

ADB



DEVELOPING SOUTH ASIA

Lessons & INSIGHTS

SOUTH-SOUTH LEARNING SERIES



ADB

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**Lessons
& INSIGHTS**

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CONTENTS

3	Foreword <ul style="list-style-type: none">▪ <i>Message from the Director General, SARD</i>
4	Abbreviations
5	Introduction <ul style="list-style-type: none">▪ <i>What makes eight ADB-assisted loan projects in South Asia worth replicating</i>
7	Bangladesh <ul style="list-style-type: none">▪ <i>Reducing vulnerability to disasters</i>
19	Bhutan <ul style="list-style-type: none">▪ <i>Expanding growth through rural electrification</i>
31	India <ul style="list-style-type: none">▪ <i>Improving human conditions through various sectoral approaches</i>
34	<ul style="list-style-type: none">• <i>Addressing urban needs through the Rajasthan Urban Infrastructure Development Project</i>
41	<ul style="list-style-type: none">• <i>Strengthening roads sector management through the Madhya Pradesh State Roads Sector Development Program</i>
49	<ul style="list-style-type: none">• <i>Expanding energy supply through the Renewable Energy Development Project</i>
57	The Maldives <ul style="list-style-type: none">▪ <i>Bridging the digital divide</i>
71	Nepal <ul style="list-style-type: none">▪ <i>Investing in shallow tubewell irrigation</i>
85	Sri Lanka <ul style="list-style-type: none">▪ <i>Rebuilding lives after decades of conflict</i>
97	Publication Team/Credits

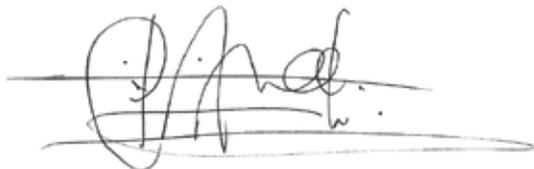


FOREWORD

ADB's operations in South Asia are delivering good results. In the spirit of South-South learning, this publication shares some of the lessons and practices used in eight ADB projects across our South Asian countries from 1996 to 2011. Our hope is that these success stories will help practitioners and policy makers in the region with the design, implementation, and even scaling up of similar development operations.

Our team has a keen interest in creating, capturing, and communicating operational knowledge to guide ongoing and future investments. Within the broader rubric of what has been described as the 'Finance ++' value proposition, we hope to make knowledge solutions part and parcel of our work. Publications such as this help us share information about what has worked on the ground, and what lessons can be shared more broadly. Through this, we hope to contribute to the development debate.

We hope you will find the document useful reading.

A handwritten signature in black ink, appearing to read 'J. Miranda', with a horizontal line underneath.

Juan Miranda
Director General
South Asia Department

ABBREVIATIONS

BME	benefit monitoring and evaluation
BEA	Bhutan Electricity Authority
BPC	Bhutan Power Corporation
CGISP	Community Groundwater Irrigation Sector Project
EIRR	economic internal rate of return
GEMS	Government e-Letter Management System
ICT	information and communications technology
IREDA	Indian Renewable Energy Development Agency Limited
MLD	million liters per day
MPRDC	Madhya Pradesh Road Development Corporation
NCIT	National Center for Information Technology
NECORD	North East Community Restoration and Development Project
O&M	operation and maintenance
PFIs	participating financial institutions
PIU	project implementation unit
PMU	project management unit
RES	renewable energy sources
STW	shallow tubewell
TA	technical assistance
WUAs	water user associations
WUGs	water user groups

INTRODUCTION

This photo-intensive publication, the first of South Asia Department's South-South learning series, aims to showcase lessons, replicable practices, and other insights which development practitioners can learn from, and apply in, the context of their respective countries.

Projects discussed here represent various sectors such as energy, urban development, transport, information and communications technology (ICT), irrigation, and disaster risk reduction.

An example of one such project, the Emergency Disaster Damage Rehabilitation (Sector) Project (2008-2011) in Bangladesh, proved beneficial not only in repairing damaged infrastructure with flood-resistant designs but also helped in restoring lost livelihoods and improved access to basic social services for 25 million people.

Valuable lessons can be learned from a project like the Rural Electrification and Network Expansion Project (2003-2006) in Bhutan which, in alignment with the country's "Vision 2020, Electricity for All" agenda, provided access to electricity to 15% more than the original target population.

Improving living conditions in complex urban communities requires holistic interventions. The Rajasthan Urban Infrastructure Development Project (1998-2009) in India proved successful in improving quality of life in six cities within Rajasthan through sanitation and water supply as well as infrastructure development.

Strengthening the capabilities of institutions towards more efficient management of state roads was a result of the Madhya Pradesh State Roads Sector Development Program (2002-2008) in India. It helped establish the Madhya Pradesh Road Development Corporation (MPRDC), which was later entrusted to develop and maintain all state highways.

The Renewable Energy Development Project (1996-2002) in India focused on strengthening the Indian Renewable Energy Development Agency (IREDA) as a financial intermediary. The project assisted the government to shift from funding technology-driven government installations and renewable energy sources (RES) to commercialization, through subsidy provisions and making the development of RES demand-driven.

The Information Technology Development Project (2001-2009) in the Maldives was successful in improving the efficiency, transparency, and accountability of the government by electronically linking government agencies and making information accessible to the public through internet kiosks.

The Community Groundwater Irrigation Sector Project (CGISP) (1998-2008) in Nepal was successful in improving productivity and income of farmers by providing year-round irrigation to select communities in the *Terai* (lowland plains) areas. The project irrigated 93% of the targeted 58,200 hectares of land and was able to do so at 40% of the estimated cost. Its impact was visible in terms of increased production, improved productivity and income of target groups, and socially-empowered poor households and women.

The North East Community Restoration and Development Project (NECORD) (2001-2009) in Sri Lanka restored normal life in what used to be conflict-affected areas in the North and East. A return to normalcy was indicated by increased activities in markets and the return of farmers and fishermen to their work.

The selection of the projects showcased in this publication was based on their implementation or completion within the last ten years, an overall rating of either *Highly Satisfactory* or *Satisfactory* in their project completion reports, representation of all developing member countries in South Asia, representation of major sectors of ADB operations in South Asia, and the achievement of exemplary and significant results vis-à-vis their respective project components as documented in the project completion reports.

As developing member countries seek greater economic growth opportunities and move towards becoming more inclusive, this knowledge product aims to be a useful reference for mainstreaming good practices that could be replicated across the countries of the region.

Bangladesh

**EMERGENCY
DISASTER
DAMAGE
REHABILITATION
(SECTOR)
PROJECT
(2008-2011)**

Bangladesh

REDUCING VULNERABILITY TO DISASTERS

Bangladesh's geographic conditions make it vulnerable to natural disasters such as cyclones, storms, floods, and droughts. It has experienced four major floods in 1988, 1998, 2004, and 2007. The United Nations Human Development Report in 2008 described Bangladesh as one of the countries most affected by climate change, making disaster management a compelling national agenda.

The erosion of riverbanks in Bangladesh is a regular occurrence that endangers its economy and the livelihoods of its citizens. Flash floods accelerate the erosion process and are highly damaging.

In 2007, severe floods occurred in two short periods over three months from July to September, killing 1,071 people in 46 of the country's 64 districts. Tubewells were contaminated and latrines were damaged. The absence of potable water and sanitation facilities triggered widespread outbreaks of diarrhea and other water-borne diseases.

The string of disasters damaged 8,891 kilometers of rural roads, including structures in 46 districts, municipal infrastructure in 83 *pourashavas* (municipalities) such as roads, bridges, culverts, irrigation, and sanitation systems. Also damaged were 1,420 kilometers of national, regional, and district roads, including 115 bridges and culverts. Water resource structures such as large and medium-scale flood control and irrigation schemes were also damaged, as were education and health facilities.

Before communities could fully recover from the killer floods, a cyclone accompanied by a tidal wave hit Bangladesh the same year, damaging houses, crops, livestock, and infrastructure. Cyclone Sidr was recorded as one of the top five worst windstorms in the world, even more severe than the 2005 Hurricane Katrina in New Orleans. While the total damage was not fully assessed, the death toll exceeded 3,300 people with approximately 55,000 injured as a result of the severe storm.





Bangladesh is crisscrossed by rivers that make travel by road impossible without bridges. Damage and destruction of bridges due to floods or other natural disasters disconnect road networks and bring negative consequences to livelihoods.

The Emergency Disaster Damage Rehabilitation Project was ADB's response to the need to manage future floods and other similar disasters, predictable or otherwise. The project aimed to restore normality to the livelihoods of affected communities by rehabilitating damaged infrastructure.





Riverbank protection structures provide a strong defense against erosion and flood, thereby increasing agricultural productivity and minimizing the impact of disasters. The inset photo shows the protection structure built for a disaster-damaged riverbank (main photo).

After project completion, reconstructed bridges restored Bangladesh's road network. It was once again possible for rural farmers to get their products to market, get supplies at a lesser cost, and access public services.





Guided by the new design standards prepared by the project for the Roads and Highways Department, the following tangible results were achieved:

- Rehabilitation of rural infrastructure in 23 districts, including 861 kilometers of rural roads and 4,997 meters of bridges and culverts, and the construction of 25 flood and cyclone shelters including livestock shelters with sanitary facilities.
- Repair of damaged urban infrastructure, including 628 kilometers of roads, 96 kilometers of drains, 945 meters of bridges and culverts, as well as footpaths located in 30 *pouroshavas* (municipalities).
- Repair of 733 kilometers of damaged national, regional, and district roads, and 14 bridges and 370 meters of culverts within the country's seven road zones —Barisal, Comilla, Dhaka, Khulna, Rajshahi, Rangpur, and Sylhet.
- Repair of flood control, drainage, and irrigation facilities, together with 337 kilometers of embankment breaches, and 75 flood control structures.
- Construction of 35 protective works and 29 kilometers of canals under 331 subprojects chosen by the Bangladesh Water Development Board in 47 districts.

The success of this project was best shown by its contribution to sustainable economic growth in communities through various activities that minimized the devastating impact of the 2007 floods and cyclone, and by further reducing any future risk from similar hazards. By repairing rural and urban infrastructure, and water resources through updated quality standards, the project not only made Bangladesh resilient to future similar disasters, as proven when the repaired structures survived the 2009 and 2010 floods, but also normalized the economic and social activities of the affected population across 51 districts. Farmers were able to transport their agricultural produce, such as perishable food, to markets on time and are expected to be able to do so, uninterrupted, for some time to come.

A district road in Gaibandha, northwestern Bangladesh. Reconstructed after the floods, it has helped restore economic activity to the area.

The project, through its quick-disbursement component, imported food and agricultural products that were urgently needed for emergency relief to mitigate the adverse impact of the cyclone on agriculture. It facilitated the quick recovery of crop losses and ensured food security for the flood-stricken population.

The distribution of food items through the vulnerable group feeding program generated employment opportunities for locals, with some 15 million person-days of work for local residents, more than 20% of which went to women.

Also credited for the success of the project was the way in which ADB worked with the steering committee of the executing agencies. This resulted in the expeditious resolution of implementation issues. It also helped that ADB's resident mission in the country was empowered with authority, enabling effective monitoring and immediate decision making. An opportunity for cofinancing materialized when ADB coordinated with other donor agencies to produce a joint strategic framework for work in the affected areas.

