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Role of World Bank assistance in rural road development of India

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Abstract
World Bank projects have helped Rural Roads Program (Pradhan Mantri Gram Sadak Yojana or PMGSY), an initiative Government of India's significantly expand rural road connectivity in an efficient and organized manner. Many unconnected habitations now, have reach to all-weather roads and vital rural link roads have been upgraded that has revitalized the rural economy and improved the quality of life in these areas– children can now go to school, medical facilities are easier to access, and markets are within reach. These states included were the poor income states of Jharkhand, Rajasthan, Uttar Pradesh, and Bihar, as well as the upland states of Uttarakhand, Himachal Pradesh, Meghalaya, and Punjab. The project has introduced innovative technologies, developing IT applications for field-level reporting, training local contractors and ensuring that the roads are constructed and maintained in a sustainable manner.

Keywords: PMGSY, Rural Roads Project, World Bank, Rural Roads

1. Introduction
Adequate infrastructural development in rural as well as urban areas is the precondition for economic and social development of a country. Provision of rural roads increases mobility of men and material, thus in turn facilitating economic growth. Connectivity to rural parts has a strong positive relation with rural economic progress and strong negative relation with the level of poverty. Indian economy has been agrarian by nature, so it is necessary to have a rural road network of acceptable standards which is instrumental in increasing the returns manifolds from agriculture as well as minimizing the post-harvest losses. It was necessary post-independence to accelerate the investments in rural infrastructural development for generating additional employment, creating economic opportunities for all, ensuring delivery of services related-unrelated and boost credit absorption. All these eventually are detrimental in improving quality of life and reducing poverty. Rural roads have featured periodically on the attention radar of policy makers since Independence. Efforts have been made to develop rural roads under various schemes. India has the 2nd largest network of roads across the world at 4.7 million kilometers. During 1940-61, the Nagpur plan created a path for road development underscoring India's first major attempt towards planning of road system. The Bombay plan thereafter (1961-81) owed to changing nature of road transport in India. The Lucknow plan (1981-2001) was drawn up to feature all aspects of road development and its management. The roads were classified into national highways, state highways, and district and village roads.

2. Literature Review
A number of studies have established a direct relationship between rural connectivity and resulting socio-eco development. Many times the benefits have been measured for developed rural roads by emphasizing on reductions in monetary or time costs incurred to access product and factor markets and key public social services. A magnitude of benefits have been attributed to rural road development, including increased cultivated production, growth of dairying, better farm prices, growth in industrialization, improved educational standards, and higher life expectancy. Rural road development augments the reach to markets for both inputs and productivities through a reduced transaction and trade cost. Road concentration had a very major positive influence on consumption at the farm and household level in rural parts of South China from 1985-1990 (Jalan and Ravallion 2002) [6]. The expansion of rural roads cannot be noticed in isolation from the needs of roads in urban zones and changes affecting the landscape. National Highways comprise the key system of serving the movement function. State Highways and District Roads cover the secondary roads linking both mobility and access purpose. Rural roads principally aid the access function. There is a necessity for development in a balanced way of all classes of roads in all regions of the country. The priority has to be for constructing rural roads in areas of low connectivity and to perfections in areas with greater connectivity (NRRDA, 2007). Rural roads have been proved to be catalytic for economic development and poverty alleviation in rural areas; this objective should be chased further more vigorously. In future, the objective should be to join all tenancies with all-weather rural roads instead of fair climate roads built earlier (Ministry of Rural Development, 2006) [7]. As defined by the Asian Development Bank, poverty is the "Deprivation of essential assets and opportunities to which every human is entitled. Everyone should have access to basic education and primary health facilities. Deprived households have the right to sustain themselves by their labor and be realistically rewarded, as well as to have some security from external shocks". Structural poverty arises due to shortage of prospects. It affects people who are detached from the wider economy and society as a whole. Thus, the key to overcoming structural poverty is to provide access to adequate infrastructure and services (Cook 2005) [2]. Surd (2011), whose findings indicate that farmers with high gross returns to inputs may choose not to approve inputs, if there are high costs attached in acquiring these due to poor infrastructure. The ILO's Employment Intensive

