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INTERNATIONAL DEVELOPMENT ASSOCIATION



Environment

PROTECTING NATIONAL AND
GLOBAL RESOURCES

IDA at WORK

September 2009

SUSTAINABLE DEVELOPMENT NETWORK



THE WORLD BANK

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Contents

Environment: Protecting National and Global Resources	2
Sustainable Woodfuel in Rural Senegal Addresses Energy Needs	10
Sri Lanka: Renewable Energy for Rural Progress	12
Bosnia and Herzegovina: Solid Waste Management Project	14
Vietnam's Mangrove Forests Fight Erosion, Improve Livelihoods	16
Soil and Water Conservation in India's Karnataka Watershed	18

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Mainstreaming the principles of environmental improvement into sustainable development strategies is central to the World Bank's mission of overcoming poverty. The poor are directly dependent upon environmental services for their livelihoods and well being, and on a broader level, economic growth suffers where environmental resources are degraded or lost.

This booklet describes how the International Development Association (IDA), the concessional lending arm of the World Bank, supports the poorest countries to improve their management of land, water, air, and biodiversity resources. Several examples show how creative pilot solutions, once scaled up, have had a positive impact on the lives and health of the poor. Our seminal work in Country Environmental Analysis (CEA) and Strategic Environmental Analysis (SEA) now underpins most IDA portfolio lending.

IDA's engagement in several global issues (critical ecosystem partnerships, global forest protection, coastal and marine management, and fisheries) responds to the call for leadership in global public goods. Strategic prioritization, policy cohesion, and institutional strengthening have been the greatest challenges to effecting tangible successes in global programs. Climate change, one of today's greatest global challenges, is treated in more detail in a separate policy brief.

While dedicated IDA lending for environmental and natural resource management has averaged \$470 million per year over the last decade, we believe that IDA donor support must increase so that IDA clients may improve their management of environmental resources, strengthening their poverty reduction strategies.

We offer a few stories from past and present IDA clients, such as Bosnia Herzegovina, India, Sri Lanka and Vietnam, to demonstrate the benefits of these activities and the importance of strategic alliances and a global approach.



James Warren Evans

Director, Environment

The World Bank

IDA at WORK

Environment: Protecting National and Global Resources

Over the past decade, the International Development Association (IDA), the World Bank's fund for the world's poorest countries, has lent some US\$4.7 billion to support investment in environment and natural resource management. This support has helped mitigate air pollution in urban and industrial areas; provide cleaner and more reliable supplies of water; make land management more sustainable; build environmental institutions; deal with climate change, and protect biodiversity. Independent evaluations have shown that IDA lending has been delivered effectively.

Through credits and analytical work, IDA has contributed to the increasing integration of environmental issues in national development strategies, and in the country assistance strategies the World Bank

develops with client countries. Environmental safeguards around World Bank projects have evolved and emerged as the global gold standard for environmental assessment and management. The Bank also works closely with environmental nongovernmental organizations (NGOs) through partnerships and implementation agreements.

IDA CONTRIBUTIONS

IDA is helping countries meet their Millennium Development Goals.

While environmental sustainability is a factor in meeting the Millennium Development Goals overall, Goal 7 specifically is to ensure environmental sustainability. Two targets under this goal are a particular focus of IDA's environmental work: targets 9 and 10.

At a glance

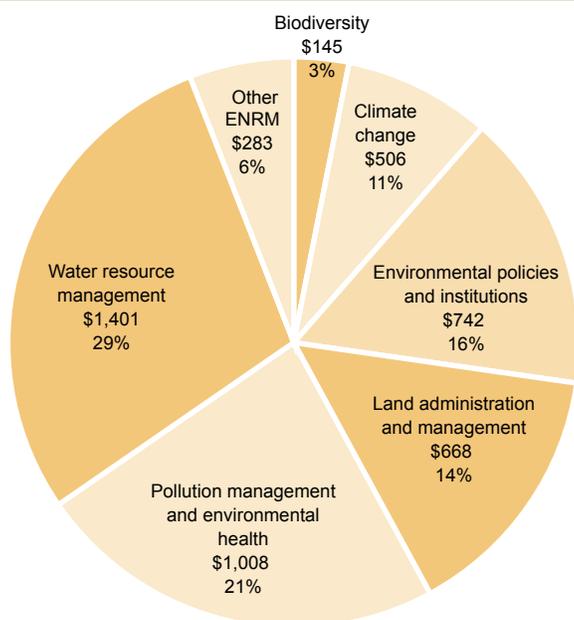
- The coastal management and mangrove restoration of Vietnam's southern coast increased climate resilience for 120,000 households in lower Mekong Delta.
- Soil and water conservation works completed on over 200,000 ha in Karnataka State, India, improved average crop yields by about 24 percent and broadened crop diversity.
- Nearly 50 percent of Bosnia and Herzegovina's solid waste is now disposed of in a sanitary landfill or in another environmentally sound manner.
- IDA lending for environment and natural resources management averaged about US\$470 million per year over the past 10 years.
- Africa was the most targeted region over the same period, with a share of more than 41 percent of total IDA commitments for environment and natural resources management, followed by South Asia with 26 percent.

Incorporating the principles of sustainable development

Target 9 is to integrate the principles of sustainable development in country policies and programs, and reverse the loss of environmental resources. The first part of this target coincides with the Bank’s ambition to incorporate environmental issues, as stated in its environment strategy.

