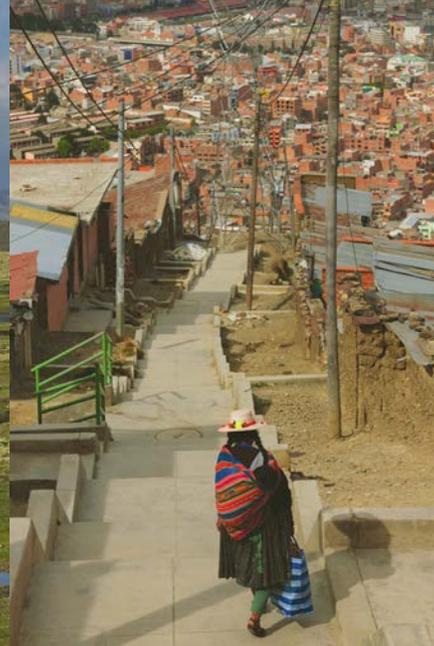
The Bank has used an array of instruments to help countries address environmental problems and enhance sustainability. Analytical work such as Country Environmental Analyses (CEAs) helped identify gaps and opportunities, informing a series of Development Policy Loans to enhance policy instruments and to build capacity for environmental management. Investment projects have addressed environmental problems ranging from air pollution management to land management and conservation.

The Peru Development Policy Loan series shows the ways that new systems for environmental management can help tackle urban air pollution, address fuel quality issues, and promote more sustainable fisheries management. Drawing from a comprehensive CEA, the program helped the government address



worsening urban air pollution, responsible for about 3,900 premature deaths each year. The program involved tougher fuel quality standards, conversion of 86,000 vehicles to natural gas, improved vehicle inspection and maintenance programs, and the design of overall air quality management programs for cities with the most extreme pollution problems. The loan also allowed Peru to address a difficult problem involving overfishing of *anchoveta*—an important export industry. Currently, the full anchoveta fleet operates within a government quota system. A voluntary retirement plan for the fishers addresses the problem of overcapacity.

Another example of the World Bank's partnership with LAC clients is its engagement with Mexico on climate change. The dialogue and support span over 15 years of collaboration, ranging from analyses of low-carbon approaches and adaptation, GEF-funded mitigation projects, and policy loans. These loans have bolstered Mexico's institutions and policy frameworks for the reduction and monitoring of emissions across sectors and for enhancing its ability to adapt and protect the most vulnerable against the inevitable impacts of climate change. Similarly, policy loans in Colombia and Brazil have been used to build institutional capacity and develop policies to address the causes



of environmental problems through systemic reforms.

Conservation and Biodiversity

There have been significant achievements in the area of conservation, with the region leading the world in new policy initiatives for conservation. As elsewhere, the early emphasis was on command and control instruments—establishing new protected areas with the aim of minimizing anthropogenic interference and the destruction of habitats. But it was soon apparent that legal declarations seldom translated into effective conservation, and a variety of alternative instruments were developed, recognizing the need to provide incentives for more effective stewardship of natural habitats.

Over the past 20 years, governments and society at large in the region have learned to appreciate biodiversity's intrinsic value and its contribution to many human activities (agriculture, water regulation, flood control, and so on). Through partnerships with the GEF, World Bank, bilateral agencies, and many other stakeholders, mature programs and policy tools help reduce threats to biodiversity, notably land conversion to agriculture, deforestation and forest degradation, and overexploitation of coastal and marine resources. The creation and strengthening of protected area systems and other complementary regulatory tools are

often cited as models for the rest of the world. For example, the region leads the developing world in the extension of areas under protection (20 percent versus 13 percent in the rest of the developing world) and is often consulted on how to successfully establish conservation trust funds (20 such funds exist today and help mobilize and secure financing for protected areas and for other conservation initiatives).

Policy innovations began in the late 1980s with a series of debt for nature swaps, beginning with Bolivia in 1987. The process was subsequently refined, culminating in innovations in Costa Rica and Mexico with a series of payment for environmental services projects. The new policies, complemented by regulations, seek to remove incentives for land conversion while strengthening biodiversity protection. The new programs encourage ecological territorial planning, clearer land rights, stronger enforcement against illegal logging, reforestation, and native forest management. The region has demonstrated the benefits of empowering resource-dependent indigenous and farmer communities that can function as effective stewards of natural resources and biodiversity.

Future Challenges — The Long-Term View

Over the past 20 years, the LAC Region has done a lot of things right—ranging

from improving management of natural resources and biodiversity conservation to increasing efforts in pollution management. Many challenges still remain: the region's megacities and rapidly expanding medium-size cities continue to put stress on the quality and quantity of water resources; expansion of the agricultural frontier in various countries still drives deforestation and land degradation; and climate change brings with it new challenges, such as glacier melt and changes in the natural environment (increased water scarcity in some regions, saltwater intrusion in coastal areas, and impacts to forests including the Amazon, to name a few). A recent struggle in many countries is how to take advantage of the high global demand for oil, gas, minerals, and other natural resources without degrading the natural environment and livelihoods in the surrounding areas.

The region needs to balance management of its environmental quality and natural wealth with providing better living conditions to a sizable proportion of the population that lives in poverty. The good news is that Latin American and Caribbean countries can draw from experience acquired over the past years in environmental management—using economic and institutional tools and harnessing the energy of civil society—as well as its innovative spirit to tackle the new challenges.

