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Rural Road Development in India:
An assessment of distribution of
PMGSY project benefits in three states
by gender and ascribed social groups

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South Asia Sustainable Development Unit

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SANGEETA KUMARI

Introduction

In 2000, the Government of India launched the Pradhan Mantri Gram Sadak Yojana (hereinafter PMGSY) with the primary objective of providing all-weather road connectivity (with necessary culverts and cross-drainage structures operable throughout the year), to eligible unconnected habitations in rural areas. Currently, about 60 percent of the 170,000 eligible habitations have a road. By the end of 2010, expenditures for the program had amounted to about US\$14.6 billion, and a further US\$40 billion is estimated to be required to complete the program by 2020 (World Bank, 2010). The PMGSY program is a very large undertaking with the World Bank also being involved in its financing and execution all along; the most recent credit amounted to US\$1.4 billion.

The program aims to draw all of India's villages into the mainstream. First, by improving connections to markets resulting in villagers getting favorable prices for inputs and outputs, which will raise their incomes and sharpen their incentives to cultivate more intensively, pursue new activities and invest in new methods. Second, by reducing the time spent traveling to and from work (for adults) or school (for children) (even in the rainy season), resulting in improvement in quality of life as well as attendance of pupils and their teachers. Third, by improving villagers' access to timely treatment especially in the event of accidents and acute sickness, it will help in lowering morbidity and mortality. The current study limits itself to the first and (partially) the second aims of the program, focusing more on income generation rather than the social impacts.

Aims of PMGSY

PMGSY intends to include all of India's villages to:

- improve connections to markets, that will raise incomes of villagers and provide incentive to pursue new activities and opportunities;
- reduce travel time of children to schools and adults for work and daily chores; and
- improve villagers' access to timely treatment in the event of emergencies and accidents.

This assessment seeks to focus on two aspects of the PMGSY program. First, the emphasis is on new/additional gainful employment and economic opportunities, as opposed to other forms of benefits. Second, the distributional concern related to whether women and members of scheduled castes (SC), tribes (ST) and other backward castes (OBCs) have been able to exploit such opportunities, and if not, what efficient measures promise to improve their chances of doing so. With this objective and given the paucity of clear evidence along these lines, the South Asia Sustainable Development Department (SASSD) of the World Bank undertook a Poverty and Social Impact Assessment (PSIA). One of the objectives of this PSIA was to provide evidence that can inform future phases of the program and recommend suitable policy interventions. It intends to address the following key questions around which this report is also organized:

1. What are PMGSY's effects on villagers' employment and occupational choices?
2. To what extent do these shifts yield higher or more regular income?
3. Do these shifts vary across groups (women, SC, ST and 'others')?
4. What are the enabling factors and main obstacles that prevent weaker groups from exploiting the more attractive possibilities and sharing more fully in the benefits?
5. What are the more promising policy and programmatic alternatives that could shift the distribution of benefits in favor of these groups?
6. How are these changes in policy to be achieved in practice?

To answer these questions, a specially designed survey of villages in the states of Jharkhand, Rajasthan and Himachal Pradesh was carried out in the second half of 2013. Two agencies were

engaged for the study: TARU Leading Edge Private Limited carried out the survey while two international consultants¹ performed the statistical analysis.

This report summarizes findings based on data collected as part of the primary survey, coupled with findings from the qualitative survey which included focus group discussions (FGDs). It highlights findings which answer the six key questions (see box above) which are relevant to decision makers as evidence to improve existing and proposed programs and for further policy dialogue. This is a short version of a separate detailed report² which in addition to the key findings of the quantitative and qualitative surveys has annexes on key impacts and detailed findings by state. The detailed analysis and tables generated are part of the full statistical analysis report³ by international consultants and the preliminary findings report⁴ which will serve as background reports for reference as required. It is hoped that the report(s) will make a useful contribution to the process of drawing up recommendations to improve PMGSY's impact in the sphere of ascriptive distribution - in short, on its 'inclusiveness'.

