RURAL ROADS

A Lifeline for Villages in India

Connecting Hinterland to Social Services and Markets

THE WORLD BANK
This brochure highlights the best practices followed under the program and reflects the impact of the roads on the lives of people living in difficult geographical terrains in Himachal Pradesh (HP) and Rajasthan.
Need for rural roads

In the year 2000, around 40 per cent of the 825,000 villages in India lacked all-weather access roads. This constrained economic activities and access to essential services. Nearly 74 per cent of India’s rural population, constituting the majority of India’s poor, were not fully integrated into the national economy.

The rural roads sector, which is a State subject, also lacked adequate planning and management due to poor coordination between multiple funding streams and agencies. Investing in rural roads was given low priority and viewed in isolation from the need for State and National Highways.
Recognising the critical issue of the rural road sector, the Government of India (GOI) planned to give a boost to rural connectivity. In the year 2000, it launched a nationwide program, the Pradhan Mantri Gram Sadak Yojna, (PMGSY- the Prime Minister’s Rural Roads Program) under the Ministry of Rural Development (MoRD). The program envisages providing new connectivity to about 180,000 habitations through the construction of about 372,000 kms of roads, and upgrading about 370,000 kms of the existing core rural network to provide full farm-to-market connectivity. The total outlay for the program is 33 billion USD. PMGSY is being implemented as a 100 per cent centrally-funded program aimed at providing all-weather connectivity to all habitations of above 500 population (250 in case of hills, desert and tribal areas).

Government spearheads rural roads

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Through the PMGSY, the GOI is endeavouring a radical departure from the past. It is enforcing more rational and transparent decision making, planning, and design tools; it is also helping to streamline the flow of funds through a sector wide approach for sustainable rural infrastructure development. The Central Government has formulated detailed Policy and Operational Guidelines and set up the National Rural Road Development Agency (NRRDA) to provide management and technical support to the States.

The program has greatly enhanced the capacity of States to plan and manage rural roads by creation of State Rural Roads Development Agencies in each State. These agencies monitor PMGSY works, which are implemented by Public Works Departments, Rural Development Department and similar agencies.
The PMGSY program, now part of the Bharat Nirman Initiative\(^1\), is running into the 7th year of implementation. Until the end of November 2007, connectivity has been provided to about 42,019 eligible habitations. A total of 100,000 kms of roads have been constructed, serving about 45 million rural people.

Connectivity and mobility is the key to reaching out and opening up new opportunities. With the construction of village roads, rural India is rapidly transforming. Wherever the roads network has come up the rural economy and quality of life has improved.

Habitations with a population above 1000 are targeted to be connected by year 2010 and habitations with a population of 500 by 2015. Recent estimates by the MoRD suggest that the total investment required to meet the PMGSY targets was Rs. 1,320,000 million. From this, Rs. 269,290 million have been spent on building roads and the balance of Rs. 1,050,710 million will be used to connect the remaining unconnected habitations that are eligible under the program.

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\(^1\) Bharat Nirman Initiative is a time bound plan (2005-09) for rural infrastructure, prepared by Government of India in partnership with state governments and Panchayat Raj Institutions (local government bodies)
World Bank partners PMGSY

The World Bank, a partner with the Government of India to build rural infrastructure, alleviate poverty and improve rural livelihood, is supporting the PMGSY program. The Bank’s Rural Road Project¹ (RRP) is being implemented in select districts of Jharkhand, Himachal Pradesh (HP), Rajasthan and Uttar Pradesh (UP).

Since the inception of the PMGSY, the World Bank has provided technical support to the Ministry of Rural Development in formulating the operational guidelines of the program. It includes setting up the Core Road Network approach to prioritize the selection of habitations. A highlight of the association has been the mandatory provision for peoples’ participation, adoption of Environmental and Social Management Framework (ESMF), developing maintenance management capacity of the States and exposure to global good practices through training.