Middle East and North Africa Region

The countries of the Middle East and North Africa have been subject to an unusual mix of environmental pressures and benefits. Population growth and rapid urbanization have strained water resources, exacerbated pollution problems, and stretched basic services. Vast natural assets—including oil, gas, and some land and marine resources—have contributed to growth and, in some states, generated unusual wealth. But exploitation of these resources is pushing the limits of sustainability. Climate change adds to these challenges, with more frequent weather extremes, increased pressure on water resources, and greater vulnerability for coastal cities.

In 1990 the Middle East and North Africa countries were ill equipped even to take stock of their own environmental needs, let alone address threats and risks. Only Syria had a separate ministry for environment protection, and it employed only a handful of professional staff. Other countries lacked laws, regulatory authorities, and systems for environmental management.

The few environmental activities were principally financed by grants from international donors. The World Bank and European Investment Bank (EIB) supported water and wastewater treatment in a handful of countries such as Algeria, Tunisia, and Turkey. A few regional initiatives monitored and reduced Mediterranean marine pollution, such as the Mediterranean Strategy and Action Plan, financed by the European Union, and the Mediterranean Action Plan, under the Barcelona Convention.

A Wholesale Change

The 1990s began a 20-year effort to build systems, capacities, and

institutions to address the mounting environmental challenges facing the region. The EIB and the World Bank made the environment a priority in their assistance strategies and in 1990 prepared an Environmental Program for the Mediterranean (EPM), assessing the region's challenges. Soon after, the Mediterranean Environmental Technical Assistance Program (METAP) became the operational arm of the EPM, establishing programs in Albania, Algeria, Bosnia and Herzegovina, Croatia, Egypt, Jordan, Lebanon, Libya, Morocco, Syria, Tunisia, Turkey, and the West Bank and Gaza.

METAP grew into a multifaceted, \$60 million program, spanning four phases over two decades and assisting a transformation in the way countries approached the environment. National strategies, operating at the multicountry level, led to the emergence of regional approaches on solid waste and pollution management. The necessary legal frameworks and institutions emerged, with ministries of environment in Algeria, Lebanon, Morocco, and Tunisia.



Eight countries issued decrees for environmental impact assessments.

The program supported policy analysis for environmental sustainability, using Cost Assessment of Environmental Degradation methodology. The METAP program also supported several countries in the preparation of National Environmental Action Plans.

Countries formulated regional strategies for water quality and integrated coastal zone management. As institutions and analytical tools improved, the countries developed a pipeline of environmental projects totaling \$2.5 billion, with the World Bank poised to provide \$500 million in financial support, and EIB, \$2 billion. The projects included industrial pollution control in Algeria, pollution abatement in Egypt, environment management in Morocco, and solid waste management in Jordan, Morocco, Tunisia, and the West Bank and Gaza.

METAP supported extensive capacity building. The network MED-CITIES, established by METAP, became a self-sustaining network, headquartered in Barcelona, providing technical support to selected northern and southern municipalities. The core goal was to build national and regional expertise in policy analysis, environmental economics, solid waste management, integrated coastal zone management, and environment impact assessment. The METAP countries today can draw on national and regional expertise,



supplementing it when necessary with international consultants. In the fourth phase of the program, METAP trained 600 country officials in environmental economics, environment and trade, environmental assessments, coastal zone management, and solid waste management.

Both the region and the Bank became better equipped to address environmental challenges through regional approaches involving multiple partners. The Bank drew these lessons from the experience:

- Countries should invest their own money in key projects, ensuring greater ownership and lowering the vulnerability that accompanies excessive reliance on outside grants.
- Decision makers other than environmental specialists must grasp the costs of degradation and loss of natural resources. Environmental policies should enjoy support within finance ministries.
- Donors need to stay engaged over the long term. Building capacity and strengthening institutions is a time-consuming process requiring changes in mindset and behavior.
- Regional programs present special challenges. Regional analysis and action are required, along with actions by individual countries. Regional programs must promise benefits for individual countries; otherwise, they would have little incentive to participate.

METAP's Legacy

With stronger institutions and expanded capacities, countries in the Middle East and North Africa are better

prepared to take on the ambitious programs needed to control pollution, manage scarce water and land resources, and expand renewable energy and sustainable fisheries. Climate change promises intensified water scarcity problems, plus new pressures on coastal cities, which are already stressed from population growth and unchecked development.

The World Bank portfolio spans four areas: shared seas, climate change, deserts, and pollution and chemicals management.

The shared seas program includes the Mediterranean Environmental Sustainable Development Program (Sustainable MED). A successor program to the original METAP, it will integrate the environment into the economic development agenda of southern and eastern Mediterranean countries. In 2009 the Global Environment Facility had earmarked about \$50 million in support. Meanwhile, the Bank extended its engagement in the shared seas portfolio, broadening its support to other regional shared seas, such as the Gulf and the Red Sea. The Gulf Environment Program and Action Plan engages several Gulf states in a "fee for service" arrangement for technical assistance to strengthen their environmental management capacity, with the ultimate objective of facilitating sustainable development of the Gulf region and its waterways.

In the climate change area the Bank supports Algeria, Egypt, Jordan, Morocco, and Tunisia in accelerating cleaner power technologies like concentrated solar power, which will avoid CO₂ emissions, reduce dependency on fossil fuels, generate green jobs, and help build an industry with export potential to high-paying

markets in Europe. *Adaptation to a Changing Climate in the Arab Countries*, a report undertaken with the League of Arab States, offers guidance to 22 Arab countries on the challenges of climate change adaptation.