PMGSY Impacts and Benefits

A series of quick assessments of the socioeconomic impact of PMGSY in selective states in India commissioned by the Ministry of Rural Development in 2004 revealed that rural roads benefit rural communities in various domains. The impacts on agriculture, employment generation, industry, health, education sector, social aspects, transport, urbanization and poverty alleviation were already starting to show. However, these benefits may not be equitably distributed. In rural India, birth identity and gender are key determinants of social inclusion within the dominant society, making equity in the distribution of project benefits a key concern. Thus SCs and STs suffer extreme poverty, as do female-headed households. Members of these groups do not fully benefit from government programs due to cultural constraints, low levels of literacy, and other social barriers. In particular, their capacity to benefit from 'public goods', such as improved rural roads, is low. Confirming this hypothesis, a recent Bank study of the long-term impacts of rural roads in Bangladesh found that initially the poorest households did not share in the monetary benefits of rural roads. Instead, significant improvements in per capita expenditure and assets were concentrated primarily among households between the 50th and 70th percentiles.

The vision and mission of India's Ministry of Rural Development is sustainable and inclusive growth of rural India through a multipronged strategy for eradication of poverty by increasing livelihood opportunities, providing a social safety net and developing infrastructure for growth. This is expected to improve the quality of life in rural India and correct the developmental imbalances, aiming in the process to reach out to the most disadvantaged sections of society. Rural road connectivity is not only a key component of rural development by promoting access to economic and social services and thereby generating increased agricultural incomes and productive employment opportunities in India, but also as a result an important ingredient in ensuring sustainable poverty reduction.

PMGSY roads improve villagers' access to market opportunities and the net prices they encounter for inputs and outputs. Within the village, on-farm employment is affected by shifts from food-grains to other crops and more intensive cultivation; and non-farm employment

¹ "PMGSY's Impact on Villagers' Allocation of Time and Gainful Employment. Who Benefits?" by Susanne van Dillen and Clive Bell, May 2014

² "Rural Road Connectivity for Sustainable and Inclusive Growth: An assessment of PMGSY's effects on employment and occupational choices in three states". World Bank, June 2014.

³ "PMGSY's Impact on Villagers' Allocation of Time and Gainful Employment. Who Benefits?" by Susanne van Dillen and Clive Bell, May 2014

⁴ "Rural Road Development in India: Distribution of PMGSY project benefits. Preliminary Findings Report" by TARU Leading Edge Private Limited. March 2014

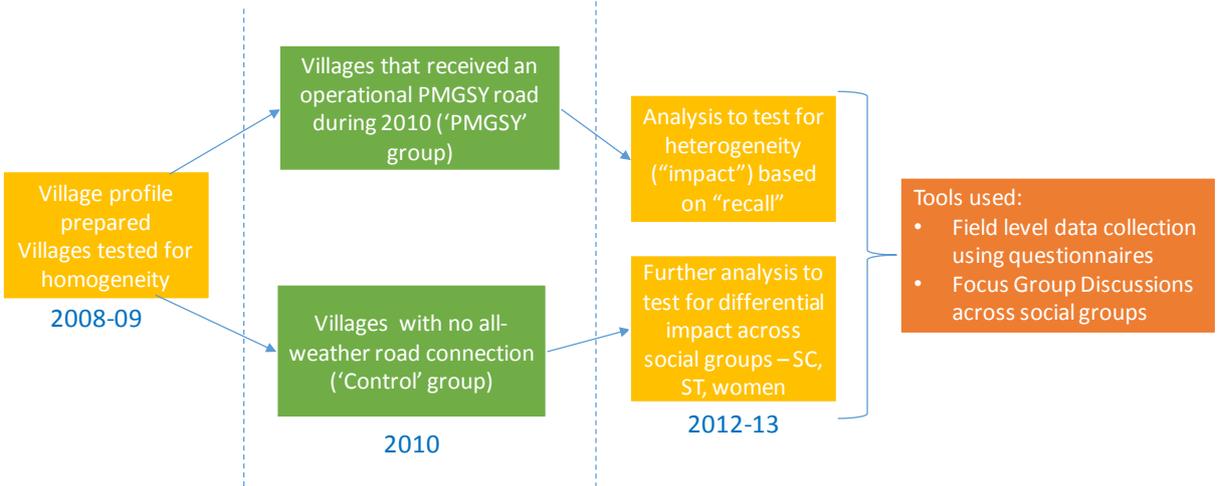
opportunities in construction, grocery shops and other forms of petty trade could expand. Good connectivity to nearby towns enable villagers to commute to jobs there on a daily basis. The lack of an all-weather road will not, logistically speaking, hinder seasonal or long-term migration.