PROJECT BRIEF

PROJECT TITLE

- Emergency Disaster Damage Rehabilitation (Sector) Project

COUNTRY

- Bangladesh

PROJECT TYPE OR MODALITY OF ASSISTANCE

- Loan
- Technical Assistance
- Grant

APPROVAL DATE

- 31 January 2008

CLOSING DATE

- 20 April 2011

ADB FINANCING (\$ THOUSAND)

- 120,000

GEOGRAPHICAL LOCATION

- 51 districts affected by the 2007 floods and cyclone

SECTOR/SUBSECTOR

- Multisector

THEME

- Economic growth

PROJECT COMPONENTS

- Quick disbursement component
- Rural infrastructure
- Municipal infrastructure component
- Roads component
- Water resources component

RESULTS DELIVERED

- National highways and provincial, district, and rural roads built or upgraded (kilometers)—2,222
- Beneficiaries of road projects (number) —25,000,000
- Embankment, irrigation drainage, and protective works completed (kilometers)—400
- Water control structures rehabilitated (number)—75

SUCCESS INDICATORS

REPLICABLE PRACTICES AND LESSONS LEARNED

Overall Rating: *Highly Successful*

- The project rehabilitated the flood and cyclone-damaged infrastructure in Bangladesh which, in turn, restored communities' livelihoods. The improved design of the rehabilitated infrastructure contributed to the mitigation of damages from—and will reduce communities' vulnerability to—future natural disasters.
- Restoration of roads and bridges has provided isolated communities renewed access to markets and nearby health and education facilities, as evidenced by the considerable increase in passenger and freight traffic using the rehabilitated infrastructure.
- The repaired infrastructure benefited 25 million people through economic development in the project areas by generating increased incomes for men and women.
- Economic efficiency, as measured by the economic internal rate of return (EIRR), was assessed for two sample road sections. The results showed that the investment was highly efficient. The calculated EIRRs were 25.5% and 53.4% for the two selected *zilla* (district) roads. These EIRRs compared favorably with the 12% economic opportunity cost of capital.
- The rehabilitated, restored, and improved infrastructure consisted mainly of permanent structures like protective works, sluice gates, and embankments that demonstrated quality workmanship and proved their sustainability during the floods in 2009 and 2010. The structures were still in good condition and undamaged. They continued to be maintained by the project's executing agencies.

- Regular interaction between the borrower and ADB through the Project Steering Committee proved highly beneficial, especially in identifying eligible subprojects spread over a wide geographical area, and in reallocating loan funds from one component/sector to another based on a final needs assessment and performance.
- The adoption of simplified approval procedures for procurement and other project activities, including delegation of authority to the ADB resident mission, can lead to timely implementation of projects.
- Implementation experience suggests that emergency assistance projects generally require an adequate program for capacity building within executing agencies, including strong institutional support for contract administration. Familiarity with ADB procedures for procurement and disbursement helps ensure timely completion of contractual works, submission of withdrawal applications, and liquidation of imprest accounts. The Local Government Engineering Department and the Roads and Highways Department, two executing agencies of the project, proved to be well-equipped in administering procurement and disbursement.
- Harmonizing the project activities with other donor agencies helped improve a joint strategic framework for emergency response. ADB collaborated with the Japan Bank for International Cooperation, World Bank, and United Nations agencies in undertaking damage and needs assessment and identifying opportunities for cofinancing.

Bhutan

**RURAL
ELECTRIFICATION
AND NETWORK
EXPANSION
PROGRAM
(2003-2006)**

A man wearing a yellow hard hat and a blue long-sleeved shirt is working on a wooden electrical post. He is leaning over the post, holding a thick yellow rope. The background is a clear blue sky.

Bhutan

EXPANDING GROWTH THROUGH RURAL ELECTRIFICATION

In Bhutan's steep mountainous topography, numerous glacier-fed streams and rivers flow. These natural resources promise not just electricity to light up homes, but the power to help industrialize the kingdom that had for centuries existed in isolation. ADB came to Bhutan's assistance in 1995 to fund a rural electrification project for the first time and when only 20% of Bhutanese households had electricity.

A man fixes an electrical line atop an electrical post.

Energy projects accounted for one-third of all ADB assistance provided to Bhutan between 1995 to 2010. Among this assistance was the Sustainable Rural Electrification Project in 1999, which saw further growth through the Rural Electrification and Network Expansion Program in 2003.

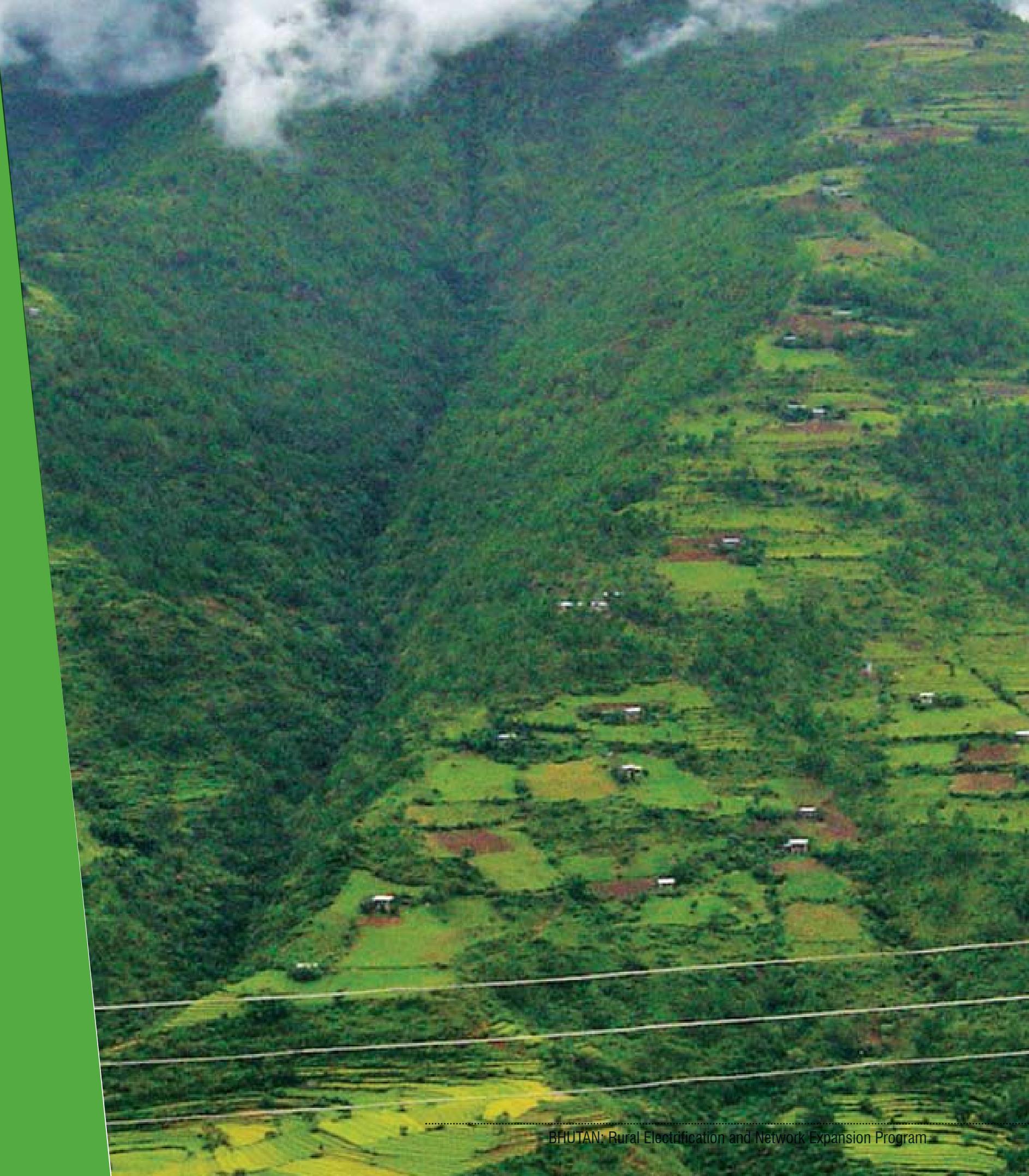
In the absence of navigable roads, electric poles, transformers, and other infrastructure items are carried by humans or animals across hills, valleys, rivers, and forests to their final destinations.





In the absence of machines that could hoist them, workers climb an electric pole in order to fix a broken electricity line.

When the expansion project was completed in January 2006, a total of 9,206 rural households in Bhutan's eight districts had been electrified, 15% more than originally targeted. This increase was due to the connection to new houses within the project areas that were constructed during project implementation. As noted by the Bhutan Power Corporation (BPC), rural electrification prompts new construction in project areas as residents would typically want to take advantage of the benefits made available by the project.





As Bhutan is a very mountainous country, pylons, towers, poles, and the lines connecting them must literally traverse mountains, and cross rivers and deep gorges in order to connect the population to the national grid.

The project included two technical assistance (TA) grants: one which supported the government in exploring the establishment of the Druk Hydro Power Corporation to operate the nation's power generation facilities and manage power trading with India; and the other which assisted the government to build the capacity of the Bhutan Electricity Authority (BEA), the technical and economic regulator for its power sector.

Determining actual electricity consumption in the project sites was hindered by the absence of a database that would identify beneficiaries and link them to the BPC's billing system. Such a database could have helped BPC track and assist consumers that were provided access to electricity under the project but who failed to connect to the power supply. Many of these intended beneficiaries were reluctant to avail of the project for fear of being identified as "poor and in need of charity".

The project impact has been far-reaching. The moment a Bhutanese village has electricity, a ripple effect occurs and the quality of life changes throughout the entire village. Residents start working longer hours and children have longer hours of illumination within which to study and use for other productive activities. Meanwhile, the use of firewood has either stopped or been reduced considerably as electrical appliances, like rice cookers and refrigerators, make their way into kitchens.



Even before being connected to the grid, residents in Sakteng, Trashigang District, are delighted to see cables reaching the gewog (village block), which signifies that illumination is coming very soon.

“Through ADB’s series of assistance, the Royal Government of Bhutan brought forward the goal of Electricity for All from 2020 to 2017, and further to 2013. Through availability of electricity, the health and hygiene standards of the people have improved; productivity in all parts of the country has been enhanced; our children are better educated; and our forests are conserved. Provision of electricity has also contributed to the slowing down of rural-urban migration”.

—Mr. Khandu Wangchuk, Minister of Economic Affairs

When the project was formulated in 2003, approximately 65% of the population lacked access to electricity. Today, more than 89% of all Bhutanese households are lit, including hundreds in the northern mountains. Beyond the confines of individual homes, electrification has led to a proliferation of micro-enterprises. It has increased income and improved the health of farmers, and with accessible electricity, dependency on firewood has decreased, leading to a reduction in diseases related to smoke inhalation.

ADB assistance was subsequently extended to two rural electrification projects, namely the Green Power Development Project and the Rural Renewable Energy Project. While Bhutan aims to achieve the ambitious target of 100% rural electrification by the end of 2013, ADB will have helped half of the country’s rural population gain access to electricity by then.

At the first session of Bhutan’s first parliament in May 2008, the Minister of Economic Affairs, Mr. Khandu Wangchuk, announced to the Parliament that by 2013, all households in Bhutan will be illuminated.



Community support is demonstrated in meetings where issues such as ownership, safeguards, and safety measures are discussed with the beneficiaries. This practice facilitates a sense of responsibility in stakeholders for the infrastructure and facilities.



BHUTAN: Rural Electrification and Network Expansion Program

PROJECT BRIEF

PROJECT TITLE

- Rural Electrification and Network Expansion Project

COUNTRY

- Bhutan

PROJECT TYPE OR MODALITY OF ASSISTANCE

- Loan
- TA Grants

APPROVAL DATE

- 30 September 2003

CLOSING DATE

- 19 December 2006

ADB FINANCING (\$ THOUSAND)

- 9,400

GEOGRAPHICAL LOCATION

- Districts of Chhukha, Lhuentse, Mongar, Pemagatshel, Punakha, Samtse, Sarpang, and Trashigang

SECTOR/SUBSECTOR

- Energy/Electricity Transmission and Distribution

THEME/S

- Economic growth
- Environmental sustainability

PROJECT COMPONENT

- Extension of electricity distribution system
- Capacity building for BEA
- Establishment of the Druk Hydropower Corporation (as the corporate holding company of hydropower stations)

RESULTS DELIVERED

- Households connected to electricity (number)—8,857
- Institutions connected to electricity including monasteries, offices, shops, industries, schools and basic health units (number)—349
- Electrification kits distributed to vulnerable households (number)—236
- Druk Hydropower Corporation was renamed and established as Druk Green Power Corporation
- BEA, a functionally separate department of the Department of Energy, set a new tariff structure implemented in July 2007

SUCCESS INDICATORS

Overall Rating: *Highly Successful*

- ADB's country strategy for Bhutan focuses on rural electrification as a primary means of fostering pro-poor growth. Not only was the project highly relevant to ADB's operational strategy, it was also tailored for the country's "Vision 2020, Electricity for All" development objective.
- The project exceeded the target expectations by providing access to electricity to 9,206 new rural consumers (15% more than the project target) in all the project villages. The cost per connection was \$1,447 (11% below the proposed estimate).
- Evaluation of the project gave an EIRR of 24.4%, significantly higher than the 12.7% calculated at appraisal.
- While it relied on cross-subsidies from the power export revenues, the project remains likely sustainable. The power sector in Bhutan is inherently profitable given the revenues received from the sale of electricity to India, and partly because it is government policy to ensure that such benefits are diverted to the BPC to ensure the sustainability of its rural electrification program.

