

2013

# TOGETHER WE DELIVER

10 STORIES FROM  
ADB-SUPPORTED PROJECTS  
WITH CLEAR DEVELOPMENT IMPACTS



ADB

Asian Development Bank



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Printed in the Philippines.

ISBN: 978-92-9254-492-8 (Print), 978-92-9254-493-5 (PDF)  
Publication Stock No. ARM146407-2

#### Cataloging-In-Publication Data

Asian Development Bank

Together we deliver: 10 stories from ADB-supported projects with clear development impacts  
Mandaluyong City, Philippines: Asian Development Bank, 2014.

1. Project impact.      2. Project management.      I. Social development.      I. Asian Development Bank.

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# Foreword

This book is about 10 stories of projects supported by the Asian Development Bank (ADB) with clear development impacts. The range of assistance ADB provides to its developing member countries in the region is most vividly explained in this book in terms of the transformative effect it has on people's lives.

In the People's Republic of China, coal miners are safer and people are breathing cleaner air and benefiting from lower fuel prices as a result of an innovative project to capture and use hazardous methane gas from coal mines.

In India, childbirth is becoming safer for women and infants in remote rural communities and students can look forward to a brighter future because of all-weather roads that now connect their villages to community hospitals, training schools, and other facilities.

In the Lao People's Democratic Republic, women in remote villages in the north of the country no longer have to spend hours collecting water and have healthier families, thanks to the water distribution systems and treatment plants provided by a water supply and sanitation project.

These three projects, and hundreds more undertaken by the developing member countries with the support of ADB and other partners, are designed to improve people's lives.

The sums of money needed to help the poor and vulnerable in Asia and the Pacific are as vast as the challenges. But it takes more than money. Across the region, government agencies, development organizations, the private sector, civil society organizations, and local communities bring expertise and commitment into the mix to help improve lives. The scale and scope of many of the projects described in this book would be impossible without the constructive partnerships forged by this collaboration.

Development is also about ensuring lasting benefits. ADB-supported projects are designed to mesh with the governments' own development plans, and are implemented

by agencies in developing member countries. Projects also rely heavily on the expertise and knowledge of international and national experts, the private sector, and civil society organizations. So, far from simply building facilities, such as water treatment systems, the projects try to build in sustainability, such as cost recovery schemes tailored to the needs of the communities, to ensure that benefits continue to flow long after international assistance ends.

Asia and the Pacific is a dynamic region that has grown rapidly in recent decades. Millions of people have been lifted out of poverty as a result. But as many countries move from lower- to middle-income status, the challenges remain. About 90% of Asia's extreme poor live in countries classified as middle-income. Across the region, vulnerability is also a major problem as nearly 900 million people live just above the border line of poverty.

Addressing these diverse needs is a complex task. To rise to this challenge, each ADB-supported project requires thorough strategic planning, collaboration, and innovation. But essentially, it is about managing scarce financial and human resources to make the greatest impact on the lives of people who need it most. Through this book, we offer a glimpse of the achievements of 10 projects, and highlight the stories of some of the people whose lives have been changed.

A handwritten signature in dark ink, appearing to read 'Takehiko Nakao', with a large, stylized flourish at the end.

Takehiko Nakao  
President  
Asian Development Bank



# List of Partners and Contributors

## Project Teams

### **Afghanistan: Hairatan to Mazar-e-Sharif Railway Project**

Government of Afghanistan: Ministry of Commerce and Industry, Ministry of Finance (Mohammad Omar Zakhilwa and Mustafa Mastoor), Ministry of Interior, Ministry of Mines, Ministry of Public Works (Najibullah Aoudjan, Noorgul Mangal, and Abdullah Wahdat), and Balkh provincial government.

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Development partners: European Union, International Security Assistance Force, the United States Embassy, and the World Bank.

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### **Armenia: Water Supply and Sanitation Sector Project**

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Civil society/Nongovernment organization: Armenian Water and Sewerage CJSC (Patrick Lorin and Eduard Chil-Akopyan).

Development partners: European Bank for Reconstruction and Development, KfW, and the World Bank.

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Sayamoungkhoun, and Phouvanh Senbouttalath), provincial authorities, nam papas (provincial water utilities), and Department of Public Works and Transport (DPWT) in Luang Prabhang, Luang Namtha, Oudomxay, Xayaboury, Vientiane Province, Xieng Khouang, Houaphan, and Bokeo provinces.

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Development partners: Governments of Australia and New Zealand.

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# Introduction

## Partnering for Expertise and Innovation

The Asian Development Bank (ADB) has since 1966 been financing development in the Asia and Pacific region with the aim of reducing poverty. With \$14.2 billion ADB financing approved and \$6.4 billion cofinancing mobilized in 2013, and 3,045 employees from 61 countries, ADB partners with governments, other development agencies and organizations, and individuals to deliver projects that create economic and development impact.

In Afghanistan, for instance, a rail worker was able to send his daughters to school because of the salary he earns from working at a newly established railroad terminal. He is one of more than 7 million people in Afghanistan who are benefiting from the railway line, which serves as a crucial supply link into the country from its neighbors. The rail system became operational 2 years after the project broke ground—a remarkable achievement considering that it was built in one of the world's most challenging environments.

ADB provided loans to support the project, but it also offered solutions, such as performance-based contracts for the construction, and operation and maintenance works. The company would also be rewarded with a bonus if it constructed, operated and maintained the railway efficiently. The incentive in this innovative contract were crucial to have the job done quickly and correctly. The success of the project was also due to a broad array of partnerships: several ministries and provincial bodies in Afghanistan, the World Bank, International Security Assistance Force in the project area, and a railway company from Uzbekistan.

In Armenia, more than 600,000 people are healthier and more productive because they have access to a regular supply of clean water in their homes. This was accomplished by ADB in partnership with international experts, including

specialists from a French company and the water agencies throughout the country.

Flexible financing arrangements were provided by the European Bank for Reconstruction and Development, KfW, and the World Bank, enabling timely release of funds to the national and local water agencies. All the work was underpinned by the support of the people in the areas that received the new water connections, and by the Government of Armenia.

In Bhutan, the government is using the revenue from exporting clean energy to neighboring India not only to grow its economy, but also to fund social programs and bring electricity to more than 8,500 rural poor households. The project was the first cross-border power generation venture financed by an international agency in South Asia.

To make the project a reality, ADB supported a public-private partnership between a state-owned utility of the Government of Bhutan and a private Indian power company.

In Solomon Islands, antiquated laws kept the poor, especially women, from getting loans because they did not own land. The government amended the law with ADB's assistance, allowing people to use movable assets, such as cars and trucks, as collateral. This access to financing, and other reforms, led to a flood of new locally owned businesses being registered. Rather than simply offering one-time financing to women entrepreneurs, ADB worked with the Government of Solomon Islands to change the system so that generations of women could start new businesses and operate them with ease.

To make the project a success, ADB partnered with the governments of Australia and New Zealand to work with a broad range of private companies. This included incorporating the country's first community-owned company, which now provides fruits and vegetables to the leading hotel in the capital, Honiara. The partnership also led to the formation of a cooperative-owned cocoa export company that now directly negotiates with overseas buyers.

A recurring theme of the projects described in this book is the partnerships among developing member countries,



ADB, other organizations, and individuals, which bring much more than financing to the table. With the support of their partners, developing member countries are applying innovative solutions, overcoming barriers, and achieving results. This collaboration enables a limited amount of funding to be combined with expertise and knowledge to generate a broad development impact.

This book examines case studies throughout Asia and the Pacific to better understand how governments, people, and organizations can work together to deliver results.

Afghanistan's first railroad  
is bringing more goods,  
trade, and jobs in the Balkh  
Province.



# Afghanistan: A Lifesaving Link

## Hairatan to Mazar-e-Sharif Railway Project

For Afghanistan, the country's first railroad has resulted in a steady supply of lifesaving goods and a vital link to Uzbekistan, its vibrant neighbor.

For Jan Mohammad, the impact has been much more personal. It has given him a job that has changed the lives of his five children.

"My income has made their education possible," Jan says.

Jan works at the railway station in the town of Naibabad, along the northern Afghanistan border, unloading freight. He can earn over \$300 a month working for the rail company—more than triple what he once earned as a day laborer.

The extra money is putting his three sons and two daughters through school.

Jan is one of millions of people in Afghanistan whose lives have been changed by the railroad.

It is the first rail line in Afghanistan's history and runs 75 kilometers from the city of Mazar-e-Sharif to Hairatan, a town on the country's northern border with

### Project Results

#### DATES

- **Approved:** September 2009
- **Closed:** April 2013

#### BENEFICIARIES

- **More than 7 million people**

#### JOBS

- **1,200 jobs** in logistics and unloading operations
- **11% annual growth in employment** in the project area since 2010
- **About a 20% drop in carbon dioxide emissions** due to reduced traffic on the highway

#### TIME

- **Freight travel from Hairatan to Mazar-e-Sharif cut to 1 hour** from 2 hours

#### TRADE

- **Trade between Afghanistan and Uzbekistan** rose from \$170 million in 2008 to \$732 million in 2011–2012

Uzbekistan. Built with a \$165 million grant from ADB, the project has helped open the war-torn country to increased trade and commerce.

“Afghanistan has the potential to be a regional crossroads, as it was when trade flourished along the routes of the ancient Silk Road,” says Balabhaskara Reddy Bathula, a transport specialist in ADB. “The rail system is the first step in bringing the country closer to sharing in the prosperity of its neighbors.”

Afghanistan is home to a spectacular rugged landscape that has captured the imagination of visitors since the Venetian explorer Marco Polo traversed its mountains in the 13th century.

Unfortunately for the people of Afghanistan, who need goods from the outside world and markets to sell their products, the rough mountain passes in many parts of the country have not changed for centuries.

The landlocked country has faced a critical shortage of roads. Aside from a lack of highways needed to move goods and people effectively inside the country, its few cross-border road links have been crowded with traffic.

The materials required to rebuild the post-conflict nation, deliver basic services, and reduce widespread suffering in one of the world’s poorest countries were not getting to the people who needed it. The few supplies that arrived came at an agonizingly slow pace.

In addition, security problems in the country made international land routes to and from the south and east unsafe and unreliable. The safer northern road to the Uzbekistan border had in recent years become a colossal bottleneck of traffic as the country’s supplies squeezed through that single overburdened border crossing.

Afghanistan did not need a trickle of goods flowing back and forth across the border. It needed a flood of humanitarian aid, commercial goods, and materials to help rebuild the country’s infrastructure. After more than 3 decades of conflict, the country had to be rebuilt on the back of a small, rough border highway.

Beyond simply bringing the country out of desperation, Afghanistan needed the means to grow its economy. It is surrounded by neighbors whose people are enjoying better lives than their forebears, due in part to trade with the dynamic nations of Central and South Asia, and the rest of the world.

Because of its location, Afghanistan has been poised to join in this economic boom. However, the security situation prevented the country from developing the roads, railways, and airports that would link it to its thriving neighbors. Its doors had not truly been open to the life-changing impact of regional and global trade.

## A practical solution

The Government of Afghanistan and ADB devised a solution to move goods efficiently through this safe northern passage. The plan was to rehabilitate an outdated 15-kilometer cross-border railway extension from the town of Termez in Uzbekistan and extend the link to the main northern city of Mazar-e-Sharif and the country's main road network about 75 kilometers away. The old railway terminated at the Afghanistan border town of Hairatan. Here, cargo was off-loaded and reloaded onto trucks, which passed through a congested highway for distribution across the country.

**Carbon dioxide emissions from heavy vehicles dropped from 2.3 million tons to 1.7 million tons per year**





Workers unload a boxcar. The value of Afghanistan's total trade was \$6.8 billion in 2011 and 2012, increasing from \$3.5 billion in 2008 before the new rail system was built.





“We have employees who come from the south, east, and west of Afghanistan working together as a whole.”

In December 2011, 2 years after the project broke ground, the Hairatan to Mazar-e-Sharif railway was operational. Goods could be transported in trucks along Afghanistan's main road system from Mazar-e-Sharif in Balkh Province, about 300 kilometers north of the capital city of Kabul, and then shipped efficiently by rail into Uzbekistan and further to Central Asia and Europe. Vital relief goods and other materials could flow in from the other direction as well.

Esmatullah, a store manager at a port in Hairatan, has seen his business flourish since the rail line opened.

“We have about 50 or 60 wagons loaded and unloaded in Naibabad at night,” he says. “Some workers are busy there and they are from different provinces. We do not have employees and workers only from the north, we have employees who come from the south, east, and west of Afghanistan working together as a whole.”

The first rail line in Afghanistan's history runs 75 kilometers from the city of Mazar-e-Sharif to Hairatan on the country's northern border with Uzbekistan.







Piles of construction rebars in the main terminal train station of the new Afghanistan railway. The value of trade between Afghanistan and Uzbekistan reached \$732 million in 2011 and 2012, up from \$170 million in 2008, after the rail line improved transport between the countries.

The moving of goods along the rail line, rather than on highways fraught with security and other problems, has increased trade around the country.

“Another benefit this railway provided to our businessmen is the timely and easy loading and unloading of their goods and supplies,” says Esmatullah. “They can load and unload their goods whether in Balkh Airport, Naibabad, or Hairatan. They can also carry out their trades without any fear of delays and fines.”

## Now they can go to school

More than 7 million people have benefited from the new railway through jobs and increased trade. This has included freight operators, traders, businesses, and local communities served by the railway.