Distributional impact of PMGSY: Little is known about which of the newly connected communities benefit most from these expanded opportunities, and why the others do less well. Although households with better resources, capabilities and skills can be expected to profit more from PMGSY than their less endowed neighbors, little empirical evidence is available on how PMGSY’s benefits are actually distributed among different population groups. Policy makers are concerned not only about the poor, but also about the ‘ascriptive’ categories – SCs, STs, OBCs, women and youth. There is therefore a need for an in-depth analysis of PMGSY’s distributional impact, with a view to devising mechanisms to make this scheme inclusive.

The Survey: Methodology

Overall methodology: The study had a quasi-experimental design (‘PMGSY’ villages vs ‘control’ villages) approach, wherein villages which had an operational PMGSY road during 2010, formed the ‘PMGSY’ group and villages with no all-weather road connection constituted the ‘control’ group (Figure 1). The approach followed was a random selection of villages wherein a village profile was prepared and villages tested for homogeneity in 2008-09. An analysis was done in 2012-13 to check for heterogeneity based on the impact of the road, and further tested for variation among different social groups. This was done using questionnaires administered to households, supplemented by FGDs by gender and by dominant and weaker groups, in order to obtain views from all segments. Caste categorization was ascribed by the respondents - a caste analysis was not carried out upfront.

Figure 1: Diagrammatic representation of the overall methodology



While this cannot be considered a true “impact assessment” study as it does not build upon an already available baseline but uses ‘recall’ data based on an ‘event’, the impact of the intervention (provision of PMGSY road) and variations across social groups (based on gender, caste) were discernible. A great deal of rigor was built into designing the methodology to ensure that views obtained were actually representative of the area in which the study was carried out.

States, districts and villages: Each of the three states, viz. Jharkhand, Rajasthan and Himachal Pradesh, was chosen to reflect a particular characteristic: Jharkhand, with widespread poverty and well-entrenched Maoist insurgency, is backward. Rajasthan has tribal dominance and relatively backward areas; and Himachal Pradesh is hilly with a difficult terrain. The World Bank in consultation with the National Rural Roads Development Authority (NRRDA) identified 2-3 districts in each state on the basis of criteria such as: (i) PMGSY roads being functional during 2010 (January 1 to December 31) adding up to a number significant enough to offer a robust sample size; (ii) demographic compositions and spatial location of districts (contiguity of districts); and (iii) a minimum of 6 census villages which are yet to be part of any rural road plan for all-weather connectivity to serve as control.

Overview of sample villages

Jharkhand:

- Habitation and geography: 11 villages with nucleated habitations.
- Location: Average 0-1 km from old existing roads.
- Demography: two thirds of the villages are tribal dominated, and the rest had mixed population; 150-400 households.

Rajasthan:

- Habitation and geography: 4-5 had nucleated habitations; average 2-3 hamlets per village. Mostly hilly; on the foothills.
- Location: Villages covered mostly had 1-2 habitations only benefiting from the road constructed. Average 3-4 km from old existing roads.
- Demography: Barring 3 villages, all are completely tribal villages; 100-150 households.