Investment Program (EIIP) currently involves twenty one African countries, eight Asian countries and eleven countries in Latin America and Caribbean Region. On-going infrastructure programs for development in rural region focus on employment, targeting the poor sections of the society including features such as good governance and capacity building at all levels. They focus on infrastructure development both productive and social in public investment programs, an instrument still available to governments. decades, EIIP in association with the private sector and training institutions, over the decades, has prepared a whole series of tools and training materials to analyze and prioritize investments, to document best practices and particularly to train members of ILO's customary constituents (government staff, small, medium-sized contractors communities and workers) involved in decentralization of services including providing for and maintenance of rural roads. Having a poor road system, particularly in the countryside, makes it more difficult for children to go to school and more costly for farmers to bring their production to the market. Bad roads adversely affect people in countless other ways. World Bank views that a biggest limitation with developing and sustaining rural roads is the fact that they are, rural. The areas with need are often difficult to access, logistics become complex, local contracting capability is restricted, engineers are few and younger engineers especially, are not willing to leave the urban settings. The rural environment works as the growth engine of an economy, the rural population are wardens of the environment and ecosystems. Planners working for rural development need to be specialists in the intricacies of these intersecting priorities and need to understand how the provision fits into the bigger goals of rural growth, and the primacies for socio-eco growth. Attracting the best talent to rural development process is equally necessary. It takes more engineering and managerial expertise to construct sustainable infrastructure.

3. Scope and Objective

The study is limited in its objectives. It focuses only on the contribution of World Bank in rural roads development under PMGSY in India. The study is an attempt to understand the kind of support extended by World Bank for Indian rural development by joining hands with GOI for its ambitious PMGSY program at various levels. Urban roads, highways and bridges etc. do not form a part our study.

The study's overall objective is to undergo the motives and support of World Bank in the rural road development in India.

4. Research Methodology

The paper is based on information collected from secondary sources of World Bank documents and PMGSY documents. Data has also been collected from officials in charge of the project. Basic statistical tools like average and percentages have been used to draw a comparative analysis of the data collected.

5. Discussion and Analysis

5.1 The launch of Pradhan Mantri Gram Sadak Yojna

Despite the conceptual plans and targets were worked upon the absence of detailed work mechanism lead to a non-integrated network of roads. Rural Roads Sector development was grieved with the lack of systematic planning, quality and continued maintenance of roads under construction and up gradation. It was a myth that rural roads did not require planning, designing and quality assurance in a sustainable manner. The quality and maintenance of roads were deficient in terms of riding quality, width and strength to face the growing traffic demands and impact of all-weather wear and tear. The road development lacked technical precision. This was holding down the economic development in rural India and barring the rural population from being fully integrated into the economy and accessing essential services Rural road management required sufficient planning, survey, coordination between various funding streams and an effective decision making process. Admitting to the criticality of the rural road development, the Government of India (GOI) strategized to uplift the rural connectivity in a more planned way by launching a nationwide program, The Pradhan Mantri Gram Sadak Yojna (PMGSY- hereafter) under the Ministry of Rural Development (MoRD) on 25th December 2000. The program envisioned providing new road connectivity to nearly 180,000 habitations through the construction of about 372,000 kilometers of roads and upgrading about 370,000 kilometers of the existing basic rural network to arrange for full farm-to market roads. PMGSY is being implemented as a fully centrally-funded program intended at providing all-weather access to all habitations of at least 500 people (250 in case of hills, desert and tribal areas). Government's initiative of building rural roads through the PMGSY is endeavoring a weighty departure from the past. It is imposing more rational and transparent decision making, planning and designing process. Moreover it is also helping to streamline the financial flow through a sector wide approach for sustainable rural structural development. The Central Government has formulated detailed policy, operational guidelines and establish the National Rural Road Development Agency (NRRDA) to provide technical and management assistance to the States. The program has significantly elevated the capacity of the states to plan and manage rural roads by establishing State Rural Roads Development Agencies in each State. These bodies monitor PMGSY works, which are executed by Public Works Departments, Rural Development Department and other parallel agencies. While the total rural road length was only 3, 54,530 kilometers in 1970-71, it has increased to about 49, 83,579 kilometers in recent times.