¹ Through RRP, the Bank is extending a credit of US$ 300 million equivalent and a loan of US$ 100 million.
Prior to unveiling the PMGSY program, the Central Government was responsible for only National Highways. It was for State Governments to plan, fund, construct and maintain rural roads. There was no national level consensus or coordination on rural roads.

The PMGSY initiated a paradigm shift in the way rural roads are mapped, designed, monitored, and built. At the initiative of the MoRD, NRRDA prepared an operational manual to systematize the process of road building, to be uniformly applied throughout the country. For the first time, nationwide operational standards have been adopted in the area of institutional structures, planning, design, reporting systems, procurement, contract management, financial and accounting systems, manpower skills and safety measures. Monitoring of the quality of works and materials by third parties has become mandatory. Guidelines on acceptable standards with desired specifications have also been put in place in order to cut down on subjective evaluations.
Quality with transparency

Under the PMGSY, a three-tier quality control system has been put in place to ensure quality in road works. This will be applicable throughout the country.

- The first tier is at the District Project Implementation Unit (PIU), led by a senior Executive Engineer, where all aspects of operational monitoring are held. Contractors are also required to maintain field level laboratories for testing at each stage. The PIU field engineers periodically conduct quality control tests at the site and record the results in a quality control register.

- The second tier involves quality monitoring at the State level, where district wise quality monitors of the State government, working independently of the PIU, cross-check the work and verify the entries in the register.

- The third tier, added under the Rural Roads Project, is of National Quality Monitors. It is mandatory for a reputed independent agency to be specifically contracted to carry out random tests on the quality of work. Retired Chief Engineers from neighbouring States are also taken on board for inspection of works alongside representatives of reputed engineering colleges and other specialized institutes.
Partnership with technical colleges

A unique feature is the engagement of technical institutes with government agencies. In most cases all survey reports and detailed project reports were prepared by the staff of the Public Works Department (PWD). This enabled officers to develop ownership and become involved in the early stages of the program. These preparations were supervised by chief engineers and independent professional bodies like the National Institute of Technology at Hamirpur, HP. It scrutinized the project proposals prepared by the State Public Works Department and were deputed for any technical project support the State government may periodically require. Through such interaction the engineering institutes were engaged in real-time projects while the government agency had access to professional technical assistance.

All weather connectivity to the village is now possible through a causeway over a water body
Rural Roads: A Lifeline for Villages in India
The Project moves ahead

Selecting beneficiaries

Under the PMGSY, a fair and transparent process for selecting habitations or clusters for connectivity was adopted to rule out patrimonial preference. The population size of the habitation was the deciding factor. Habitations with a population of more than 1000 were given priority for connectivity in the first phase of the program. After this, all habitations with a population of 500 and above would be selected for single road connectivity. However, a more generous criterion was approved for habitations in the tribal, desert and mountainous regions because of the difficult terrain. Here the criteria was lowered to a cluster size of 250 residents or more.
Habitation

The unit for the program is a habitation and not a revenue village or panchayat. A habitation is a cluster of dwellings in an area also called dhanis, tolas, desam, majras or hamlets. The population of all habitations within a radius of 500m (1.5 km of path distance in hills and deserts) is clubbed together for determining the population size. The cluster approach enables connectivity to a large number of habitations, particularly in the hills/mountains or desert areas.
Uniformity in governance and management

To build a strong foundation, from the inception of the program, the Government in Rajasthan announced many path-breaking decisions. Meanwhile, the Central Government adopted an enabling role, endorsing its strong commitment to the PMGSY.

The Central Government, provided a regular and continuous flow of funds, though this was linked to performance and expenditure. Sufficient funds were released as and when required to the state government. At no point of time was any construction work held up or slowed down because of financial restrictions thus facilitating construction to roll on smoothly. This worked as an additional incentive for engineers and contractors to meet their periodic deadlines as more funds were in the pipeline for the next schedule.

The Government of Rajasthan played a major role in ensuring that the program was implemented in accordance with the cluster-based criteria. The PMGSY was regarded as a rare opportunity for correcting the historical imbalances of development in the poorer regions of the State.