Himachal Pradesh:

- Habitation and geography: Small villages with 30-40 houses only; 1-2 had nucleated habitations. Mostly hilly and scattered habitations.
- Location: Mostly 1 habitation benefiting from road constructed. Average 2-3 km from state/district/national road.
- Demography: Mixed caste groups. No ST households (Kangra); 2 villages with Muslim population.

Selection of villages and habitations: Twenty-two villages were covered in each state -- 16 PMGSY villages and 6 control. Among the PMGSY villages, those preferably at the tail end of the constructed road were selected. A minimum of 6 census villages which are yet to be part of any rural road program were selected to serve as control villages. Two habitations were covered in each of the villages selected: in case of homogenous habitation patterns, the 2 most populous habitations were selected; where inter-habitation level distinction existed, the 2 most populous habitations were selected and 4 households of both weaker and stronger social groups were covered from each habitation.

Table 1: Overall sample size for study

S. No.	Sample type	Habitation	Village information	Household head interview*	Supplementary household information (women)	FGD
Jharkhand						
1	PMGSY	16	16	256	256	64
2	Control	6	6	96	96	24
3	Total	22	22	352	352	88
Rajasthan						
1	PMGSY	16	16	256	255	58
2	Control	6	6	96	96	24
3	Total	22	22	352	351	82
Himachal Pradesh						
1	PMGSY	16	16	251	248	63
2	Control	6	6	95	81	24
3	Total	22	22	346	329	87
	G. Total	66	66	1050	1032	257

*Includes 49 female-headed households

Stakeholders: Besides the household survey, the PSIA also undertook 4 FGDs in each village, as well as a village level profile interview with key informants to gather village level data in order to facilitate comparisons between the two sets of villages. The list of stakeholders who were engaged with for primary data collection and collection of qualitative information is presented below. Line departments other than Public Works Department/rural roads were consulted only if the required data were not available at the village level.

Table 2: List of stakeholders consulted

Level	Type of engagement	Stakeholder type
Village level	HH level data collection, habitation level FGDs, Key informant discussion (for village information)	Women groups, weaker sections (potentially impacted families), opinion leaders, PRI representatives, village level line departments. Panchayat Secretary, ANM, ICDS workers
State, District, Block	Consultations (as deemed appropriate)	Rural Road Dept./PWD and office staff, Panchayats , PRI representatives, district and nearest APMC officials, reputed non-government organizations/community-based organizations of the area

Village profile: Following a random selection of villages, a village profile was prepared and villages tested for homogeneity in 2008-09. The data source for village profiles of PMGSY and control villages were obtained from the respective village Panchayat President and secretaries as available in their records, and hence were representative.

Field level data collection: Sixteen households were selected for the in-depth survey at random from each village based on spatial clusters that reflected caste-based settlement in order to ensure representativeness. A separate, truncated version of the questionnaire was administered to the women within the households. Thus, 1,056 interviews in 66 sample villages were each conducted with household heads and with an adult woman in the house based on simple random sampling. Care was taken to ensure that women enumerators were used to field the questions to women. Beneficiaries were categorized as: men, women, male-headed households, female-headed households, SC, ST, OBC and 'other castes' – across 'control' and 'PMGSY' villages. Briefly, the household questionnaire covered details of demographic characteristics, occupation and employment, connectivity, livestock and other assets, land ownership, operational holdings and cultivation, and questions on activities and earnings before and after the road became operational.

The study probed the benefits at three levels: (i) it asked respondents whether anyone in the village had benefited and how; (ii) if they had benefited themselves and how; and (iii) whether they had participated. These questions were put to both men and women, and differentiated between male- and female-headed households. This helped differentiate between responses of those who said there were improved opportunities and they benefited and those who said there were improved opportunities, but they themselves could not benefit. The latter group is important and the obstacles faced by this group were drawn out by the study. Similar queries were made to respondents in the 'control' villages for the two reference periods by slightly tweaking the questions.

The fieldwork began in August 2013 and was completed in November 2013. The 'current' reference period was the agricultural year, July 1, 2012 to June 30, 2013. The reference recall period was the agricultural year 2008-09.