6. The World Bank supports PMGSY

6.1 World Bank's Mission and Rationale for Involvement.

The World Bank Group's mission is carved in stone at its Washington headquarters: "Our Dream is a World Free of Poverty". It targets to remove poverty and boost common prosperity in every country, by increasing the income growth. Improving shared prosperity interprets into refining the welfare of the least well-off in every economy, and includes stress on tackling disproportions that keep people in poverty from generation to generation. A vast majority of the world's poor live in rural areas and are poorly educated, generally employed in the agriculture sector. Access to good schools, healthcare, electrification, safe water and other basic services remains elusive for many people and are often estimated by socioeconomic status, gender and geography. The purpose of undertaking rural roads projects is to restructure public sector in the countries involved, budgetary reforms, private sector development, improved road standards, the reduction of differences between urban and rural regions, reduced rural to

urban migration, and refining the delivery of social services to the poor. The World Bank has supported approximately 1816 projects around the world directly or indirectly involved development of rural roads. India is one among the world's fastest growing economies. Since 1990, its economic growth rate has more than doubled, rising from 1.9 percent per capita (1961-1990) to 4.6 percent (1991-2008). Real per capita income, increased two folds in 2008-09 from 1993-94 level and stood at US$1,040. Rapid growth has contributed to reducing poverty but at a slower rate when compared to other nations. Weaknesses in basic rural infrastructure from roads to electricity, have reserved poverty reduction and limited opportunities for the 60 percent of the population dependent on agriculture and related activities. Investment in rural roads was given little priority and viewed in isolation from the need for State and National Highway The sector, which is a State subject, also lacked required planning and management due to poor synchronization between multiple funding streams and agencies. The rural population of Chhattisgarh, Assam, Bihar, Uttar Pradesh, Himachal Pradesh, Madhya Pradesh, Jharkhand, Orissa, Rajasthan, West Bengal and many other – were deprived of physical access due to lack of road connectivity. While not meeting its ambitious first phase targets, the PMGSY has made respectable progress in its first three years of operation. Of the 64,800 habitations of population 1,000 and above unconnected as of December 2000 which were planned to be connected by the end of 2003, works on 22,100 are either completed or close to completion. The program has also found the works for connecting another 24,300 habitations with populations of less than 1,000. The program has not been able to meet the target as defined in the policy statement mainly due to the shortfall in the availability of funds as well as the implementing capacity constraints of road agencies and contractors. Moreover, there remains a challenge to develop an effective government strategy in addressing the issue of inadequate maintenance on rural roads.

6.2 World Bank Assisted Projects

6.2.1 Rural Road Project –I

The project was launched with an objective of achieving a wide-ranging and more viable access to markets and social services in the districts of participating states which included new construction and up gradation of 9,900 km of the rural road network in the participating states (Himachal Pradesh, Rajasthan, Jharkhand, and Uttar Pradesh).

World Bank's contribution- US$708.

Institutional Development (estimate US$13.56 million, actual cost not available)

(a) Training to Ministry of Rural Development and Technical assistance to each state.
(b) Creating poverty impact and rural road user satisfaction observing system.
(c) Procurement of material and quality control testing equipment, IT and associated office equipment.
(d) Staff training of rural road agency and the local contracting industry etc.

Date: The closing date of the project was extended from March 31, 2010 to March 31, 2012

Table 1: Percentage of eligible habitations selected by World Bank. Eligible habitations are defined as villages with more than 1000 people (500 in case of hilly, desert, and tribal areas).

