EMPOWERING WOMEN THROUGH RURAL INFRASTRUCTURE

Mainstreaming Gender in Transport

Asian Development Bank
A pilot project on community-based rural road maintenance by ethnic minority women’s groups was carried out in the two counties of Luxi and Lianghe in Dehong Dai and Jingpo Ethnic Autonomous Prefecture (Dehong Prefecture hereafter), Yunnan Province in the People’s Republic of China. The $200,000 pilot project, Community-Based Rural Road Maintenance by Women Ethnic Minority Groups in Western Yunnan, was funded by a grant from the Gender and Development Cooperation Fund\(^1\) of the Asian Development Bank.

The project aimed to develop and demonstrate a suitable system for the routine maintenance of rural roads, thus ensuring improved road conditions, lower transport costs, and more continuous access to townships and villages in the province. At the same time, the project aimed to generate employment opportunities for women and ethnic minority groups in rural areas, allowing them to earn a steady income and improve their livelihoods.

This publication presents the results of the pilot project.

\(^1\) Financed by Australia, Canada, Denmark, Ireland, and Norway.
FOREWORD

The physical condition of roads is critically important for any transport network. Unless roads are adequately maintained, they inevitably deteriorate, leading to higher road user costs and longer travel times. When simple routine maintenance is postponed for long periods, there is often a need for more extensive rehabilitation, which is much more costly. Routine maintenance is often delayed due to factors, such as lack of funds or insufficient technical knowledge.

This publication describes the outcomes of a pilot project, Community-Based Rural Road Maintenance by Women Ethnic Minority Groups in Western Yunnan, which was financed by the Gender and Development Cooperation Fund of the Asian Development Bank.

The purpose of the project was to assist maintenance groups in western Yunnan Province, People’s Republic of China, in organizing and carrying out the routine maintenance of unpaved township and village roads. The pilot project sought to involve women and other vulnerable populations (such as indigenous minorities) in rural road maintenance projects, both to undertake badly needed improvements in rural roads, and to create employment opportunities for them. Women—particularly those from indigenous minority groups—have been empowered as a result of the new opportunities and training.

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Director General
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In the past, rural road maintenance in Dehong Prefecture was carried out through occasional voluntary contributions from communities living along the road, complemented by provincial and local maintenance subsidies for the purchase of materials. Most of these contributions were provided by women and the poor, and due to limited labor inputs and a lack of skills training, maintenance quality was suboptimal and the roads continued to deteriorate.

Through this Gender and Development Cooperation Fund pilot demonstration project, the Asian Development Bank reached an agreement with the Yunnan Provincial Department of Transport and the Dehong Prefecture Communications Bureau to increase the funding for routine maintenance of rural roads and change the way it is carried out. This makes it possible to finance the remuneration of maintenance groups that work year-round on keeping the roads open and slowing down deterioration. As well as resulting in improved road conditions, this also provides a valuable opportunity for off-farm employment in rural areas where there are few other job options, especially for women and ethnic minority groups.

This approach to road maintenance by women has potential for wider replication in the People’s Republic of China and other developing countries.

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BACKGROUND

Yunnan Province is located in the southwest of the People’s Republic of China (PRC). It is one of the poorest provinces, with a per capita gross domestic product that was only 52% of the national average in 2009, and a poverty incidence that is nearly four times the national average.

In 2009, Yunnan Province had a total road network of more than 206,028 kilometers (km), consisting of roughly 27,954 km of national and provincial roads, and 178,074 km of rural roads. More than 85% of the rural road network is unpaved (including earthen, gravel, and stone-paved surfaces).
Road Conditions

These rural roads are generally the responsibility of the prefecture and county communications bureaus. Although periodic and emergency maintenance are usually contracted out, routine maintenance is typically undertaken only 2–3 days a year using voluntary labor contributions from nearby communities. These contributions tend to be insufficient in quantity and quality, and do not provide a timely response to the deterioration process, leaving the road unprotected for the remainder of the year.

The lack of proper routine maintenance has resulted in poor rural road conditions. This is exacerbated by the fact that most rural roads in Yunnan Province are unpaved, located in mountainous terrain, and subjected to high rainfall. These poor road conditions mean that transport costs remain high and deter public transport operators from providing services. Also, during the rainy period, landslides commonly block the roads and are only cleared after the rainy season, leaving many communities without access for months at a time.
Income-Earning Opportunities

Rural communities in Yunnan Province, therefore, face considerable transport difficulties and high costs to access goods and services, including for the purchase of agricultural inputs and the sale of their produce. This severely limits their ability to improve their livelihoods and contributes to the high levels of poverty.