Focus group discussions: The survey of individual households was supplemented by FGDs in each village. For the FGDs, benefits were analyzed across "village dominant" and "village weak

groups”, and “women dominant” and “women weak” groups, for ‘control’ and ‘PMGSY’ villages.⁵ Four focus groups were convened in each village - 2 FGDs among women (weaker and stronger social group); 2 general FGDs - 1 each with a weaker and stronger social group. The presence and participation of members from desired social groups/strata was ensured during the FGDs. Women were invited to take part in separate sessions held with them, though they were also welcomed to join in the general, ‘village’ FGDs, whose proceedings would normally be dominated by men. *With 16 PMGSY and 6 control villages selected in each state, there were 264 focus groups in total, of which 257 sessions were actually conducted; and of these one-third were women (table 1). A total of 5,100 persons took part in these discussions, almost three-quarters of whom belonged to the PMGSY villages.*

Profile of sample households and progress of PMGSY in selected states: The study examined data both from the village profile and summary statistics⁵ obtained for the entire sample of households, i.e. 352 in each of the three states. The analyses of both data sources confirmed prior expectations that the states are different in terms of the progress of the PMGSY program, as well as household level correlates. As may be seen in Table 3, Rajasthan could be considered the most ‘advanced’ in terms of percentage habitations connected, with Jharkhand lagging the most. However, intra-state differences between households in PMGSY villages and those in control villages were insignificant. The two groups of villages were found to be very similar in most respects. Households in the PMGSY villages had, on average, somewhat larger landholdings, and more wealth in the form of livestock. On average, however, what distinguished them from their counterparts in the control villages is the all-weather connection provided by their PMGSY roads.

Table 3: Three states: PMGSY habitation connectivity achievements

	Jharkhand	Rajasthan	Himachal Pradesh
Progress as on Dec. 2010			
PMGSY habitations connected	2,617	10,976	2,631
PMGSY total eligible	9,510	15,605	3,726
Percent of total connected (%)	28	70	71
Total length constructed (km)	4,362	34,134	5,698
Expenditure (Crore Rs.)	1,519	4,837	1,141
Progress as on Feb. 2014			
PMGSY habitations connected	4,764	12,262	3,120
PMGSY total eligible	9,510	15,605	4,217
Percent of total connected (%)	50	79	74
Total length constructed (km)	16,554	44,163	10,119
Expenditure (Crore Rs.)	2,545	5,991	1,344

Source: NRRDA

Limitations of the methodology: One of the major challenges faced by the field data collection team was with respect to recall data pertaining to 2009. Respondents had difficulty in recollecting information relating to events, daily routines, etc. with the desired level of self-assurance. The study team addressed this by anchoring the discussion into specific events that may have occurred in 2009 (in the case of PMGSY villages, most likely the advent of a road).

Another issue was whether the data so collected (from 352 households per state) could qualify as being representative. While the study team makes no claims of perfect representation, it tried to address this issue by: (i) ensuring from the village profile that the villages selected - PMGSY and control - were similar with respect to basic infrastructure and other characteristics to

⁵ The terms ‘dominant’ and ‘weak’ do not necessarily correspond to a group’s ritual position in the Hindu caste hierarchy. Rather, they describe a group’s position of power in the village community. By virtue of sheer numbers, therefore, a low caste group may dominate a village’s affairs.

⁵ In terms of e.g. household size, age and education of household head, operational landholding, total value of livestock, productive assets, consumer durables, access to safe drinking water, electricity, etc.

facilitate comparison; and (ii) undertaking four FGDs in each village with both men and women, as well as weaker and stronger social groups to capture their views. The fact that nearly 5,100 participated in such discussions and spoke about the benefits they received from a road or the obstacles they faced without it, allowed for a representative picture to emerge at least within the villages studied.