REPLICABLE PRACTICES AND LESSONS LEARNED

- Synchronizing rural electrification work with other projects, such as the construction of roads, can help reduce project costs. If roads are constructed in places where rural electrification is about to occur, the costs and time needed to carry out the latter will be reduced.
- In the past, obtaining clearances from the National Environment Commission was done on a piece-meal basis which consequently delayed project implementation. Now it is a block-based accelerated procedure with the districts themselves mandated to facilitate issuance of the clearances.
- The conduct of quarterly review meetings with the contractors on progress and other issues, the appointment of a project supervisor in subprojects, the establishment of regional offices with adequate human resources, the creation of the Rural Electrification Department within the BPC, the timely payment by BPC to the contractors, and building public awareness to correct public perceptions were all instrumental in the success of the project.
- To ensure the right balance between development and conservation, rural electrification and connectivity in protected areas require special plans and activities that blend with conservation policies. This formula can perhaps be adhered to in other countries for, in the long run, no development is possible if the state of the natural environment is heavily compromised.
- Engagement of locals in project implementation can foster a sense of community involvement, ownership, and accountability.
- In hindsight, a database of beneficiaries should have been provided as a component of the program. It should have listed all households who benefited from the project, monitored their consumption, and allowed the BPC to help in installing electrical wires before the electricity was supplied.

India

**PROJECTS ON
URBAN INFRASTRUCTURE
(1998-2009),
ROADS SECTOR
(2002-2008),
AND RENEWABLE ENERGY
(1996-2002)**

India

IMPROVING HUMAN CONDITIONS THROUGH VARIOUS SECTORAL PROJECTS

ADB's earlier assistance for India focused on national programs executed by central public entities. Later on, this strategy shifted to state-level operations particularly in the transport, power, and urban sectors. Three projects taken from these sectors demonstrate how growth will not be truly inclusive unless the basic infrastructure services of clean water, reliable power, and dependable roads are provided to the underdeveloped regions of India.

ADDRESSING URBAN NEEDS THROUGH THE RAJASTHAN URBAN INFRASTRUCTURE DEVELOPMENT PROJECT

The Rajasthan Urban Infrastructure Development Project was intended to improve living conditions and the investment climate in the largest cities in the state of Rajasthan by meeting basic needs for safe water, improving environmental health conditions, and fostering sustainable social and economic development. It covered the cities of Ajmer, Bikaner, Jaipur, Jodhpur, Kota, and Udaipur which are the main centers of economic activity in Rajasthan.

The project upgraded critical sections of roads and bridges, and improved traffic management in Rajasthan.





This road provides much needed connectivity between Udaipur and Ajmer. It also links Ajmer to Jaipur.

The project provided seven million residents of Rajasthan with improved water supply, and its wastewater management component achieved a coverage of 3.5 million people in the state. Improved services in the six project cities increased per capita water availability to 120 liters per capita per day in Udaipur and to 150 liters per capita per day in Kota, according to a 2009 benefit monitoring and evaluation (BME) survey. Additionally, less time needs to be spent on water collection now as water has been made available at the doorstep.



Women from low-income households are treated for free at this project-assisted hospital, which provides antenatal and postnatal care, and counselling on pregnancy, contraception, and HIV/AIDS.

Blocked drainage was a problem in the rainy seasons for the people of Vaishali Nagar in Ajmer. The construction of enhanced drainage improved hygiene and sanitation conditions.



Based on the same BME survey, the following results were documented:

- No water-borne diseases were reported by sample households in Bikaner, Jodhpur, Jaipur, or Udaipur; and a significant reduction in water- and vector-borne diseases was reported in other cities.
- A survey of 1,418 households revealed that hygienic disposal of wastewater increased significantly in Bikaner, Jaipur, and Jodhpur. Mosquito populations were reduced, as was damage to roads.
- Fewer blockages and an increase in the flow of water through proper drainage channels, with less overflow, were reported.
- Commuter traffic increased and delays were reduced on the improved roads.
- The percentage of project beneficiary households with access to basic services rose.
- The number of admissions and outpatients due to improved access reportedly increased by an average of 21% and overall hospital facilities improved.

This sewage treatment plant collects part of the city's sewage and treats it in order to generate electricity. It helps dispose part of Jaipur's sewage while maintaining a clean and healthier environment.

This project produced two major successes in meeting physical targets: (i) it achieved source augmentation of 184 million liters per day (mld) for water supply, against an appraisal target of 163 mld for four project cities (Jodhpur, Kota, Bikaner, and Udaipur); and (ii) it reduced dependence on ground water to 57 mld, compared with an initial target of 108 mld, largely due to the 400 mld Bisalpur water supply scheme which was based on surface water.



A pump house at Jaipur, the capital of Rajasthan, helps bring potable water to its urban population, and reduces the incidence of water-borne diseases.





INDIA: Rajasthan Urban Infrastructure Development Project

PROJECT BRIEF

PROJECT TITLE

- Rajasthan Urban Infrastructure Development Project

COUNTRY

- India

PROJECT TYPE OR MODALITY OF ASSISTANCE

- Loan

APPROVAL DATE

- 03 December 1998

CLOSING DATE

- 11 June 2009

ADB FINANCING (\$ THOUSAND)

- 250,000

GEOGRAPHICAL LOCATION

- State of Rajasthan

SECTOR/SUBSECTOR

- Water supply and other infrastructure services/Urban development

THEME

- Economic growth

PROJECT COMPONENTS

- Community awareness and participation program
- Water supply rehabilitation and expansion
- Environmental improvements
- Urban transport and management
- Implementation assistance and capacity building
- Bisalpur water supply system

RESULTS DELIVERED

- Water supply pipes installed or upgraded (length of network in kilometers)—1,763
- Population served with water supply (number)—7,000,000
- Sewer lines installed (kilometers)—1,171
- Wastewater treatment capacity created (mld) — 170
- Population with access to sanitation facilities (number)—3,500,000
- Provincial/State highways and roads built or upgraded (kilometers)—96
- Beneficiaries from road projects (number)—3,000,000

SUCCESS INDICATORS

REPLICABLE PRACTICES AND LESSONS LEARNED

Overall Rating: *Successful*

- The project contributed significantly to achieving the Millennium Development Goals in the project cities, particularly those related to water supply and sanitation. The success of the water supply rehabilitation and expansion, and urban transport and management components of the project was due to the quality of service delivery and innovative designs. The BME survey in 2009 showed that a majority of the respondents reported that these improved services had resulted in a better quality of life.
- The improvement in hospital services resulted in significant benefits for the population. Slum improvement, better drainage, and heritage protection have also had a positive effect on the quality of life.
- The BME survey showed that beneficiary satisfaction with water supply was high in all six project cities. Feedback regarding quantity, pressure, and duration of water supply was also positive.
- The community awareness and participation program succeeded in generating awareness and fostering demand for the project from the public since the initial stages of its implementation.
- The project led to significant improvement in the capabilities of the project management unit (PMU) and the project implementation unit (PIU) personnel as well as the consultants and contractors.
- Reassessment of economic returns of all completed projects resulted in EIRRs ranging from 12.4 to 32.2—all higher than the 12% base economic opportunity cost of capital estimated during the feasibility study.

- Establishing RUIDP as a special purpose vehicle meant putting in place a single window clearance system for procurement. This made infrastructure procurement more efficient.
- Advance action on the recruitment of project consultants helped avoid delays.
- Acting in advance to begin designs, package bids, and obtain all statutory clearances also helped avoid delays.
- Information, education, and communication efforts aimed at changing the behavior of urban residents were necessary to achieve desired project results.
- Involving specialist agencies for specific components—in this case, the Indian National Trust for Art and Cultural Heritage for the project's heritage component, for example—led to positive outcomes.
- The project showed that a good project performance monitoring system is essential to avoid ad hoc or delayed decisions. Weekly contractor review meetings, a practice introduced by the Urban Development Department, helped get past implementation hurdles in a timely manner.
- Small investments can have large impacts and make a big difference in people's lives. Examples from this project include the hospitals in the project cities and the diversion channel for rainwater in Kota.
- Including house service connections and door-to-door solid waste collection in the project ensured that the assets created would be used effectively.

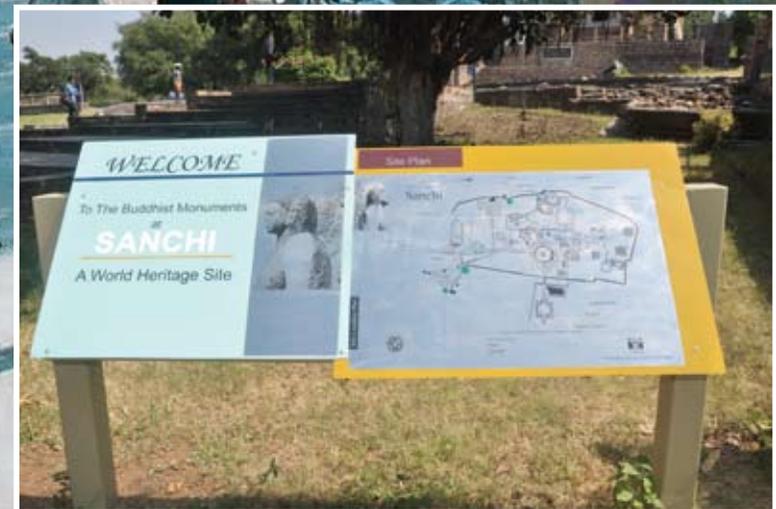
- Providing for price variation in the contracts reduced project risks; and it is also a fair practice.
- Achieving critical mass in the staffing of the PMU and PIUs for the duration of the project was an important factor in achieving smooth project implementation.
- Providing awards and incentives to contractors for quality and timely delivery, as done by the Urban Development Department, helped foster a spirit of competition and better performance.
- Timely induction of counterpart staff and building their capacity was critical to a successful handover of assets to urban local bodies and line agencies.
- Initiating awareness-building activities early on—and continuing them beyond the end of the project—enhanced the project’s effectiveness and sustainability.

STRENGTHENING ROAD SECTORS MANAGEMENT THROUGH THE MADHYA PRADESH STATE ROADS SECTOR DEVELOPMENT PROGRAM

The program enabled the Madhya Pradesh government to put in place a more effective and efficient state road sector management system that ensured reliable road transport for the state’s population. It rehabilitated the significantly deteriorated and damaged state road corridors, and improved management capabilities of the state’s Public Works Department.



This newly-renovated road facilitates tourists' access to the World Heritage site in Sanchi that hosts some of the age-old Buddhist structures like those in the inset photos below.



This program was instrumental in reducing traffic congestion, travel time, and travel costs while enhancing road safety. A traffic survey conducted after the opening of the project roads indicated average vehicle speed on the rehabilitated roads of about 40–60 kilometers per hour, which was more than double the average speed before rehabilitation. Supplemented with rural road development, an integrated road network attracted substantial local transport service development and brought socioeconomic benefits to local residents, especially the poor.

Given that Madhya Pradesh has one of the largest land areas, and is also one of the most populated and poor states in India, roads are the predominant mode of transport services in the state. The program substantially benefited other sectors, including agriculture, mining, tourism, education, and health care.

ADB, the Government of India, and the MPRDC benchmarked and shared the program implementation experiences with other states, particularly on the creation of the MPRDC. These institutions helped redesign business processes, procurement procedures, and engineering quality controls. In addition, officials and engineers from other states have visited the MPRDC and the program roads to learn from the experiences in road project management.

A portion of the road project near the Madhya Pradesh capital of Bhopal.