The Bank, in partnership with several countries and the GEF, recently launched the MENA Desert Ecosystems and Livelihoods Program, a 10- to 15-year program to enhance livelihoods in desert ecosystems. The program begins with \$21 million in Bank-GEF support for national and regional projects in Algeria, Egypt, Jordan, and Morocco. Proposed projects include investments in ecotourism, agriculture, and livestock management. To strengthen sustainability, all projects will use an integrated ecosystem management approach.

Under the pollution and chemical management program, countries are establishing systems to better track and manage chemicals—crucial as population centers grow and health effects of pollution become more evident. In Egypt the government, private sector, banks, and civil society are working together to encourage industries to move toward compliance through several policy tools, including credit lines for industries, improved enforcement, and pilots for disclosure of industrial performance. Lebanon, interested in a similar approach, is coordinating with a European Union project to strengthen enforcement.

Twenty years of investments in capacity and institutional strength now make it possible for countries in the region to manage the complex challenges posed by resource scarcities, population growth, and climate change.

South Asia Region

South Asia faces two sets of environmental challenges. There are the environmental deficits associated with poverty—such as degraded land, poor sanitation, and high incidence of vector-borne diseases. And there are the environmental strains stemming from accelerated growth—urban crowding, increased automobile emissions, and industrial pollution.

Governments in the region are working to address both sets of problems, recognizing the rising costs of environmental degradation, which the World Bank estimates to be as much as 7 percent of gross domestic product.

In the 1980s social and environmental damages linked to Bank-supported dam projects in the region ignited harsh criticism, and new projects were intensely scrutinized. India's Narmada Dam set off a global opposition campaign. Bank managers responded with environmental assessment procedures, leading to clear safeguard policies to prevent or mitigate the damage that development projects caused to communities and their environment. In several cases, the safeguards work has been systematized and disseminated at the sectoral level (see box 4).

Environmental protections sometimes strengthened or expanded a project. For example, environmental assessments associated with a school-building project in Pakistan's Sindh Province led to guidelines to reduce the vulnerability of schools to floods, earthquakes, and other natural disasters. The project team also added a new feature—environmental education as a part of the curriculum.

From “Do No Harm” to “Do Some Good”

The World Bank began to fund stand-alone environmental projects in South Asia in the early 1990s. Essentially, these sought to go beyond “do no harm” to “do some good,” often through cleanup efforts to address degradation and pollution. Two linked industrial pollution projects in India were typical. Both focused on mitigating pollution from large industrial facilities, using



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then-common “end-of-pipe” pollution control approaches, which treated emissions but didn’t address industrial processes at the source. The projects suffered from implementation delays and some project design flaws. A Bank evaluation concluded that the projects would have benefited from a more comprehensive pollution abatement strategy, taking into account the full scope of air, water, and land degradation.

BOX 4 Mainstreaming Biodiversity in India’s Transport Sector Highway Projects

In India the Bank is trying to balance the need for improved infrastructure, in particular road development, with the protection of flora and fauna. Between 2002 and 2004 the Bank produced a collection of 20 self-contained dissemination notes summarized in a report covering lessons learned in managing environmental and social concerns in India’s highway projects. A later analysis, “Strengthening Institutions for Sustainable Growth in the Highways Sector,” undertaken as part of the 2008 India Country Environmental Analysis, studied examples of best practice. These analyses have been disseminated throughout India.

The Orissa (India) State Roads Project involved forests and protected areas bordering the road network. Biodiversity assessments, part of the environmental assessment effort, included the upstream identification of likely impacts on intertidal areas, wildlife habitats, and places of rich biodiversity. Measures to protect and mitigate disruption to habitats and species were built into the project. Project managers integrated environmental and biodiversity management plans into engineering designs and bidding documents, ensuring that protections would be respected during the construction phase.



BOX 5 Cleaner Bricks for Better Air Quality in Dhaka, Bangladesh

Dhaka's badly degraded air quality during the winter is partly the result of countless brick kilns that pour unhealthy levels of fine particulates into the air. However, bricks are the foundation of the country's fast-growing construction industry.

Approximately 90 percent of the country's bricks are made in outdated and highly polluting technologies. Modern, cleaner technologies can cut that pollution burden in half. For example, Hoffman Hybrid Kilns (HHK) and Vertical Shaft Brick Kilns cause less than half the emissions of older kilns and save more than 40 percent of the energy used by them.

Through the Clean Air and Sustainable Environment Project, plus a grant from the Energy Sector Management Assistance Program, the Bank is introducing clean technologies. To make them attractive, a carbon finance operation is being prepared, providing carbon benefits of \$75,000 per year to each HHK. An additional benefit: the new technologies operate on higher land, thus providing year-round employment and improved living conditions for workers.

"At the time we were getting started in defining these environmental projects, we, like others, tended to focus on the point of emissions," said Herbert Acquay, Manager, World Bank South Asia Region. "People later came to see that you could do much more by building in greener industrial processes, as opposed to continuing with high-pollution processes, followed by a cleanup effort." (For an example, see box 5.)

The Bank's environmental engagement has since become more nuanced. The India Ecodevelopment Project, approved in 1996, set a goal of conserving biological diversity in seven protected areas. The complexity of the project, covering multiple sites and multiple species, generated some start-up difficulties, but eventually local institutions began to protect the biodiversity base, and today some of the project's innovations are used in other forestry projects.

Other programs sought to strengthen government's overall capacity for environmental management, assisting, for example, the Bhutan government in strengthening its capacity for conducting environmental assessments.