A final limitation was the uneven progress of PMGSY across the three states, because of which during the study reference (operational roads in 2010) period, Jharkhand's focus was on connecting densely populated habitations from the comprehensive new connectivity priority list (CNCPL), while Rajasthan and Himachal Pradesh, having achieved connectivity of high density habitations, were focused on connecting sparsely populated habitations that are remotely located in the states. Inter-state comparison of project data therefore needs to be made with caution.

Lessons for future surveys

The current study looked only at the benefits and it would be good for future work in this area to integrate any potential negative impact, such as an increase in speculation on land from outside interests who now have greater access to previously remote areas, which could serve to disadvantage residents without the means to take advantage of new opportunities.

The need for some form of statistical control is essential, but unless certain steps are taken now, implementing one will become more difficult in the future. The reason is that the population of villages is finite, so that as more of them are connected with an all-weather road, the pool of those still without a connection and so eligible to serve as controls will shrink, and will not be available.

In the absence of baseline surveys for 'PMGSY' and 'control' villages alike, this study's attempt to estimate the roads' impacts had to rely on respondents' powers of recall to the agricultural year that ended fully four years before the survey. For many of the questions, this must be regarded as rather challenging.⁶ The advent of the road in the PMGSY villages probably 'anchors' respondents' memories. In the absence of any such event in the control villages, the difference-in-difference comparison may well lose some of its edge.

The control villages selected in this study provide both an answer and a resource. The corresponding data for the agricultural year 2012-13 can serve as ('before') baselines for those villages, not only for themselves when they finally receive a PMGSY connection, but also when they remain unconnected and are used instead as controls for other villages that do receive a connection in the future. The conclusion is that baseline surveys should be undertaken fairly regularly in a sample of presently unconnected villages.

⁶ The corresponding recall period in the Orissa survey analyzed in Bell and van Dillen (2014) averaged two years.

Key Hypotheses

The key hypotheses tested in this study included:

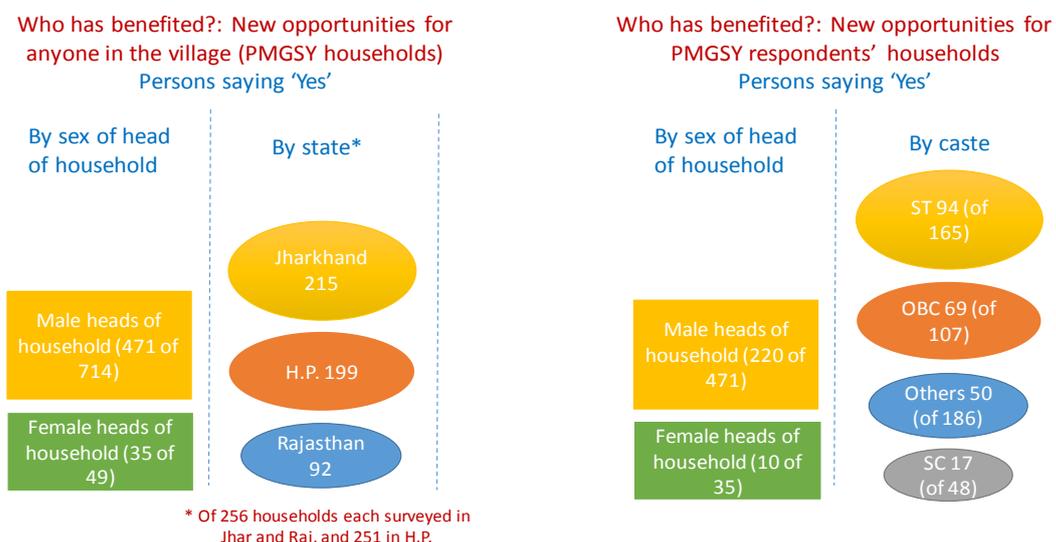
- A 'PMGSY effect' on villagers' rankings of their sources of income and on the allocation of villagers' time between various activities.
- New employment and economic activities in the PMGSY village.
- Respondents in PMGSY villages themselves enjoyed improved employment and economic opportunities since the road became operational.
- The opportunities in PMGSY villages yielded higher and more regular income than before.
- A 'PMGSY effect' on the cropping pattern and gross cropped areas in the three states studied.
- People in PMGSY villages were involved, to a great extent, in the process of choosing their road's alignment and in its construction and subsequent maintenance.
- Respondents in PMGSY villages believed that the new road had enabled them to save time in performing their tasks.