With the assistance of the program, the MPRDC was established and notified as the State Highway Authority with the responsibility of developing and maintaining all the highways in the state. The MPRDC developed modern and efficient business processes for road sector management and improved its road maintenance systems.

The program also assisted the Public Works Department in implementing labor rationalization and in organizing extensive training and capacity building programs in order to help the department adopt new business processes and modern road management systems.



*Rehabilitated roads
make travel by any
mode much easier
across the state.*





The Government of Madhya Pradesh and the MPRDC initiated several measures and initiatives that went beyond the originally anticipated program provisions, including (i) entrusting more responsibility to the MPRDC (involving 10,248 kilometers of state highway, as compared to 8,333 kilometers during project design); (ii) assigning road safety aspects a high priority with a vision of moving from better roads to safer roads; (iii) recruiting consultants and procuring works for all state-supported road projects based entirely on ADB guidelines and procedures; and (iv) regularly sending MPRDC staff for training on capacity development in various fields.

MPRDC implemented several road development projects including an upgrade of 35 bus stands, and the modernization of 24 check posts for vehicle overloading controls.

PROJECT BRIEF

PROJECT TITLE

- Madhya Pradesh State Roads Sector Development Program

COUNTRY

- India

PROJECT TYPE OR MODALITY OF ASSISTANCE

- Program Loan/Project Loan
- Technical Assistance

APPROVAL DATE

- 5 December 2002

CLOSING DATE

- Program Loan 1958: 29 March 2006
- Project Loan 1959: 10 December 2008

ADB FINANCING (\$ THOUSAND)

- Program Loan: 30,000
- Project Loan: 150,000

GEOGRAPHICAL LOCATION

- State of Madhya Pradesh

SECTOR/SUBSECTOR

- Transport and ICT/ Road Transport

THEME/S

- Economic growth
- Governance

PROJECT COMPONENT

- Design and rehabilitation of state highways
- Design and rehabilitation of rural connector roads in important state road corridors

RESULTS DELIVERED

- State roads and connector roads rehabilitated—1,603
- Vehicle travel time on project roads reduced by 30% to 50%
- Road database for planning, management of information, and decision-making created
- Road maintenance manual prepared and updated in line with international standards

SUCCESS INDICATORS

REPLICABLE PRACTICES AND LESSONS LEARNED

Overall Rating: *Highly Successful*

- This sector development project assisted in the establishment of the MPRDC, implemented labor rationalization measures, built institutional capacities, and rehabilitated 1,603 kilometers of state roads in 24 corridors. In the program areas, these interventions resulted in rapid socioeconomic development, improved state road development and road maintenance system, increased traffic on the program roads, and positive social impacts, particularly for the poor.
- Implementation of institutional reforms under the program significantly improved the effectiveness and efficiency of the state road sector management systems. The MPRDC was recognized as the State Highway Authority and entrusted with the responsibility for developing and maintaining all the highways. The MPRDC also developed modern and efficient business processes for road sector management and improved its road maintenance systems.
- Effective and efficient engagement of personnel within the Public Works Department for road maintenance was a major success indicator under the program. A TA project, in conjunction with the program, assisted the Department to implement labor rationalization measures and organize extensive training and capacity-building programs to adopt new business processes and modern road management systems.
- Road rehabilitation resulted in the reduction of traffic congestion, travel times, and travel costs while enhancing road safety, as with average vehicle speed having doubled to 40-60 kilometers per hour.
- The reevaluated EIRR for the overall project was 28.1% compared with 25% at appraisal, much higher than the ADB recommended discount rate of 12% which meant that the project was economically viable.

- As the first road sector investment in Madhya Pradesh by ADB or any other multilateral agency, the state agencies had a rather steep learning curve to overcome regarding procedures and contract documentation. This affected the schedules for project preparation and procurement. Upon the creation of the MPRDC, the delegation of implementation responsibilities, deployment of dedicated senior managerial and technical staff, and capacity building support from the TA, program performance greatly improved.
- During program implementation, timely completion of preconstruction activities in the field, close coordination with other government agencies, and timely mobilization of all the contractors were necessary for implementing the program successfully. With good coordination among all the agencies, strong support from the state government, and regular reviews, the MPRDC was able to expeditiously resolve all program implementation issues.
- The provisions in the bid documents needed to be rigorously enforced to ensure that the contractors provided adequate resources in a timely manner.
- It was important for a progressive program-based organization to ensure that the training needs of the staff were assessed regularly and measures for capacity building were taken from time to time. MPRDC incorporated these lessons appropriately into subsequent ADB-funded and other projects.

EXPANDING ENERGY SUPPLY THROUGH THE RENEWABLE ENERGY DEVELOPMENT PROJECT

Power shortages and poor supply quality are among the most serious infrastructure constraints to India's sustainable economic growth and continued foreign investments. To address these constraints, extensive investments in power projects are required. Because of the competing demands from other sectors of the economy on limited resources, India had been unable to undertake such large-scale investments, and shortages continued to persist.

Cogeneration of electricity and heat involving sugar mills, like the one shown in the photo here, is on the rise in India with support from the government.



The project was a 25-year loan of \$100 million to IREDA, a specialized government financial institution that promotes, develops, and finances new and renewable sources of energy technologies. While IREDA had access to equity support—besides tax-free bonds—from the government, such support and allocations for issuing tax-free bonds were reduced due to the agency evolving into a self-sustaining institution and to the government’s conscious policy of reducing budgetary allocations to publicly-owned financial institutions. Consequently, IREDA’s reliance on external funds, and local currency borrowing from commercial banks, steadily increased.

ADB's strategy in India involves supporting major policy reforms undertaken in the power sector, including encouraging an increased private sector role. Additionally, ADB's policy regarding assistance to the Indian energy sector has focused on resource conservation, environmental improvement, and institutional development. Its lending strategy continues to support investments through efficient public utilities and the private sector.

The project's primary rationale of expanding energy supply through private sector investments in RES fits well with ADB's overall power sector strategy. The project objectives were to: (i) promote commercialization of RES technologies by strengthening IREDA's capacity to promote and finance entrepreneurial investments in alternate energy; (ii) encourage private sector investments in small-scale power generation using RES technologies; (iii) expand marketing and financing mechanisms for the sale and delivery of alternate energy systems, based on full cost-recovery principles; and (iv) promote environmentally sound investments, by preventing depletion of India's limited forest resources and reducing the energy sector's dependence on fossil fuels.

Improved farming systems generate more biomass for energy purposes.



The project supported power generation capacity of 318 megawatts through RES technologies. In addition to positively impacting the social and economic environments of project locations, it supported direct and indirect employment generation for 1,179 people and increased access to, and quality of, electricity for local residents, industries, and farmers (the latter benefiting from irrigation through use of pump sets). The subprojects dispersed in various locations provided power supply in their respective locations.

The state of Karnataka is proactive about leveraging renewable energy options. Accordingly, solar power is one of the state's priority agenda items in order to meet future energy needs.



Engineers inspect a machine at a power plant.

The project reduced the adverse environmental impact normally associated with power generation using fossil fuels. The direct beneficial impact due to reduced greenhouse gases was estimated at an annual reduction of six million kilograms of sulfur dioxide and 705 million kilograms of carbon dioxide emissions. Disposal problems associated with 194 million kilograms of fly ash and slag per year were estimated to have been mitigated. The cogeneration subprojects put in place facilities for environmental safeguards, installed pollution control equipment at respective sites, and did not report any negative impacts on the surrounding environment. Wind farms were located on barren land, and in remote areas away from habitation, thereby preventing adverse environmental (such as noise pollution and flora and fauna damage) or social impacts.

IREDA, with its mandate to implement the country's policies and programs in the RES sector, was the appropriate executing agency. Project design was based on project preparatory TA findings on credit demand from RES projects. To accord sufficient flexibility based on changes in market conditions, the design appropriately provided for change in fund allocations.

A biomass power plant in Karnataka encourages private sector involvement in establishing sustainable biomass-based energy generation.





PROJECT BRIEF

PROJECT TITLE

- Renewable Energy Development Project

COUNTRY

- India

PROJECT TYPE OR MODALITY OF ASSISTANCE

- Loan

APPROVAL DATE

- 26 September 1996

CLOSING DATE

- 25 October 2002

ADB FINANCING (\$ THOUSAND)

- 100,000

GEOGRAPHICAL LOCATION

- States of Maharashtra, Karnataka, Madhya Pradesh, Tamil Nadu, Andhra Pradesh, Gujarat, and West Bengal

SECTOR/SUBSECTOR

- Energy/Renewable Energy

THEME

- Economic Growth

PROJECT COMPONENTS

- RES technology financing for bagasse-based cogeneration for power, wind energy development, and solar thermal system

RESULTS DELIVERED

- Cogeneration subprojects funded (number)—14
- Wind energy subprojects funded (number)—15
- Solar thermal subprojects funded (number)—22
- Installed energy capacity (megawatt)—318
- Jobs directly/indirectly generated (number)—1,179
- Annual reduction of greenhouse gases
 - 6 million kilograms sulfur dioxide emissions
 - 705 million kilograms carbon dioxide emissions

SUCCESS INDICATORS

REPLICABLE PRACTICES AND LESSONS LEARNED

Overall Rating: *Successful*

- The project was anchored on the shared importance that ADB and the Government of India placed on increased public power supply, through RES and increased private sector participation.
- The project assisted in the energy sector's growth, in general, and the enhancement of IREDA as a lending institution, in particular. It succeeded in introducing global best practices within IREDA while strengthening its organizational and institutional capacities.
- The project assisted in the quick installation of low gestation subprojects (6–9 months in the case of wind energy projects and 18–24 months for cogeneration projects).
- Evaluation of subproject social and economic benefits revealed satisfactory results, with employment generation for 1,179 people; and economic development of those remote areas where subprojects were located.
- The project-assisted suppliers, developers, and operators of wind projects in the construction, operation, and maintenance of wind energy projects that had technically matured. The project assisted the government's shift in policy from funding technology-driven government installations and RES development programs to commercialization through subsidy provisions and making RES development more demand-driven. Increased participation in RES by other lenders reduced IREDA's share in financing renewable energy technology projects, equaling 30% of the total in 2003.
- IREDA grew from being a development arm of the government for the promotion of renewable energy technology projects to a fairly large financial intermediary, with an average growth rate of 35% during the period FY1995–FY2003.

- IREDA was successful in delivering the government's agenda of promoting renewable energy technology. Its operation would have been negatively affected if the government had not separated its multiple roles (owner of a financial intermediary, a policy maker, and a regulator). The introduction of the Electricity Act 2003 set the stage for investments in the power sector, which enabled IREDA to efficiently deliver outputs.
- Renewable energy technology policy should be integrated into the overall power policy, and incentives need to be harmonized across states.
- Exploitation of the large potential of RES within the time frame proposed by the government requires reforms in incentives policy and effective incentives delivery.
- Implementation experience has confirmed the need for —and advisability of —building in flexibility to introduce necessary change in scope. When dealing with a new executing agency, implementation efficiency can be improved only if more time is devoted during project processing to sensitizing the agency to ADB's procedures and requirements.

The Maldives

INFORMATION
TECHNOLOGY
DEVELOPMENT
PROJECT
(2001-2009)

The Maldives

BRIDGING THE DIGITAL DIVIDE

An archipelago of 1,190 coral islands, the Maldives stretches over 820 kilometers in the Indian Ocean. A total of 194 islands are inhabited and another 100 are tourist resorts. The population is scattered throughout the country, the hub being the capital, Malé, with more than 100,000 residents. Out of the 194 inhabited islands, only 16 are populated with more than 2,000 people with 72 of them having less than 500 residents. Geographical remoteness and a dispersed low population mean people have limited connectivity and access to basic services, hindering poverty alleviation and effective governance.

The internet was first introduced in 1996 in the Maldives but the digital divide between the capital Malé and the other islands was reflective of the unequal growth and development disparities the country was experiencing.



Owing to the potential of ICT to promote better governance and equitable development, ADB approved the Information Technology Development Project for the Maldives in 2001 with focus on the following five areas: (i) establishing an e-governance network connecting all 20 administrative atolls; (ii) automating public services; (iii) establishing the National Computer Centre (later known as the National Centre for Information Technology, NCIT) to set ICT standards and develop the sector; (iv) establishing internet kiosks; and (v) implementing telecommunication sector reforms through better regulation.