The shift to more complex, ambitious environmental projects is perhaps best illustrated by the sweeping National Ganga River Basin Project. The Ganga accounts for one-fourth of India's water resources and its sprawling basin is home to more than 400 million people, many of whom revere the river as a living goddess. Despite its unique heritage, the Ganga faces extreme pollution pressures and associated threats to its biodiversity and environmental sustainability.

Surging population growth, urbanization, and rapid industrialization have combined to generate devastating levels of degradation in parts of the river. Only about one-third of the sewage from towns and cities on the Ganga's main branch is treated. Industrial effluents that pour into the river are either poorly treated or completely untreated.

In February 2009 the Indian government established the National Ganga River Basin Authority (NGRBA) to manage a multisector program to clean and conserve the Ganga. The goal of ending the discharge of untreated municipal or industrial wastewater into the main stem of the river after 2020 is ambitious, requiring engagement with five Indian states.

The Bank's National Ganga River Basin Project will help build the capacity of the NGRBA's operational institutions not only to manage the current cleanup but also to establish a lasting conservation program. The project will help fund investments critical to reducing pollution, including demonstration projects to establish the best approaches in wastewater collection and treatment, industrial pollution control, solid waste management, and riverfront management. The project will also strengthen the central and state pollution control boards, which are responsible for monitoring pollution, modernizing information systems, and training staff. A Ganga Knowledge Centre will act as a repository for information on the conservation of the river.

"Twenty years ago, it was unlikely that the Bank would ever have gotten involved in so complex an environmental project—with multiple states, different layers of environmental management, and built-in, systemic ways of cutting back on pollution over time," Acquay said.

Future Challenges

Over the past two decades, South Asian governments have passed environmental laws, created agencies to monitor and enforce that legislation, launched forestation efforts, and invested in water quality. However, rapid economic growth, demographic shifts, and climate change present a constellation of challenges that will require going beyond the steps taken to date. Reliance on "command and control" type environmental regulation, together with weak enforcement,



has undercut incentives to reduce pollution.

The Bank, though recognized as a trusted partner in the region, remains a small player, given the scope of South Asia's environmental challenges. And while many high-level decision makers view the environment as central to development, some hold to a stubborn belief that countries can ignore or

simply “grow out” of their environmental problems or deal with them later. The problem with this framework is that the costs of environmental degradation are cumulative, often irreversible, and, if neglected, become a threat to development.

The hopeful element is that economic growth provides resources to address environmental concerns. Moreover,

rising prosperity usually brings heightened demand for improved environmental management. Globalization has created further incentives and pressures to address degradation at the source, building in green production, and more broadly green growth, from the planning stage onward.

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COURTESY OF WORLD VISION

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How the Rio Climate Convention is Breathing New Life into Forest Operations

The World Bank's forest operations have responded over the past two decades to the Rio conventions, especially the climate convention and its subsequent agreements, though financial incentives at scale have yet to materialize.

The 1992 Rio Earth Summit adopted not one convention on forests but three related ones: the Convention on Biological Diversity, the United Nations Convention to Combat Desertification, and the United Nations Framework Convention on Climate Change. Of the three, the UNFCCC has the most profound impact on forests and related World Bank operations.

The UNFCCC, responding to a growing concern over the effects of climate change, makes only a brief reference to forests, recognizing their role in climate regulation. But the Kyoto Protocol, which entered into force in 2005, created so-called flexible mechanisms, which do have importance for the world's forests.

Under Joint Implementation, countries defined as Annex I Parties could implement afforestation, reforestation, forest management, and revegetation projects that remove carbon from the atmosphere and store it in biological sinks in another Annex I country and receive credit under the protocol. Rules are more limiting under the Clean Development Mechanism, which provides that an Annex I Party may only implement afforestation and reforestation in a non-Annex I country.

ABOVE IMAGES: Ethiopia Humbo landscape before and after assisted natural regeneration supported by World Vision and the BioCarbon Fund.

World Bank Response

The World Bank responded to the Kyoto Protocol by creating the first global carbon fund in 2000 to demonstrate the potential of the flexible mechanisms set up by the protocol. The Prototype Carbon Fund (PCF) was created as a public-private partnership five years before the Kyoto Protocol and the EU Emissions Trading Scheme (EU ETS) entered into force. The PCF, committed to exploring the potential for incorporating forestry elements in carbon finance, supported the afforestation and reforestation of 6,000 hectares of degraded land in Romania.

The World Bank's 2002 forestry policy recognized the critical role of forests in both climate change adaptation and mitigation, and underscored the importance of the new opportunities created by the Kyoto Protocol.

The Bank expanded its engagement by launching the BioCarbon Fund (BioCF) in 2004, a public-private initiative mobilizing resources for pioneering projects that sequester or conserve carbon in forests and agro-systems. Ideally, these efforts could both help mitigate climate change and improve local livelihoods, demonstrating the potential for projects that reduce emissions while providing strong social and environmental community benefits.

The BioCF has committed \$90 million for purchasing carbon credits through 26 projects, of which 21 involve afforestation and reforestation and 5 involve avoidance of deforestation and changed agricultural practices. The fund also developed innovative transactions, methodologies, and tools that are now part of the public domain. The BioCF has demonstrated the potential of these projects to generate both development and climate mitigation benefits. In addition, the fund's groundbreaking experience has produced important lessons and shed light on the early challenges to the development of afforestation and reforestation projects under the CDM, with a number of procedural improvements

recommended to the CDM Executive Board. (The lessons learned by the BioCF are synthesized in "BioCarbon Fund Experience.")