Indicators for impact assessment

- *Income activities and sources:* Shift in activity pattern; shift in cultivation pattern; new income activities, new/additional employment and business opportunities; higher/regular income and direct work opportunities in road works under PMGSY.
- *Access:* Time savings in access to work/nearest income opportunities/education/ services.

The above hypotheses were tested for variance across the three states and the different social groups primarily by gender and caste. A combination of quantitative, qualitative and existing data was used to test various aspects of the hypotheses. To capture the PMGSY's effects on villagers' employment and occupational choices, a first requirement was that sample villages must have an all-weather new activity in operation to test this hypothesis, and that there are a host of other factors (referred to here as complementary) influencing this including: (i) agency or knowledge and belief in the possibility of taking advantage of such opportunities; (ii) demand; (iii) access to finance; (iv) access to public or private transport on the road; and (v) skills, among others. A series of exogenous factors (including economic context cost of services, transport, etc.) could influence the available opportunities over time. Overall statistics on "who has benefited" from the program are shown in Figure 2 in terms of those believing in new opportunities in the village and those who took advantage of the opportunity themselves.

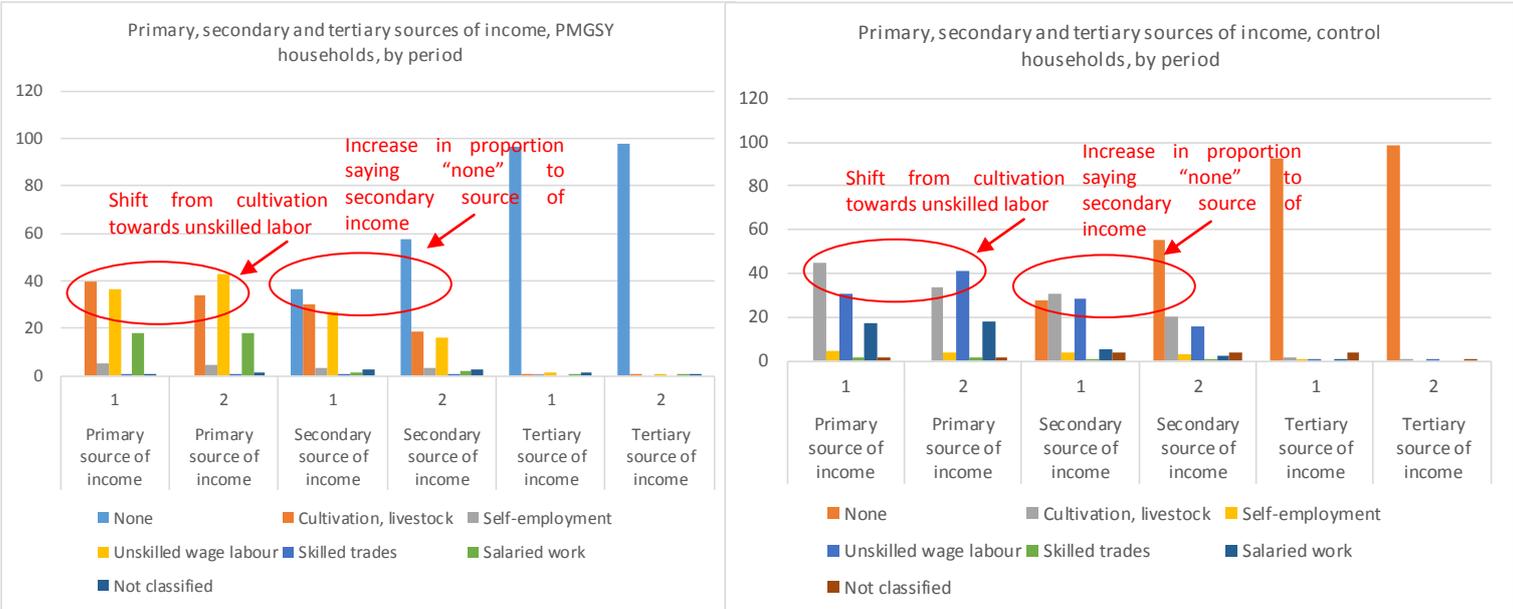
Figure 2: Who has benefited?