Other key decisions taken by the State governments that led to speeding up the decision-making processes were:

- Delegation of financial powers to the field staff to scrutinize and select bids and to announce a closure on the awards within 30 days;
- Providing stability of tenure in the department for senior managers, chief engineers, and senior administrative officers so that there was continuity in the program;
- Institutionalizing a model document that listed the guiding principle to be followed for making tenders and selection procedures. In addition to security of tenure, the roles and responsibilities of the project staff were clearly defined leading to greater efficiency and quality output.

The cornerstone of the program was the setting up of institutional and implementation structures. In each State the main implementing agency was the State Rural Road Development Agency (SRRDA). In Rajasthan and HP the SRRDA worked through their respective government department- the Public Works Department (PWD) as it was the oldest department with a strong field presence and a vast network that covered the entire State.
Impact on implementing agencies

“The program has come as a lifetime opportunity for many government officers involved with it and they have stood up to the test,” explained Mr. C. S. Rajan, Principal Secretary, Public Works Department. He has spearheaded Rajasthan’s record-time completion of works under the program. “It is once in a career that an opportunity of this sort comes up, whereby a government officer can introduce change, specially in a critical area, as road connectivity. Remote outlying habitations have been brought into the development fold. Everyone, down the line realized it and worked to his full capacity, in the process also earning promotions and other rewards,” he said.

It was not just the senior staff that benefited professionally from the project. Mr. Sonam Negi, Superintending Engineer, Mandi, HP, said, “With no constraints financially, we were able to create 85 new positions at the clerical levels and promoted 100 engineers, thus dealing with the problem of stagnation and related job frustrations. Additionally, almost all the staff was provided training and an opportunity for skills enhancement, including those handling the accounts and disbursements. As a result, now we have a highly motivated team working in the PWD paying long-term dividends to us through the Rural Roads project. With the roads connecting remote hilly areas, travel time to these areas has been substantially reduced. As a result, staff are willing to be posted to these regions, which not too long ago, were considered hardship postings.”

“In Rajasthan alone,” said Mr. H. L. Mina, Secretary PWD, “around 2,000 civil engineers, junior engineers and accounts staff have been nominated for various training courses, some even to overseas schools. This was an effort to make continuous learning and orientation an integral part of manpower and institution building.” He also added that for the first time, a study was conducted into specific manpower requirements. It led to matching manpower needs to job profiles, thus streamlining various positions, making adjustments to job descriptions and filling up of the resulting vacancies.
People make the Choices

The ‘Transect-walk’, taken up as a pilot experiment in these two States, has been a key to social management and ‘inclusive’ approaches to project formulation and implementation.

Shakuntala Verma, a former Pradhan, now a member of the Block Development Committee, Cheog, HP, explained the process. “The PWD staff initially came to our village to share the concept of the project and informed us how they would proceed with the surveys to demarcate land for building the road. Once the draft plan was ready, they shared the road path and design.”

Elected representatives of the village, along with members of some of the affected households, walked the entire stretch of the route, so that their concerns along the path could be incorporated. There were suggestions of alternative routes wherever the community felt a heritage site, a culturally sacred place an important seasonal water body or an extremely poor farmer’s land was being acquired for road construction.

“For those who had very little land or were too poor, certain adjustments were made and we tried to realign the map so that their land was not acquired. Those who understood that the value of their land would go up with a road by its side, readily parted with their land or were very eager to be included under the scheme. Others had to be persuaded and convinced of the benefits the road would shower upon us,” said Shakuntala. She tried to work out land consensus among the village community, so that people voluntarily provided a small portion of their land for the village road.

The ‘Transect-Walk’ is a survey of the land with the village community, where the road would come up. It is a unique feature initiated by the World Bank and conducted for the first time under this project. It has brought transparency and better cooperation by the community especially where land acquisition is involved.
Taking care of environmental concerns in planning, designing and implementation is yet another milestone of the Rural Roads Project. An Environmental Code of Practise (ECoP) has been laid down for top-soil preservation, tree plantation along roads, re-development of construction-site camp offices and workers’ sheds, slope stabilization and erosion control. In addition, the project takes care of the nature and cultural specifics of a village by constructing breast walls, retaining walls to protect public property, religious places and preserve the natural habitat of cattle and wildlife.