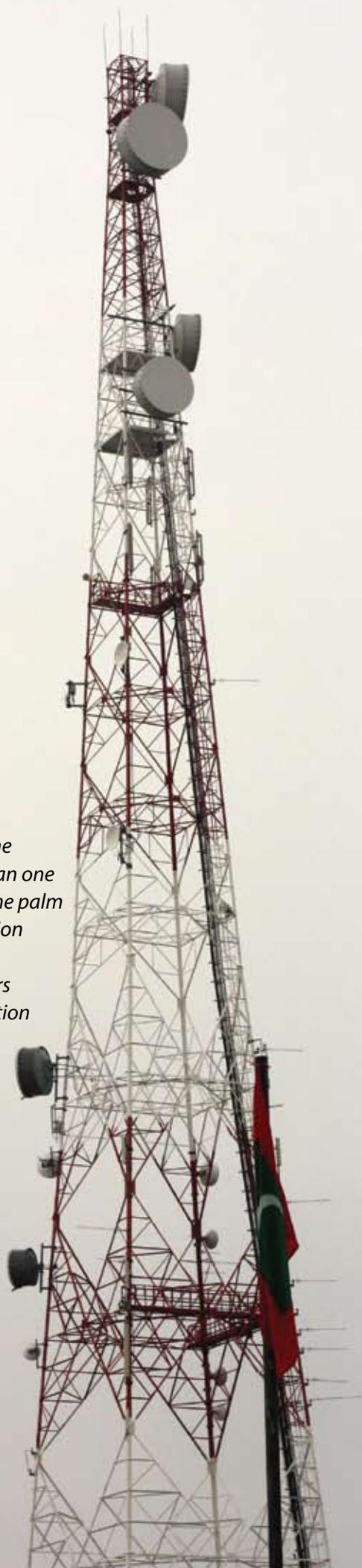
Limited means of transportation in bringing government services to the islands, mostly through motorized boats, can hinder Maldivians' access to education and health care, and an improved quality of life.



The Maldives is in a better position today in terms of ICT development compared to most countries in the South Asia region. Telecommunications coverage has been achieved for the entire country. The United Nations e-Government Survey, which evaluates the application of ICT by governments, found that in 2008, Maldives led the region in terms of the application of ICT. Internet subscriptions per 100 people increased from 0.5 in 2002 to 11.8 in 2010 while mobile subscriptions increased drastically from 14.9 per 100 people in 2002 to 154.6 in 2010. Service availability has expanded with 3G and broadband penetration across the country.

A young islander browses the Internet using his 3G-enabled mobile phone—a technology that has transformed people’s lives on the remote islands. With mobile phones and the Internet, many young entrepreneurs have set up online businesses otherwise unimaginable a decade ago.

Every inhabited island in the Maldives now has more than one antenna towering above the palm trees. The telecommunication network has seen rapid development in recent years with almost 100% penetration nationwide.



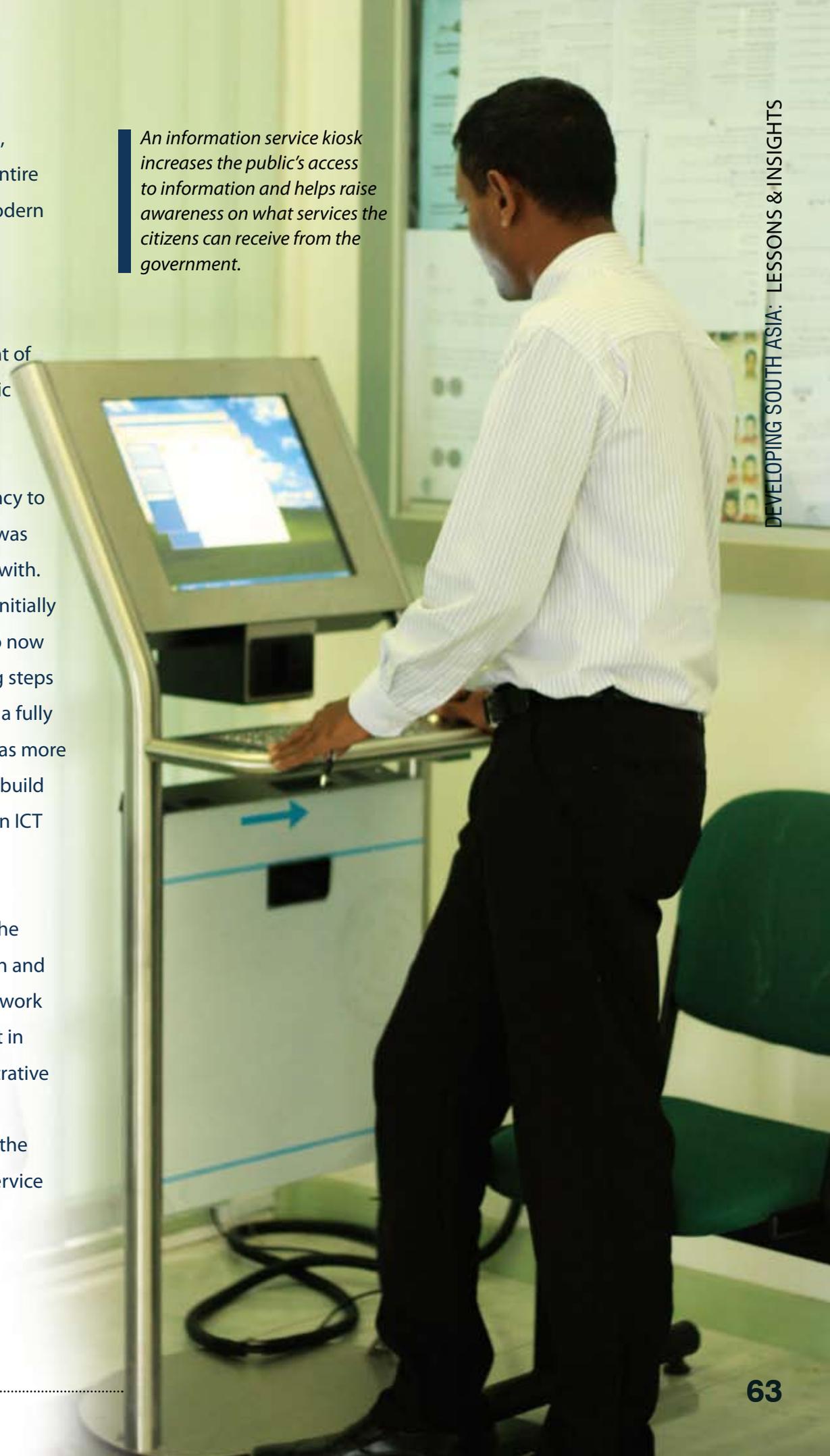
The project complemented the government's Vision 2020, which is to make modern technology widely used in the entire country, facilitating continued progress, and providing modern conveniences to the people.

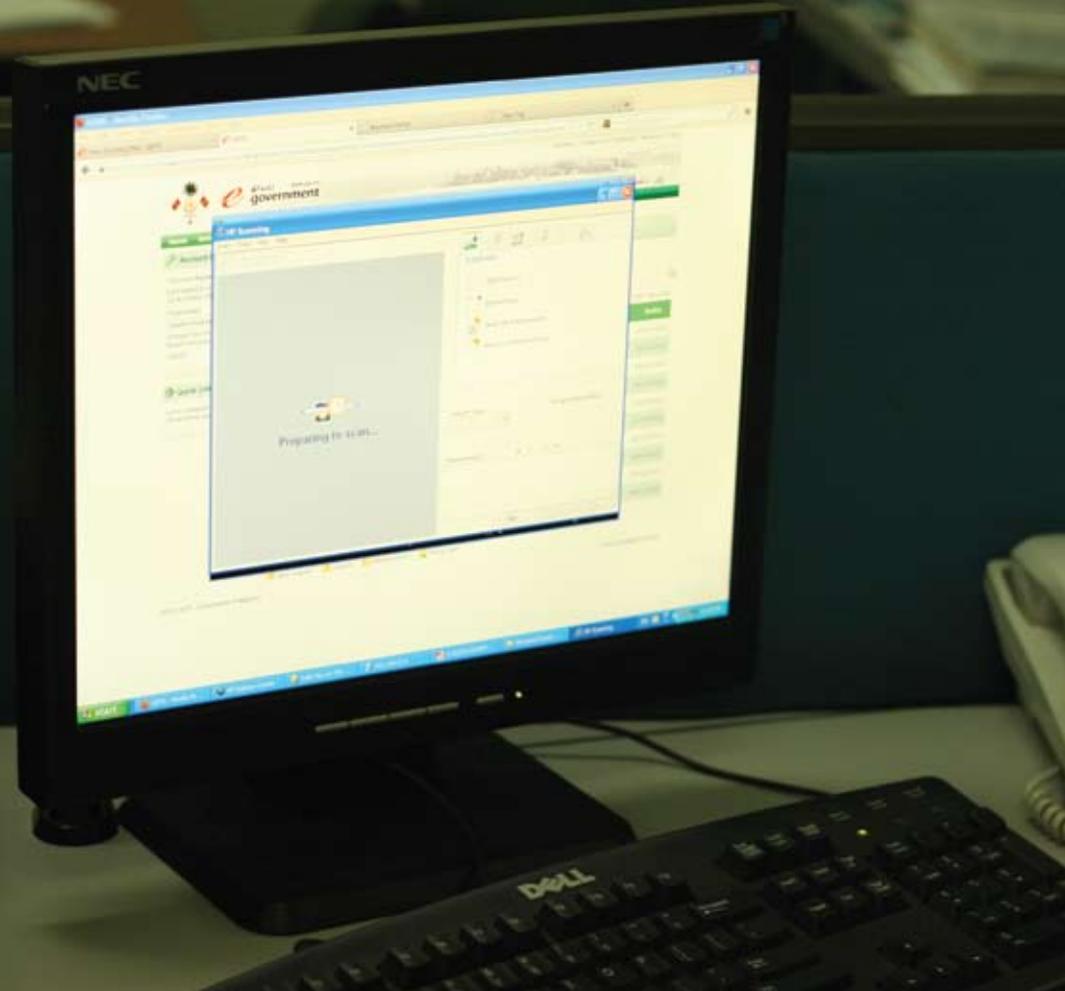
In the absence of an institution dedicated to develop the sector, the project laid the foundation for the development of e-governance and ICT integration, particularly in the public sector.

The NCIT was established in 2003 as the government agency to develop and promote ICT in the Maldives. The institution was built from scratch with only three staff members to begin with. Its mandate and services have broadened over the years, initially focusing on enhancing the ICT platform for governance to now proactively seeking private sector engagement and taking steps to develop the local ICT industry. The project provided for a fully equipped building for NCIT and, today, the organization has more than 35 staff members. The organization has been able to build an identity for itself and is confident of leading the work on ICT development in the Maldives.

The Government Network of Maldives, developed under the project, serves as the core infrastructure for ICT application and e-governance throughout the country. The fiber-optic network interlinks government agencies in the central government in the capital Malé and the local governments in 20 administrative atolls with high-speed low-cost connectivity. The network has expanded e-services within the government opening the scope for greater efficiency and accountability in public service provision.

An information service kiosk increases the public's access to information and helps raise awareness on what services the citizens can receive from the government.





LEFT: Real-time paperless communication across 20 administrative regions (atolls) can bring about efficiency and reductions in cost for the government. The NCIT received the Civil Service Innovation Award 2008-2011 for rolling out GEMS.

BELOW: A Government Network of Maldives server installed at the Baa Atoll provides fibre-optic connection across the country integrating all sector offices in the Maldives.