Despite the BioCF's best efforts, the regulatory carbon market has been a disappointment for forests. First, the CDM has restricted eligibility to afforestation and reforestation. Second, out of fear that CDM forest carbon credits would flood the emerging carbon market, it was specified that an Annex I country would not be allowed to use such credits to meet more than one percent of its 1990-level emissions. Third, these credits were created as temporary (they are akin to a lease) and have to be renewed periodically, and ultimately replaced by permanent credits from non-forestry projects. Fourth, the EU ETS, the powerhouse of the carbon market to date, has completely excluded the use of any forest carbon credits to offset emissions.

Ascent of REDD+

In 2005, recognizing that the restrictions of the CDM would limit their access to incentives for protecting and managing their forests, a number of developing countries created the Coalition for Rainforest Nations. The coalition introduced the concept of reducing emissions from deforestation in the UNFCCC negotiations. The scope was expanded first to forest degradation and then to conservation, sustainable forest management, and enhancement of forest carbon stocks, eventually becoming today's REDD+.

The Bank saw an opportunity to work with forested countries and donors, building on its convening power and long involvement in the forest sector, including forest carbon finance. The G8 summit of 2007 encouraged the Bank to design a forest carbon partnership. The following year, the Forest Carbon Partnership Facility (FCPF) was born. The FCPF, with the support of 18 financial contributors, assists 35

tropical and subtropical forest countries to develop the systems and policies for REDD+, and also provides them with performance-based payments for emission reductions.

The FCPF, now capitalized at around \$430 million, complements the UNFCCC negotiations by demonstrating how REDD+ can be applied in countries. The Facility has created a framework and processes to help countries get "ready for REDD+" along with the necessary financial incentives. Countries come to understand what they need to do to participate, including establishing monitoring systems and national management arrangements.

To complement the FCPF's work in the areas of readiness and performance-based payments for REDD+, the Bank and other development banks saw the need for a more systematic and focused approach for raising capital upfront to finance transformational investments in and outside of the forest sector. Without these early actions, it would be hard for countries to reduce forest carbon emissions. This realization that a "missing middle" needed to be filled between readiness and receiving payments led to the creation of the Forest Investment Program (FIP) in the framework of the Climate Investment Funds. The FIP, capitalized at \$620 million by seven donors, supports investments in eight pilot countries. Part of the capital supports a Dedicated Grant Mechanism for Indigenous Peoples and Local Communities.

REDD+ incentives require careful design. There is a need for significant funds early on to catalyze transformative changes that will move countries' development paths away from consumptive patterns to more protective uses of the forests. Avenues to explore include insurance of political and physical risks involved in REDD+ and land-use programs (for example, capital investments and prepayments on carbon contracts); monetization by financial institutions of future payment streams under carbon contracts; and issuance of climate bonds that



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RHETT BUTLER

TOP: In Colombia and elsewhere, Indigenous Peoples are key partners in forest protection.

БОТТОМ: Making agriculture more sustainable, such as aquaculture in Indonesia, is essential to preserving the ecosystem functions of forests, including climate regulation.

may be linked to the future carbon emission reductions of REDD+ and land-use programs. In addition, advanced market commitments,

the use of endowments, and auctions of emission reductions may help boost the recurring financing that will be needed.

The Influence of Rio and the Road Ahead

The conventions born out of Rio brought a renewed focus on forests and their importance to the well-being of local populations and to the planet. The Bank has led the way in implementing the financial mechanisms for forest carbon, starting with afforestation and reforestation and then REDD+.

The UNFCCC has underscored the importance of forests as one of the regulators in the global carbon cycle, in addition to their environmental and social functions. Given the variety of forces that drive deforestation and forest degradation, REDD+ has highlighted that the sustainable use and protection of forests will require intersectoral cooperation and participatory arrangements allowing for the full participation of, among other things, Indigenous Peoples and local communities. In this sense, climate change has brought a new focus to the political, economic, and social changes required both inside and outside of the forest sector for preserving, sustainably managing, and restoring forests.

Looking to the future, the Bank will continue to innovate to harness the incentives created by the UNFCCC (including the decisions reached at climate negotiations in Cancun and Durban). Strategically, the battle to save forests will be won by addressing the pressures from agriculture, energy, mining, and infrastructure. It requires an integrated approach to managing the natural landscape, including land and water. Deeper partnerships with governments, Indigenous Peoples, and local communities, as well as the private sector, will be necessary.

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Two Decades of GEF Partnership



Twenty years ago the Rio Earth Summit mobilized the public, private, and nonprofit sectors to better integrate environmental and development efforts. Leaders endorsed the Global Environment Facility, a multilateral funding mechanism established in October 1991 as a \$1 billion pilot program by the World Bank, with the United Nations Development Programme (UNDP) and the United Nations Environment Programme (UNEP), with the mandate to help cover the incremental costs in reaching the goals in *Agenda 21*, the Rio blueprint for environmental action at the global, national, and local levels.

Over 21 years the GEF partnership has allocated more than \$10 billion in “green” financing, unleashing significant partner cofinancing. In addition to the original three implementing agencies—the World Bank, UNDP, and UNEP—additional UN agencies and multilateral development banks have joined the partnership over time, bringing the partnership to 10 agencies working with governments across the globe. GEF funding worldwide has addressed complex environmental risks: climate change, biodiversity, polluted international waters, land degradation and desertification, persistent organic pollutants (POPs), and ozone loss.