Having an efficient, safe, and reliable railway transport network operating in northern Afghanistan has resulted in



Esmatullah, a store manager along the railway line, has seen his business increase since the rail line opened.

people getting jobs in areas where opportunities were very limited. Employment in the project area has shown an overall growth of over 10% per year since 2010. About 1,200 people are currently employed in logistics and unloading operations, while more jobs are expected to emerge in logistics services at railroad stations.

Ghulam Yahya Darwesh, a general manager at the port in Naibabad, said business has picked up in provinces throughout northern Afghanistan since the opening of the new rail link.

“About 100 workers and employees are hired here and earn a living,” he says. “We also have 300 laborers loading and unloading up to 60,000 tons of freight a month.”

**More than 7 million people benefited from the new railway through jobs and various economic activities. This has included freight operators, traders, business owners, and local communities.**



“The railway has brought positive economic effects since it was built,” he says. “The shipping gets done in an appropriate way for businessmen. They can load and send their goods and supplies easily and they are delivered in a timely manner.”

The benefits are spreading throughout Afghanistan as the railway promotes economic growth, as well as regional trade and cooperation. The lower transport costs have reduced the price of goods and have resulted in higher quality goods coming into the country.

In addition to making it easier to deliver humanitarian relief to hard-hit areas and bringing goods to various parts of the country, the project is also helping the country develop its natural resources.



**Ghulam Yahya Darwesh, a general manager of a port in Naibabad, said business has picked up in provinces throughout northern Afghanistan since the opening of the new rail link.**



“Afghanistan can also benefit, for the first time in history, from exploration and development of its mineral resources, which have been valued at trillions of dollars,” says Wahidullah Shahrani, Afghanistan’s Minister of Mines.

The project constructed new stations between Hairatan and Mazar-e-Sharif and installed modern signal and telecommunications systems for safe and efficient operation.

“In the past, I couldn’t afford to enroll my daughters to school because I didn’t have a regular job. Now they can go to school.”

By 2012, freight transported by train had reached about 6,500 tons per day, and the volume of vehicle traffic on the old, overburdened road had decreased. The freight travel time from Hairatan to Mazar-e-Sharif had been cut from 2 hours by road to 1 hour by rail, while carbon dioxide emissions from heavy vehicles had dropped from 2.3 million tons to 1.7 million tons per year.

As goods move efficiently back and forth across the border, businesses are enjoying the benefits. Local companies registered growth of about 15%–65% between 2009 and 2012 in Balkh Province. The value of trade between Afghanistan and Uzbekistan reached \$732 million in 2011 and 2012, up from \$170 million in 2008. The value of Afghanistan’s total trade was \$6.8 billion during the same period, an increase from \$3.5 billion in 2008.

Normally, 5 years are needed for such an undertaking. To make such an impact in a record time of 2 years in a challenging environment, ADB had to use various innovative methods. These included using an operation and maintenance contract that rewarded the Uzbekistan railway company for performing the work efficiently. This led to a strong service record and lower freight transport costs by the railway.

In addition, it included taking advance actions before the project was approved, a contract that offered a bonus for early completion, and ADB’s close monitoring and coordination with the government.

The success of the rail system has paved the way for a national railway development plan, which is being developed

with ADB's help. The future railway system, expected to be developed by 2025 and covering 4,425 kilometers, will link the country's major population centers. It is also expected to help make the country a strategic north-south trade corridor between Central and South Asia and, through further links, to the sea.

For Sharif, a 46-year-old father of four who works as a freight forwarder at the Naibabad station, the \$340 he earns each month is having a huge impact. It does not only change his life, it also helps address one of Afghanistan's most critical issues—the empowerment of women and girls.

“In the past, I couldn't afford to enroll my daughters in school because I didn't have a regular job,” Sharif says. “Now they can go to school.”

**Signal in the main terminal rail yard. The Hairatan to Mazar-e-Sharif railway project included the installation of modern signal and telecommunications systems along the line to maintain safety.**





Edgar, the 8-year-old grandson of Nazik Grigoryan, who lives southwest of the Armenian capital of Yerevan, is happier and healthier due to a cleaner water supply in his home.



# Armenia: Pure Water Flowing into Homes

## Water Supply and Sanitation Sector Project

Not long ago in the small Armenian town of Artashat, a day's routine was difficult, dusty, and often unhealthy. The water piped into homes usually was not flowing; and when it was, it was unsafe to drink.

"The public tap where I was getting drinking water was about an hour's drive away," recalls Ruben Hovhannisyan, a 50-year-old father of two. Like many of his neighbors, he spent a significant portion of the family income driving back and forth for clean water.

"Besides that, can you imagine how much we were contributing to dust and pollution?" he asks.

Today, Ruben and others in the town no longer need to make these time-consuming, expensive, and polluting drives. The clean water they need flows directly from the faucets in their homes.

The people of Artashat are among the more than 600,000 Armenians who benefited from the ADB-supported Water Supply and Sanitation Sector Project. The

### Project Results

#### DATES

- **Approved:** October 2007
- **Closed:** February 2013

#### BENEFICIARIES

- **More than 600,000 people**
- **21 small towns and 97 villages** now have rehabilitated water and sanitation networks

#### EFFICIENCY

- **Water is available** for an average of 14 hours a day, up from 6 hours
- **Number of water connections with meters** has risen from 40% to 77%

#### HEALTH

- **Incidence of waterborne diseases** is reduced
- **Cost of medical care** has fallen

#### TIME

- **People, especially women,** spend less time collecting water, and have more time for social and economic activities

project helped the Government of Armenia upgrade water supply and sanitation systems with support from private companies.

“Through this project, the government has improved people’s access to clean water—a fundamental basic need,” says Cesar Llorens, an urban development specialist in ADB. “The country is acting as a regional leader in providing innovative solutions in the water sector.”

## A dilapidated system

Armenia is a mountainous country, bordering Azerbaijan, Georgia, Iran, and Turkey, that is blessed with an abundant supply of water. The country can supply more than 10 billion cubic meters of water per year, and only needs a quarter of that amount to provide drinking water for its 3 million people.

“Through this project, the government has improved people’s access to clean water—a fundamental basic need.”

The drinking water that is pulled from the ground, usually through wells and springs, is of good quality and requires minimal treatment.

Despite these natural advantages, Armenia had faced serious challenges in providing clean, safe water to its people during the last 2 decades. In many parts of the country, people had water for only two to three hours a day and the pressure was low. Often the water from the tap was not safe for drinking or cooking.

The country’s problems were familiar to many of its neighbors. When Armenia gained independence from the Soviet Union in 1991, it faced a mammoth task transforming the state-run utility systems into modern, efficient agencies. This included the national water and sewerage company and local water agencies throughout the country.

In the 1990s, about 60%–80% of the water flowing through the system was lost to leaks or other problems. This was more than four times higher than the norm for most cities in Western Europe.



Residents of the capital, Yerevan, and about 95% of the other city dwellers in the country were connected to the Soviet-era centralized water service. The old system then fell into disrepair from neglect and poor maintenance. In the years after independence, only about 15% of the population enjoyed continuous water service.

In 2007, a survey in 60 towns and 300 villages showed that more than 60% of the water supply and sanitation infrastructure was in very poor condition. More than half of that had to be replaced or rehabilitated immediately.

The people of Armenia needed a modern system of bringing clean water into their homes, including investments in new equipment and infrastructure. They also needed an updated system of making their water supply pay for itself through a sustainable billing system.

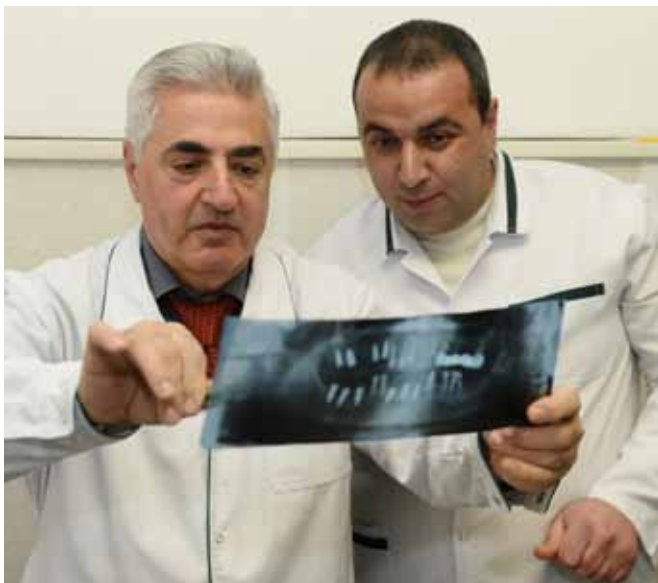
**More than 600,000 people in Armenia have benefited from the Water Supply and Sanitation Sector Project. The project helped the Government of Armenia upgrade water supply and sanitation systems with the help of private companies.**





The Water Supply and Sanitation Sector Project has provided clean water and improved waste removal systems in 21 small towns and 97 villages in Armenia.





The largest dental clinic in the Armenian town of Artashat is able to help more people at lower costs due to an improved water supply, says Hakob Yughurjyan (left), the director of the clinic.

## Strong partners, clean water

The government needed to modernize the country's water supply system and bring clean water back into the homes of its people, but it faced a lack of resources and expertise.

A key element of the government's strategy to address this problem was to outsource many of the management functions of the water supply system to a company with strong experience and a good track record in the water sector. This was backed by financing and support for upgrading infrastructure, training staff on technical and financial management including water source protection, and reforms to bring about systematic improvement of water supply and sanitation services.

Government reforms in the early 2000s allowed the country's principal water agency, Armenia Water and Sewerage Company, to partner with private companies to improve the efficiency and quality of services.



**At the Central Dental Clinic in Artashat, southwest of the Armenian capital of Yerevan, about 170 patients a day are better served as a result of a steady supply of clean water.**

Financial support in 2007, as well as technical expertise, came through the Water Supply and Sanitation Sector Project, supported by a \$36 million loan from ADB. In April 2012, ADB approved an additional loan of \$40 million to construct 600 kilometers of new pipe networks to connect 110,000 more households, as well as rehabilitate pumping stations and treatment plants.

## **Serving more patients**

At the Central Dental Clinic in Artashat, about 18 kilometers southwest of Yerevan, the impact of an improved water system is felt every day. The dental clinic is one of the largest in Armenia, with 35 dentists serving about 170 patients a day. A big part of the service they provide requires the use of dental machines that cost as much as \$15,000 each.

“In the past when we were using low-quality water, the dental machines used to break down very often,” says Hakob



Yughurjyan, the director of the clinic. “Sometimes the machines would break while we were treating a patient.”

Mineral deposits from tap water accumulate on the walls of dental unit water lines, causing damage to the equipment. Aside from the inconvenience of the machines breaking down, the clinic had to add the costs of repair and maintenance to the fees charged to patients.

“Now we can serve more patients because we have a steady supply of clean water,” he says.

## Less time collecting water

“I had to be careful that the children did not inadvertently drink water from the faucet. There was always a danger of getting sick.”

The blending of international water management expertise with long-term financing and government reform programs has had a major impact. The dental clinic is just one example of the wide-ranging effects of the project.

The project has helped rehabilitate the water and sanitation networks of 21 small towns and 97 villages, all of which are managed using efficient commercial principles by Armenia Water and Sewerage Company. It supplies safe potable water for at least 14 hours a day to more than 600,000 Armenians, one-quarter of whom were poor.

The project has reduced the incidence of waterborne diseases and cost of medical care. It has also allowed all members of the family to spend less time collecting water, and more time participating in social and economic activities.

Armenia Water and Sewerage Company has operated much more efficiently than its predecessor. On average, it has increased the duration of water supply to its customers from 6 to 14 hours a day. The percentage of people who are paying their water bills has increased from 48% to 90%. This will enable the company to maintain and upgrade its services in the years ahead.

The number of water connections with meters has increased from 40% to 77%, and about 98% of the water

flowing through the system complies with international water quality standards.

## Keeping the children safe

Life can be hectic at the home of Nazik Grigoryan, a 59-year-old retiree who lives southwest of the Armenian capital, Yerevan. She lives with her two married sons, their wives, and her three grandchildren.

Their busy household of eight people is a happy and peaceful home, but her young grandchildren were at risk of getting ill at any time.

“I had to be careful that the children did not inadvertently drink water from the faucet,” she recalls. “There was always a danger of getting sick.”

**Four-year-old Hayk, his mother and other members of the family of Nazik Grigoryan, who lives southwest of the Armenian capital, Yerevan, are enjoying improved health due to the steady supply of clean water in their home.**



The water piped into their homes was available only for two hours in the morning and two hours at night. The water was also salty and unsafe. To keep their family healthy, Nazik's two sons had to make expensive and time-consuming trips to fetch drinking water from the public tap.

With the improved water system, the family now enjoys clean water from their faucets for at least 17 hours per day, for an equivalent of about \$12 a month, which is a fraction of what they used to spend to drive across town to obtain clean water. As a result, her sons are able to spend more time working and earning income for their families.

Nazik's 28-year-old daughter-in-law has noticed another benefit from the new water system.

Due to the improved quality of water they use for bathing, she says, "Our skin and hair have become softer."

## Partnering for progress

The improved water services in Armenia are the result of the combined efforts of international and local partners working together. ADB, the European Bank for Reconstruction and Development, KfW, and the World Bank provided the funds and expertise to improve the country's water systems.