State	Baseline (%)	Target (%)	Actual (%)
Uttar Pradesh	50	55	97
Himachal Pradesh	40	60	78
Jharkhand	35	60	69
Rajasthan	40	65	86

Source: (IEG ICR Review, Report Number: ICRR14080, 2013)

6.2.2 Rural Road Project-II

Experiencing the positive benefits from RRP-I, Rural Roads Project-II was launched concentrating on building all-weather roads to low income eight states of Rajasthan, Jharkhand, Uttar Pradesh, Bihar, Punjab as well as upland states of Himachal Pradesh, Uttarakhand and Meghalaya.

The project brought advanced technologies for constructing of new rural roads, developed information technology applications for field-level reporting, introduced training for local contractors, and also making sure that the roads are maintained in a consistent manner.

Objective behind Project Development

The objective of the project is to back the solidification of the systems and processes of the PMGSY rural roads program for construction and maintenance of all-season rural access roads, bringing about enhanced road connectivity to commercial opportunities and social services for beneficiary populations in the participating states.

Project Description

The project is designed around two components:

Component 1: US$1,440 million for PMGSY program – Funds for civil works expenses in the seven participating states linked with providing new all-weather access to isolated habitations and upgrading important link routes in rural areas. The project was introduced to strengthen operational efficiency and the sustainability of roads through developed maintenance.

Component B: US$60 million Institutional strengthening- This fund was meant for technical assistance program designed to build up the capacity of related agencies to implement the program. As such, the project has two priority objectives:

(1) Enhancing PMGSY operations to provide more nominal, transparent and efficient delivery of infrastructure.
(2) Sustained preservation of infrastructure assets with the help of improved policies, institution systems and implementation mechanisms.

- **Sub Component B1: (US$11.9 million for Research and Development:** Consultant services to support system-wide improvements for the PMGSY program based on international best practice. Key areas will include development of improved program documentation and recording, maintenance managing systems and advice, improved technical design standards.

- **Sub Component B2: US$6.7 million for Independent means of verification:** Consultant services to provide independent authentication of results under the program which will include provision for performance audits on all

aspects of project implementation, citizens monitoring and grievance redress, Financial Management (FM) audits and outcome monitoring surveys.

- **Sub Component B3: US$ 22.6 million for State Level Project Institutional Support:** Consultant services to provide support in the implementation of state's program to meet state level DLIs and execute their works in accordance with agreed procedures and standards. Consultants will also support state level maintenance management activities and NRRDA to coordinate state level activities.

- **Sub Component B4: US$ 7.8 million for Equipment:** Equipment and office infrastructure support including IT related equipment to streamline (i) use of modern surveys, research equipment and design tools, (ii) quality promising equipment, and (iii) use of modern IT tools and software.

- **Sub Component B5: US$11.0 million towards Training for Skills Development:** Training for skills development to support a long-term capacity building program including international training, workshops, study tours, and counterpart training.

- **Project Completion Date :**Mid year2017

Table 2: Project Financing Table

Activity	Total(US $ million)
Component A:Indicatve Support to PMGSY Program (State wise eligible expenditure programs (2011-2015) of which:	1706
Rajasthan	443
Uttar Pradesh	200
Jharkhand	223
Uttarakhand	276
Himachal Pradesh	215
Punjab	111
Meghalaya	238
Total IBRD/IDA	1440

Source: Document of the World Bank, PMGSY Rural Roads Project.2010

Selection of beneficiary State criteria: According to the 2001 Census, and as stated in the table below, the participating states significantly represent three categories of vulnerable populations. Each group will need targeted assistance in order to be benefitted fully and meaningfully from the project

Table 3: Vulnerable Population Table: ("PMGSY Rural Roads Project Vulnerability Framework", 2010)