The Bank’s engagement with the GEF is aligned to its overarching mission to alleviate poverty through sustainable development, balancing economic, social, and environmental considerations. Some \$4.5 billion of GEF funding has flowed to client programs, with more than twice this amount in International Bank for Reconstruction and Development (IBRD) and International Development

Association (IDA) cofinance. Environmental considerations are integrated into Bank country assistance strategies and lending. GEF grants have helped Bank clients to test innovative approaches and lay the foundations for other financing partners to invest. For example, GEF funds have helped set the stage for larger-scale programs like the Climate Investment Funds.

The World Bank has mobilized over \$30 billion in additional funding for projects, generating economies of scale and stimulating synergies. Particularly important were GEF grants in international waters, biodiversity conservation, and sustainable land management, which historically haven't received strong international lending support. In 2011, 42 percent of the Bank's GEF grants were combined with projects financed with IBRD or IDA resources.

Results Over Time

Climate Change – Mitigation. Climate change threatens to stall or reverse development progress in many countries. More than 35 percent of the Bank's GEF Program has supported climate change mitigation investments, resulting in CO₂ reductions of 100,000 kilotons—equivalent to taking 740,000 cars off the roads. The reductions have come through renewable energy, energy efficiency, new technologies, and transport investments.

The World Bank's GEF-funded support concentrates on low-carbon and

carbon-resilient development. Wherever possible, the Bank has tried to combine GEF funds with other resources to expand impact and increase efficiency.

- The China Renewable Energy Scale-up Program used a renewable energy “feed-in” tariff policy to support wind farms, biomass power, and small hydropower projects. With these and other investments, China is becoming one of the world's fastest growing markets for wind and renewables.
- Indonesia's Geothermal Power Development Project strengthened capacity for geothermal development, introducing efficient project transaction procedures and practices for the creation of approximately 350 megawatts in geothermal energy capacity, targeting elimination of 60 megatons of CO₂. The initial GEF-funded work mobilized further World Bank and CIF investments as well as the sale of carbon credits under the Clean Development Mechanism.
- The Egypt Kureimat Solar Thermal Hybrid and the Morocco Integrated Solar Combined Cycle Power projects produce energy from a solar field with a range of about 20 megawatts each. These programs renewed global interest in concentrated solar power technology and spawned a follow-on regional investment in Algeria, Egypt, Jordan, Morocco, and Tunisia that is being scaled up with an additional GEF grant plus financing from the CIF's Clean Technology Fund.

Climate Change – Adaptation. The World Bank, using grants from the Least Developed Countries Fund (LDCF) and the Special Climate Change Fund (SCCF), helps countries to reduce vulnerabilities, build resilience, and adapt to a changing climate by investing in climate-resilient approaches and promoting synergies through ecosystem-based adaptation and disaster risk reduction.

- The Pacific island state of Kiribati, acutely vulnerable to climate change and sea level rise, faces risks to coastal zones, water supply, and agricultural production. The country's National Adaptation Program of Action laid the foundations for managing the impacts of climate

change. The Kiribati Adaptation Project II used the \$50 million GEF Strategic Priority on Adaptation funding window to increase public awareness of climate risks, improve policies and procedures for water resource and coastal management, and strengthen the government's capacity for climate risk management and adaptation planning. Further work is now funded by the LDCF.

- In the Caribbean, the Bank has backed a series of GEF-supported adaptation projects, beginning in the late 1990s. The efforts have prepared countries to carry out vulnerability and risk assessments as well as adaptation planning. The Mainstreaming Adaptation to Climate Change Project strengthened capacity to collect and analyze data on physical and socioeconomic vulnerabilities and to analyze options for adaptation. An implementation of adaptation measures in the Caribbean project promoted climate-resilient development and protection of resources vital to tourism, fisheries, agriculture, and forestry in four countries.

Conserving Biodiversity. Safeguarding natural ecosystems and promoting more sustainable natural resource management have underpinned the World Bank's biodiversity work for more than 20 years. One-third of World Bank GEF grants have supported biodiversity conservation. This has led to over 114 million hectares set aside as protected areas (PAs); more than 20 conservation trust funds have been established and are generating revenues to support the management of PAs; biodiversity considerations are integrated into productive agricultural, rangeland, coastal, and forestry landscapes; and biodiversity conservation is spurring ecotourism and supply chain certification.

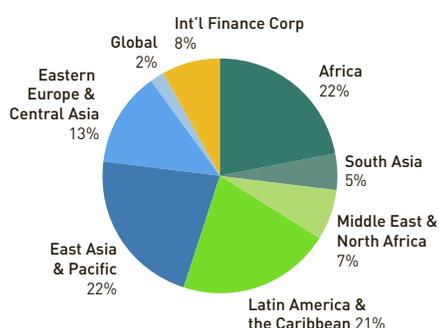
- The Amazon Region Protected Areas Project (ARPA) supports designation of 24 million hectares of new PAs in Brazil to combat biodiversity loss and deforestation, while preserving the benefits of carbon sequestration (0.43 billion tons offsets by 2050). Indigenous and traditional communities also benefit. ARPA's nationally managed endowment fund, valued in 2010 at \$27 million, covers recurrent costs of sustainable PA maintenance.