The World Bank provides two kinds of financial support: Development Policy lending, which support economic and social programs across a broad range of sectors; and Investment lending, which support specific poverty reduction projects. Development policy lending has benefitted from a greater integration of environmental issues, often focusing specifically on strengthening governance in natural resource management. The percentage of Development Policy Loans addressing environment and natural resource management has grown from about one percent in fiscal year 2000 to 16 percent in the fiscal year 2008.

IDA Commitments for Environment and Natural Resources Management (ENRM) by Sub-theme, FY2000–2009 (US\$ million)



An example is Central African Republic’s Development Policy Operations, where improved governance and transparency of forestry and mining assets set the stage for restoring the key functions of state governance, especially with respect to natural resource management. These efforts were supported by parallel activities by other World Bank teams, such as the debt relief initiative, and by other bilateral and multilateral institutions.

Protecting environmental resources.

The second part of MDG target 9 refers to several environmental resources, one of them being forests.

Since 1990, the world has lost some 1.3 million square kilometers of forest, almost 100,000 square kilometers each year. Considering that more than 1 billion poor people derive their livelihoods from forests, this rapid loss threatens their prosperity and national efforts to reduce poverty.

In forest management, IDA combines work to make the management of protected land areas more effective with activities that benefit forest-dependent communities. IDA has financed the creation of new protected areas as well as the expansion and strengthening of existing ones. These cover forest, mountain, and dry land systems, with increasing attention paid to freshwater and marine ecosystems.

Examples include Lao, Uganda, Bolivia, Madagascar and India (see box).

The international community has turned to the World Bank for leadership in the areas of energy access, as well as the mitigation of greenhouse gas emissions and adaptation to impacts of climate change. The Bank began articulating its response in an April 2006 paper entitled *Clean Energy and Development: Towards an Investment Framework*. Intensive work along those lines continued at the Bank, with the IDA and Climate Change report (2007) and a Strategic Framework on Climate Change and Development (2008).

IDA at WORK: Environment



For the poorest countries of the planet, the issues of improved energy access and clean energy are paramount, and IDA will support them by providing analytical work, capacity building, and lending to reduce vulnerability to climate variability and change.

Providing access to life-saving resources: water.

While the safe drinking water Millennium Development Goal target is largely on track globally, not even half of the sanitation target will be met by 2015. Current financial efforts need to be almost doubled to meet the sanitation target. Reaching goals on water supply and sanitation alone in sub-Saharan Africa will require annual investments of some \$7 billion annually, well above current investments of \$800 million annually. Water, environment, and health teams continue to work together on issues of child mortality, water quality, hand-washing, and other key activities.

Using IDA's comparative advantage.

Environmental issues cut across economic and social sectors and require strong government leadership to correct market failures and promote actions by all members of society. While many development partners are active in this sector, IDA provides unique services by using its partnerships with governments at all levels to integrate environment into economy-wide policy and development planning. This includes:

- linking the environment and all relevant development sectors (e.g., through analytical work and sector-wide environmental assessments);
- convening stakeholders within and outside the national context to form partnerships that address environmental problems requiring collective action;

- allocating significant financial resources as demonstrated by a lending volume of about US\$4.7 billion in environmental and natural resources projects in the past decade;
- mobilizing additional financial resources and coordinating assistance on environment with the Global Environment Facility (GEF), bilateral agencies, and foundations;
- making available the largest contingent of experts in the world—more than 200 staff—with an increasing presence in field offices;
- developing global knowledge on a broad range of topics that help clients learn from each other on means to achieve economic growth with environmental sustainability.

Helping to deliver results for people around the world.

In the *India Karnataka Watershed Development Project* (IDA US\$100 million), completed in 2007, IDA played a key role in helping the government design a project to test new participatory approaches for integrated watershed planning and implementation. The new model also draws in non-governmental organizations (NGOs) as active partners. Results include **soil and water conservation works completed on over 200,000 ha, improving average crop yields by about 24 percent and broadening crop diversity.**

The *Nigeria Local Empowerment and Environmental Management Project* (IDA US\$70 million) demonstrated how Nigerians can plan, fund, implement, and operate and maintain small environmentally-sustainable and socially-inclusive projects across a number of key sectors. More than one million people are benefiting from education micro projects, 1.1 million from health, 1.8 million from water, 500 million from rural transport, and 500 million from

environment and natural resource management facilities provided by the communities themselves. The project monitoring records also show 1.2 million more children are now in school as a result of the education facilities under the project and close to 1.9 million people now have access to improved water supply in terms of distance traveled and cost.

Relying on a Strategic Environment Assessment and a National Tourism Strategy, The *Honduras Coastal Tourism Project* (IDA \$5 million) set out to plan a more sustainable coastal tourism industry. It set up a series of environmental conservation activities, as well as a Fondo Prosperidad for income-generating activities, and to underwrite financial sustainability of the sector. The region now has a “sustainable tourism” approach that integrates the economic benefits of responsible tourism. This

includes low-impact energy generation, climate resilience planning, and natural resource conservation.

The Bosnia and Herzegovina Solid Waste Projects 1 & 2 (IDA US\$66 million total) target people’s exposure to garbage in open dumps, which is one of the most serious public health risks in urban areas. The project focuses on regional landfills, safe methods of disposal, and rehabilitation of landfills. It also emphasizes, public awareness, training of sector staff, extending waste collection to areas not currently serviced, and the development of business plans. **With six regional landfills established by the end of the first project in 2009, almost half of the country’s population is benefiting.** A new project is being prepared to support the construction of six new sanitary landfills by the end of 2013.