The national and local governments worked with a broad range of local and international contractors and operators to bring much-needed private sector expertise and efficiency to improve the country's water systems.

As part of this effort, Saur, a French company that specializes in assisting governments in the management of public utilities and other services, partnered with the Armenia Water and Sewerage Company to share good practices from its international experience.

The international community recognized the project's innovation. During the 2012 Global Water Summit in Italy, the Armenian Water and Sewerage Company received the Water Performance Initiative of the Year award.





**An improved water supply has allowed 67-year-old Tanya Saribekyan to spend less time worrying about trying to find clean water, and more time helping her family and tending her house plants.**

## **Blooming flowers**

Tanya Saribekyan is 67 years old but she still works to help support her son's family, including her grandson, who is an engineering student in college. She tailors and alters clothes for her neighbors, and also makes preserves from the apricots she harvests from her garden.

Before the water improvement project, she had to stand in a long line each day to fetch water from a public tap that was open for only a few hours.

“If you missed the time when they turned on the water supply, you might be without water for the whole day,” she recalls.

The improved system has brought 24-hour water supply to their home. Tanya can spend more time on her tailoring work and other livelihood activities. Her family is healthier and she can enjoy simple pleasures, such as tending her flowering houseplants.

“I so enjoy taking care of the flowers and seeing them bloom inside my home,” she says with a smile.

Part of the money generated from the cross-border trade of clean energy to India is used to bring affordable electricity to remote and poor areas of Bhutan.



# Bhutan:

# Bringing Power to Villages and Beyond

## Green Power Development Project

Rinchen Norbu, a resident of the small southwestern Bhutan village of Balaygang, remembers in the past trying to keep his three daughters healthy in a home full of soot and smoke.

“Before we had electricity, we used a kerosene lamp for light and charcoal for cooking,” recalls the 39-year-old farmer. “That produced a lot of smoke.”

In recent years, the situation has changed dramatically in his remote village. Electricity has been brought into the area, despite steep mountainsides and rugged terrain. Today, his children study with electric lighting and his wife prepares meals using an electric rice cooker and other appliances.

The small village also used to be barely accessible, especially during the rainy season when muddy roads were completely washed out. Rinchen and other farmers would battle the water-logged roads for 2 days trying to bring their goods to the market in the capital city, Thimphu.

With an improved road into the village, they can now bring rice and vegetables they grow on their land to the market faster, in

### Project Results

#### DATES

- **Approved:** October 2008
- **Closed:** April 2014

#### BENEFICIARIES

- **More than 9,000 rural poor households and facilities** will gain access to electricity through extensions of the electrical grid

#### HEALTH

- **Reduced reliance on firewood and kerosene** brings cleaner indoor air, benefiting women and children especially

#### GREENHOUSE GASES

- **Burning less wood** means less carbon dioxide and other pollutants released into the atmosphere
- **Exporting clean energy to India** replaces power generated by fossil fuels, reducing CO<sub>2</sub> emissions by 500,000 tons a year

about seven hours, regardless of the weather conditions.

People in the village of Balaygang benefited from a rural electrification program that was part of the ADB-supported Green Power Development Project. The project's rural component connected more than 8,500 rural households to hydroelectricity, and 119 remote public facilities (schools, health clinics, and other community facilities) to solar electricity. Access roads to the project site, which also run through the village, were improved during plant construction.

In addition to rural electrification in Bhutan, the project built the 126-megawatt Dagachhu Hydropower Plant, which will begin operating in June 2014. The electricity generated will be exported to India through an existing cross-border grid.

The project aims to sustain the country's economic growth by both promoting cross-border power trade and increasing domestic access to electricity.




**Rinchen Norbu, a resident of the small southwestern Bhutan village of Balaygang, says his children now are able to study by the light of a clean electric light and his wife no longer needs to cook with unhealthy charcoal.**

## Abundant hydropower resources

Bhutan has an abundant supply of hydropower. It is the only South Asian country with surplus energy available for export. Yet, three in five homes in the country's rural areas were without electricity before the project began in 2008. The Government of Bhutan is developing the potential of its vast energy reserve while providing electricity to many remote areas.

Bhutan's potential hydropower output is estimated at 30,000 megawatts, but only 5% is being used. After meeting domestic demand, about 70% of the 1,500 megawatts of hydropower being generated is exported to neighboring India to help drive that country's booming economy.





Bhutan has an abundant supply of hydropower. It is the only South Asian country with surplus energy available for export.

Bhutan is expected to achieve 100% rural electrification by 2015, ahead of the government's original target of 2020.







The export of energy is one of the main drivers of Bhutan's \$1.5 billion economy. The power to be exported to India from the Dagachhu plant over 25 years is expected to generate more than \$250 million in taxes, dividends, and royalties. Hydropower export will be the largest source of income for the government to fund its public services and social programs. The revenues will also help keep the price of electricity low for poor rural users.

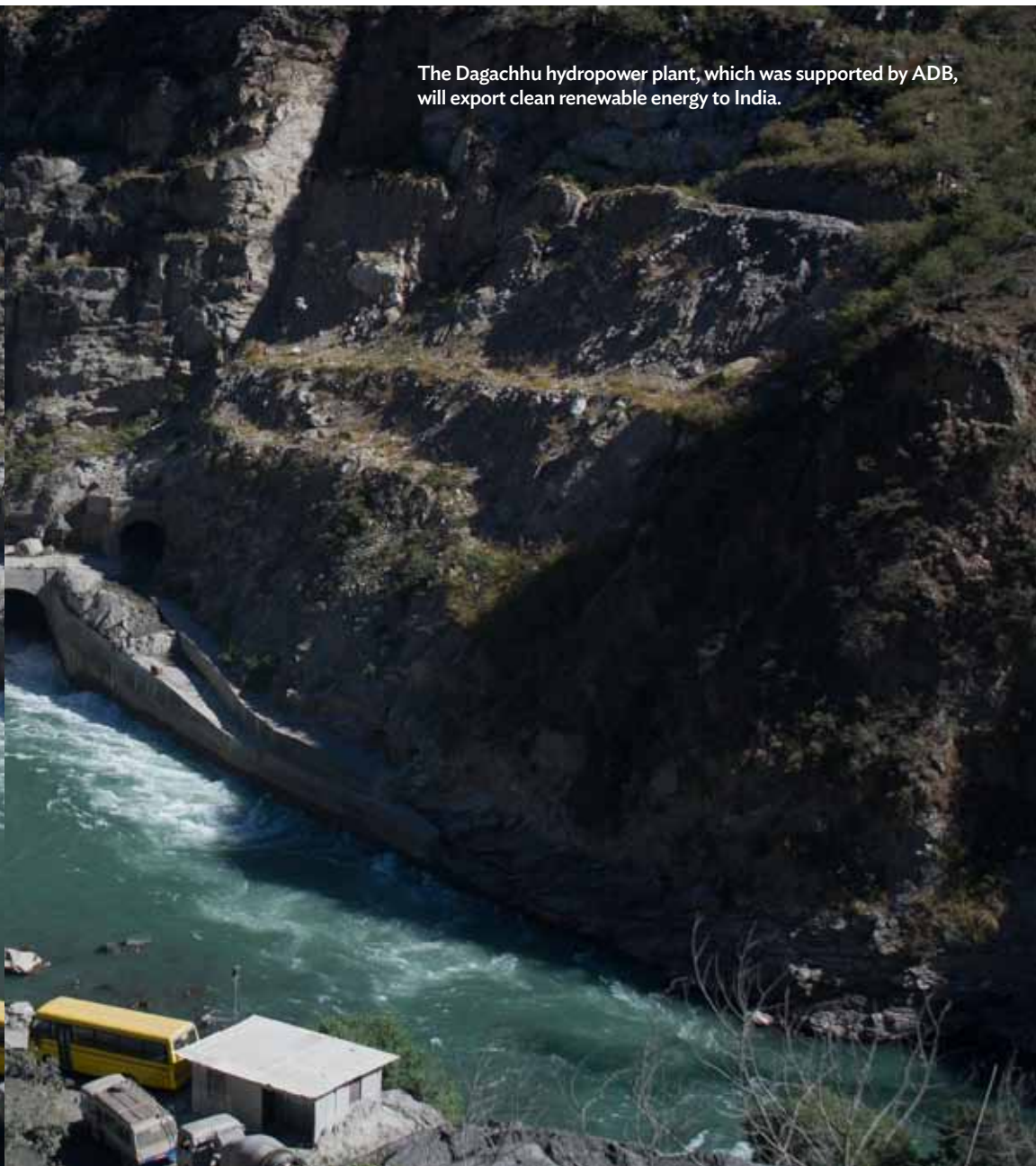


The Dagachhu plant is a “run-of-the-river” facility, meaning that it has no large water storage reservoir and generates electricity through the power of rushing water.



The government aims to develop and export 10,000 megawatts of hydropower to India by 2020. Several more hydropower projects are in the pipeline.

“Hydropower will allow us to develop and strengthen our economy,” said Bhutan Prime Minister Tshering Tobgay.



The Dagachhu hydropower plant, which was supported by ADB, will export clean renewable energy to India.

In 2013, 95% of the population was connected to electricity, compared with 60% in 2008 before the Green Power Development Project started.

## Powered by the private sector

Hydropower plants in Bhutan have been developed in partnership with Austria and India. The Dagachhu Hydropower Plant was developed by a joint venture between the Bhutan public utility, Druk Green Power, and an Indian private company, Tata Power.

“The hydropower plant is Bhutan’s first public-private partnership in infrastructure,” said Kaoru Ogino, a principal energy specialist in ADB, who noted that most

**The 126-megawatt Dagachhu hydropower plant will begin operating in June 2014 and its output will be exported to India through an existing cross-border grid network.**



projects of this type are undertaken by governments. “The project is a model for future private participation in the energy sector, particularly in hydropower.”

ADB provided \$119 million in loans to help build the Dagachhu Hydropower Plant, which does not include a large water storage reservoir. The run-of-river-type plant, which generates electricity through power created by rushing water, will have less environmental impact than traditional plants because the project did not build a major reservoir; there is also no need to relocate people.

## Reducing greenhouse gas emissions

While the project has protected the surrounding environment, it is also making an impact on a global scale. In February 2010, the Dagachhu plant was registered as the world’s first cross-border project to receive carbon credits under the Clean Development Mechanism.

The Clean Development Mechanism, allows greenhouse gas emission reduction projects in developing countries to earn carbon credits which can be traded and sold, and used by industrialized countries to meet part of their reduction targets under the Kyoto Protocol. This creates a financial incentive to build clean energy projects.

The power to be produced by the Dagachhu plant will be used in India, where it will replace power generated by fossil fuels. The use of Bhutan’s clean power supply will avoid about 500,000 tons of carbon dioxide emissions every year, or 15 million tons over 30 years.

“When we sell power to India, we are replacing fossil-fuel-based power generation, so globally we are contributing to a clean environment,” said Thinley Dorji, chief executive officer of the Dagachhu Hydro Power Corporation, the company that will operate the plant.

The project has become a model for other countries on how to trade renewable energy, such as wind, solar, and geothermal, across borders.





**Left:** Sangay Dema, a 51-year-old resident of Balaygang Village, near the Dagachhu project, has seen business increase at her small store that sells noodles, canned goods, and cold drinks.

**Below:** The Green Power Development Project in Bhutan also connected 119 schools, clinics, and other facilities to solar electricity.



The environmental benefits of the project have received international recognition. On 25 July 2013, the Development Impact Honors Program of the United States Department of the Treasury awarded the project for its excellence. The honor is given to outstanding projects that “reflect the vital on-the-ground work that strengthen communities and regions around the world.”

## Busy days at the community store

In Balaygang Village, near the Dagachhu Hydropower Plant Project, 51-year-old Sangay Dema runs a small general store selling noodles, canned goods, and cold drinks. These days, business in her wooden, corrugated-iron-roofed shop

is better than it has ever been, thanks to passing trade from truck drivers and the many workers at the plant.

She says her fellow villagers also drop by more often than they used to because they too are earning more from selling food to workers; leasing rooms in their homes; or from construction, driving, and other jobs at the plant.

In Bhutan, about 12% of the population lives below the national poverty line of about \$27 per month. Sangay has been able to earn more than that in a single day since work began on the plant in 2008.

Her grandchildren will have more opportunities opened to them than she had. Sangay did not go



to school, and learned to read and write in a monastery. But she is happy that increased sales means she now has a little extra money to expand the range of products in her store and to spend on small luxuries like a refrigerator and a television. She can also afford to visit her children in Thimphu more often.

“Life is better now,” she says.

## Lighting up the countryside

Part of the revenue from power export to India will be used to bring affordable electricity to people in remote and poor areas of the country.

Bringing electricity to remote rural areas has reduced the health threat caused by using kerosene and firewood in the home, which produces smoke that is particularly harmful to women and children.





Electricity has been provided under the project to more than 9,000 households and public institutions, including schools, clinics, and community facilities in remote rural areas.

Bringing electricity to these areas has reduced the need to destroy the forests that supplied firewood for cooking and home heating. It has also diminished the threat to health of women and children in particular, by reducing their exposure to smoke generated from using kerosene and firewood in the home.

Through the efforts of this project, and others, Bhutan is expected to achieve 100% rural electrification by 2015, ahead of the original government target of 2020.