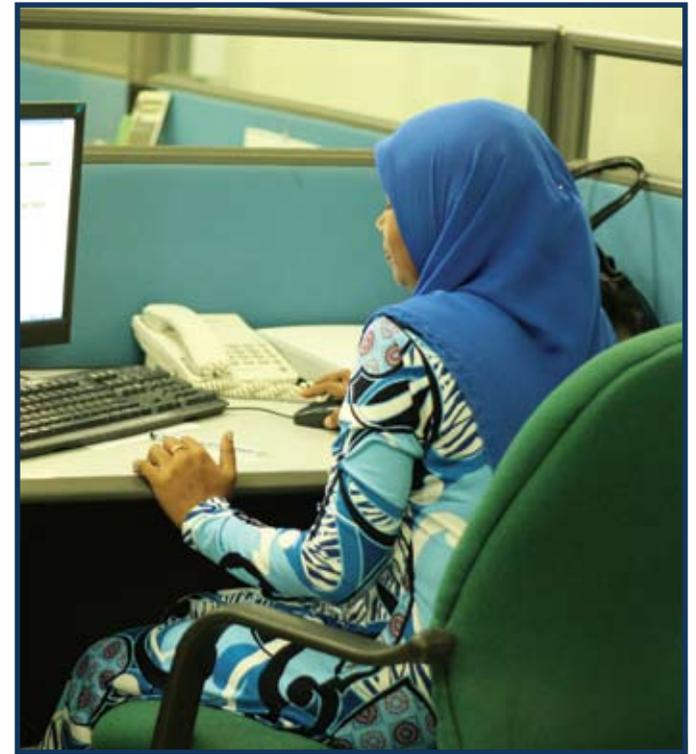
One notable application is the Government e-Letter Management System (GEMS) which enables the exchange of communications (letters, memos, general notes, messages, and announcements) electronically. GEMS was rolled out to all 20 atoll offices with 121 offices in the capital Malé using the system as of 2012.

Although there was initial resistance in adopting the system, its benefits are increasingly being seen. According to Fazeela, a young administrative assistant at Baa Atoll office in one of the remote islands in Maldives, "it is now much easier to communicate with the central government and other local governments in the country".



“Previously we would fax or post letters and it would take a while to receive. They often got lost along the way. Now that the system allows you real-time communication, and lets you see who has opened the message, it’s impossible for communication to get lost. It also used to take so much time to track letters and messages from big box files. Now it doesn’t take me more than five minutes to search a letter from the past year and I don’t have to do much filing”.

—Fazeela, Administrative Assistant at Baa Atoll office



Fazeela (left, and top photo) demonstrates the use of GEMS to her colleagues.

It is estimated that with reduced use of paper and lower printing costs and staff time, the government has saved 9 million rufiyaa (\$583,000) as of 2011. More savings can be expected in the future with the increased use of GEMS reducing the need for papers. GEMS is green and environment-friendly.

A citizen's web portal (www.egov.mv) maps more than 300 services which the government provides. The Chief Information Officer of the NCIT, Mr. Faig Umar, notes how interesting it was to see relevant government information made readily available to citizens.

“Most government agencies refused to share information of their services including, for example, who is responsible for certain types of transactions. With improved information accessibility, people can now demand better services and hold service providers accountable”.
—Mr. Faig Umair, Chief Information Officer, NCIT

The PMU for the project was composed of NCIT staff who were part of the government structure instead of individuals hired externally. This helped ensure the ownership and sustainability of the project. As a consequence, some \$300,000 of project costs were saved and diverted to relevant project areas.

NCIT is working to establish Citizen e-Centres in 50 islands with assistance from the South Asian Association for Regional Cooperation Development Fund. The Citizen e-Centres will run information technology literacy programs and are expected to increase demand for the citizen's portal, information kiosks, and e-services.

The prospects for project sustainability were strong. The Maldives Telecommunication Regulation 2003 was issued through a presidential decree providing ample powers to the regulatory authority and guidance to the industry. The Maldives Telecommunication Policy for 2006–2010 was issued in 2006 by the Minister of Transport and Communication, which was designed to virtually reduce geographical separation by reducing the disparity in services rendered throughout the country, thus achieving a “one island nation”.

The regulatory body for the telecommunications industry was restructured by establishing a separate entity in 2003. The Regulatory Telecommunications Authority of the Maldives took the role of regulating and developing the sector. The Ministry of Transport and Communications became the policy maker. In the meantime, competition was introduced to the cellular mobile services market in February 2004 with licensing of the second mobile operator.

The project is a positive testament to the importance of ICT integration in the public sector. A good central network infrastructure providing online services, and enhancing information access through kiosks and citizen's portals, not only contributes to cutting costs and increasing efficiency gains but also offers an opportunity to bring about needed public sector reforms.

Remoteness and isolation are the main barriers to development of the Maldives. Connectivity opened many doors.

PROJECT BRIEF

PROJECT TITLE

- Information Technology Development Project

COUNTRY

- The Maldives

PROJECT TYPE OR MODALITY OF ASSISTANCE

- Loan

APPROVAL DATE

- 17 December 2001

CLOSING DATE

- 31 December 2009

ADB FINANCING (\$ THOUSAND)

- 9,500

GEOGRAPHICAL LOCATION

- Malé and 20 atolls

SECTOR/SUBSECTOR

- Transport and ICT/ICT

THEME/S

- Economic growth

PROJECT COMPONENTS

- Networking of government agencies and applications for delivery of public services
- Establishment of the National Computer Center/NCIT
- Creation of internet kiosks in remote atolls
- Implementation of telecommunication sector reform

RESULTS DELIVERED

- Offices connected to ICT network (number)—106
- Applications developed—web portal, GEMS, Transport Online
- NCIT established, 2003
- Internet kiosks built (number)—20
- Regulation/policy issued
 - The Maldives Telecommunication Regulation, 2003
 - The Maldives Telecommunication Policy (2006-2010), 2006

SUCCESS INDICATORS

REPLICABLE PRACTICES AND LESSONS LEARNED

Overall Rating: *Successful*

- The project improved the efficiency, transparency, and accountability of public sector management by networking government agencies, and electronically providing information and services to the public.
- The institutional framework for telecommunication sector development was prepared with clear responsibilities specified.
- The physical infrastructure of the government network was constructed and some software applications were developed and made operational.
- The NCIT building is fully functional while several internet kiosks have been installed and are operating in public locations.
- The project was economically viable with an EIRR of 16.5%, higher than the ADB economic opportunity cost of capital of 12%.

- The engagement of local staff in the project increased the quality of project implementation in many areas, and made the delivery of services more customized to local conditions. NCIT recently received the Civil Service Innovation Award 2008-2011 in recognition of the quality of systems developed under the project, i.e. GEMS and Transport Online services.
- Given that ICT was a relatively new field in the Maldives at the time the project commenced, benchmarking was very important in sensitizing people and institutions to adopt e-services and automated processes. Some of the offices and schools on the islands continued to be resistant to fully adopting GEMS. Some managers still insisted on having hard copies on their table. Behavioral change was influenced by demonstrating success stories in other GEMS-enabled offices.
- It was also crucial for project designs to take into account local logistical requirements. The project faced budget constraints as the high cost of travel and access to the outer islands was higher than anticipated, although the project involved establishing a nationwide network. Furthermore, the initial implementation timeframe of three years was optimistic and required extension. ICT procurement fell short as service providers in the country were limited and insufficiently qualified, and some of the international contractors, while qualified, performed unsatisfactorily. The high costs of logistical arrangements and limited availability of interested high quality service providers could have been anticipated in the preparatory stage, and is an important lesson when designing projects in similar conditions. Better contract management and closer supervision of contractual services to prevent, and timely address, poor performance issues are also two important lessons from this project.
- ICT and e-governance are among the interventions that are not easily acceptable because of the extent of workplace adjustments needed. A change management and information, education, and communication drive should be integrated as components in these kinds of projects.
- The project's replicability should build on the essential integration of infrastructure development with institution building, knowledge transfer, and policy and regulatory reform. A holistic approach to project design and planning is also extremely important in order to sustain the results that are achieved from the project.

Nepal

**COMMUNITY
GROUNDWATER
IRRIGATION SECTOR
PROJECT
(1998-2008)**



Nepal

INVESTING IN SHALLOW TUBEWELL IRRIGATION

As countries strive to improve agricultural production, the demand for groundwater irrigation becomes strong. In Nepal, a 20-year Agricultural Perspective Plan, approved in 1994 with the support of ADB, had recognized the expansion of groundwater-based irrigation as a priority input in agricultural development, along with such complementary improvements as construction of all-weather agricultural roads, electrification, greater use of fertilizers, and better marketing activities.

A project loan was approved in 1998 by ADB to develop groundwater provision in Nepal's lowland plains (*Terai*) as a better alternative to provide irrigation as opposed to developing systems that use surface water.

While Nepal is a predominantly agricultural country with 80% of its rural population reliant on farming, agriculture has underperformed due to, among others, a lack of reliable irrigation. The potential for shallow tubewell (STW) irrigation in the *Terai* to spur agriculture development through increased use of groundwater resources had also been constrained by the lack of an appropriate policy environment and institutional mechanisms.

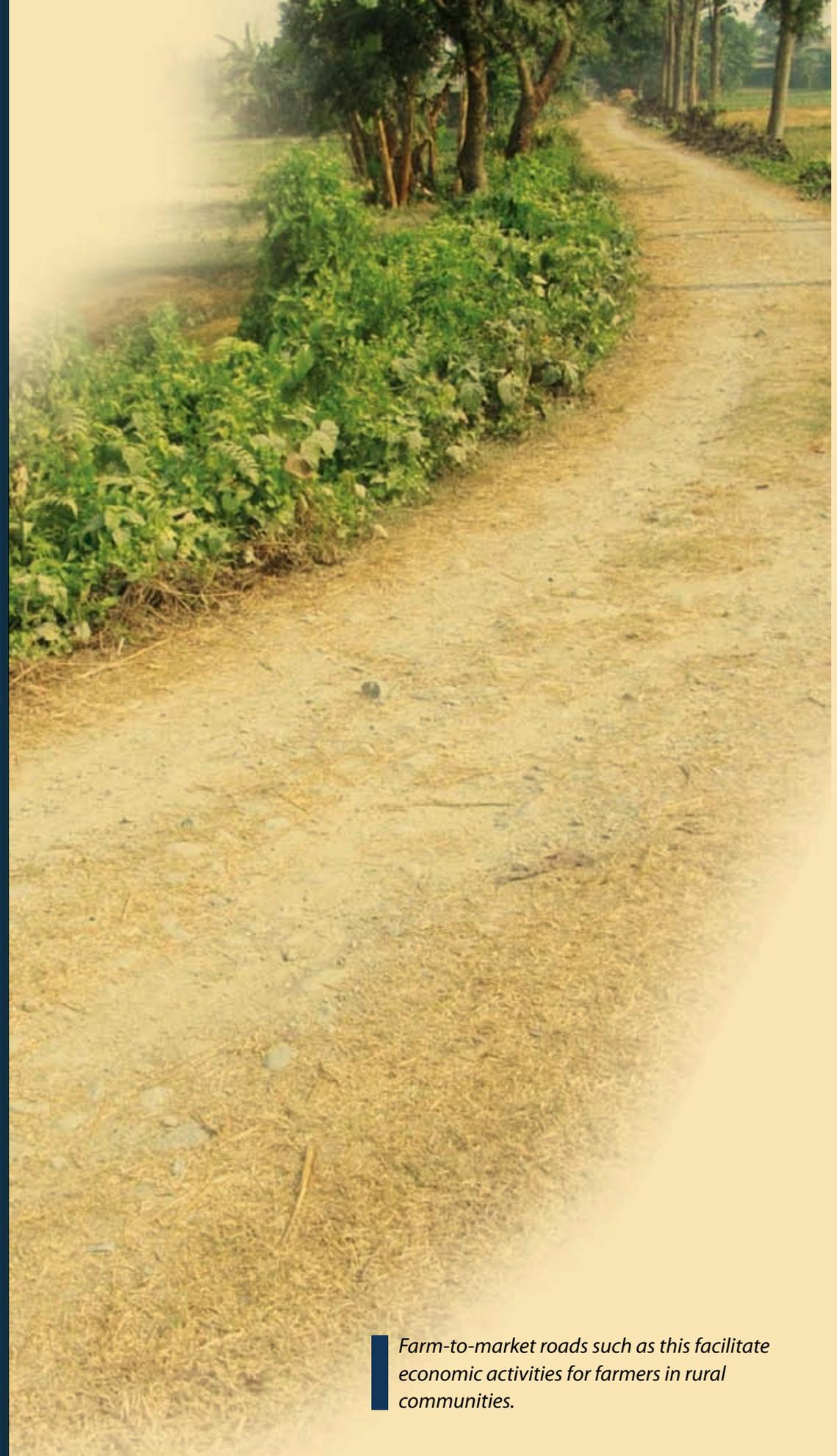
The Government of Nepal had developed policy directions prioritizing STW irrigation as an investment in the agriculture development strategy for the *Terai*. The ADB-funded CGISP, approved in 1998, covered 12 districts in the *Terai* from the central and eastern development regions with the aim of increasing agricultural productivity on a sustainable basis. It specifically aimed to improve incomes of small farmers with less than a hectare of land through participatory, demand-driven, and integrated group STW development.