“Wherever an old tree could be saved or an orchard protected from landslides, barrier-walls were built to protect the soil from erosion, says B. B. Kalra, Superintendent Engineer.
Cyber transparency

Another initiative introduced under the project is the web based program OMMAS. The Online Management, Monitoring and Accounting System provides information and data on various aspects of road building. The data includes details of the facilities available at each project village, its habitation, the type of road project undertaken, name of the contractor, the standard bidding document and the progress of the project.

In addition, a Geographic Information System (GIS) has been set up in HP and Rajasthan on a pilot basis. The website provides information on the physical features of the villages and districts. This knowledge helps in selecting the area for road building or for upgrading. In the coming years, it will be useful for planning and monitoring the roads for a maintenance check.

- Geographical Information System-GIS has been developed as a useful tool for planning, budgeting and program monitoring of the Rural Roads Project.
- It provides linking of maps with the software for on-line management, monitoring and accounting. The program provides total transparency and is accessible to all citizens as well as those involved with the program.
- Road Information System (RIS) will be added to the GIS. It is a detailed data with geographical display of various information about the roads.
- A web version of GRIMMS allows the user to access GIS on rural roads database. It lists all the habitations, the tourist places, the condition of the roads, the stage of construction, the road length, and boundaries with different States and parliamentary constituencies.
- It also mentions all the services available in a village and whether it is connected with an all-weather motorized road or not. The public can access this site.

Quality control

State governments have set up testing laboratories in every project district to ensure sustained quality improvement and facilitate quality control tests during the road construction. Since 2003, district Udaipur in Rajasthan has an ISO 9001 certified Quality Laboratory. Training for skills enhancement and orientation on modern machines for the laboratory staff and field engineers is held here.

Compressive strength of a sample of concrete being tested to ensure quality as per specifications
The taste of success
Capacity building of local contractors

A major intervention is raising the project implementation capacity of the contractors. In the first instance, selection is through a transparent tendering process. Additionally, small and medium size contractors have benefited by a waiver of excise duty on the purchase of machinery and equipment. Access to finance, with continuous work for 3-4 years to recover costs, has helped even smaller contractors to make heavy investments to purchase machinery.

After handling larger road-building segments and raising their capacity, many contractors are now bidding for larger projects in other States of the country either by applying individually or by forming a consortium.

Contractor B.P. Mody from Rajasthan, who started as a medium level contractor, said he was now independently bidding for projects in other States. Whereas Bhambroo, who started as a very small contractor, was pleased that he could now sustain his family with a regular income from the hardware he had invested in. He never had enough money for formal schools and had learnt on the job. Under the project, he got his first formal training, where he learnt standardization and technical concepts.

In the year 2000 there were just 42 Hot Mix plants with pavers in Rajasthan. Seven years later, by mid 2007, the State has 221 such plants. The number of crushers too has gone up from 214 to 475 in the State. Contractors listed with the PWD have also increased from 200 per cent in the highest classification to over 300 per cent in the lowest grade, resulting in a high level of utilization of PMGSY funds.
Better markets - Better incomes

Cheog, a small nondescript bloc headquarter in Himachal Pradesh, with around 60 mountainous villages, is bustling with activity today. It has become the hub for truck drivers to rest awhile before their onward journey to the big cities. Roads in this area now connect remote sleepy hamlets, making it possible for these trucks to crisscross through pine forests and verdant green terraced fields. They directly collect fresh vegetables and fruits from the farmers that are stacked up on the curbs of the newly built roads, next to their fields. Pointing to a truck full of cabbages parked next to the Panchayat Bhawan, Son Thakur, a member of the Zila Parishad said, “These cabbages will now be unloaded at the Azadpur Mandi, in Delhi”.