WB GEF Program 1991-2011

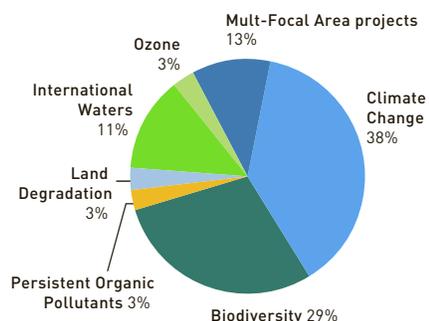
- \$4.5 billion in GEF grants matched by \$11.4 billion of IBRD/IDA/IFC loans and credits and \$19.3 billion of other cofinancing
- 700 projects across 120 Bank client countries
- Working across all World Bank Regions and IFC
- GEF programming integrated across environment, energy, urban, transport, agriculture, and health sectors

Historical program distribution, by focal area and World Bank Region and IFC (1991–2011) (Total approved \$4.5 billion)

GEF Council WB Approvals by Region



GEF Council WB Approvals by Focal Area



- In Liberia GEF funds support key PA management projects tied to the country's forest sector reform, and its "3 Cs" approach—commercial, community, conservation. One project focused on preservation of biodiversity in Sapo National Park, the most pristine forest tract in West Africa and home to the pygmy hippopotamus. Others support park management, establishment of a PA network, and sustainable community livelihoods across the country's PAs.
- The Periyar Tiger Reserve, through the India Ecodevelopment Project, promoted a conservation and poverty alleviation strategy to mitigate the impact of local communities' tiger poaching, overharvesting of firewood, and other practices to protect rare, endemic, and endangered species. Today Periyar promotes community-based, park-centered ecotourism.

Sustainable Land Management.

Bank-GEF grants have demonstrated best practices for land and water management, preventing carbon loss from forests, soil erosion, and salinization; recovering marginal lands; and introducing climate risk insurance through adaptation strategies. These efforts have been concentrated on areas in Sub-Saharan Africa where communities struggle with food security.

- The TerrAfrica Initiative, a global partnership to scale up sustainable land and water management in more

than 20 Sub-Saharan countries, benefited from an early \$150 million GEF grant to implement the Strategic Investment Program (SIP) for Sustainable Land Management (SLM) with the support of the World Bank. The SIP advanced programmatic approaches to scale up climate-resilient SLM practices, including watershed management and land-use planning, low tillage, intercropping, agroforestry, small water infrastructure, woodlots, and erosion control.

- The success of the SIP spawned the 2011 Sahel and West Africa Program in Support of the Great Green Wall Initiative, a land-use program to increase productivity and climate resilience for 12 West African and Sahel countries supported by GEF, LDCF, and SCCF funding. World Bank agriculture, environment, and water resource sector projects will provide critical baseline finance.

International Waters. World Bank clients have used GEF grants for water pollution mitigation, capacity building, and cooperation across river basins, aquifers, and seas.

- The Strategic Partnership on the Black Sea and Danube Basin, involving 17 countries and multiple agencies, addresses nutrient pollution and resulting eutrophication within the basin. Ten Bank-supported projects under the partnership reduced nitrogen and phosphorus

pollution entering waterways from agricultural, municipal, and industrial wastewater.

- The Environmental Protection and Sustainable Development of the Guarani Aquifer System Project targeted the sustainable management of the aquifers shared by Argentina, Brazil, Paraguay, and Uruguay and played a crucial role in incorporating groundwater concerns into the water management agendas of all four countries.

Chemical Pollution. GEF grants support clients' goals of eliminating persistent organic pollutants by phasing out production and use of toxic chemicals, demonstrating safe chemical destruction techniques, promoting safe chemical use and handling, and introducing emission control technologies to capture toxic gases.

- The Moldova POPs Stockpiles Management and Destruction Project contributed to a modern regulatory system for the management of POPs and other toxic chemicals and wastes, allowing for remediation of over 1,600 POPs hot spots.
- In Vietnam, a hospital waste management project will cofinance a \$150 million Bank loan to support elimination of POPs in the health sector by reducing dioxins and mercury releases from hospital incinerators.

Despite the achievements, the scale of global environmental problems remains vast. Biodiversity loss, deforestation, overexploitation of marine resources, and degradation of water and land all continue. Climate change presents new challenges and makes other chronic problems more complex. The World Bank, in its partnership with the GEF, will redouble efforts to help countries toward greener, cleaner, more resilient, and more inclusive growth.

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Defining Sustainable Private Sector Development



In 1987—a very different era with respect to how world leaders viewed the environment and economic development—the International Finance Corporation (IFC) recruited its first environment specialist. That same year, the Brundtland Commission released its report, *Our Common Future*, which challenged the predominant thinking that societies could either protect the environment or develop their economies. A new perception was beginning to emerge, which maintained that long-term success—for societies and for businesses—would depend on the ability to do both.

Many would argue that the Brundtland Commission gave much needed visibility to the concept of sustainable development, alerting the public to emerging risks associated with the depletion and contamination of the earth's resources. Economic development strategies would have to look beyond the immediate needs of the current population, taking into account the need to safeguard resources for future generations. Projects that could generate near-term growth or profits but leave a legacy of pollution and resource exhaustion would come under heavy criticism.

In the context of a shifting development paradigm, IFC began ramping up its efforts. In 1990 IFC amended its Project Review Procedure to incorporate a systematic environmental review of each of its investments. In 1991 IFC created an environment unit and recruited a small cadre of environmental specialists.

A turning point came with the Pangu Hydroelectric Project in Chile in the

early 1990s. Notwithstanding an unprecedented set of IFC policies for environmental and social protection, the project generated significant controversy, more than any other in the IFC's history. The project involved the first major hydroelectric dam built on the Biobío River. ENDESA, Chile's largest private utility, built the dam, but the controversies surrounding the project's social and environmental impacts posed reputational risks for IFC and focused senior management's attention on the need to avoid or mitigate potentially harmful impacts of IFC-funded projects.