The CGISP installed 10,870 STWs for group users and 1,500 for individual users in 300 village development committees or subproject areas, irrigating a total of 54,350 hectares of land. It established water user groups (WUGs) and water user associations (WUAs) while strengthening the capacity of the executing agencies, non-government organizations, and participating financing institutions (PFIs).

Water discharges from an STW irrigation system in Morang, Nepal, which farmers use for vegetable farming to increase their income.

Also, trade activities and access to public services by the villagers were improved through the completion of 300-kilometer farm-to-market roads including access and village roads. In response to demand from local communities, a causeway and five vented culverts were constructed in different subproject areas where rural roads had already been improved from other sources, providing year-round connectivity of the subproject areas to markets. Approximately 10% matching funds were contributed by the communities to complete the agricultural roads.



Farm-to-market roads such as this facilitate economic activities for farmers in rural communities.

A total of 7,020 microfinance loans were provided through qualified PFIs on a group guarantee basis for STW installation.

A total of 848 training sessions were organized for the communities with the participation of 28,590 persons, including 6,003 women. The staff of the Department of Irrigation, Nepal Rastra Bank, Department of Agriculture, the PIUs, and the PFIs were trained to provide effective project management and create a sustainable STW support system.

Key training areas included project orientation and implementation modalities, agriculture extension, credit and financial management, institutional development, environmental management, monitoring and evaluation, road improvement and quality control, and STW installation and operation and maintenance (O&M).

RIGHT: Access and village roads were improved in project areas.

BELOW: A woman irrigates a vegetable farm using an STW pipe.





Accredited by the Nepal Rastra Bank, 10 PFIs provided credit services to the farmers through \$3.1 million worth of loans.

The year-round irrigated area increased by 54,350 hectares, which was 93% of the appraisal target of 58,200 hectares. The deficit in the area size was due to confusion over policy reforms related to capital cost subsidies for STWs and credit delivery constraints during the project's initial two years, as well as the poor security situation in some project districts between 2003 and 2005. Still, cropping intensity increased by 79%, and average crop yield increased by 62%, substantially higher than the appraisal expectations of an increase between 25% and 50%.

Annual total farm output increased to 278,892 tons, which was 26% higher than the project's original target, owing to the large amount of time dedicated to irrigating the lands of group members and non-member fellow farmers.

Small farmers, mostly from disadvantaged communities and holding less than one hectare of land, increased their annual net income by NRs30,000 (\$411) per hectare on average, making positive impacts on their food security, family health, and in reducing poverty in general.

A multipurpose hall serves as a market place as well as a venue for skills development training.

With the user groups approach, the project provided access to year-round irrigation to marginal and small farmers, among them women, who were not benefiting from pre-existing sources of irrigation due to their small land holdings. Out of a total of 39,334 farmers directly associated with the project's WUGs, about 60% were female and 33% came from disadvantaged groups. The executive committees of the WUGs and WUAs were 20% female, and 16% were representatives of disadvantaged groups.



The project's sustainability relied on the capacity of the WUAs and their assumption of responsibility for O&M of STWs, income generation from renting out STWs to non-member fellow farmers, and the establishment of group funds for maintenance of farm-to-market roads—which proved effective in all of the WUAs. The government has been replicating the CGISP approach in new areas of the *Terai*, albeit on a somewhat limited scale.

“It was the first project implemented in Nepal with zero subsidies for direct capital cost. By organizing small farm families into user groups, the project proved to be financially as well as socially viable. Even in the absence of direct capital cost subsidies (for STW installation and agricultural inputs), the project managed to achieve the intended results due to social mobilization, community infrastructure development, provision of loans on a group-guarantee basis, and agriculture extension services”

—Mr. Narendra Khetri, former CGISP project staff member and currently a Senior/Divisional Hydro-Geologist in the Department of Irrigation

Women in water user associations are involved in bee farming and honey bottling to augment their income while also contributing to their cooperative.



■ *A banana farm in a project area is irrigated with water from an STW.*

PROJECT BRIEF

PROJECT TITLE

- Community Groundwater Irrigation Sector Project

COUNTRY

- Nepal

PROJECT TYPE OR MODALITY OF ASSISTANCE

- Loan

APPROVAL DATE

- 26 February 1998

CLOSING DATE

- 21 January 2008

ADB FINANCING (\$ THOUSAND)

- 30,000

GEOGRAPHICAL LOCATION

- 12 districts in the *Terai* of the central and eastern development regions

SECTOR

- Agriculture and Natural Resources/Irrigation, Drainage, and Flood Protection

THEME

- Economic growth

PROJECT COMPONENTS

- Community STW Development
- Improvement of farm-to-market roads
- Provision of credit
- Implementation assistance and institutional strengthening

RESULTS DELIVERED

- WUGs formed (number)—13,000
- WUAs formed (number)—222
- Training sessions organized for communities (number)—848
- National highways and provincial, district, and rural roads built or upgraded (kilometers) —300
- Community STWs installed (number)—10,870
- Microfinance loan accounts opened / end borrowers reached (number) —7,020
- Land improved through irrigation services, drainage, and flood management (hectares) —54,350
- Training sessions organized for government agencies and PFIs (number)—300

SUCCESS INDICATORS

REPLICABLE PRACTICES AND LESSONS LEARNED

Overall Rating: *Successful*

- The project provided year-round irrigation for 93% of the targeted 58,200 hectares of land through STWs and was able to do so at 40% of the estimated cost. Its impact was visible in terms of increased production, improved productivity and income of target groups, and socially empowered poor households and women.
- About 21% of those trained by the project were women which enabled them to play active roles in planning, implementing, and managing STWs, and agriculture programs, thereby improving their confidence in managing local resources, and strengthening their social status.
- The government and WUAs were likely to sustain project outputs since almost all of the key sustainability indicators—capacity of the WUAs and their assumption of O&M responsibility of STWs, income generation from renting out STWs to non-member fellow farmers, and establishment of group funds for low-level maintenance of farm-to-market roads—were effective in all of the WUAs.
- A survey conducted by the Department of Irrigation in August 2007 in sample subproject areas concluded that marginal and small farmers, mostly from disadvantaged communities and holding less than one hectare of land, had increased their annual net income by NRs30,000 (\$411) per hectare on average. The project-wide estimate was that beneficiary households increased their annual net income by NRs18,315 (\$251) per hectare as a result of participation in the project. This increase was much higher than the appraisal target of an average increase in annual net income of NRs6,550 (\$90) for all such households.
- The overall EIRR, based on cost and benefit streams for the project, was 51.1%, which was at the higher end of the 31%–55% EIRR range estimated at project appraisal.

- Organizing small-farm families into user groups made the project more financially viable and instilled a sense of ownership among the communities. Even without direct capital cost subsidies for STW installation and agricultural inputs, social mobilization helped the project achieve its intended results.
- Organized stakeholders such as WUGs in this type of project can serve as reliable facilitators between the project and beneficiary groups for effective project implementation and sustainability. They can be tapped to provide refresher training, and help in social mobilization, as well as in the operation and maintenance of STWs, among others.

Sri Lanka

**NORTH EAST
COMMUNITY
RESTORATION
AND DEVELOPMENT
PROJECT
(2001-2009)**

Sri Lanka

REBUILDING LIVES AFTER DECADES OF CONFLICT

Villagers board a ferry to cross a waterway, a common mode of transportation before the NECORD Project began building bridges.

Three decades of armed conflict between the Government of Sri Lanka and the Liberation Tigers of Tamil Eelam affected more than a million people. It destroyed major infrastructure and livelihoods, and minimized access to many basic services in the North and East.

The economy of Sri Lanka's northeastern region is primarily rural, with over 88% living outside the main towns. Livelihoods depend mainly on agriculture, fishing, and subsistence farming. During the course of the conflict, much of the agricultural land became inaccessible because of the presence of land mines. Irrigation systems were also either destroyed, or fell into disuse.

Paddy fields in the north and east of the country are now being cultivated after the land has been demined and people have moved back to the villages.



In 2001, the NECORD Project served as ADB's response to the Government of Sri Lanka's request for support in restoring basic services and livelihoods in the Northern and Eastern provinces which had been neglected due to many years of conflict.

The project focused on rehabilitating basic infrastructure in the education, health, water supply and sanitation, shelter, community development, roads, agriculture, and fisheries sectors. A total of 464 subprojects proposed by the beneficiary districts based on requests from local divisional governments in consultation with the communities, benefited more than one million people.

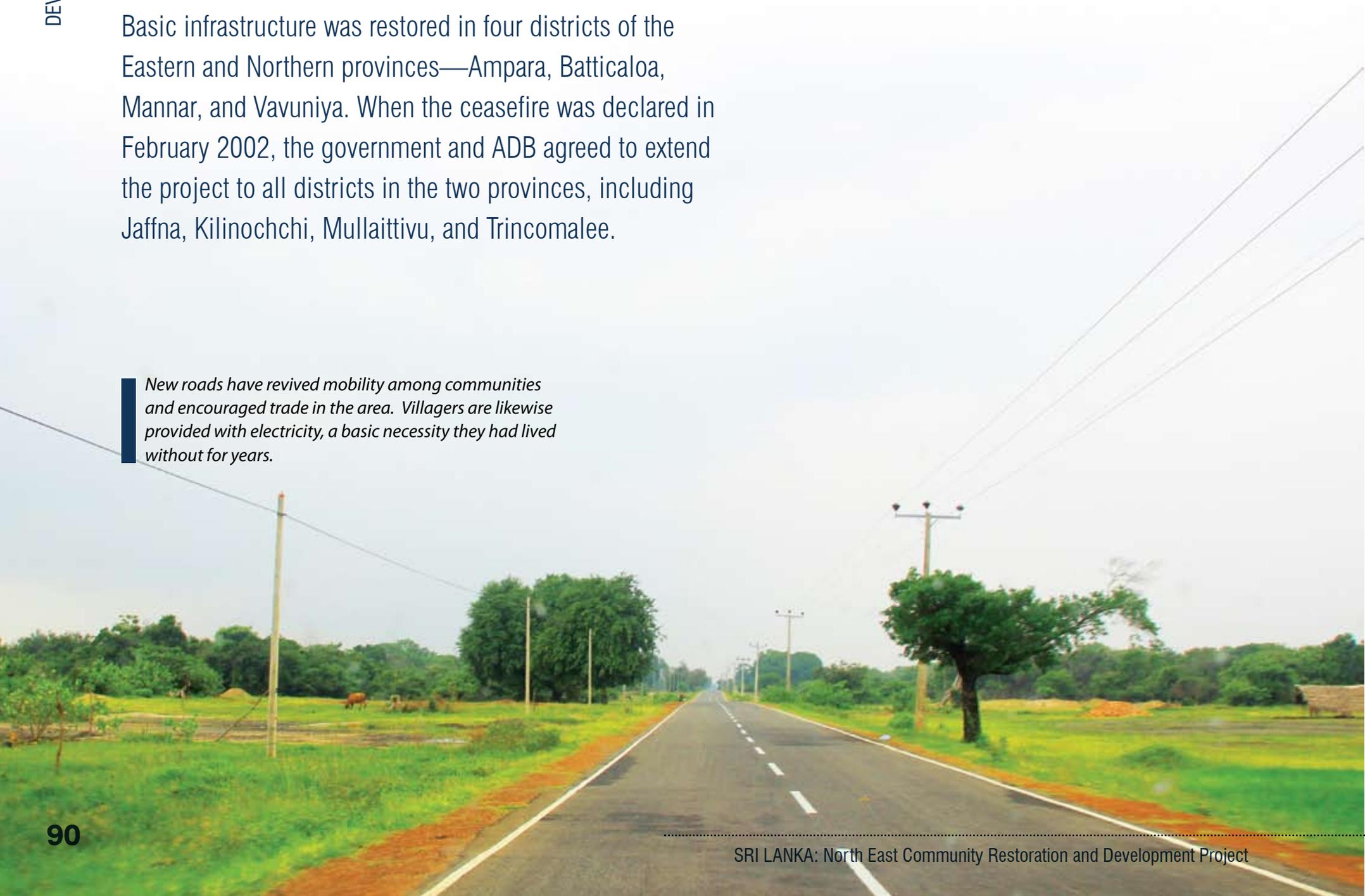
New boats and fishing gear were provided to the communities as fishing gives them a means of livelihood.