Planting Trees in Southern Vietnam to Fight Coastal Erosion

When Typhoon Linda struck southern Vietnam’s coast in 1997, it exposed a compromised ecosystem. Historically, vast mangrove forests have stabilized coastlines, affording protection from winds and storms. But for years, local populations had exploited the forests for timber and firewood or cleared the trees to make room for shrimp farms.

With a view to rebuilding livelihoods and restoring a devastated ecosystem, the Coastal Wetlands Protection and Development project (IDA \$23M, Global Environment Facility \$7M) financed by the World Bank set about planting almost 5,000 hectares of mangroves, often in challenging environments.

Including related government programs, about 25,000 hectares of new trees were planted between 2000 and 2007 to protect Vietnam’s southern coast.

Today, the newly planted trees are a haven for sea creatures. Sediment from the Mekong Delta is being trapped in the mangroves’ unique root systems, helping roll back years of coastal erosion. As a result, fishermen are witnessing more shell varieties, a resurgence of crab seedlings, improved daily catches and higher incomes. And coastal communities have gained protection from waves and seasonal storms.

The project also included an ambitious social development program to help address one of the root causes of environmental degradation—precarious living conditions and entrenched poverty in areas near the coast. All together, about 1,500 families across four provinces were relocated from a fragile beach-front environment to comfortable housing in new communities protected by dikes. These families gained access to schools, roads, electricity, water as well as literacy classes, extension services, micro-credit, seeds and land. For many, the move has meant new opportunities and a more secure grip on life.

Expected impacts of this second project include an improved disposal management system and enhanced coverage of formal waste management services, improved ground water quality at disposal sites, higher citizen satisfaction with waste management services, and an increased cost recovery rate of participating utilities.

Providing critical research and analysis.

In addition to lending, IDA has provided an average of 18 analytical studies a year over the past three years, as well as a range of technical assistance focused exclusively on the environment.

We continue to work with our partners and focus on the messages contained in groundbreaking 2008 World Bank study *Environmental Health and Child Survival – Epidemiology, Economics, Experiences*. This report highlighted that diseases from environmental risk factors— diarrhea, acute respiratory infections, and malaria—are the top killers of children under five in developing countries. Malnutrition is an important contributor to child mortality and is inextricably linked to environmental infections. Climate change is projected to increase the burden of malnutrition, malaria, and diarrheal diseases. The burden falls most heavily on the poor, particularly in large, populous areas in South Asia and Africa.

Given the strong linkages of environmental factors to health outcomes, such as diarrhea and malnutrition, and the effects of climate change on food security, collaborative research for health offers a significant opportunity to incorporate those linkages. On the Bank's side, it also underscores the need for multiple sectors in the Bank to work together toward achieving improved health outcomes in client countries, both through prevention of disease and death, as well as through treatment and innovation related to drug and vaccine development, for example.

Furthermore, it has direct implications for institutional arrangements in the Bank to facilitate the requisite collaboration across sectors for, and continued attention to, tackling diseases such as diarrhea, which still claims 1.6 million lives annually, mostly of children from poor families in developing countries.

Further, recently completed Economic and Sector work in Uganda (2009) shows how financing and governance issues are critical to expanding sanitation and hygiene, improving environmental health outcomes and meeting the country's various health goals. The Uganda analysis identifies institutional bottlenecks relating to sanitation and hygiene and shows how an integrated budget line for sanitation can be included in the context of Uganda's efforts to decentralize some essential services, bringing them closer to the communities.

Country environmental analyses provide the analytical basis to integrate environmental considerations into the range of projects and programs – both lending and technical – the Bank offers to support developing countries. In fiscal year 2008, country environmental analyses were completed in several IDA countries, namely Ethiopia, Honduras, Namibia, Nepal, Nigeria, Senegal, Timor-Leste, and Vietnam. Analyses also were underway in Benin, and Côte d'Ivoire.

Similarly, Strategic Environmental Assessment provides a framework for assessing and managing a broad range of environmental risks, further assisting the Bank as it integrates environmental issues across numerous sectors into its activities. The assessment has focused on fisheries, forestry, mining, and urban development planning sectors. Work was completed during the 2008 fiscal year in IDA countries Bangladesh, Cambodia, Cameroon, Guinea, India, Kenya, Liberia, Madagascar, Sierra Leone and Zambia.

The Second Natural Resources and



Environmental Governance Development Policy Operation Program for Ghana, followed a country environment analysis prepared in collaboration with a local donor group on environment and natural resources. In addition to supporting a Strategic Environmental Assessment for the oil sector, this program continues to address governance issues in the forestry and mining sectors as well as to improve environmental management.

GLOBAL ISSUES

The world today faces an array of both persisting and new challenges in seeking to protect the environment, manage or mitigate the impacts of climate change, and protect the earth's biodiversity. Achieving progress in all these areas – such as properly managing forests, preserving fish species or preventing soil erosion – requires actions coordinated across sectors and among the various stakeholders.

IDA has a proven track record of effective engagement in global environmental issues.

The international community has turned to the World Bank for leadership in a number of areas, including climate change, biodiversity, sustainable forest protection and forests and management, and coastal and marine management, including fisheries.

Climate Change. Important milestones have been reached in the effort to broaden action on climate change over the past couple of years. The Strategic Framework on Development and Climate Change was adopted by the World Bank in October 2008. During fiscal year 2009, donor country pledges have been made to Climate Investment Funds and project implementation is expected to begin as early as the current fiscal year. Meanwhile, the World Bank's

Climate Change Portal provides climate-related data and serves as a launching point for adaptation tools (including the Climate Risk Screening Tool ADAPT) and other resources. These achievements are contributing to IDA's efforts to combine development and climate change action in an integrated country platform. As a result, IDA's recent lending and non-lending activities have been characterized by increased attention to climate-related risks and improved analytical work.