Up in the Shimla mountains, farmers Naresh Kumar and Shamsher Singh are pleased with their extra earnings this year. It is the first time the produce did not perish because of a lack of proper transportation facilities. The 2 km. stretch of road from village Talai to Khadharab has linked their village to the main road leading to Cheog. The area has cultivable lands at the highest altitude in the district. During the rains, the narrow dirt tracks down the hills get slippery with mud
and slush. “Our movement was restricted. Sometimes there have been accidents. People with broken limbs have managed to survive but not those who suffer a head injury, as getting timely medical attention was impossible here.” Now, some farmers have earned enough to buy cars and drive an injured person to the referral hospital 16 kms away.

Naresh and Shamsher grow beans, potatoes, peas and the ubiquitous cabbage. Some farmers are also experimenting with organic farming in the hope of supplying directly to a select clientele and big hotels in the cities.

Village Garpaiya, situated mid-way up this road, has also experienced a phenomenal change. Raj Kumar, the Pradhan, says, “We’ve managed to save 80 per cent of our agricultural produce. Earlier, only 20 per cent was being sent to the markets on time, while the rest would perish in the fields for want of carriers or mules.” The early morning bus starts from Dharech, the nearest town on the highway. They would walk about 16 kms all night, to reach Dharech.

Farmers were also saving money on cartage. The charges for a donkey were Rs.100 per quintal and Rs.200 per quintal was charged by a head loader to carry the farm produce to Dharech. Now a truck transports vegetables at the rate of Rs. 100 per quintal all the way to Delhi.

In order to cut transportation costs further, the villagers have got together to hire trucks. In one year, 1000 truck-trips have been made to the big cities to carry cabbage, 100 for beans and 500 each for potatoes and cauliflower. Their earnings have gone up manifold.
Mushrooming dairies

In Rajasthan, where agriculture is dependent on unpredictable rains, many farmers rely on dairy farming for their livelihood. The roads have brought milk collection vans to their doorsteps, saving them a long hot trek to the highway and the uncertainty of catching the milk collection vans in time.

In the arid district of Udaipur, rearing of livestock has gone up with the coming of the roads. Munna Lal Gayari, has been a very busy man since the road came to his village, Beed. The State’s Milk Cooperative brand, Saras, had set up a milk producers’ cooperative society. It provides a cold storage tank and fat content measurement equipment under the management of Munna Lal. “Earlier I would carry the milk containers on my back to the main road and often skip the trip in bad weather. My earnings were miniscule,” Munna Lal said. Now villagers from as far as 2 kms away, can bring in their milk at any time.

A large refrigerated tanker collects the milk daily. Payments are made once a fortnight. They are calculated according to the fat content, which is measured and noted in the register in front of the client.

On an average, Munna Lal collects 100 litres a day, earning Rs. 800 per month. If the collection is more, his monthly earnings go up correspondingly. If Kesho Ram, with 2 buffaloes, earns Rs. 3000 a month, Reva Shankar, who bought a jeep after the road was built to ferry milk collection from three hamlets, collects Rs. 120,000 for his clients every month. He is paid Rs. 12,000 per month by the Saras Dairy Milk Cooperative in Udaipur. “All payments are received in cheques that are directly deposited in a collective account,” he said. A businessman to the core, on the return journey, he runs the jeep as a taxi, ferrying villagers to his village and enroute to others at Rs. 20 per passenger.
Family bonds

With accessibility, distances get shortened and visits between family members become more frequent. Shakuntala Verma, said “Our pace of life has suddenly changed, people are earning better and travel is less time consuming. Even our sons, working in big cities, are visiting us for festivals as just three days leave is enough for a home visit.”

In the dusty, dry landscape of Rajasthan, young Kalyani Devi is happy with the road. Busy working in her fields, she smilingly said that she could slip away to the next village every second day to chat with her mother.

For the villager of Thooni Ahiran, rural roads have meant better marriage offers for their sons and daughters. “Few people were willing to give their daughter in marriage into a village where access was difficult and time consuming. All marriage ceremonies were held by the side of the main highway as getting in was difficult,” said Satyanarayan Lodha.