In the remote district of Dagana Dzongkhag in southern Bhutan, there has been increased employment, resulting from the construction of power lines and new roads built in remote communities.

This has included extending and improving the bumpy path from the hydropower plant through Balaygang village, and up to the main road that connects to the Bhutan capital and beyond.

“Before this project, this was one of the remotest districts in Bhutan,” says Thinley Dorji, who lives at the plant with his wife, son, and two nephews. “Now that is changing because of the project.”

“We used to have lots of respiratory problems in the rural areas because the kitchen is entirely dependent on fuel wood,” says Sonam Tschering, the secretary of the Ministry of Economic Affairs. “Many people suffered from pulmonary diseases. Providing rural electrification not only has given people a clean source of light, it has also improved their health.”

Not only that, he adds, “You talk about schools, about hospitals. These were all supported through the revenue generated by hydropower.”

“Before this project, this was one of the remotest districts in Bhutan. Now that is changing because of the project.”



Cooks at Yangguang Hotel in Shanxi Province use stoves powered by methane gas to prepare meals quickly and efficiently.

# People's Republic of China: Clean Energy from Deadly Gas

## Coal Mine Methane Development Project

Li Fumang used to gasp for air to get his job done each day at the 148-room Yangguang Hotel in Shanxi Province of the People's Republic of China (PRC).

"Before we started using methane gas, I worked 8 hours a day unloading coal from the truck and feeding it to the boiler," says the 53-year-old. "It was really hard work. The place was full of coal dust. It was difficult to breathe."

Today, Fumang can breathe easily. The hotel uses two fully-automated steam boilers fueled by methane gas. They heat and cool the rooms, and provide hot water throughout the hotel, with no need for coal.

The methane gas that feeds the boilers is being supplied through the Coal Mine Methane Development Project, a partnership between the Government of the PRC, the people and companies of Shanxi Province, and ADB. The project captures deadly methane gas from a coal mine and uses it to provide clean energy for households and companies.

### Project Results

#### DATES

- **Approved:** December 2004
- **Closed:** January 2011

#### BENEFICIARIES

- **About 100,000** local households and nearly 500 local businesses

#### SAVINGS

- **Household fuel costs fell** from CNY2,000 (\$294) a month to CNY350 (\$52)

#### HEALTH

- **Methane burns cleaner** than the coal or charcoal it replaces, cutting smoke and soot in the air residents breathe

#### GREENHOUSE GASES

- **265 million cubic meters** of methane prevented from escaping into the atmosphere per year
- **Power plants** release less CO<sub>2</sub> and pollutants burning methane instead of coal

“The project illustrates how coal mines can be made safer for workers while at the same time producing clean energy,” says Ashok Bhargava, a director in ADB. “It demonstrates several ways to achieve environmentally sustainable growth, one of ADB’s key strategic goals.”

## A changing climate and a deadly gas

As emerging economies like the PRC grow, they need a huge supply of energy. Much of the PRC’s energy supply comes from burning coal, which releases carbon dioxide, one of the main greenhouse gases responsible for climate change.

The Coal Mine Methane Development Project is helping Shanxi Province capture deadly methane gas from coal mines to provide clean energy for use by households and companies.



Coal mining is often accompanied by the release of methane gas, a greenhouse gas that is 21 times more potent than carbon dioxide. Coal mines in the PRC release about 15 billion to 20 billion cubic meters of methane into the atmosphere each year. These emissions are expected to grow as coal mines go deeper underground.

Many coal mines contain a great deal of methane, which needs to be drained during the mining process because it is extremely flammable and may explode when mixed with air. Methane is a primary cause of underground explosions that kill coal miners in the PRC each year.











Modern methane-fueled boilers, which replaced old coal-powered boilers, have made it safer and more efficient to heat and cool the 148-room Yangguang Hotel in Shanxi Province.

## An innovative solution

To help address these problems, the PRC and ADB worked together on the Coal Mine Methane Development Project. The project used the latest technology to capture methane from a coal mine in Shanxi, one of the largest coal-producing provinces in the country.

The project's strategy was not only to improve coal mine safety by demonstrating methane capture technologies on a large scale, but also to convert the captured methane to a clean form of energy for use in nearby communities. This project is set to become a model for thousands of coal mines around the country.

The project constructed a system for capturing more than 265 million cubic meters of methane from mines in Jincheng prefecture every year. This directly improved coal mine safety in the area.

The captured methane, which is about 90% natural gas, was used to run a 120-megawatt power plant that provided clean electricity to nearby areas. The project also constructed energy transmission and distribution facilities that helped to bring clean, reliable gas to about 100,000 households and nearly 500 businesses.

The supply of clean energy improved the health of residents and drastically cut their monthly energy costs. Before the project, families were spending about CNY2,000 (\$294) per month on coal. After the gas connection, their energy bills were cut to about CNY350 (\$52).

Reliable gas supply for commercial and industrial establishments increased energy efficiency and improved businesses in the area. It encouraged and enabled the government to require the use of gas in taxis and other forms of public transport, which resulted in cleaner air.

The project used a new and more efficient technology for coal mine methane capture that had not been used before in the PRC. The project captures and produces coal mine methane for a 120-megawatt power plant—the world's largest methane power plant. Electricity generation and gas distribution to nearby communities have cut coal

consumption. This has resulted in more than 3 million tons of carbon dioxide equivalent not being released into the atmosphere each year.

In Shanxi Province alone, more than 3.2 billion cubic meters of methane was captured from coal mines for clean energy use in 2012.

The poor and women especially benefited from the project. Poor households were connected to the gas pipes for free. They also paid a lower monthly rate for the gas.

The project is also registered under the Clean Development Mechanism—which supports the Kyoto Protocol that gives financial incentives to projects in developing countries that reduce greenhouse gas emissions.

The sale of carbon credits under this mechanism had brought in more than \$100 million in estimated revenues as of 2012, which helped offset the cost of the power plant.



**In Shanxi Province, at least 365 buses have been converted from diesel to clean-burning and affordable methane gas.**

## Learning from experience

For Guo Guohua, a 60-year-old resident of Yejiahe Village in Shanxi Province, the use of gas for her home heating has cut her monthly energy bill by nearly two-thirds. This has been a big help in paying the bills for her family of six.

“Before we started using methane gas, we didn’t have indoor showers,” she says. “In winter, we had to go to the public bathhouse once a week. We used to wash our hands and do laundry with ice-cold water. Now, with methane-gas-fueled water heaters, we can take showers anytime we want and we have hot water from all taps.”

“Before we started using methane gas, we didn’t have indoor showers. In winter, we had to go to the public bathhouse once a week.”

“Cooking is also easy now,” she adds. “I only need 40 minutes to prepare dinner for the whole family. Before, I needed an hour and a half.”

Cui Zhenghua has also seen an improvement in cooking, now that he is using methane gas. But for the 26-year-old manager of a noodle restaurant in Shanxi Province, that means he can more easily prepare hundreds of meals each day.

“Hand-cut noodles are a specialty in Shanxi Province,” he says. “We have four cooks and sell more than 300 bowls of noodles every day. By using methane gas, we are able to have a stable, consistent fire. This is very important for cooking quality noodles and other dishes. The kitchen is also easy to clean.”

Wang Xinjia, the deputy general manager of Jincheng Public Transport Corporation in Shanxi Province, has seen cleaner air and lower costs for his business as positive results of the project.

“We converted 365 buses from diesel to methane gas,” he says. “Forty more are to be converted within this year. The total cost for gas is about CNY2.1 million (\$350,000) annually. This is only one-third of the price for diesel fuel.”

“As part of the project, the Shanxi Jincheng Anthracite Coal Mining Group built a methane gas power plant with 97 generators that produce 207 megawatts of clean energy,”

says Sun Biao, the deputy director of the company's Clean Development Mechanism office.

“Many coal mining companies from Shanxi and other provinces have visited our methane gas power plant to copy our methane capture and reuse technology,” she says. “We are very glad they can learn from our experience.”

**Right:** Guo Guohua, a 60-year-old resident of Yejiahe Village in Shanxi Province, says her family enjoys hot showers and more efficient cooking and heating for less cost now that they use methane.

**Below:** At the Shunliu'er Noodle Restaurant in Shanxi Province, methane gas gives a stable, consistent fire that helps produce more than 300 bowls of noodles a day.





At least 5 million people are expected to have better access to clean water under the Municipal Water Distribution Infrastructure Development Project.





# People's Republic of China: Clean Water for Millions

## Municipal Water Distribution Infrastructure Development Project

Liu Lanxiu and her family used to have difficulty getting a steady, strong supply of clean water to the building where they live in Mushan village in the southeastern People's Republic of China (PRC) province of Jiangxi.

The water pressure would only reach the first few floors of the building, making the top floors less fit for occupancy.

“Now, everything has changed,” says Lanxiu, who can get water through the building. “Our family is able to run a guest house with more than 10 rooms. We offer meals and lodging to our guests.”

“We could not imagine having this kind of family business a couple of years ago without a stable water supply.”

Their business, like many others, has benefited from an overhaul of their town's water system undertaken by the [People's Republic of] China Water Affairs (CWA) Group, under a private sector operation funded by ADB. The project upgraded water treatment plants and water piping

### Project Results

#### DATES

- **Approved:** April 2011
- **Closed:** August 2013

#### BENEFICIARIES

- **At least 5 million people**

#### SAVINGS

- **Improved water systems**  
mean people do not have to buy expensive bottled water

#### HEALTH

- **Lower incidence of illness**  
in areas with improved water systems

#### CONSERVATION

- **The project is expected to cut wasted water** by 40%

#### EFFICIENCY

- **A steady, dependable supply** of water benefits hospitals, schools, and other public services; and private companies

systems to bring clean and affordable water to millions of people in the PRC.

## A vast water distribution system

Throughout the PRC, people are moving from the countryside to cities looking for a better life. Since the country began its reforms in 1978, nearly 500 million people have migrated to cities. Another 200 million people are expected to make the move by 2020.

“We could not imagine having this kind of family business a couple of years ago without a stable water supply.”

As a result, urban areas throughout the country needed massive investments to ensure basic services are delivered to hundreds of millions of new residents. Water distribution has traditionally been the responsibility of municipality-owned utilities, which typically suffer from chronic financial distress due to weak management, poor budgetary discipline, artificially low water tariffs, and the widespread problem of nonrevenue water.

The utilities' chronic losses are a drain on the budgets of governments, which then hold back on the investments needed to ensure a reliable supply of safe water to all residents. The government recognized that water supply facilities can be upgraded quickly with private sector participation in water distribution.

The most basic of all services—the provision of clean water—has been particularly challenging. An estimated 100 million people in urban areas do not have water piped into their homes.

According to a recent study, one in four water utilities in the country is unable to efficiently distribute water to more than 40% of the area it services. A significant amount of treated water is lost and contaminated during distribution due to old and decrepit pipes. When water is contaminated, it impacts the poor most because they struggle to pay for bottled water and medical care.



Liu Lanxiu, left, a resident of of Mushan village in Jiangxi Province, was able to start a family business after her community received a steady supply of clean water.

## Access to clean water 24/7

Only a few years ago, the tap in Luo Meixiang’s home sputtered yellow, rusty water—when water flowed at all.

For Meixiang, a 64-year-old retiree living with her husband on the third floor of a grey apartment block in Gao’an, Jiangxi Province, even basic chores like cooking and cleaning were a constant struggle.

“At peak times, during lunch and dinner, as well as in the evening in summer, the water hardly reached our floor,” she says. “We had to go downstairs to fetch water. In the morning, the water coming out was yellow caused by old rusty pipes.”



Luo Meixiang, a 64-year-old retiree living in Gao’an, Jiangxi Province, has seen the water in her home change from sputtering, rusty, and yellow to strong and clean.





Water quality is tested at the Shahu Water Supply Plant in Gao'an City, Jiangxi Province. Residents in the area have seen dramatic improvements in the quality of their water supply.





An overhaul of the water system in Gao'an City has transformed Meixiang's situation. Upgraded treatment and network control equipment, installed in 2011, now delivers clean and affordable water to Meixiang and her neighbors.

"Everything has changed," she smiles, loading the family's small washing machine. "We never have problems when preparing meals. We can take shower or use the washing machine anytime we want."

**Dan Ranhua, a 32-year-old doctor in Ji'an City, has seen a decrease in stomach problems and skin diseases due in part to an improvement of the water quality in the area.**



About 200 kilometers south of Gao'an, in Ji'an City, Dan Ranhua, 32, an internal surgeon at Qiyuan District Hospital, observed how poor quality water can cause illnesses, such as gastroenteritis and diarrhea. "These illnesses are a threat to children's lives, especially the ones between 1 and 5 years old," he says.

"Based on our hospital records," says Ranhua, "I've noticed that illnesses of the stomach and intestine have been reduced significantly in the past 5 years. There are mainly two reasons for this. One, the awareness for public sanitation has been strengthened; and two, the quality of water has been improved in our district. The incidence of skin disease has also decreased," he notes.

Water quality is a major concern for Fu Xiaohua, a doctor who is also the president of the People's Hospital in Gao'an. "Water is essential for a hospital, mainly for cleaning, disinfection, surgeries, and everyday use," he

**The number of beds at People's Hospital in Gao'an has nearly doubled due in part to a strong, steady supply of clean water, says Fu Xiaohua, a physician at the facility.**



says. “Unlike energy—for which we can have backup facilities at my hospital—there is no alternative to water.”