More information on IDA's climate change activities can be found in a brief on the subject at www.worldbank.org/ida.

Biodiversity. The World Bank has been a leader in strengthening the capacity of developing countries to benefit from biodiversity funding.

IDA's biodiversity investments help to improve the management of protected areas, build the capacity of communities to manage biodiversity resources, and work with governments to design and implement policies that support effective management on local, national, and regional levels. One such project, the Guinea-Bissau Coastal and Biodiversity Management Project has provided the investment to establish IBAP, a semi-autonomous Government agency responsible for management of the country's five national parks. The agency works with the communities to ensure that the forests are protected. Protection of this vast forest-rich area opens an opportunity for the generation of carbon credits in the international carbon market as a result of reduced emissions from deforestation and degradation. The resulting funds will help the country to position itself to fund IBAP and the management of the parks, rather than through financing from IDA and the Global Environment Facility.

Sustainable Land Management. The recent Millennium Ecosystem Assessment, with contributions from more than 1,300 authors from 95 countries, confirmed that land degradation and desertification is potentially the most threatening ecosystem change with impacts on the livelihoods of the poor. One of the leading financiers of measures to combat land degradation and desertification, IDA has invested some \$700 million in sustainable land management activities, including the TerrAfrica partnership in sub-Saharan Africa. One such example is the Sustainable Land Management Project in Ethiopia, where smallholder farmers are working to reduce agricultural land and to improve agricultural productivity through improved watershed management practices, rural land certification and administration, and access to financial and technical assistance.

Forest Protection and Management is another long-standing area of IDA engagement. PROFOR is a multi-donor partnership to provide improved information and knowledge on key forest issues such as livelihoods, governance, finance, and cooperation across sectors. Through the Forest Alliance, IDA combines forces with the World Wildlife Fund to create representative, well-managed protected forest areas, and responsibly-managed forests outside protected areas. IDA is also involved in the Forest Law Environment and Governance process. In partnership with governments, civil society, and the private sector, this process aims to create high-level political commitment to address illegal logging and other forest crime. Additionally, The Forest Carbon Partnership Facility supports climate change mitigation that reduces deforestation.

Coastal and Marine Management

Climate change threatens to push many of coastal and marine ecosystems over the edge, with severe consequences for all of society, and especially harsh consequences for the world's poor.

Properly valuing coastal and marine ecosystem services is critical to sustainable development, according to the World Bank publication *Environment Matters: Valuing Coastal and Marine Ecosystem Services*. This report argues that while we recognize the ocean provides vast quantities of food, it also plays a key role in regulating our global climate through its role in the earth's carbon cycle, and the global conveyor belt of ocean currents. The ocean is also home to the richest diversity of life forms on the planet. These and other essential services vital for life support and humankind have been treated as "free goods", and the ecosystems that provide them are rapidly deteriorating through overuse, pollution, and physical destruction.

Valuation of indirect ecosystem services pays particular attention to the regulating role of coastal and marine resources in providing habitats for marine ecosystems and in continuing to provide essential services in fisheries productivity, tourism amenities, coastal protection, and CO₂ uptake.

The annual contribution of ocean ecosystem goods and services to the global economy has been estimated to exceed \$20 trillion. Non-market values such as biodiversity and climate regulation are incalculable, and the spiritual worth of an intact seascape and the wonder of a coral reef are impossible to quantify.

Coastal and marine ecosystems play a complex and vital role in supporting economic prosperity and social welfare in developing countries. As we progress further into the 21st century, the importance of these coastal and marine resources is certain to increase.



Fisheries. The World Bank's Global Program on Sustainable Fisheries, "PROFISH" continues to meet the challenges of the growing crisis in the world's marine fisheries and the impacts of the crisis on poor people in coastal- and fisheries communities around the world. Recently, PROFISH produced two major publications geared at policy makers and managers in IDA countries: The first is the "Sunken Billions", which focuses on economic justifications for fisheries reform; the second is "Changing the Face of the Waters", which looks into the promises and challenges of sustainable aquaculture. Both reports are already being applied in the West Africa Regional Fisheries Project, which aims to ensure sustainable livelihoods, food security, and economic growth for nine IDA countries, from Mauritania to Ghana.

LOOKING AHEAD

The Bank, the International Finance Corporation and the Multilateral Investment Guarantee Agency are embarking on the preparation of a new World Bank Group Environment Strategy, expected to be completed by December 2010. This exercise reflects the World Bank Group's enduring commitment to ensure that its support to client countries leads to development results that are economically, socially, and environmentally sustainable.

The new strategy will articulate a set of principles and propose an approach for achieving environmental sustainability within the World Bank Group's portfolio. It will examine the experience and lessons learned from the creation within the World Bank of the Sustainable Development Network in facilitating the integration of environmental considerations in other sectors in which the World Bank works.

Through the strategy preparation process, the World Bank will seek to identify key areas in which it should engage to support its clients to more effectively address environmental priorities and move toward greater sustainability. In addition, the strategy will explore the Bank's potential role in supporting innovative financing approaches for supporting environmentally-sustainable development in client countries. In that regard, the Bank will work closely with development partners, such as the Global Environment Facility and multilateral and bilateral donors, with a view to strengthening collaboration.

Lessons learned.