State	Total Population(million)	% of Tribal Population	% of women	% of Scheduled caste
Jharkhand	26.93	28	48.57	11.84
Uttar Pradesh	166.20	0.1	42.97	21.1
Rajasthan	56.51	12.6	47.94	17.15
Meghalaya	2.32	85.9	31.27	0.5
Uttaranchal	8.49	3	44.19	17.9
Himachal Pradesh	6.08	4.02	49.18	24.7

Source: Census of India, 2001

Table 4: World Bank Rural Road Project-II-Project Approval and Works Awarded (up to November 2016)

(Component-A=Rs 8938 crore) (Target Length= 22,520 km) — Annexure -I

State	Original Allocation		Revised Allocation		Projects Cleared				Works Awarded			Work Completed		Expd. (Rs. Cr.)	Habitation to be connected as per clearences
	Rs. Crore @ 60 US$	Rs. Crore @ 44.50 US$ (PAD)	Million US$	Rs. Crore @ 60 US$	Date	Nos	Length Km	Value Cr.	Roads Nos	Length Km	Value (In Cr.)	No.	Length Km	Gross	
HP	215	956.75	112	672	05.10.11	113	612.16	156.22	107	588	144.00	86	414	615	54
					30.03.12	64	288.05	74.24	59	244	62.00	45	169		
					15.03.13	141	800.30	285.75	136	762	274.00	78	373		
					18.07.14	100	548.00	246.29	100	548	245.00	59	270		
					HP Total	418	2249	763	402	2142	725.00	268	1226	615	54
JH	223	992.35	223	1338	23.05.11	177	721.45	201.93	170	698	224.00	95	339	1226	3608
					27.04.12	230	793.00	276.55	205	663	239.00	99	316		
					15.10.12	56	6.00	186.54	48	5	165.00	40	4		
					26.03.13	881	2433.83	1245.63	758	2094	1098.00	589	1632		
					JH Total	1344	3954	1911	1181	3460	1726.00	823	2291	1226	3608
MG	238	1059.10	100	600	16.08.11	18	105.88	94.81	18	106	95.00	10	67	337	393
					08.05.13	75	266.94	230.00	75	267	230.00	24	70		
					04.02.14	197	741.00	485.00	196	740	942.00	31	89		
					MG Total	290	1114	810	289	1113	1267.00	65	226	337	393
PB	111	493.95	136	816	05.10.11	20	311.32	149.22	20	311	149.00	20	311	1022	7
					22.05.12	7	13.12	6.40	61	717	327.00	61	717		
						54	703.94	332.93							
					25.02.13	124	637.64	319.21	124	637	304.00	123	637		
					26.08.13	46	455.24	247.16	46	455	240.00	44	441		
					04.08.14	48	173.46	92.31	48	173	126.00	46	166		
					PB Total		2295	1147	299	2293	1146.00	294	2272	1022	7
RJ	443	1971.35	358	2148	04.10.11	1076	3602.76	885.82	1073	3590	881.00	1032	3228	2725	2923
					19.06.12	687	1892.04	549.68	685	1880	547.00	640	1700		
					11.03.13	569	1672.00	483.32	568	1665	480.00	533	1522		
					19.08.13	571	1715.00	510.18	568	1701	507.00	529	1524		
					24.02.14	864	2617.30	796.18	864	2617	796.00	793	2398		
					RJ Total	3767	11499	3225	3758	11453	3211.00	3527	10372	2725	2923
UP	200	890.00	247	1482	19.10.11	514	812.64	370.13	454	738	339.00	441	713	1674	1215
					02.11.12	671	1126.79	533.35	634	1064	505.00	985	3621		
					03.12.12	399	2769.97	1013.68	389	2711	994.00	0	0		
					UP Total	1584	4709	1917	1477	4513	1838.00	1426	4334	1674	1215
UK	276	1228.20	167	1002	05.10.11	29	34.74	44.12	29	35	44.00	18	29	793	89
					08.02.13	126	1139.78	471.36	126	1140	442.00	96	1031		
					31.07.13	109	674.85	335.35	108	664	334.00	68	491		
					04.02.14	34	317.00	151.00	33	295	148.00	18	164		
					UK Total	298	2166	1002	296	2134	968.00	200	1715	793	89
BR	-	-	244	1464	21.11.13	956	2292	1655	886	2101	1499.00	514	1169	1015	1541
					BR Total	956	2292	1655	886	2101	1499.00	514	1169	1015	1541
	1706	7591.70	1587.00	9522.00		8657	30278	12429	8588	29209	12380.00	7117	23605	9407	9830