Apart from agriculture, very few other income-earning opportunities exist in the rural areas. Many men, therefore, migrate to the cities in search of work during the agricultural off-season, although they are not able to send much money back to the household. For women, income-earning opportunities are virtually nonexistent. Women cannot easily work outside their community due to their other responsibilities, including taking care of the children, livestock, agricultural land, and the household. They are, therefore, very restricted in the type of work they can access.
THE PILOT PROJECT

In view of the need for an improved system for routine maintenance of rural roads in Yunnan Province, a rural road component was incorporated in the Yunnan Integrated Road Network Development Project (YIRNDP). This $1.5 million rural road component, which was approved by the Board of Directors of the Asian Development Bank (ADB) in December 2010, is supporting the implementation of an improved routine maintenance system, covering at least 650 km of rural roads for the duration of the project. This is being implemented in Dehong Prefecture. The main component of the YIRNDP (construction of a new expressway) is also located primarily in this prefecture.

Dehong Prefecture is in the west of Yunnan Province. In 2009, it had a total road network of more than 6,976 km, consisting of roughly 820 km of national and provincial roads, and 6,156 km of rural roads. Dehong Prefecture has a population of just over 1 million, approximately half of which is from ethnic minority groups, including Dai (30%), Jingpo (11.5%), Lisu (2.5%), A’chang (2.5%), and De’ang (1.2%). The official poverty incidence in Dehong was 15.0% in 2008, well above the national average of 4.2%.

During preparation of the rural road component of the YIRNDP, the pilot project on community-based rural road maintenance by ethnic minority women’s groups in Western Yunnan Province was formulated.

Location of Dehong Prefecture and Luxi and Lianghe Counties

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2 This is based on the People’s Republic of China’s poverty line of CNY1,196 per capita per year ($0.51 per capita per day), which is well below the international poverty line of $1.25 per capita per day.
Apart from developing and demonstrating an improved system for rural road maintenance, the pilot project aimed to make use of the investments in road maintenance to create employment opportunities for rural women, especially those from ethnic minority groups.

A $200,000 grant was obtained from ADB’s Gender and Development Cooperation Fund, which was complemented by counterpart funding from the Dehong Prefecture Communications Bureau and the communications bureaus of Luxi and Lianghe counties where the pilot project was implemented. This counterpart funding was targeted primarily at the daily management and supervision of the pilot project.

THE MAINTENANCE SYSTEM

The maintenance system developed under the pilot project involved the creation of women’s maintenance groups that are contracted to carry out routine maintenance of rural roads.

Maintenance groups

The maintenance groups are made up of women living near the road to be maintained. One woman working on a part-time basis is required for every 1–2 km. Information about these employment opportunities is disseminated through village leaders and women’s groups. A selection is made from interested candidates, giving preference to women from poor households and ethnic minority groups. The selected group members are registered with the county communications bureau, allowing them to enter into a contract for routine road maintenance.
The group members subsequently receive basic technical and managerial training. The technical aspect looks at different causes of road deterioration and the need for routine maintenance; this is followed by practical training on the different maintenance activities and their proper implementation. The managerial aspect looks primarily at the system of work plans; inspections; and group management, including basic accounting.

**Maintenance activities**

The women’s groups are responsible for three types of maintenance work: (i) preventing damage by ensuring the proper working of the different road elements by clearing the drainage system and landslides and by cutting vegetation; (ii) making minor repairs to the road surface, shoulder, and road structures, avoiding further and more serious damage; and (iii) creating additional basic protection measures (e.g., side drains) where these are lacking, thus preventing damage from recurring. These protection measures have proved to be very successful in reducing subsequent maintenance needs.

The maintenance groups receive a set of basic hand tools and safety equipment to carry out their work. Materials are also provided or reimbursed, where necessary.

**Payment system**

The remuneration of the maintenance group depends on the amount of work completed, using unit rates for the different activities. At the beginning of the month, a work plan is prepared, indicating the work to
be carried out and, at the end of the month, the work is inspected and payment is made for the work that has been completed.

This results in a very flexible approach that allows certain maintenance activities to be prioritized by the communications bureau, while ensuring that estimated costs are not exceeded. At the same time, the group members can determine their working hours as the inspection only looks at the work completed and not at the hours worked.

**THE RESULTING ROAD CONDITIONS**

The pilot project covered 165 km of unpaved township and village roads (including earthen, gravel, and stone-paved surfaces). In line with the main objective of the pilot project, road conditions were found to have improved significantly compared to the situation before the project, indicating that the maintenance groups were not only capable of slowing down the deterioration process, but also of reversing it.