In its work on environmental issues, IDA is increasingly reflecting the following lessons learnt:

- Investing in the environment is economically justified. IDA investments have demonstrated that improving management of crops, grasslands, and forests can provide higher incomes to poor people. Cleaner air, water, and reduced exposure to human waste and garbage improve the health and productivity of the working poor.
- Early and comprehensive analytical work helps target IDA support addressing economic and social problems of critical importance to the poor (e.g., investing in watershed management for food production and water supply). Country-level environmental analyses present an opportunity to work with governments to identify the main environmental challenges and to collaborate with other donors, who generally have similar interests.
- Operational quality at entry, supervision and completion can still be further enhanced.
- Increasingly, IDA should rely on domestic environmental safeguards that pass the test of equivalence and acceptability to IDA.
- The environment is an area with a multitude of actors. To ensure strategic objectives are met, it is important that IDA continues leveraging its resources through global programs.

Sustainable Woodfuel in Rural Senegal Addresses Energy Needs

Challenge

At the time of project preparation, forest-based traditional fuels (firewood and charcoal), mainly used for household cooking purposes, represented 53 percent of Senegal's final energy consumption. The bulk of the consumption of charcoal took place in the principal urban areas. Over the years, the operation of the charcoal industry in Senegal had resulted in (i) the gradual loss of forest cover (approximately 30,000 ha per year) degrading the ecosystem's carbon sequestration capacity and biodiversity; (ii) the degradation of the rural environment (particularly soils); (iii) the impoverishment of rural areas and an acceleration of rural exodus; and (iv) a massive transfer of wealth from the rural communities to a few city-based woodfuel traders. These negative impacts disproportionately affected rural women and children.

Approach

The project adopted a comprehensive approach, tackling both woodfuels' supply and demand, by

- Mapping forest resources, preparing participatory, sustainable forest management plans, and training communities on how to implement them, over 300,000 hectares of forests in the Tambacounda and Kolda regions, strengthening in the process the buffer zone around the Niokolo-Koba National Park.
- Establishing GIS-based forestry monitoring and evaluation systems.
- Promoting private sector inter-fuel substitution and the use of improved stoves.
- Strengthening the institutions involved in the management of the sector, and promoting the participation of civil society, with a special focus on women and mobilization opportunities at the village and regional levels. Villages were made contractually responsible for the forests in the project zone.

Results

Demonstrated that the production and marketing of traditional biomass fuels can be stabilized, while arresting deforestation, contributing to ecological conservation and increasing village incomes. More than 20 percent of Senegal's woodfuel consumption in 2004 was derived from sustainably managed forests.

Highlights:

- Sustainable community-managed forests were established over an area of 378,161 ha (exceeding project targets), supplying more than 370,000 tons per year of sustainable fuelwood.
- As an incentive for respecting sustainable forest plans, villagers benefited from rural development and training schemes. Community-based micro enterprises were established including beneficiary-operated improved carbonization units, apiculture cooperatives, collective and individual agricultural diversification units/systems; livestock and poultry-raising, arts and crafts units, etc. While woodfuel and large livestock activities were mostly led by men, all other activities were generally managed and operated directly by women.
- Established a sustainable incremental income generation base (wood and non-wood products) of about US\$12.5 million per year, equivalent to a \$40,000 average per participating village. Of that total, more than 30 percent resulted from women-led economic activities.
- More than 20 percent of Senegal's current energy supplies were derived effectively from renewable resources in the form of sustainable woodfuels in 2004. (That share has increased to 50 percent today with the introduction of sustainable green wood cutting in an eight-year rotation program).

- Inter-fuel substitutions (switching from charcoal to kerosene and LPG) and improved stoves directly benefited some 250,000 families in the principal urban and peri-urban areas of Senegal, reducing negative health effects associated with in-door pollution.
- Training and micro-credit schemes helped create an economically viable market for improved stoves.

IDA Contribution

- IDA contributed US\$5.2 million of US\$19.8 million project cost.
- Pioneered the use of GIS for the development of community-based participatory forest and natural resource management schemes.
- Introduced community-based rural development approaches that will be replicated in non-forested areas, where central economic activity will be agriculture, fisheries, or other.

Partners

From project preparation to supervision, the World Bank worked in close collaboration with the Dutch Co-operation agency (DGIS) which contributed US\$8.8 million. The Global Environment Facility also co-financed the project (US\$4.7 million).

Next Steps

- The establishment of a sustainable and diversified income base and the generation of a productive demand for energy have made the 317 project zone villages prime candidates for rural electrification and increased access to other modern energy services.
- A second transitional phase of this project is now under implementation, covering an additional 269,000 hectares.



The project demonstrated that the production and marketing of traditional biomass fuels can be stabilized, while arresting deforestation, contributing to ecological conservation and increasing village incomes.

Sri Lanka: Renewable Energy for Rural Progress

Challenge

Sri Lanka is a densely populated island nation, with about 20 million people whose per-person income is \$US 1,500, well above the South Asian average. However, the country is characterized by wide disparities in income and opportunities. The majority of rural communities have long had limited access to energy. Where it is available, it is relatively expensive.

Approach

The IDA-financed Renewable Energy for Rural Economic Development Project was launched in 2002 to increase access to rural energy supplies, thereby improving the quality of rural life in Sri Lanka. The project followed a two-track approach for improving energy access: first, expanding off-grid renewable energy technologies and providing energy services to remote communities; and second, promoting private participation in grid-based power generation.