Source: World Bank Officials

The figures below represent the comparative state wise analysis of works and funding used in the project

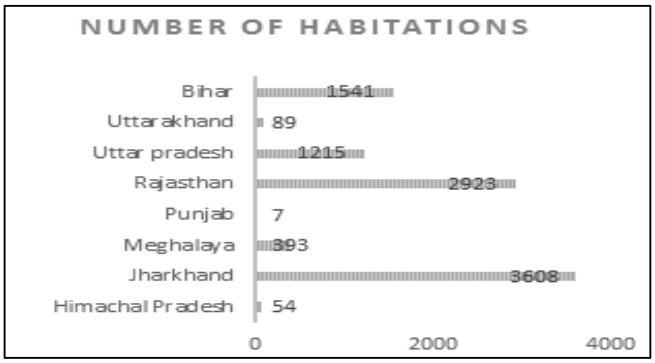

Fig 1

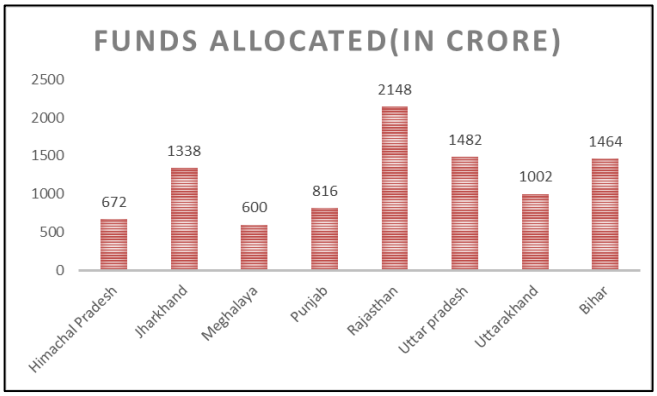

Fig 2

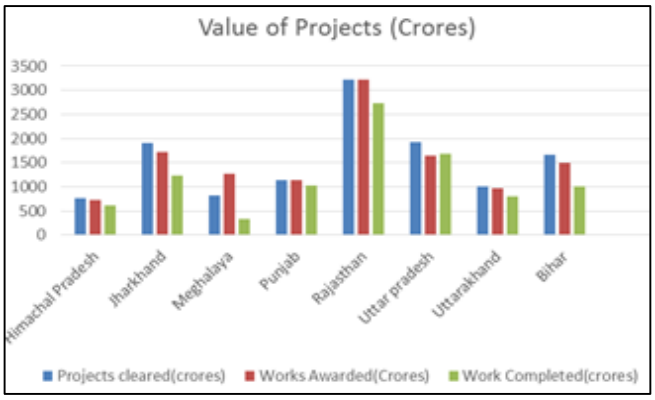

Fig 3

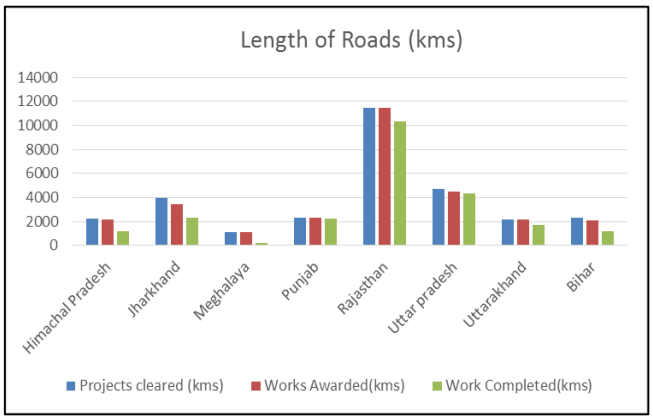

Fig 4

Out of the total eight states involved in the program, the maximum habitations were covered in Jharkhand followed by Rajasthan and only seven habitations from Punjab were selected. Jharkhand has relatively more of tribal population and forest cover and faces many serious problems in rural roads infrastructure development. The largest part of funds have been allocated to Rajasthan state and the lowest amount has been allocated for eastern part of India i.e. Meghalaya. The statistics suggest that approximately 99 percent of the work awarded has been accomplished in Punjab whereas 96 percent of works have been completed in Uttar Pradesh and 90 percent in Rajasthan. The state lagging behind in terms of work completed in comparison to works awarded is Meghalaya with only approximately 20 percent of it being finished till November 2016.The highest portion of funds. I.e. 91 percent approx. have been used in Uttar Pradesh. Against total of 67 percent of allocated funds only55 percent of the works awarded have been completed in Bihar. The major concern is for Himachal Pradesh where almost 84 percent of funds have already been used whereas the work accomplished has only reached to a level of 57.23 percent of the works awarded. A target of 23605 kilometers was already completed for the target of 30278 kilometers of road projects cleared making it 78 percent of the entire target. The Bank's aid is small relative to the total size of the program but the benefits of Bank assistance are likely to be amplified by supporting the improvement and advancement of existing systems. There is a need to agree on a set of equivalent standards for fiduciary and safeguard necessities that will apply to both program and Bank funds to a shift from a transaction orientated approach and moving to systems approach.

7. Conclusion

Since the year 2004, The World Bank's patronage has helped build and improve more than 23000 kilometers of rural roads. More than six million people living in the distant parts of India have benefitted from the intervention. As on November 2016, more than 36,000 habitations in participating states, now have access to all-weather roads. From the hilly and tough terrain of Himachal Pradesh to the parched, rugged land of Rajasthan, new roads