The NECORD Project restored basic services, shelter, and livelihoods for 500,000 beneficiaries and benefited another 500,000 people indirectly. This stabilized the economies of the Northern and Eastern provinces and helped displaced families return home to productive lives.

Basic infrastructure was restored in four districts of the Eastern and Northern provinces—Ampara, Batticaloa, Mannar, and Vavuniya. When the ceasefire was declared in February 2002, the government and ADB agreed to extend the project to all districts in the two provinces, including Jaffna, Kilinochchi, Mullaittivu, and Trincomalee.

New roads have revived mobility among communities and encouraged trade in the area. Villagers are likewise provided with electricity, a basic necessity they had lived without for years.



rennovated. For the education sector, teachers' quarters were constructed in remote and rural areas to improve recruitment and retention of teachers. Water supply, sanitation, and toilets were built. Furniture and educational materials, including textbooks, were also provided. The project constructed 1,486 new classrooms, 50 offices, 20 activity rooms, one student hostel, 11 teachers' quarters, 30 fully-equipped science laboratories, water supply facilities, and 357 female and 237 male latrines and washrooms. Desks and chairs (19,410 for students and 1,950 for teachers) were provided and 1,950 Tamil-medium teachers were recruited.

The water supply and sanitation component of the project benefited a total of 18,000 families with four village piped systems, 117 community systems, and 827 latrines.

A total of 2,377 new houses were built and 317 kilometers of village roads were also constructed.

A total of 74 villages were electrified, basic services and facilities were given to 58 communities, and 21 new villages were developed for resettlement which included clearing of land, and constructing new roads. In addition, vocational training was given to 502 men and 93 women in areas such as plumbing, carpentry, electrical installation and repair, masonry, and auto mechanics. A total of 58 women's rural development societies were established with over 5,000 women members.



(TOP TO BOTTOM): A newly-rehabilitated school building equipped with new facilities has led to more children attending school. Piped water is being supplied to the communities, thereby improving their general health and hygiene. The construction and rehabilitation of hospitals such as the Mullaitivu Hospital in the northern province has improved access to health services.



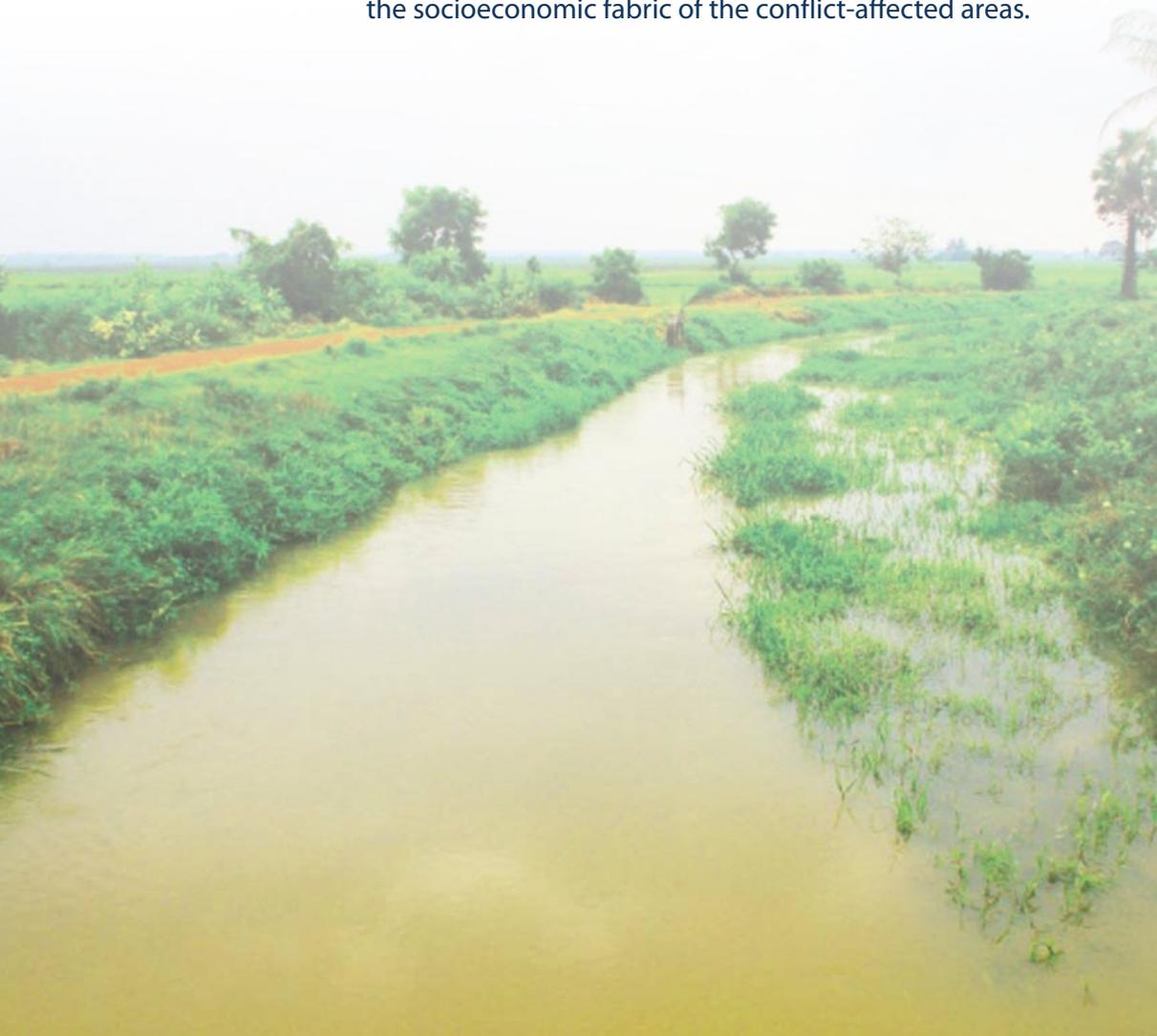
Community development programs were implemented by the existing community organizations.

An estimated 44,000 families benefited from agricultural works improvements including 13 major irrigation systems; 14 storage reservoirs were also rehabilitated and restored. In addition to 21 agrarian outreach centers, and one agricultural research station, 13 veterinary facilities (four with equipment) were restored. Equipment for the agrarian centers (which included four tractors with plows and wagons), six extension offices, and seven blocks of staff quarters were also restored. For the fisheries sector, five anchor points and one fish market in Jaffna and two fishery facilities in Mannar (including 30 quarters for the poorest fishermen) were constructed. A total of 144 new outboard motors, 81 fishing boats, and 310 sets of fishing nets were also provided.

A total of 77 kilometers of rural roads including 15 bridges were rehabilitated, improved, and widened. Two ferries were also supplied.

The people in the area are now aware of the importance of protecting the environment and water quality as their quality of life and livelihoods depend on these resources.

Beyond just “doing no harm,” the project made a positive contribution to the rebuilding of key infrastructure and making existing infrastructure more effective in strengthening the socioeconomic fabric of the conflict-affected areas.



SRI LANKA: North East Community Restoration and Development Project

PROJECT BRIEF

PROJECT TITLE

- North East Community Restoration and Development Project

COUNTRY

- Sri Lanka

PROJECT TYPE OR MODALITY OF ASSISTANCE

- Loan

APPROVAL DATE

- 16 October 2001

CLOSING DATE

- 9 February 2009

ADB FINANCING (\$ THOUSAND)

- 25,000

SECTOR/SUBSECTOR

- Multisector
- Agriculture and natural resources

THEME

- Social development

PROJECT COMPONENT

- Rehabilitation of basic infrastructure in health, education, water supply and sanitation, shelter and community development, agriculture and fisheries, and roads

RESULTS DELIVERED

- Family beneficiaries of 103 health subprojects—272,000
- Student beneficiaries of 219 education subprojects—179,000
- Family beneficiaries of 12 water supply and sanitation subprojects—18,000
- Houses built for internally displaced persons—2,377
- Family beneficiaries of 44 agriculture subprojects—44,000
- Family beneficiaries of fisheries subprojects—780
- Family beneficiaries of 77 kilometers of rural roads and 15 bridges, and 2 ferries—57,000

SUCCESS INDICATORS

REPLICABLE PRACTICES AND LESSONS LEARNED

Overall Rating: *Highly Successful*

- The restored and new facilities as well as livelihood programs implemented under the project have proven to be sustainable. The project's success was attributed partly to the selection of works and programs through a bottom-up approach, and their alignment with the government's existing procedures. There was an urgent demand for the infrastructure, and the beneficiaries expressed being extremely grateful for all the improvements, which made them willing to support the costs of O&M.
 - The project restored normal life in the former conflict areas in Sri Lanka. A return to normalcy was indicated by increased activities in markets and the return of farmers and fishermen to their work. It also restored basic services, shelter, and livelihoods for 500,000 beneficiaries and benefited a further 500,000 people indirectly.
 - The physical works and livelihood programs provided under the project were properly constructed and were being maintained well from the regular O&M budget of the line government departments and responsible agencies.
- Development works and programs can be carried out quickly and efficiently by working with—and supporting—existing government systems and procedures. This approach facilitated project implementation and ensured that dozens of trained government officers brought experience and knowledge back with them upon return to their home departments.
 - The project became a model for post-disaster operations, particularly with regard to the 2004 tsunami. Also, implementation through provincial councils supported the principles of devolution and improved coordination between central and provincial governments.
 - By working with the local government departments and agencies, the most urgent areas for support were quickly identified as these were already on record. The bottom-up approach within these areas to select the most urgent and locally prioritized works led to greater ownership of the various works, helping with continued sustainability.
 - By leaving the specific requirements and works to be decided as implementation progressed, the project authorities were able to respond to the most urgent needs, even in a fluid conflict situation. This also saved considerable funds as the project was prepared by a small-scale technical assistance project for only \$150,000 and completed within a short time frame.
 - The fact that the existing government structure included a number of community-based organizations already established in each village was a major help in not only selecting the highest priority works, which varied from village to village, but also in improving local income activities. A related benefit was that even after the project was implemented, and the PMU and ADB had moved on, these community-based organizations

remained to support the various activities, leading to greater sustainability.

- Close coordination among the multiple development partners was important in ensuring that works and programs were complementary, with no overlap or gaps in support. The project was able to incorporate separate but complementary programs from four bilateral development partners, as well as the World Bank and the OPEC Fund. This helped the overall implementation and impact of the project by incorporating grant funds judiciously with loan funds, in order to better address areas governments are traditionally reluctant to fund with loans—e.g., consulting services, support to non-government organizations, and giving out cash grants.
- When operating in areas with multiple projects being implemented concurrently, benefits from such projects should be distributed equally. A case in point was the tsunami assistance from other development partners which provided twice the funding per house as did the NECORD project resulting in inequities in a number of coastal villages where both projects funded housing. In an already tense or conflicted-oriented environment, this can lead to problems with the beneficiaries.



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Developing South Asia: Lessons and Insights

This publication showcases eight projects that delivered exemplary and significant results in their implementation. These projects represent various sectors such as energy, urban development, transport, information and communications technology, irrigation, and disaster risk reduction. This publication identifies lessons learned and highlights good practices that can be replicable across South Asia.

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