“We usually maintain the road 2–3 days a year using voluntary contributions, but the road becomes worse each year. This project has improved the road a lot, and vehicles now use the road to cross into the other county.”

Community member in Lianghe County

Cleaned and repaired side drain and improved road surface

Removal of a small landslide
The clearing of the drainage system resulted in damage prevention and slowing the deterioration process. This was reinforced by building more than 26 km of new side drains to ensure better drainage. Repairs to the road surface and shoulder further improved road conditions.

The resulting improvement in road conditions is seen by local authorities, village leaders, and community members as a very visible achievement of the project. On certain roads, traffic increased as road conditions improved, and in many cases, villagers and road users expressed their gratitude by providing free transport to the maintenance workers.

Access also became more continuous as a result of the maintenance work, which removed landslides within a few days instead of at the end of the rainy season. Many villagers also phoned the maintenance groups and requested assistance whenever they could not pass, relying on their ability to keep the roads open.

“Before the project, the road was impassable for much of the rainy season, and we would have to walk long hours to the market with our produce the day before. This year, the road remained open and we could go by motorcycle in the morning.”

Community member in Luxi County
MAINTENANCE COSTS AND FUNDING

The maintenance implementation costs in the pilot project averaged 5,250 yuan (CNY) per km (approximately $800). Of this total cost, 15% was for tools, safety equipment, accident insurance, and the transport of materials, while the remaining 85% was spent on salaries.

Forty-two percent of the expenditure was for the removal of large landslides, with a total of 17,000 cubic meters of material being removed. Extensive road surface and shoulder repairs—totaling more than 200,000 square meters and forming 36% of total expenditure—were also undertaken under the project.

Funding

As part of the YIRNDP, policy dialogue for rural road maintenance was conducted; existing sources and options for increasing funding allocations to routine maintenance were identified. The provincial and
prefecture authorities agreed to prioritize the allocation of existing funding to routine maintenance.

Together with a foreseen increase in local funding from 2011 onwards, this resulted in an increase in funding for township roads, from approximately CNY500/km/year ($76/km/year) to CNY2,500/km/year ($381/km/year).

Routine maintenance costs will need to be reduced in line with available funding. This can be achieved by funding routine maintenance activities only (excluding large landslides and washouts and surface upgrading). Furthermore, the increased routine maintenance by women’s groups will also reduce the need for more expensive rehabilitation costs. Improving maintenance management may help further reduce maintenance cost. A second pilot project is examining the potential for reducing maintenance costs.

EMPLOYMENT AND INCOMES

Under the pilot project, 163 women were contracted through 21 maintenance groups. Ninety-two percent were from households below the official poverty line and 55% were from ethnic minority groups (21 De’ang, 21 Lisu, 18 Dai, 12 Jingpo, and 18 A’chang women).

During the project, approximately 18,000 workdays of employment were created, averaging 110 workdays per group member. Annual expenditure on salaries averaged CNY4,500 ($686) per worker. This was effective in helping to lift the workers and their households above the official poverty line.
This income forms approximately two-thirds of the total household income in most cases. Pig raising and the sale of vegetables, tea, and sugarcane are other important sources of income.

This is one of the few employment opportunities open to rural women, who are generally able to earn only a few hundred yuan per year doing agricultural work. The fact that the maintenance work is near to their homes and allows flexible working hours makes it very easy for them to combine the work with their other responsibilities. In times of heavy workload, groups also hire additional workers.

The women in the pilot project used their income primarily to purchase food and household goods and for their children’s education. Part of the income was invested in the purchase of animals (especially pigs) and agricultural inputs, as well as house construction.

Many of the women maintenance workers have expressed their happiness with their work, citing the fact that they have few other employment options and that having flexible working hours enables them to combine maintenance work with other responsibilities. Many have also expressed their concern over the need for continuation of the work. At the end of the pilot project, a number of groups approached authorities and persuaded them to continue funding the maintenance work.

**SKILLS DEVELOPMENT**

Apart from direct income generation, the project also aimed to improve the options open to women for improving their livelihoods, enabling them to use their incomes more effectively. Training was provided to maintenance workers and other community members in various economic and productive activities.
Through the initial training and subsequent on-the-job instruction, the group members acquired considerable technical skills. This was recognized by community members, many of whom expressed their appreciation and admiration for the fact that these women had obtained steady employment and were able to do such a good job. Village leaders also expressed their satisfaction, noting that their initial doubts had been completely dispelled as a result of the work done by the women.

“At first I thought the work would be too difficult for the women but, where men would already have given up, they continued and managed to really improve the road.”