are energizing the rural economy, improving incomes, and cultivating the quality of rural life. Many impact assessment studies have been conducted by the government of India and World Bank itself to find how lives of the population these areas have improved. The roads in these areas have attracted many corresponding funding and investments, mostly private, but their returns mainly depends on the road conditions. Considering and hoping that these roads are permanent, therefore will continue to remain operational forever, the investments have been made. For farmers it is now easy to take their produce for selling in the market. Farmers now find it easier to take their produce to market in time. Though a very significant change was not found as soil, weather and environment factors play a much larger role in agro sector, but easier market access due to improved connectivity have shifted the cropping patterns in some blocks. School enrollments have seen an upsurge, and access to health care has improved due to increased connectivity. The roads have also resulted in huge savings in travel time and cost of reaching the markets. Livestock and usage of latest and better agricultural equipment were better in the abodes where roads

are. The projects have brought about a model shift in the way rural roads are planned, designed, supervised, and built. At the design stage itself, peoples' concerns are taken into account, where the representatives through the 'Transect Walk', walk the entire bit of the proposed road before decisions are finally made. An Environmental Protection Code has been laid down as a part of the project to ensure that trees are planted along the newly built roads, steep hillsides are evened out through bio-engineering, and construction debris is not left behind. In hilly landscape, debris is frequently used to form flat areas for community use. Community based organizations have been educated to monitor the roads under construction on quality parameters at various stages to enhance community ownership by helping develop a citizen monitoring framework. Asset management practices have also improved which enhance the endurance of the entire rural roads program. The project has shaped the capacity of small local contractors. It has also better equipped the government engineers for monitoring quality along with exposure to international best practices in road construction. The project has presented five year performance-based maintenance contracts at the end of the construction for road sustainability.

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