Now, the marriage procession comes down the village road enabling the old and the children to join in as it winds its way to their doorstep.
‘S’ for School

A n overcrowded government school has been operating from a dilapidated building in village Khadharab, HP. With the road connecting the village to the nearest town, Fagu, multiple education choices have opened up for the villagers. Some farmers have started a car pool to take their children to an English medium private school in the town 4 kms away.

Another big advantage of the roads is schooling especially for girls, as mentioned by Shiv Kumar Gujar of village Karansar in Rajasthan (Jaipur District). “On days when it rained or was too hot, we would just keep the children at home, knowing well that the teacher too would have taken the day off as walking through dirt-tracks or crossing fields was impossible”, he said. Now the teacher arrives on time as there is a direct bus from his village. The headmaster of a primary school at Swami Ka Bas said that there had been a 20 per cent rise in the enrolment rate since the past one year and 60 per cent of these students are girls.

Sadhna Jain, a teacher at Dedkiya Primary School, refused a posting to the village because it was inaccessible. Now she has accepted the post as she can come on her scooter from Udaipur.
In the clusters around Dedkiya, in Udaipur district, people lived under conditions of extreme poverty with poor lands and high unemployment. Now they take the bus to reach work at building sites in Udaipur. Earning Rs. 60 per day, Daulat Ram tries not to miss a single day. That is unlike in the past, when he would tire, walking across two hillocks, often turning around to go home from sheer exhaustion and hunger. As he said, though the bus fare for a single journey is Rs. 10, at least he can manage to get some food for his family everyday.

Road to earning

Villagers scramble to get inside the bus, many are left out, but don’t give up and rush to perch themselves right on top of the bus.

Says Ruma Devi, now her husband returns before sun set with vegetables and oil and they enjoy leisure hours together with the children.
A spurt in house building

Better connectivity has also led to a spurt in building activity. “I could never think of building a concrete house because carting building material on loaders or ponies was impossible and financially out of my reach,” said Roshan Lal. His uncle, Ghasi Ram, 75, said, “I had never dreamt that I would see a road in my village. But now it runs right through our lands and the price of my land has jumped from Rs 50,000 a bigha to Rs 1 lakh,” he smiled.

Medicine in time

The primary health centre (PHC) at Thooni Ahiran is bustling with activity. The road has joined the neighbouring villages and, as a result, more mothers come for their ante natal-check up. Dr. Shikha Singh is pleased that women are able to come to the PHC for their delivery. Complicated cases can now be referred quickly to the Community Health Centre or to the District Hospital. With better connectivity, the PHC is not facing shortages of polio vaccine any more. Children are being immunized at regular intervals and the health education camps at the Anganwadi have better attendance with women from other clusters joining in. Roads have also helped with better follow-up of TB patients. Dr. Singh now insists on the patients coming to the centre each day to take their tablets in the presence of the medical staff. Cases of road or field accidents are also being attended to at the PHC itself.
The Challenge

Road maintenance and management systems

The bane of most civic construction work is the follow-up maintenance work. Shortage of funds with the State government posed a challenge for maintenance. The Rural Roads Project has built in maintenance as part of the contractor’s responsibility for a period of five years after the completion of the road. Thereafter, the State government takes over. In Rajasthan, the government has already earmarked resources from the central pool and identified areas from where additional revenue will be raised to meet the demand for maintaining roads falling under the PMGSY and other programs.
Key interventions for the successful management of the Rural Roads program are:

- Institutional development by setting up a rural roads development agency to undertake the work in a program mode at the State-level

- Participation of people’s representatives at all stages of planning and proposal formulation for greater community ownership and support

- A three-tier quality control mechanism to achieve high quality through regular and random checks by professionals

- Adoption of the environmental code of practice to avoid or minimise adverse environmental impact

- Setting up operational guidelines, norms and standards at various levels of project implementation

- Better human resource development through capacity building, skill-enhancement and clarity of role

- Inclusion of a five-year maintenance clause in all road building contracts from the date of completion of a particular road

- Complete transparency in contractual bidding and awarding process.