Efforts to strengthen existing protections were stepped up. In 1996 IFC recruited its first social specialist. It set about revising environmental and social procedures and guidance. In 1998 IFC modified the World Bank's safeguard policies for its own use. An independent recourse mechanism, the Office of the Compliance Advisor/Ombudsman (CAO), was established in 1999 with a mandate to address the concerns of individuals or communities affected by IFC projects, enhance projects' social and environmental outcomes, and foster greater public accountability.

In 2000 IFC's environmental unit was elevated to department status and a director was recruited. The following year IFC adopted environmental sustainability as a core pillar of its corporate strategy and an integral part of its operations. IFC's new Environment and Social Development Department was also directed to go beyond a risk-management function and be more proactive in helping IFC's clients manage their businesses more sustainably. In effect, this meant changing the department's culture from one that avoided "bad" projects to one that helped clients do business in a sustainable way as part of their long-term success.

Meanwhile, it was becoming clear that commercial banks also were increasingly exposed to environmental and social risks in the projects they financed. Nongovernmental organizations were recognizing the vulnerability of publicly listed companies to media campaigns that drew attention to poor environmental and social performance and appealed to shareholders and consumers to take action. Banks, convinced that they

needed stronger environmental and social risk-management systems, turned to IFC, which had already established a standard that could be easily referenced.

In 2002 a group of commercial banks gathered with IFC to discuss environmental and social issues in project finance. The following year, 10 leading banks from seven countries agreed to use IFC's safeguard policies as the basis for a voluntary risk-management framework known as the Equator Principles. It has now been adopted by 76 financial institutions worldwide.

Although IFC's adoption of the World Bank's safeguard policies was a significant step forward, it was clear that this was not a long-term solution. In addition to the practical problems identified by IFC staff, the CAO issued a report in 2003 noting serious limitations of IFC's safeguard policies. A particular challenge was IFC's need to engage with clients at all stages of the project cycle and adapt to companies with wide-ranging differences in scale, risk profile, and management capacity. In 2003 a small team started to design a framework that was more suited to IFC's needs. It would need to distinguish IFC's responsibilities from those of its clients; be concise and understandable for a nonexpert audience; integrate environmental and social dimensions; provide a pragmatic, outcome-oriented approach; avoid prescriptive solutions and provide flexibility to achieve desired progress over a reasonable period of time; and emphasize the importance of management systems to achieve results. After a two-year global consultation period, IFC adopted the Sustainability Framework, consisting of the Policy and Performance Standards on Social and Environmental Sustainability and the Disclosure Policy, on April 30, 2006. The Equator Principles were revised in 2006 to reflect IFC's Performance Standards.

In 2009 a review of the framework concluded that it had not—as some had feared—become an impediment to IFC's growth. In fact, a significant number of IFC clients (88 percent surveyed in 2011) believe that IFC's environmental and social requirements are helpful to their long-term business interests. Following an 18-month consultation process starting in the fall

of 2009, IFC updated its Sustainability Framework. The revisions, which became effective on January 1, 2012, reflect the evolution in good practice around environmental and social risks that should be addressed at the company level, as well as developments in IFC's changing business model. The changes include increased attention to climate change, supply chain management, gender, conservation of natural resources, ecosystem services, and revised procedures for working with financial intermediaries.

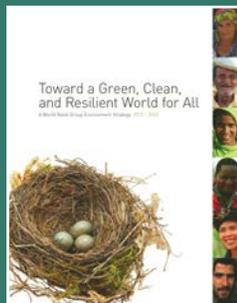
Because IFC is the largest global development finance institution focused exclusively on private sector development, its standards and guidelines have a multiplier effect. Many companies worldwide have incorporated the Performance Standards into their policies. Governments, such as Bangladesh, Canada, China, Norway, and Vietnam, are using the IFC standards to help inform their thinking on how companies—particularly in the financial and extractive sectors—can move toward sustainable practices.

The widespread adoption of IFC's standards as a global benchmark has been welcomed by IFC—although it was not fully anticipated. IFC does recognize that the use of its standards as a benchmark places a greater burden on it to undertake broader consultation with stakeholders when changes are made or expected. To help facilitate this knowledge sharing, IFC regularly hosts "Community of Learning" events and disseminates good practice notes, guidance, and other publications.

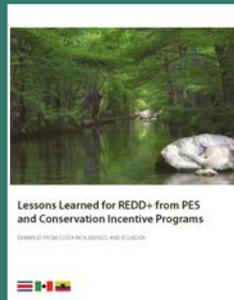
IFC seeks to stay at the forefront of sustainability issues in partnership with the private sector and development partners. Whether managing downside risk, creating business value by incorporating sustainable solutions, or identifying innovative ways to finance sustainability, the private sector is the engine of competitive, sustainable solutions and can help finance and address challenges in the years ahead.

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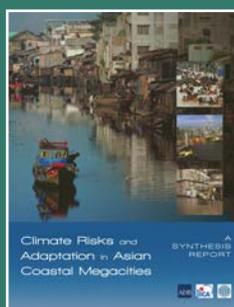


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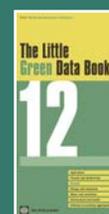


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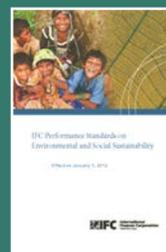
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