Results

The project resulted in increased power-generation capacity, private-sector involvement, and rural energy access: more than 105,000 households have benefited from the off-grid electrification program; more than 4,700 households now have electricity provided to by village hydro and biomass projects; 826 additional rural small-scale and medium-scale enterprises (including public and religious institutions) in rural areas have been provided electricity.

As of March 2009, highlights include:

- **Renewable on-grid expanded.** 105 MW of grid-connected mini-hydro capacity is newly in operation, compared to a target of 135 MW by June 2011. The Sustainable Energy Authority issued permits for 40 upcoming mini-hydro projects (with a combined capacity of 102 MW).

- **Renewable off-grid increased. Under the off-grid** electrification component, 105,032 solar home systems were installed; 126 village hydro schemes achieved an additional 1.23 MW capacity, providing electricity to more than 4,700 households.
- **Credit expansion helped.** A credit line extended to commercial banks at subsidized rates with longer tenures reduced barriers to accessing finance for renewable energy development.
- **Private sector galvanized.** This project enhanced the capacity of private sector developers, some of which provided technical advice for renewable energy development in neighboring countries.
- **Rural business assisted.** 826 additional small-scale and medium-scale enterprises (including public and religious institutions) in rural areas were provided electricity (compared to a project target of 1,500 businesses by 2011), and
- **Household access expanded.** The project provided 109,737 additional households in rural areas with electricity (on track to achieve a project target of 160,000 households by 2011).

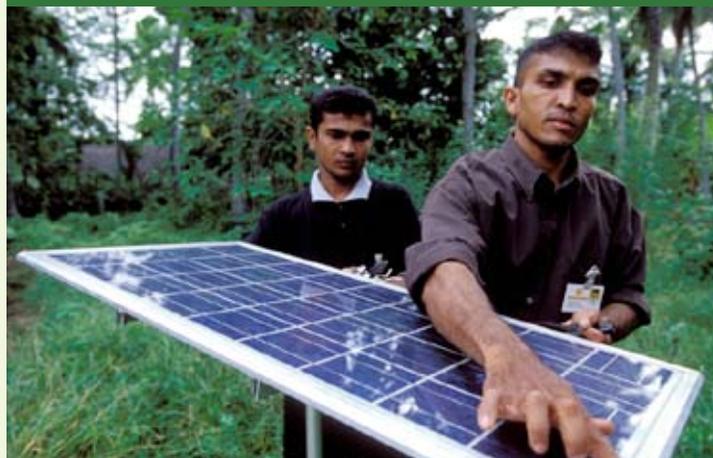
IDA Contribution

The Renewable Energy for Rural Economic Development was launched in 2004 with an IDA credit of US\$75 million, co-financed with a grant of US\$8 million from the Global Environment Facility. The financial intermediaries and developers contributed a total of US\$49.9 million, with the Government of Sri Lanka contributing US\$0.8 million. IDA provided an additional US\$40 million line of credit for RERED Additional Financing in 2008. US\$7 million from the IDA credit was subsequently reallocated to the IDA-Financed Tsunami Emergency Recovery Program. By providing an institutional framework and

implementation mechanisms, IDA has been the major driver behind the private sector in developing Sri Lanka's renewable energy industry. The framework for a standard power purchase agreement has been put in place with IDA assistance. This has facilitated the process of contracting power, and has reduced transaction costs even for small power developers. Delivery Project and RERED is well known and appreciated in Sri Lanka. The framework for a standard power purchase agreement has been put in place with IDA assistance. This has facilitated the process of contracting power, and has reduced transaction costs even for small power developers.

Next Steps

The project may soon provide support to the first commercial wind project. Recently, there has been some slowdown in implementation due to increase in cost of financing installation and construction of grid expansion and delays in the provision of subsidies. However, the Government and the World Bank Group are working on ramping up financing.



More than 4,700 households now have electricity provided to by village hydro and biomass projects; 826 additional rural small-scale and medium-scale enterprises (including public and religious institutions) in rural areas have been provided electricity.

Bosnia and Herzegovina: Solid Waste Management Project

Challenge

In 2000, solid waste collection services in Bosnia and Herzegovina (BiH) covered only about 60 percent of the larger municipalities and a much lower share in rural towns. Institutional and enforcement capacity was weak, and equipment for waste collection and disposal were obsolete and poorly maintained. As a result, significant amounts of waste were discarded in unofficial sites such as wild dumps, roadsides, rivers and mines, posing a direct risk to public health and causing serious environmental problems.

Approach

In 2002, the Solid Waste Management Project was launched to improve solid waste services in participating priority areas. Project objectives included increasing administrative and technical capacity for solid waste management at the local and entity level, improving cost recovery, encouraging private sector involvement, addressing environmental problems, and reducing health hazards caused by inadequate waste collection and disposal systems.

Results

With six regional landfills established by the end of the project, almost half of the country's population is benefiting.

Highlights:

- Nearly 50 percent of solid waste is now disposed in a sanitary landfill or in another environmentally sound manner.
- A total of 145 wild dumpsites were cleaned and closed, greatly reducing environmental and health hazards. This represents more than a 10 percent reduction of wild dumpsites; and by the end of the project, 15 percent will be closed.