In 2013, the state-owned hospital treated 200,000 outpatients, hospitalized about 30,000 patients, and performed 9,000 surgeries. “Without the good water supply services from CWA,” he says, “we would have not been able to double our capacity from 410 beds to our current 800.”

At Jinggangshan University, on the outskirts of Ji'an City, thousands of students are seeing the impact of addressing these problems. The project has brought a modern water system to the school.

The university has about 17,000 students and more than 1,500 teachers and staff. It houses six cafeterias and restaurants that need a steady supply of clean water. The university, including dormitories, uses about 3,000 cubic meters of water per day.

“We used to get our water from the wells we dug and the water quality was not good,” says Liu Shuwen, a director at the university.



**Chen Nian, a 21-year-old business student at Jinggangshan University in Ji'an City, says life is much improved on campus now that a steady, strong supply of water is available.**

With the improved water system, the university is able to upgrade its facilities for students in various ways. “In 2013, we installed washing machines and shower rooms with hot water in the dorms,” says Shuwen.

Chen Nian, a 21-year-old business student at the university, says that cold showers are free and hot showers cost a small fee, charged to a smart card.

“The hot showers are really convenient and delightful, especially in

Sun Linzai, who washes dishes and vegetables in the cafeteria at Jinggangshan University in Ji'an City, says the strong supply of hot water has made her job easier.





winter,” she says. “It’s a very reasonable and affordable price for us.”

For Sun Linzai, her job of washing dishes and vegetables in the university cafeteria has been made much easier by the strong, steady supply of water.

“I have worked here for 4 years,” she says. “This is really a good job for me. The working environment is clean and the use of both hot and cold tap water is very convenient.”

## Partnering to expand water access

To bring this change to small cities, the project upgraded local-government-owned water distribution pipeline networks across the country with new investments, technology, and management expertise.

To reach more cities, ADB—in partnership with 12 international banks—provided CWA with \$200 million in loans.



**More than a million people in the city of Ji'an are expected to receive improved water services as a result of the project, according to Du Xiangming, deputy bureau chief of the Urban Planning and Development Bureau.**

CWA worked with local regulators to conduct cost-of-living surveys, and engaged consumer advocacy groups to keep water prices affordable. The poorest customers were helped to pay their bills for basic water consumption through subsidies.

In Ji'an City, CWA upgraded two local water plants and helped train staff to improve water distribution by reducing leakage and installing meters. It also helped improve consumer services, by providing 24-hour hotlines and flexible bill payment schemes.

“Before the CWA started operating the water supply service in Ji'an, we used other supply plants, but the water



Water treatment plants have been modernized and upgraded under the Municipal Water Distribution Infrastructure Development Project.



PHOTO CREDIT: MR. DENG JIAN

quality was not good and the capacity could not meet the citizen's water demand," says Du Xiangming, deputy bureau chief of the city's Urban Planning and Development Bureau.

"We believe, with the cooperation of [CWA], we can reach our goal of providing water for more than 1 million people in Ji'an's urban and rural areas by 2030," he says.

"Water distribution is a new frontier for private participation. ADB has been instrumental in increasing access to safe water and improving water distribution efficiency in small cities across the country," says Hisaka Kimura, a principal investment specialist in ADB's Private Sector Operations Department.

## Clean water for the masses

The result of this dynamic partnership has been reliable, convenient access to safe drinking water for millions of people. The project is expected to benefit at least 5 million people in the target small- and medium-sized cities. Already, people in areas served by improved water systems are getting sick less often and are saving money, because they no longer have to buy expensive bottled water.

Eliminating water outages and having steady pressure improve delivery of public services, such as hospitals and school, and services from private companies. The project is also helping conserve water, one of the most precious resources in the PRC's booming economy.

By 2015, the project is expected to deliver at least 2 million cubic meters of water per day and cut the waste of water by about 40%.

## Supporting a water-intensive industry

In Gao'an, the ceramics industry—which relies heavily on water—is booming. About 80 factories make high-quality tiles and ceramic fixtures for construction, accounting for

about one-eighth of the country's total ceramic output. The industry in the area employs about 30,000 workers.

“Architectural ceramics is one of the leading industries for local economic development and job creation,” says Xi Yongchun, administration director of Jiangxi Architectural Ceramics Industrial Base. “A stable water supply is the foundation for developing this industrial base,” he remarks.

Water is used in all stages of ceramic production, including mixing, milling, and glazing. A water supply interruption can be catastrophic for a factory's production line, requiring expensive shutdown of kilns and hours of lost production. Water quality is also important for the consistency of porcelain quality.

Gao'an's ceramic plants have existed since the 1970s, but it was only in the late 2000s that they began to expand rapidly. A government plan to establish “Ceramic City” was designed to leverage the city's skills in ceramics, ample labor supply, and abundance of excellent local clay. The only problem was finding a strong supply of clean water.

The project responded to the challenge by upgrading and expanding the water network in the area. Today, more than 120,000 cubic meters of water per day flow through the system—triple the amount of 6 years ago.

A treatment plant is being built that can process 40,000 cubic meters of water a day, along with a pipeline into the area where ceramics factories are based, to further expand production and increase job opportunities. Yongchun estimates that the expansion will create 3,000 new jobs in 2014.

Liu Chunliang, general manager of Xinruijing Ceramics, says his company could not operate without the strong, steady supply of water now flowing into the area.

“Our water consumption for six production lines is about 80,000 cubic meters per month,” he says. “It's a 24/7 operation. If the water supply stops for 2 hours, we have to shut down the whole production. You can see how important water supply is for us!”

Sandhya Rani Jena, a 19-year-old student, says improving roads in her village in eastern India has allowed more students to obtain training at the local vocational school.



# India: Rural Roads to Prosperity

## Rural Roads Sector II Investment Program (Project 1)

A community hospital in Chandanpur, in eastern India, is busier than ever. The 16-bed hospital is doubling in size to handle an influx of new patients. More than 100 patients come to the hospital each day, double the number of previous years.

More people can visit the hospital because the surrounding area now has improved roads to remote villages in the countryside. Safe, paved roads that can be used in all-weather conditions mean that people who once suffered at home, or died in transit, can now reach modern medical care.

“More and more pregnant women prefer to visit the hospital now for the delivery of babies,” says Prakash Chand Mahate, a doctor who works at the center. “This has reduced the maternal and infant mortality rates by up to 25% in the region.”

“Health workers have also been able to achieve a 100% immunization rate in many villages now that they can be reached by modern roads,” says Prakash.

### Project Results

#### DATES

- **Approved:** July 2006
- **Closed:** October 2009

#### BENEFICIARIES

- **About 2 million** people

#### ROADS

- **About 2,900 kilometers** of rural all-weather roads were built or upgraded

#### POVERTY

- **Percentage of families living in poverty** fell by 4.6% in project villages, versus 2.8% in non-project villages

#### EDUCATION

- **The number of children completing grades 5 and higher** rose by 8%
- **The number of children receiving no education** fell by 4%

#### PUBLIC TRANSPORT

- **Use of public buses and taxis** rose by 50%





**Prakash Chand Mahate, a doctor at the Community Health Center in Chandanpur, India, says improved roads have resulted in reduced maternal and infant mortality and increased immunizations.**

“Lives are being saved,” he adds. “Ambulances can now reach the villages where there was no road in the past.”

The lives are being saved through the ADB-supported Rural Roads Sector II Investment Program, which aimed to help the Government of India with its national effort to improve roads in the countryside.

Having a poor road system, particularly in the countryside, makes it more difficult for children to go to school and more expensive for farmers to bring their produce to the market. Bad roads adversely affect people in countless other ways.

“Bad roads make people poorer. It’s as simple as that,” says Lee Ming Tai, a senior transport specialist in ADB. “Building and repairing roads make a powerful impact on people’s lives in the rural areas.”

In India, the neglect of the rural road system in recent years has deprived many rural communities of the economic opportunities that cities in India have enjoyed. Many small towns are poor, and young people are being driven to go to large cities to find jobs.

In response, the project improved the roads in some of the poorest areas in India.

“The project focused on being socially inclusive and gender responsive by helping the poor through improved access to social and economic services,” says Lee Ming.

## Better access to market

The ADB-supported project helped about 2 million people, mostly the poor in rural areas, by providing modern roads to 1,503 communities in the states of Assam, Odisha (formerly Orissa), and West Bengal. About 2,900 kilometers of all-weather rural roads were built or upgraded under the project.

The improved roads enabled people, particularly women, to find jobs, commute to work and schools, and go to clinics and hospitals more quickly and safely. It also encouraged farmers to grow higher-value crops, and enabled them to transport their produce faster, keeping it fresh and in good condition.

As a result of the project, farmers in the area made more visits to the market than before the new roads. The number of visits made by government agricultural extension workers to farming communities increased threefold, bringing much-needed expertise and other help to farmers.

Before the project, Shatrughan Mahapatra, a 63-year-old farmer in Deulapada Village, was not able to bring the wheat and other crops he grows to the market when there was heavy rain. An old-fashioned ox cart was the only way to trudge through the knee-deep water on the old road.

The Rural Roads Sector II Investment Program has helped about 2 million people, mostly the poor in rural areas, by providing modern roads to 1,503 communities.







As part of the project, an elevated all-weather road was built near his village. Shatrughan can now get his crops to the market quickly and efficiently, even when it is raining hard. Because of this, his income has doubled.

“It was a hand-to-mouth existence for the family,” he recalls of life before the new road. “Now, we are much better off and are able to meet our needs.”

**Shatrughan Mahapatra, a 63-year-old farmer in Deulapada Village, can now get his crops to the market quickly and efficiently, even when it is raining hard, due to improved roads.**





Farmers are just one group that has enjoyed wide-ranging benefits from the road improvement project. Many people, who had previously been engaged in low-paying day labor in the countryside, were able to use the roads to find better-paying jobs just outside of their villages.

After project completion, the distance traveled to the workplace by people in the area increased by up to 10%, but the time it took for them to get to work was reduced by up to 60%.

This positive effect was confirmed by the increased use of public transport. The use of public buses and taxis increased by 50%, while trips by minibus were up by 150%.

**At the public elementary school in the village of Khamar, students from neighboring villages have been able to walk, ride bicycles, or take a bus through the improved road.**



## Increased enrollment

At the public elementary school in the village of Khamar, students faced huge obstacles trying to get to class during the monsoon season. As the roads into the village were flooded, boats had to be used to get to the school or some students just stopped attending school.



Keshav Chander Pradhan

Since the new road has been built, students from neighboring villages have been able to walk, ride bicycles, or take a bus to school even when it is raining.

“Before the road was constructed, there were only 40 students in the school,” says Keshav Chander Pradhan, a 40-year-old teacher at the school. “Now, we have 70 students on our rolls.”

The improved school attendance was seen as well after the completion of the project in 2009. The number of students who completed grades five and above increased by 8%, while the number of children receiving no education dropped by 4%.

Flooding was also a problem for Madhusudan Biswal and his wife, Bhanumatib Biswal, who operated a small grocery store in the same village. On the old dirt road, they had to use a bicycle to bring in the food and other items they sell in their store. This required bringing only small amounts and making many time-consuming trips.

“Now, vehicles can reach our village and we can purchase in bulk all the commodities we require,” says Madhusudan.

Bhanumatib agreed that the road has had a major impact on their business. “We are earning much more now,” she says.

Panchai Swain, a 45-year-old secretary of a women’s community organization in the village, says her group earns money through embroidery and making stuffed toys. This required obtaining the thread and other raw materials, as

well as transporting the finished textiles and toys to the market to sell.

Before the improved road in the area, these were difficult trips. Today, public buses move along the new road and stop in the village. They can now easily get to the market and as a result, their group's income has more than doubled.

"We want our kids to be educated," she says. "With more income, we can now afford to send our children to school."



Panchai Swain

## On the cutting edge

The effectiveness and impact of the road building project were rigorously evaluated by ADB using a cutting-edge approach to assess how well development organizations were doing their work.

**Bhanumatib Biswal and her husband, Madhusudan, have seen dramatic growth in business for their small store since an improved road has increased traffic nearby.**



The study looked at how people in an area benefited from a road compared to a similar village that did not receive a road during the same period. This analysis allows an organization to understand if positive results—such as improved school attendance and increased incomes—are attributed to the project, or if other factors, such as a generally improving economy, contributed to the results.

The study conducted on roads built in Madhya Pradesh State found that villages that received new or upgraded roads improved in various ways, unlike similar villages that did not benefit from the improved roads.

Most importantly, the percentage of poor families—measured according to those living below the poverty line—declined by 4.6% in project villages versus 2.8% in the villages that did not receive roads.

Villages with improved roads from the project saw a 61% increase in buses serving them, while other villages experienced a 23% decline. Primary school dropout rates among girls declined by 7.2% in villages without the new roads, and by 9.7% in the areas that received them. The attendance of teachers increased by 5.5% in villages benefiting from the project and declined by 0.3% in unaffected villages.

The study also found that the amount of crops that spoiled during transport to market declined by 9.7% in villages with new roads, and increased by 2.6% in similar villages without the roads.

## Inspiring students

At the Industrial Training Center in Parakhanda Village, students come from surrounding areas to learn to be electricians and pipe fitters, and to study other valuable trades that could lead to jobs.

“I am studying so that I can become economically independent and also support my family,” says Sandhya Rani Jena, a 19-year-old student who rides to school on a bicycle from her village 4 kilometers away. “The road has certainly inspired more students from neighboring villages to join the center.”