Village leader in Lianghe County

The fact that the women earned their own income and were able to make a visible improvement to the road increased their status. Women especially mentioned that they had more decision-making power within their households. Some women also mentioned an increased respect from other community members, boosting their status and confidence.

Road maintenance is a continuous activity that needs to be repeated each year, and as such provides good long-term employment. To further enhance the required technical skills for other nonfarm employment, the project also provided productive training for women to acquire necessary skills.

“This is the first time for me to attend training about women and development. It’s very helpful to use the project activities as a case study.”

Director of County Maintenance Division

Training in economic activities was provided for 262 women at the village level, through classroom instruction, including question-and-answer sessions, followed by field visits. Topics were demand-oriented and included traditional activities, such as pig raising, disease control, and tea garden management, but also included introduction to new technologies, such as dairy buffalo, winter agriculture, and new cash crops.

“I have attended several trainings, but I am impressed by this one as it arranged a study visit to a tea garden. The income from selling tea leaf is not as big as pig sale, but it is very important for each family to support daily expenses. We had no chance of learning the management of tea gardens before this. It’s very easy to understand.”

Cao Mingmei
57 years old, A’chang minority, leader of Henglu group in Lianghe
The project also had a capacity-building component for local authorities. This provided training on how to realize the potential for women’s participation in infrastructure development. This training was carried out in partnership with the Dehong Prefecture Women’s Federation and involved 59 participants from prefecture and county governments and a further 141 women’s representatives and leaders of income-generating programs.

**SUSTAINABILITY**

The ultimate objective of any pilot project is the replication and sustainability of the piloted approach. In this case, replication is, to a certain degree, ensured through the rural road component of the YIRNDP, which provides financing for the maintenance of at least 650 km of township roads (approximately a quarter of the total township road network in Dehong Prefecture). In addition, certain townships replicated the approach using their own funds at the end of the project.

In Xiaochang township in Lianghe County, the village-level women’s centers and the township authorities reached an agreement to contract out the maintenance of more than half the township roads through these women’s centers in an effort to replicate the approach.

The sustainability of the approach faces two major obstacles. The main obstacle is the funding of routine maintenance. Although the pilot project was able to prioritize the allocation of available funding to routine maintenance, sustainability will require a further increase in funding, as well as a reduction of maintenance costs. As a result of policy dialogue during project implementation, the minimum funding level of $390/km/year has been made available for township and village road maintenance to ensure replication.
The second obstacle is lack of capacity at the local level. The use of volume-based contracting has reduced the need for supervision, but the required resources for preparing the monthly work plan and carrying out the inspection were still quite high.

A follow-up ADB-financed, small-scale technical assistance project is looking at ways of reducing the management burden for local authorities. One option is the introduction of performance-based contracting, where the maintenance groups are paid according to the resulting condition of the road rather than the amount of work completed.

Performance-based contracts have been particularly successful for roads that have been previously improved by Gender and Development Cooperation Fund projects. Moreover, the capacity of both women’s groups and communications bureaus has been upgraded through the training conducted.

A Guide for Communications Bureaus and a Manual for Maintenance Groups3 have been prepared to enable replication of the approach by other communications bureaus. The Yunnan Provincial Department of Transport plans to distribute copies of the guide and manual to other prefectures and counties throughout the province.

The pilot project has shown that women are very capable of carrying out road maintenance work. The pilot project also ensured safety at work, and enhanced both individual and women’s groups capacities through the training conducted on rural road maintenance and other nonfarm activities.

About 85% of the maintenance cost was used to pay salaries; the remainder was spent on tools, safety equipment, accident insurance, and materials. In a rural context where few income-earning opportunities exist, especially for women, these salaries were very important for the women maintenance workers and their households, effectively lifting them above the poverty line.

Overall, the pilot project has been a success, inspiring other counties and townships in the People’s Republic of China to do the same.

This publication was prepared by Xiaohong Yang and Serge Cartier van Dissel under the overall guidance of Tyrrell Duncan, Director, East Asia Transport Division and concurrently Practice Leader (Transport). Sonomi Tanaka, Samantha Hung, Sri Wening Handayani, Scott Ferguson, and David Sobel provided valuable comments as peer reviewers. Gloria Gerilla-Teknomo and Ma. Concepcion Jea Macrohon provided invaluable assistance in finalizing the publication.
Empowering Women through Rural Infrastructure

This publication presents the results of a pilot project that sought to involve women and indigenous minorities in rural road maintenance projects, both to undertake badly needed improvements in rural roads, and to create employment opportunities for them. Women have been empowered as a result of the new opportunities and training.

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 two-thirds of the world’s poor: 1.8 billion people who live on less than $2 a day, with 903 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.