- Sarajevo and Banja Luka have recycling arrangements with private recycling factories for paper, plastic, metal, and tires. The Sarajevo landfill is now a model for the rest of the country and the region.
- The collection rate in the project region has increased from 40 to 70 percent.
- Seven multi-municipal waste management districts were established through the cooperation of multiple municipalities. Implementation progress has been particularly impressive in Sarajevo, Banja Luka, Zenica, and Bijeljina

IDA Contribution

The Government has repeatedly asked IDA for continued support to the sector. Solid Waste Management remains a priority for the BH Government and the IDA's ongoing support has been agreed upon in the new Country Partnership Strategy (CPS) for FY08-11. This reflects the continuous support the Solid Waste Management Project receives from the BH Government and will allow IDA to meet the Governments demand to scale-up the operation and include additional regions into the project. In addition to its financial contributions of US\$26 million, IDA played a coordinating role in helping the Government of Bosnia and Herzegovina raise additional resources from other donors.

Partners

Due to limited available resources and huge needs for further investments in the sector, the Government and IDA have sought additional funding for the sector from numerous bilateral and donor agencies since 2002 and from the beginning of the project IDA has been coordinating closely with a number of donors in the sector. The solid waste strategy which is guiding investments in the sector was funded by the EU in 2000. Since then, many activities have been financed in parallel by other donors. Donors are very support-

ive of IDA's work in the sector and have provided substantial technical assistance. IDA has strong partnership arrangements in technical assistance in coordination with the European Union, JICA, SIDA and USAID. Technical assistance was provided by EU, SIDA, JICA and USAID. The EU financed a few technical assistance activities as well as cleaning up of one of the biggest wild dump site in the Republika Sprska (Knezevo). EU will also consider parallel financing parts of the Second Solid Waste Management Project and the future programming in this sector for the IPA funds will be closely coordinated with the PMU. It was agreed recently with the Ministry of Foreign Trade and Economic Relations (MoFTER), BiH that donor coordination in the Solid Waste sector will be formalized, and donor coordination meeting will be held few times a year chaired by the MoFTER Assistant Minister.

Next Steps

Although progress under the first solid waste management project was impressive, wild dumping remains a challenge in Bosnia and Herzegovina; numerous illegal dumpsites can still be found in many municipalities. These wild dumpsites contain various household, industrial, and hazardous clinical wastes and even animal carcasses. Clean-up and closure remains a high priority, but requires setting up functioning sanitary landfills that provide an alternative for disposal. In light of the significant environmental improvement in participating areas, the Solid Waste Management Project was expanded through additional financing. A new project is being prepared to support the construction of six new sanitary landfills by the end of 2013. Expected impacts of this second project include an improved disposal management system and enhanced coverage of formal waste management services, improved ground water quality at disposal sites, higher citizen satisfaction with waste management services, and an increased cost recovery rate of participating utilities.



With six regional landfills established by the end of the project, almost half of the country's population is benefiting.

Vietnam's Mangrove Forests Fight Erosion, Improve Livelihoods

Challenge

Population density and growth combined with illegal logging, wartime defoliation and over-exploitation of natural resources, have put severe pressure on Vietnam's natural environment. Forest coverage decreased from about 40% in 1965 to 25% in the mid-1990s. In particular, the rapid decline of Vietnam's mangrove forests has had a serious impact on the productivity of coastal fisheries and the rural economy of the Southern Mekong Delta. Mangrove forests act as breeding grounds for aquatic organisms, a cleansing system for sediments and nutrients in estuaries, and provide buffer zones against typhoons and floods. However, low environmental awareness coupled with limited resources and entrenched poverty prevented provincial authorities from adequately protecting coastal wetlands in the past.

Approach

- The project adopted a comprehensive, long-term approach to the protection of coastal wetlands in four Mekong provinces: Ca Mau, Bac Lieu, Soc Trang and Tra Vinh. In addition to planting trees to fight erosion, the project sought to tackle some of the causes of environmental degradation.
- The project established a full protection zone (FPZ) along the coast and relocated households out of the FPZ which is vulnerable to typhoons to a buffer zone protected by dikes. It tried to improve incomes in adjoining communities to reduce destructive practices through a combination of resettlement activities, extension services, vocational training, credit and social support.
- The project also introduced policy and contractual measures that give local communities incentives to protect the coast's growing mudflats and biodiversity.

Results

Pressure on coastal mangrove ecosystems has been reduced, erosion has declined and livelihoods have improved for coastal communities.

Highlights:

- 4,662 ha of mangrove planted in full protection zone; 983 ha in buffer zone. Combined with other forestry activities implemented by the government of Vietnam in the project area, more than 95% of barren areas in the full protected zones have now been reforested.
- In Ca Mau province, area of erosion decreased by 40% between 2000 and 2007; accretion area increased by 20%.
- 2.3 million scattered trees also planted.
- 1,452 poor households were relocated to new settlements, with schools, clinics, roads, electricity and new homes, improving their living standards and their social and economic opportunities two years after resettlement. The reported poverty rate among interviewed resettled households has gone from 22% prior to moving to 12% in 2007.
- Training, demonstration farm models and micro-credit helped bolster livelihoods and expand opportunities. Formerly landless households received well-built houses and secure tenure. 7,627 "red books" were issued to households in the buffer zones under the project. In Soc Trang province, all resettled households received productive land in addition to houses.
- Some investments (school rooms, musical instruments, etc) targeted poor Khmer minorities, enhancing their social and cultural lives.
- Biodiversity appears to be recovering from past disturbances with aquatic resources such as sea crabs and blood clams reappearing and increasing.

- Protection and maintenance contracts in place in all forested areas (34,395 ha under contract with smallholders supported by the project and around 100,000 ha with State-owned Forestry Enterprises supported by Government Program 661). Forest law violations along 470 km of shoreline considerably reduced from 1,757 violations in 2002 to 318 cases in 2006.
- Forestry staff gained experience in planting mangroves in challenging environments (outside protective dikes and off-shore), requiring advanced planting techniques and taller trees.