Ronjan Kumar, a 30-year-old teacher at the school, said enrollment has increased since the new road was built in the area.

“Two years ago, the village was inaccessible,” he says. “When there was no road, there were only about 20 students at the center. Now we have about 60 students. Due to the improved road, the commuting time has also been reduced for students coming from far-off places.”

Jitender Biswal and Rakesh Pradhan, who are both students at the school, said the road made studying at the school possible for them and their relatives. One of Rakesh’s brothers has finished his studies at the school and has found a good job.

“Improved road access certainly helped us to look at the opportunity to enroll at the center,” says Rakesh. “I want to supplement my family’s income by getting a job after finishing the electrician course here.”

For Jitender, the road was a major factor, as well in getting a chance to study.

“Our village mostly remained marooned due to flood water,” he says. “An unpaved track was the only approach to the village. With the road, our connection to other villages and nearby towns has improved. It has also helped students like me from neighboring villages to consider coming here to study.”

**At the Industrial Training Center in Parakhanda Village, students from surrounding areas, Rakesh Pradhan (left) and Jitender Biswal (right) travel on newly built and upgraded roads to learn to be electricians and pipe fitters, and to study other trades.**







The Vocational Education Strengthening Project in Indonesia is helping produce the skilled workers that both Indonesian companies and foreign investors need.

# Indonesia: Matching Skills, Changing Lives

## Vocational Education Strengthening Project

Jakarta student Dinda Layallia has always been fascinated with anything that flies: butterflies, dragonflies, birds, kites, and airplanes—her favorite.

“I just love airplanes,” says Dinda. “When I was a young child I would always run and wave at any airplane flying overhead.”

When Dinda graduated from junior high school 3 years ago, she asked to enroll



Thanks to valuable skills training, Dinda Layallia is closer to her dream of getting a job in aviation.

in an aviation vocational school. Her parents initially rejected the idea, preferring to send her to a regular high school, just like any other girl her age.

But Dinda did not want to go to a general high school, because she knew that it would be difficult for her parents to send her to a university to study aviation engineering. An expensive education was beyond their reach.

### Project Results

#### DATES

- **Approved:** March 2008
- **Closed:** November 2013

#### BENEFICIARIES

- **90 vocational schools** are receiving assistance

#### JOBS

- **7 in 10 graduates** of supported schools obtain jobs within 4 months from graduation
- **Graduates get higher** paying jobs

Dinda hoped to attend Sekolah Menengah Kejuruan (SMK) Negeri Penerbangan 29, a senior secondary vocational school in Jakarta, so she could get a job as an airplane mechanic right after graduation.

The school's programs in mechanical engineering, electronics, refrigeration, and aviation are traditionally geared toward boys. Of the 890 students in the school, fewer than 90 are girls.

But Dinda's determination finally convinced her parents to allow her to attend the school. She now stands a much better chance of making her dream come true.

Her school is one of dozens of vocational schools in Indonesia supported by the Vocational Education Strengthening Project, which is financed by ADB. The project helped students obtain the skills they need to get a job after graduation.

The government recognizes that workers need to upgrade their skills, particularly in the fields of technology and management, to help Indonesian companies compete globally. The challenge was to develop a curriculum that is up-to-date to match the skills needed in the workplace.

The Vocational Education Strengthening Project was launched in 2008 to directly address the mismatch between education programs and the skill needs of businesses.

"The government wants to ensure that the country produces the skilled workers that meet both Indonesian companies' and foreign investors' needs," says Sutarum Wiryono, an education specialist in ADB. "Improvement of vocational education in Indonesia is key to meeting the increasing demand for skilled workers."

## A perfect match

At a state vocational school called SMK Negeri 3, near the world famous tourist area in Bali, this process of matching skills training with industry needs is in full bloom.

About 400 skilled workers graduate from the school each year, with about half of them continuing their studies at the

nearby Academy for Hotel Management. To make sure that the most needed skills are being taught, the nearly 40-year-old school has partnered with 30 hotels and restaurants; 13 cosmetic studios, spa resorts, and beauty salons; international cruise ship operators; and an English language training institute in Bali.

One of those partners is Suwar no, the manager of the Sunset Residence Hotel in nearby Kuta. He helps organize 6-month internships at nearby hotels for students of the school.

“We have high expectations of our future employees,” he says. “So we support the school wherever we can.”

The school, which is assisted by the project, works with the hotels in the area to prepare the students for their internship, and later their employment.

**The Vocational Education Strengthening Project has helped 90 model vocational schools by improving school facilities, upgrading the quality of teaching and learning, and strengthening schools–industry linkages.**









Seven in 10 graduates from schools supported by the Vocational Education Strengthening Project have obtained jobs within 4 months from graduation.



“Our students know exactly what to expect, because we prepare them well for their placements, and the hotels provide us with feedback on their performance,” says Yulie Astini, the school’s principal.

To keep their skills up-to-date, teachers at the school are encouraged to work for 2 to 4 weeks a year in the local hotel industry. In addition, the school has set up small businesses on its campus—called production units—that not only teach the students practical skills with actual paying customers, but also contribute to the school’s coffers. This includes a fully operational hotel on campus where students work with the alumni of the school.



Suwarno

Anggi Martha, a student who worked in a nearby hotel as part of her studies at the school, says the practical experience of her internship had served her well.

“What I have learned in school perfectly matched the jobs I do in the hotel,” she says. “Compared to students coming from other schools, I’ve got a lot more self-confidence.”

## More jobs, higher pay

The Vocational Education Strengthening Project has helped 90 model vocational schools by improving school facilities, upgrading the quality of teaching and learning, and strengthening schools–industry linkages. The project links private companies directly with the schools, so they can advise on what skills are most needed in their industry.

Seven out of 10 graduates from the schools supported by the project have obtained jobs within 4 months from graduation, according to the Vocational Education Department in the Ministry of Education. Their graduates have generally been receiving higher paying



Anggi Martha

jobs than workers who graduated from vocational schools not assisted by the project.

Administrators at schools covered by the project reported that the training they received allowed them to operate their schools more efficiently. They could also save money while helping more students.

Income from business ventures with private companies also reduced the need for government assistance to the students, and decreased the amounts that parents needed to pay in tuition. In addition, employers have reported that graduates from the project-supported schools are starting their new jobs with skills that more closely match what they need.

**Graduates from schools supported by the Vocational Education Strengthening Project have generally been getting higher paying jobs than workers from other schools.**



The Indonesian education ministry has announced plans to adopt the methods at vocational schools supported by the project in other institutions around the country.

## From student to entrepreneur

For Richard Theodore, a 20-year-old graduate of the government vocational school SMK 3 Tangerang, his training helped him understand better how to run his restaurant called Tacose, located at Ciputra Mall in West Jakarta.

He owns and operates three outlets of the restaurant, employing 29 people. His learning experience at the ADB-supported vocational school has been critical to the operation and expansion of his business.

“I learned so much about basic culinary knowledge,” he says. “My teachers were great and very experienced, like professional chefs and hotel managers. I learned both theory in classrooms and practice in culinary techniques in the kitchen.”

“I also got very valuable lessons on entrepreneurial skills, such as how to promote and sell a product, prepare a proposal, and conduct simple business analysis,” he says. “I think the curriculum in SMK has been good, practical, and relevant to businesses and industries. The learning environment is also favorable. I feel so fortunate to have had a chance to study at such a wonderful school.”

## A dream made possible

The 15-year-old Bintang Jalu Rais Al-amin listens intently to an orientation talk given by a group of senior high school students. More than 400 new students are also in the auditorium of the state vocational school, SMK Negeri 2 Depok, in the Sleman District of Yogyakarta Province.

Bintang, whose name means “star” in Bahasa Indonesia, has always wanted to study at the school. It is considered the top vocational school in the province, and the ninth best among the 9,000 in the country.

There was a time when the institution had a reputation as a “second-class” school, producing only low-level employees. But this perception has changed after the school received support under the ADB project.

“I’m impressed by the achievements of the school, and I heard it has international recognition too,” Bintang says of the school where he plans to learn about manufacturing processes.

He knows that he has a strong chance of finding a good job after graduation. His cousin, who recently graduated from the school, did just that.

“My only dream now is to work,” says Bintang.



**According to employers, graduates from schools supported by the Vocational Education Strengthening Project start their new jobs with skills that more closely match what companies need.**





The Northern and Central Regions Water Supply and Sanitation Sector Project has provided 24-hour clean water to 18,173 households in 12 towns across the northern and central regions of the Lao People's Democratic Republic.

# Lao People's Democratic Republic: Faucets of Change

## Northern and Central Regions Water Supply and Sanitation Sector Project

Life has always been hard for women in the small, poor villages of northern Lao People's Democratic Republic (Lao PDR). The daily ritual of fetching clean water was a particularly grueling task.

"I would get up in the morning before the children were awake and walk to the river and carry back the water," recalls Lee Chanmanee, a woman from Muang Houn District. "I'd go back to the river again and again until I had enough water for the day."

"The path to get there was not straight and quite difficult," says the mother of five. "I'd carry 20 liters at a time. It was very heavy."

Today, clean, safe water is piped into her home. The daily walk along the uneven dirt path is no longer necessary, and the water that her family is drinking is cleaner and safer.

"Our lives have improved a lot," she says. "Our family is healthier now and we've had very little sickness."

### Project Results

#### DATES

- **Approved:** August 2005  
**Closed:** March 2013

#### BENEFICIARIES

- **18,173 households (almost 100,000 people)** were provided 24-hour clean water
- **More than 17,000 households** installed modern toilets
- **751 poor households** received grants to help pay for the installation of modern toilets

#### TIME

- **Eliminating the need to fetch water** frees time for women and girls
- **Girls with more time** have more opportunity to go to school

#### HEALTH

- **Access to clean water** cuts incidence of water-borne illnesses

Lee is one of thousands of people in the Lao PDR who have benefited from the Northern and Central Regions Water Supply and Sanitation Sector Project. It was supported by ADB, with cofinancing from the Norwegian Agency for Development Cooperation, the Organization of Petroleum Exporting Countries Fund for International Development, and the United Nations Human Settlements Program.

The people in these remote, impoverished areas have for decades struggled to access clean, safe water. Most have never had the benefit of modern toilets. In 2005, when the project was being prepared, only 17% of households in small towns in the Lao PDR had piped water and more than 50% lacked modern toilets in their homes.

Lack of safe water and sanitation facilities had a significant impact on their health and ability to work and live with dignity. Women and girls were particularly hard hit, as they bore the burden of hauling water and the drudgery of dealing with problems affecting the health of their families. Instead of going to school or having a chance to work or socialize, they spent much of their time carrying water.

**The Northern and Central Regions Water Supply and Sanitation Sector Project has helped install water distribution systems and build water treatment plants.**



The solution: pipe clean water, construct modern drainage systems, and install toilets in people's homes to improve the health of families and cleanliness of villages. The goal of the project was to improve the quality of life in these small towns, as well as to help these areas become market centers for goods and services, especially from the rural areas.

"Piped water is important," says Phomma Veoravanh, deputy director general of the Department of Housing and Urban Planning in the Ministry of Public Works and Transport. "It has a big impact on the people, not just to eliminate poverty but also to support social and economic development."

"Clean, piped water most dramatically affects the lives of girls in small, poor communities," says Anupma Jain, senior social sector specialist in ADB. "It allows girls to attend school longer," she says. "Basically, without water supply, girls are assisting their mothers or other family members to collect water. This takes them away from staying in school or even attending school."

**Lee Chanmanee used to have to carry about 20 liters of water a day from a nearby river before a modern piped water system was installed in her home.**











This water treatment plant supplies piped water to homes in Luang Namtha Province.

## A challenge and an innovation

Although people desperately needed and wanted piped clean water in their homes, many were less enthusiastic about having modern toilets installed. Poor families struggling to pay for even the most basic expenses had little money left to put in toilets.

Bringing in clean water would have been much less effective if the project had not also addressed the issues of storm drains and modern toilets. People would still be getting sick. How can you help people install modern toilets in their homes when they can barely afford to pay their bills?

In response, the project offered free water connection for a limited time to those households that installed modern toilets. The water supply company then recovered the cost of these initial connections by spreading the payments over time. Poor households were also given grants to help them pay for the new toilets.

**Reliable access to piped water supply has helped ease the burden on women and enabled them to earn money through local markets and ecotourism opportunities.**



The charges were based on consumption, which was broken into three progressive tariff blocks: lifeline, normal, and highest. A lifeline tariff block corresponds to a minimum level of water consumption at a nominal fee. This makes the water more affordable for the poor, and spreads the costs of the service to customers within the water supply company's entire service area. This has improved the financial performance of the water companies and will help them continue to provide clean water for years to come.

"After we build the plants, our priority is to provide reliable service," notes Chertoua Kayingmoua, general manager of the water supply company in Oudomxay Province.

## Proactive help

The project provided 24-hour clean water to 18,173 households (96,036 people) in 12 towns across the northern and central regions of the country. Some 17,565 households built modern toilets in their homes. Of these, 751 poor households received grants to help pay for the installation of toilets. In many of the villages, all households now have modern toilets. The project also provided access to water supply to about 3,000 households from ethnic groups and those headed by women—groups that are vulnerable and sometimes neglected.

Besides installing water distribution systems, the project built water treatment plants to maintain the quality of the water.