IDA Contribution

- \$31.8 mln IDA credit. Denmark's aid agency DANIDA provided a \$7.3 mln grant for technical assistance.
- The initial design of the project was overly complex - it relied too heavily on technical assistance and resulted in delays. With less than 10% of funds disbursed in the first three years (2000-2003), the project was restructured in 2004 to achieve its development goals in a changed context. DANIDA's technical assistance was reduced from \$11.3mln initially to \$7.3 mln. Training and poverty reduction activities were refocused to reach the poorest households and communes.
- After restructuring, the project was also more effectively decentralized. This contributed to project success and increased the capacity of provincial authorities.

IDA Contribution

- Local authorities are committed to continuing training and social activities for resettled households to help them beyond the project's closure.
- In areas where land accretion has occurred thanks to mangrove plantings, the next step is to consolidate land gains with new dykes and plant new lines of buffer trees to continue the process.
- Experience gained in planting trees in challenging environments should be especially valuable at a time when climate change puts coastal communities at greater risk of natural catastrophes.



Pressure on coastal mangrove ecosystems has been reduced, erosion has declined and livelihoods have improved for coastal communities.

Soil and Water Conservation in India's Karnataka Watershed

Challenge

Seven districts in Karnataka, India, were characterized as drought-prone and dominated by rain-fed agriculture around a narrow range of two to five crops. When the project began in 2001, average annual household income for the nearly two million people who lived in the area was approximately US\$222. Groundwater availability was between three and four months. Common lands were deteriorating through poor management. Watershed development was largely delivered through a top-down, non-participatory model, resulting in little social mobilization. Self-Help Groups were weak and unable to build financial capital. The project, which closed in March 2009, successfully demonstrated how an integrated watershed development model can address these challenges.

Approach

- The project's primary development objectives were to improve the productive potential of selected watersheds and their associated natural resource base, and strengthen community and institutional arrangements for natural resource management in selected districts in Karnataka, India.
- Project targets included addressing soil and water conservation needs within a geographical area of 432,000 ha by introducing new approaches for community-based participatory watershed planning.

- The project was implemented in three phases by the Watershed Development Department, along with other state, district and local non-government organizations working closely with participating communities.

Results

The core program of soil and water conservation works were completed on 270,000 ha of arable and non-arable lands, improving average crop yields and broadening crop diversity.

Highlights:

- From a sample of wells monitored, groundwater levels have increased by 15 meters, 18 meters and 27 meters respectively, across the three main agro-ecological zones. Groundwater availability has improved to four to six months, giving farmers greater choice of crops and in many cases, double cropping on arable lands.
- Crop yields have increased by 25 percent over the baseline, cropping patterns have shifted to higher valued crops, and milk yields have been enhanced by 15 percent.
- Average annual household income has increased by about 53% to approximately US\$340. The increase in average income has contributed to a reduction in migration by about 70 percent. Young men no longer had to leave the community to find work.
- The project achieved its target of establishing 4,300 farmer groups and 6,600 new Self-Help

Groups to implement participatory watershed management across 7,000 communities in 742 micro-watersheds. New participatory micro-watershed planning approaches resulted in highly integrated micro-watershed plans being prepared by communities, with greater local ownership and commitment.

- Self-Help Groups flourished with training and revolving funds through project support, and mobilized US\$5 million in savings to help establish small businesses. The majority of members are women. More than 60 percent of the self-help groups are linked to commercial financial institutions, leveraging additional credit for larger enterprise start-ups. Money-lenders are no longer a major force in these communities.
- The project resulted in a new government policy for co-management of common lands in watersheds. Many positive lessons were learned that will have long-term impacts on improved natural resource conservation and rural livelihoods. It has also helped strengthen decentralization.
- The project's monitoring and evaluation system showcased the application of cutting edge technology such as remote sensing, geographic information systems, and satellite communications to watershed planning, implementation and assessment.
- The project was the recipient of five prestigious national awards; National Productivity Awards 2007 and 2009; National Water Award 2007; Earth Care Award 2008; and National E-Governance Award 2009.



Soil and water conservation works have been completed on over 270,000 ha, improving average crop yields by about 25 percent and broadening crop diversity.

IDA Contribution

- Total project cost at time of approval was US\$127.6 million, with IDA providing a US\$100.5 million grant, the government providing US\$14.3 million, and beneficiary cash and in-kind contributions amounting to US\$12.8 million. After the tsunami of December 2004, US\$20 million in estimated savings from the original IDA grant were reallocated to finance an emergency recovery program in Tamil Nadu.
- IDA played a key role in helping the government design a project to test new participatory approaches for integrated watershed planning and implementation. More meaningful engagement with communities is based on extensive capacity building, social mobilization and group formation, and the use of thematic maps for participatory watershed planning. The new model also draws in non-governmental organizations as active partners.

Next Steps

- The project largely achieved all project development objectives. Through an integrated watershed and rural livelihoods approach, the project improved soil and water conservation, agricultural productivity, and income for farmers. For the landless and women, the project provided support for income generating activities that can be sustained into the future through pooled savings and access to commercial credit.
- The Government of Karnataka is replicating the model in several other districts through Government of India watershed schemes. A similar project proposal for the six remaining arid, rainfed districts in Karnataka is now under consideration for Bank financing, possibly as part of a larger programmatic approach in several states, based largely on the lessons learned from the Karnataka project.
- The central government National Rainfed Area Authority is adopting features of the project's innovative monitoring and evaluation system for all government watershed programs throughout India.



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