"The water supply plant is important because it delivers clean and drinkable water to the people," says Saysamone Vongsamphanh, general manager of the water supply company in Luang Namtha Province. "As a result, they have better health."

Helping women was a particular focus of the project. It not only helped women obtain clean water and modern toilets for their homes, but also trained them as water supply company workers, project management staff, and community managers. About one-third of government staff in project management units were women. Nearly half of the participants of the community water and sanitation



workshops organized by the project were women. And nearly one-third of operation and maintenance training for water company staff were attended by women.

## Life is much easier



Khamsian Kaewpanya

Khamsian Kaewpanya is one of the women who helped their village obtain clean water and build modern toilets. She is a village water and sanitation coordinator in Oudomxay Province.

“It is very different now,” she says. “Before we had to carry water and now we can get it from the tap. Since villagers have gained access to clean water, health problems have been reduced. Their lives are more comfortable now.”

Reliable access to piped water supply has helped ease the burden on women and enabled them to earn money through local markets and ecotourism opportunities.

People in remote, impoverished areas of the Lao PDR have for decades struggled to access clean, safe water. Women and girls were particularly hard hit as they bear the burden of hauling water.



Bouatib Promsaengprasert, a village water and sanitation coordinator in Muang Sing District in Luang Namtha Province, notes that increased income for women has helped the entire family.

“Our lives are better since we got tap water,” she says. “Now we have time to work in the market and support our families better.”

In Muang Sing District, Bouakham says she used to spend two hours a day collecting 60 liters of untreated water for her family.

“Every morning I’d wake up, do the housework, and then go to the river to collect water. It would take 20 minutes for each trip,” she recalls. “I’d go 2 or 3 times in the morning and do the same in the evening. So in all, it took about six times a day.”

“Now, I can wash clothes and take a bath in the house. I also have more time for cooking and other things. Life is much easier with tap water.”

**The Northern and Central Regions Water Supply and Sanitation Sector Project has helped pipe clean water, construct modern drainage systems, and install toilets in people’s homes to improve the health and cleanliness of villages.**







Life has improved for Namjilsuren Gombo and her five daughters, who have been enrolled in a government food stamp program in Mongolia.

# Mongolia: Changing the System to Focus on the Poor

## Food and Nutrition Social Welfare Program and Project

Namjilsuren Gombo and her five daughters live in a simple *ger*—a traditional one-room tent home—along a hardscrabble mountainside on the outskirts of the Mongolian capital city of Ulaanbaatar.

With an 8th-grade education, and no husband, 42-year-old Namjilsuren has struggled for years to take care of her daughters with her meager income. Some months, just keeping them fed meant giving up other necessities.

“Sometimes we did not have notebooks for them to use in school,” she recalls. Adding later, “There were times before when I used to cry because I felt helpless.”

These days, life is better for Namjilsuren and her five daughters. They have been enrolled in a government food stamp program, which is a welfare benefit that helps them to buy enough flour, rice, and other basic commodities to get them through the month. Using the stamps to cover food expenses frees up money to spend on other necessities.

### Project Results

#### DATES

- **Approved:** December 2008
- **Closing:** June 2014

#### BENEFICIARIES

- **More than 120,000** people are no longer undernourished

#### THE POOREST

- **The program targeted** the country's poorest 5%

#### EDUCATION

- **By freeing up income**, the program has allowed families to send children to school

#### NUTRITION

- **More fruits and vegetables** are eaten by beneficiaries of the program

“It means we get to satisfy our daily food consumption needs,” she says. “With full stomachs, the children are much happier going to school and their grades have improved. They never miss school, they are better fed, and they have something to wear. They are happy attending their classes.”

Namjilsuren and her five daughters benefited from the Food and Nutrition Social Welfare Program and Project, a partnership between the Government of Mongolia and ADB.

The project was launched to help the government provide assistance to the country’s poor and vulnerable people in response to global food and fuel crisis in 2008. When food prices spiked in May 2008, inflation in Mongolia reached 33%, the highest rate of all Asian countries. The country was importing almost 80% of its food. Poverty at the time stood at 33% of the population, and in poor households about 70% of the budget was spent on food.

The government first reacted to public demonstrations about high food prices by raising welfare payments for all by 20%. This approach was costly, particularly because it did not channel the welfare benefits to the poorest. Through the project, the

**The Food and Nutrition Social Welfare Program and Project, a partnership between the Government of Mongolia and ADB, has helped more than 120,000 people.**





most vulnerable households were identified. Being able to target assistance enabled the government to help those who were most in need while also helping contain the government's ballooning welfare expenditure.

## Finding the poor

The Food and Nutrition Social Welfare Program and Project helped the government create a food stamp program that carefully targeted the poorest and most vulnerable 5% of the population. This was the first time in Mongolia that poor families nationwide were systematically identified. Food stamps represent about 10% of average monthly spending in these households.

“The project helped to create a safety net, ensuring food consumption and nutritional levels for the poor,” says Wendy Walker, a principal social development specialist in ADB. “The impact evaluation of the project found that the most significant impacts have been ensuring food security and dietary diversity for households, improving self-esteem, and reducing negative coping strategies such as having to borrow money from others to pay for food.”

The project designed and conducted a nationwide household survey that identified the country's poor. The resulting database has become an important tool for poverty targeting, which can be used for other social programs.

“It was a very effective project,” says Otgonbileg Yura, head of the Welfare Division in the Ministry of Population



Food stamps, issued with the support of the Food and Nutrition Social Welfare Program and Project, can only be used for 10 essential food commodities.







Before enrolling in a government food stamp program, Namjilsuren Gombo used to struggle to provide for her five daughters.

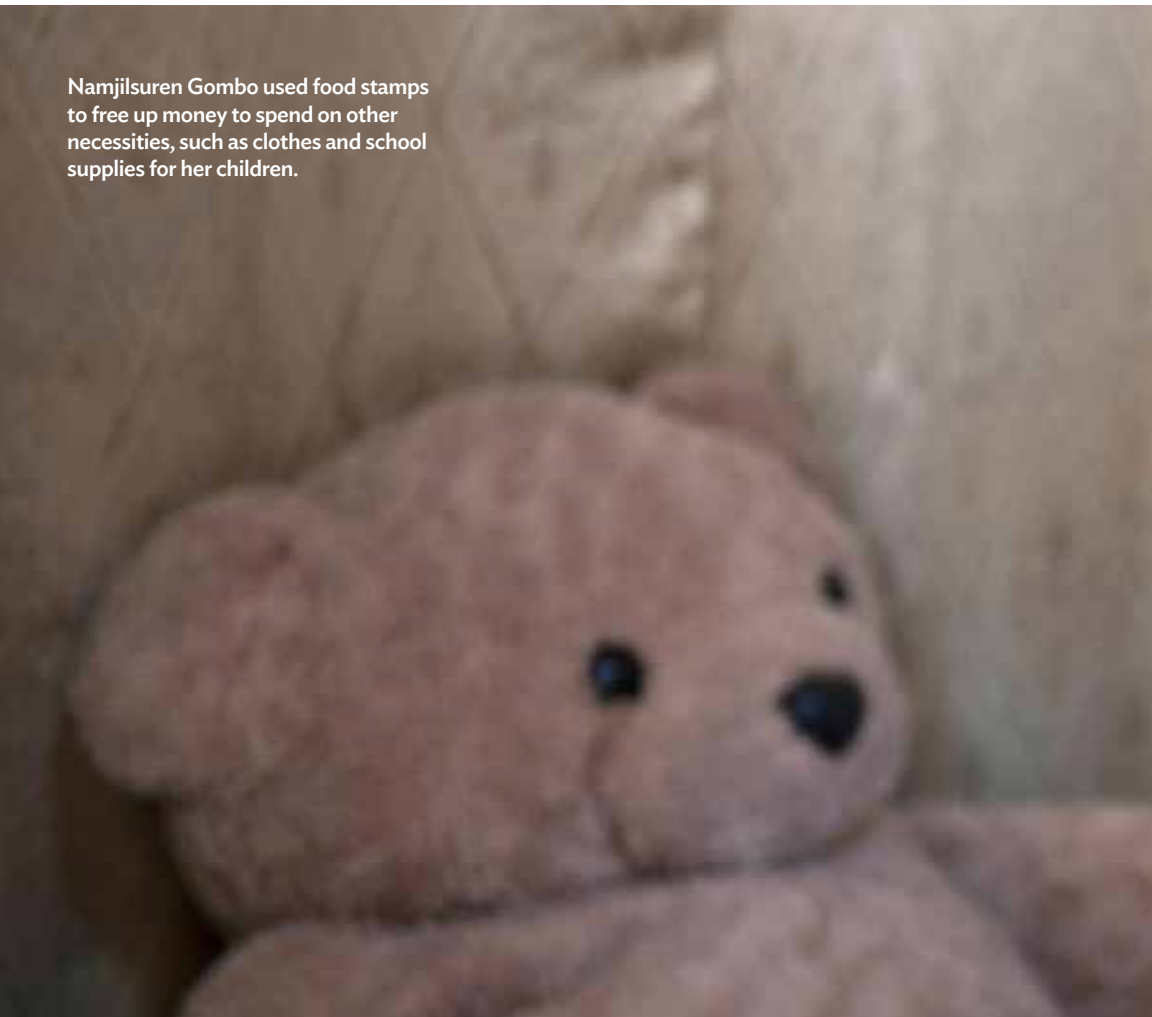
Development and Social Protection. “With the implementation of this project, we were able to deliver social welfare services based on the actual living conditions of the population. In other words, social welfare is becoming now more targeted, reaching the most vulnerable and poor households.”

Dorjderem Sanjaasuren, a senior officer in the Department of Social Welfare Policy Implementation, agrees.

“The project laid the groundwork for correctly identifying households and citizens who are in dire need of social welfare assistance, put in place a household living standard database, and provided a platform for gaining experience and expertise,” he says.

The food stamp program was officially adopted as a government social welfare benefit in 2012, and is now fully supported by the state budget. The program ensured that the

Namjilsuren Gombo used food stamps to free up money to spend on other necessities, such as clothes and school supplies for her children.



poorest people in the country do not become malnourished or hungry. More than 120,000 people have benefited from the program, exceeding the original target of 100,000.

Lkhagvasuren Myagmarjav, a director in the Social Welfare Service Department in General Office of Social Welfare and Service, says the program has had a powerful impact on the poor in Mongolia.

“People are genuinely happy about this program,” she says. “The program has really made a difference in their lives. More specifically, malnutrition was averted. According to the testimonies of citizens themselves, certain funds that would normally be spent for food purchase are now being used for other useful purposes, such as healthcare and education; this opened new possibilities for improvements in their living standards.”





Many people who receive food stamps have told government officials that their children are particularly benefiting. The extra money is often set aside for their education. Because the food stamps can only be used for a specific list of 10 essential food commodities, and are most often used by female members of the household, the assistance helps to ensure nutritional impact in the household instead of being spent on other less essential items.

“The biggest advantage of the food stamp system is that they are mostly handled by female members of the household and are intended solely for buying food,” she says. “This support is critical in building hope and confidence among the most vulnerable members of the society. As a result, they can play more active roles in their communities.”

“Food stamps in rural areas are paper stamps that are redeemed at shops, but in urban areas they are electronic debit cards with the monthly payment automatically transferred by the bank to the card,” notes Altansukh Myagmarjav, project manager in the Ministry of Social Welfare and Labor. “This makes it very easy for beneficiaries to use and for the government to manage the program.”

**Food stamps in urban areas, issued with the support of the Food and Nutrition Social Welfare Program and Project, are electronic debit cards with the monthly payment automatically transferred by the bank to the card.**



## Going back to school

Otgonjargal Pashka is a 29-year-old social worker in the district of Songinokhairkhan, west of Ulaanbaatar. Her district is located near Naran garbage disposal point where the poorest live by foraging through rubbish for their daily subsistence. Because few have enough money for food, not to mention children's education, many children drop out of school. Children from poor families are ashamed to go to school because their parents cannot afford to buy them school uniforms or stationery. Sometimes children are thrown off buses because they lack money for bus fare.

"With the food stamps they can feed themselves," she gladly says. "The money that was used only on food items now is spent on other things."

"Girls usually feel more ashamed than the boys, so they miss their classes more often," says Erdenetsetseg Myagmarsuren, a school teacher with four students whose families were enrolled in the food stamp program. "These children really had a hard time."

"Fewer students are dropping out of school," she says. "They are now fed, dressed, mentally optimistic, and motivated. Compared to other human development programs, food stamps have no negative impact, it is mostly positive."

## Living a better life

Poor families that receive food stamps use them to buy food from the contracted shopkeepers located across the country. One of the contracted shopkeepers, in Dungovi Aimag, south of Ulaanbaatar, observes that the families who benefit from the food stamp program consume more fruits and vegetables. Thus, the quality of food and nutrition for the poor has improved.

Saintuya Lkhagva and her five children, who live in a poor area on the outskirts of Ulaanbaatar, survive on the small salary earned by her husband, who is a music teacher in elementary school.

Saintuya bought food with her husband's salary, but the family could barely get by. They lived in a trailer, using his salary to buy basic food and fuel to burn in the harsh winter to keep them warm.

The family situation has improved since receiving food stamps under the ADB-supported project. With the help of the food stamps, they could save their earnings to acquire a simple home of their own.

"You can't imagine how happy we were," Saintuya says. "Our children were very happy, happy that we would no longer be cold in the winter. Our lives have changed



dramatically. Our children are more active. They are happy at school and are getting better grades now.”

“The trailer was not only cold, but also very small for all of us,” she continues. “There was no room for any furniture. Now we have a TV; a refrigerator; and a computer for the children, even if it’s not new. Next year, things will get even better for us. We are living as a normal family.”

**Saintuya Lkhagva, who lives with her five children on the outskirts of Ulaanbaatar, was able to buy a home based in part on money saved as a result of receiving food stamps.**







Cocoa beans for export in Solomon Islands. The Pacific Private Sector Development Initiative is helping 14 Pacific island countries improve their business climate to promote social and economic development.

# Solomon Islands: Breaking Business Barriers

## Pacific Private Development Initiative

Not long ago, registering a new company in Solomon Islands was a torturous bureaucratic process that often took months. Aloysio Ma'ahanao, an accountant who has helped his clients register new companies, remembers those times well.



Aloysio Ma'ahanao

“Under the old Companies Act, it took from 2 weeks up to 2 or 3 months, and under the new act the longest it takes me is 2 days. The registration itself takes about 5 minutes.”

The quick business registration that Aloysio's clients enjoyed was due to reforms that have taken place as part of the Pacific Private Sector Development Initiative. It is helping 14 Pacific island

### Project Results

#### DATES

- **Approved:** November 2006
- **Closed:** April 2013

#### ENTREPRENEURS

- **The average number of new businesses** started per year has more than doubled

#### TIME

- **Business incorporation** takes less than 2 days, down from 45 days
- **Loan approval** takes 1 day, down from 28 days

#### COST

- **Incorporating a business** now costs \$175, compared with \$336 before the reforms

#### WOMEN

- **Loans secured with assets other than land** allow women who lack access to and control of land to borrow money for business

countries improve their business climate to promote social and economic development.

Solomon Islands has been one of the 14 Pacific countries benefiting from the ADB's support through regional technical assistance for the Pacific Private Sector Development Initiative.

## Committed partners working together

“One of the things you have to do to encourage investors to come in is reduce the cost of doing business.”

The Pacific Private Sector Development Initiative has made it easier to do business in the Pacific by reducing barriers to starting and operating a business. It is supported by the governments of Australia and New Zealand, and ADB. This included grants of \$6.1 million from ADB, \$41.7 million from the Government of Australia, and \$4.5 million from the Government of New Zealand. The support has helped simplify and modernize business laws in the Pacific island countries.

The initiative addressed the poor business climate in many of the countries in the Pacific. Natural impediments, including small market size, remoteness, and susceptibility to natural disasters, constrain their business activities.

Throughout the Pacific, business operators have faced high start-up costs, and expensive and time-consuming processes and regulations, as well as laws that restrict investments—particularly foreign investments.

While it is difficult to avoid the high costs associated with business impediments in the Pacific islands countries due to their small and remote economies, the initiative has worked to create an environment that minimizes the costs of doing business, while encouraging dynamism and entrepreneurship.

The initiative introduced reforms that reduced the time required to start a new company, and increased opportunities for people to access credit to operate a business. Outdated laws and regulations that hindered

business were amended. Through the initiative, the governments have eliminated the need for lawyers when incorporating a new company, and have helped remove cumbersome identification requirements.

## Taking the lead

Although reforms are underway throughout the Pacific, Solomon Islands has been a leader in improving its business climate. Undertaking much-needed reforms requires strong government commitment. Despite understandable concerns about loss of revenue, the government abolished the fee to reserve a company name and the obligation to create a company seal. This has significantly reduced the cost of incorporation.

“One of the things you have to do to encourage investors to come in is reduce the cost of doing business,” says Prime Minister Gordon Darcy Lilo. “We can encourage our people to own companies, build up excess capital, and then put it to good use.”

The country’s company registry is now fully online, with fast company name searches, simple forms, and automated checking of completed documents.

As a result of an improved registry, the time it takes to approve a loan has been reduced from 28 days to 1 day. More loans are being made, which is creating more businesses.

“These reforms have helped the business community because companies are spending less time on bureaucracy and more time on their core business,” says Hayden Everett, a senior country specialist in ADB. “Women entrepreneurs who run informal businesses and want to enter the formal business sector have also benefited.”

Since the company law reforms took effect in 2010, the number of business owners in Solomon Islands has grown significantly. In the 5 years before the reforms, from 2005 to 2009, there were on average 124 new companies formed per year. Since 2010, the average has more than doubled.

Before the reforms, it cost \$336 to incorporate a business. It now costs \$175. Likewise, business incorporation time





Reforms under the Pacific Private Sector Development Initiative have empowered women, people in vulnerable situations, and others to set up small businesses and contribute to the country's prosperity.





has been reduced from 45 days before the streamlined system to less than 2 days now.

The increased number of companies operating in the country's formal sector has also created new job opportunities.

## A loan in a day

For Hudson Wakio—the 35-year-old owner of a company that sells computers, office supplies, and electronic items—the impact of the new law has been startling. He applied for a loan to buy a delivery truck for his company, Advanced Technologies.

“I thought loan approval would take months, instead it only took a day,” he said. “Within an hour the forms were processed, and by the end of the day I had the truck. I couldn’t believe it.” Hudson now has nine trucks.

Andrew Sale, advisor for an Australia-funded development project, saw similar results when he helped cocoa farmers

**Hudson Wakio, the owner of a company selling office supplies, was able to get a loan approved to buy a delivery truck within a day due to business reforms in Solomon Islands.**



incorporate an export and trading company called Solomon Komoditi (Solkom).

“I submitted the application online, and went out for lunch,” he says. “By the time I came back, I had an e-mail confirming our registration was successful. It was that quick.”

Solkom is a cooperative that represents thousands of cocoa producers in several provinces. The company negotiates with overseas buyers.

Solomon Sedo in Pitukoli Village, one of the company directors and shareholders, is a buyer in Guadalcanal who works with several hundred cocoa farmers.

“It is here, in the rural areas, that we can really see the impact of the company law reforms,” says Solomon. “Solkom has negotiated a better price for farmers, and demand for cocoa is increasing. The farmers are busier and earning more income.”

## Loan without land

In addition to legal and regulatory hurdles, business operators in the Pacific island countries have faced cultural challenges. Land plays a central cultural, as well as productive, role in Pacific societies. A form of customary ownership of land created unclear land rights, making it hard for people to use land as collateral for loans to run and expand businesses.

To overcome the problem, the Pacific Private Sector Development Initiative helped Solomon Islands undertake secured transaction reforms that allow entrepreneurs to have movable assets registered electronically and use them as collateral for loans. This includes items such as boats, cars, store inventories, and farm equipment.

Tony Langston, general manager of Credit Corporation (Solomon Islands), the biggest nonbank provider of financial



**Tony Langston, general manager of Credit Corporation, the biggest nonbank provider of financial services in Solomon Islands, says loans can now be approved within a day.**



services in the country, says both the secured transaction and company law reforms have a positive impact on lending.

Before the reforms, when Credit Corporation wanted to provide a loan for a customer, a bill of sale agreement would have to be formalized and then submitted to the government for approval. This process could take up to 2 months according to Tony.

**“The Companies Act has made starting business much easier, and I have started five companies in different sectors.”**

“The reform speeds up the process,” he says. “We can log onto the database and instantly confirm whether the company is registered or not. At the end of the day, we are comforted by the fact that our client’s asset is registered and secured. From the customer’s point of view, they are happy because they get their money within a short time with this new process. We are now able to approve a loan within a day.”

## **Win-win for women**

Women who want to operate a business in the Pacific have limited access to finance due to legal and cultural barriers.

The initiative has helped the government to formulate laws that set up single-shareholder companies, making it easier for women to own and operate their own businesses. In the past, women could only operate certain businesses with the permission of a man. After the reforms, women can set up their own independently-run companies.

“The Companies Act has made starting business much easier, and I have started five companies in different sectors,” says Julie Gegeu-Haro, who holds a 90% share of ownership in the Premier Group of Companies, which offers real estate and consulting services.

The secured transaction registry, which allows business owners to borrow against their movable assets instead of relying on land ownership is also crucial for women, who lack access to or control over land.

“This reform means that there is no need to save money for start-up capital like I have in the past, and now I can borrow using my assets instead,” she says.

Another innovative aspect of the business law reforms in Solomon Islands has been to introduce the concept of community companies. These consist of groups, such as



**Solomon Sedo, a director and shareholder of the Solkom cocoa exporting company, says that women make up about half of the cocoa farmers who sell their products to his company.**



**Rose Sese, with the Areatatiki and Aruligo Community Company, says the Pacific Private Sector Development Initiative in Solomon Islands has enabled women to collectively sell their fresh fruits and vegetables.**

farmers, landowners, or women's organizations that use community assets in the form of handicrafts, fishing boats, or local crops. A company is formed to direct the profits of these activities toward an agreed community goal, and to preserve the community's assets for future generations.

The first community company incorporated was Areatatiki and Aruligo Community Company. Before it was set up, female farmers in the community sold their vegetables in the central market in Honiara. Now the women collectively sell fresh fruits and vegetables through their new community company to a leading hotel in the capital.

"It's really good to sell from company to company," said company representative Rose Sese. "The money received from selling to a company is much better than selling at the market."

The reforms have empowered women, people in vulnerable situations, and others to set up small businesses and contribute to the country's economic prosperity. This is helping to diversify the country's economy beyond extracting natural resources.

"We thought companies were only for logging, for mining, and just for big business," she said. "Now we realize that even this small thing we're doing can be a business, too."

Women bear the burden of work, family, and home responsibilities. Profits from their businesses tend to go to the education, health, and well-being of their families. Increased earnings by women benefits both their children and their communities at large.

Solomon Sedo of Solkom cocoa exporting company in Pitukoli Village, says that women make up about half of the cocoa farmers who sell their products to his company.

The increased income, he says, is "used for school fees, access to clinics, and buildings in the community."

"We thought companies were only for logging, for mining, and just for big business. Now we realize that even this small thing we're doing can be a business, too."



# Conclusion

The dramatic changes that Asia and the Pacific have undergone in recent decades have transformed it into one of the world's fastest growing regions. Developing countries in other regions look at Asia's emerging economies as examples of how to move large numbers of people out of poverty.

Although there are hundreds of millions fewer poor people today in Asia and the Pacific than there were 20 years ago, this remarkable achievement has been accompanied by continuing challenges.

In many Asia and Pacific countries, millions of people still suffer the hardships of poverty, while the quality of the environment needs to improve in some. As economies undergo transition, workers need to upgrade their skills.

Addressing these key challenges—through inclusive growth, environmental sustainability, and innovation—are at the heart of the work being done by ADB. Strategy 2020, ADB's long-term strategic framework, has responded to various development needs in Asia and the Pacific using an enhanced approach.

A necessary part of this approach is looking beyond ADB financing. In 2013, ADB approved \$14.2 billion of its financing from its own resources and mobilized an additional \$6.4 billion cofinancing. The total amount of nearly \$21 billion was a large sum on its own, but a tiny fraction of what Asia and the Pacific needs. For every dollar that ADB provides in solving a development problem, it will look for many more dollars from partner institutions, private companies, and others. This leveraging of financing—turning \$1 of ADB investment into \$4 or \$5 of total partner financing—is an everyday activity at ADB.

Beyond funds invested and leveraged, ADB also uses and shares its knowledge and expertise about development in the region. The exchange of knowledge among ADB, developing member countries, and development partners is

geared toward supporting developing member countries in the region move to the next level of development.

Financing plus leveraging of other resources plus sharing knowledge is what ADB calls “Finance ++.” The key concept is to go far beyond simple project finance to solve the region’s most pressing problems together with the developing member countries.

All of those who are committed to bringing greater prosperity and less poverty to Asia and the Pacific, must work together. The diverse participants in the region’s development agenda must find ways to leverage their financial support and expertise for maximum results. This includes bringing a wide range of participants into the development mix, including local and national governments, nongovernment organizations, private companies, community groups, and many others.

In the pages of this book are stories about men and women and their families—how their lives were improved with the support of the projects, and stories of these projects—how they were formed and carried out by leveraging resources and sharing knowledge and expertise.

The Asia and Pacific region has experienced great successes and faces many challenges. In the region’s development journey, ADB will be there every step of the way.

We hope that you will partner with us in this effort.

Together, we deliver.







## **Together We Deliver**

### *10 Stories from ADB-Supported Projects with Clear Development Impacts*

The book highlights successful projects that demonstrated development impacts, best practice, and innovation. They were implemented through the hard work of ADB's developing member countries, with support from ADB project teams and other partners. The results of the projects have changed and will continue to change the lives of many, especially the poor.

Together We Deliver is jointly produced by ADB and its developing member countries as a companion publication to the 2013 Development Effectiveness Review report.

## **About the Asian Development Bank**

ADB's vision is an Asia and Pacific region free of poverty. Its mission is to help its developing member countries reduce poverty and improve the quality of life of their people. Despite the region's many successes, it remains home to approximately two-thirds of the world's poor: 1.6 billion people who live on less than \$2 a day, with 733 million struggling on less than \$1.25 a day. ADB is committed to reducing poverty through inclusive economic growth, environmentally sustainable growth, and regional integration.

Based in Manila, ADB is owned by 67 members, including 48 from the region. Its main instruments for helping its developing member countries are policy dialogue, loans, equity investments, guarantees, grants, and technical assistance.

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