KEY QUESTION 1: PMGSY's effects on villagers' employment and occupational choices

1. PMGSY is generating new and additional employment and business opportunities. Two-thirds of all household heads⁷ surveyed in the PMGSY villages were of the opinion that some of their fellow villagers had been able to exploit such opportunities. In contrast only one quarter of their counterparts in the control villages felt any such developments in theirs. At the state level, only one-third of the household heads in the PMGSY villages in Rajasthan thought that any of their fellow villagers were benefiting in this sphere.
2. The new road has enabled villagers to save time in performing their tasks: 94 percent of the household heads and 96 percent of women replied in the affirmative uniformly across the three states. The commercial sphere dominated ranking 1, with getting to work and the market being the foremost. Getting to school and hospital lagged behind in that order.
3. There is a movement towards 'specialization' in economic activities in both control and PMGSY villages. Substantially fewer households reported having secondary and tertiary sources of income in the agricultural year 2012-13 than in the reference period 2008-09.
4. The respondents' rankings of their households' sources of income in order of importance in the two periods in question are set out for the PMGSY and control villages in Figure 3. The number of households in PMGSY villages reporting a secondary source fell by 164, to just over 40 percent of the total sample. The very few who reported a tertiary source in 2008-09 fell slightly, to just 2 percent of the total. The distribution of the primary source by category also shifted, with unskilled wage labor gaining at the expense of cultivation and self-employment. However, it cannot be concluded that the 'PMGSY-effect' had a statistically significant effect on the rankings of the sources of income. This needs to be seen in context of overall change in the rural labor market and withdrawal from agriculture at the national level.

Figure 3: Primary, secondary and tertiary sources of income, PMGSY and control households, by period



Source: Household survey

⁷ Almost 95 percent of household heads were male, but the females among them had the same assessments.

5. There was no PMGSY effect on the allocation of villagers' time among economic activities⁸ in the three sample states, between the reference period (2008-09) and the 'current' period (2012-13), with the exception of women in Rajasthan, for which no conclusion could be drawn.⁹
6. Patterns of income sources varied in the three states. In Jharkhand and Rajasthan, cultivation and livestock were the primary sources for a large number of households, although unskilled wage labor also seemed significant. In Himachal Pradesh, unskilled wage labor and salaried employment were dominant and cultivation played only a minor role in both the periods. A switch away from cultivation and livestock towards unskilled work occurred in Rajasthan and, more generally, among male-headed and ST households (Table 4).

Table 4: Primary source of income in periods 1 and 2, PMGSY households, by state, %

	Jharkhand		Rajasthan		Himachal Pradesh		Total	
	1	2	1	2	1	2	1	2
Cultivation, livestock	50.4	51.2	59.8	41.8	7.6	7.6	39.5	33.7
Self-employment	6.3	7.0	3.9	2.3	4.4	4.0	4.9	4.5
Unskilled wage labor	32.8	31.2	30.9	52.7	45.4	43.8	36.3	42.6
Skilled trades	0.4	0.8	0.4	0.4	0.0	0.0	0.3	0.4
Salaried work	10.2	9.8	4.7	1.6	40.2	42.6	18.2	17.8
Not classified (n.e.c.)	0.0	0.0	0.4	1.2	2.4	2.0	0.9	1.1
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

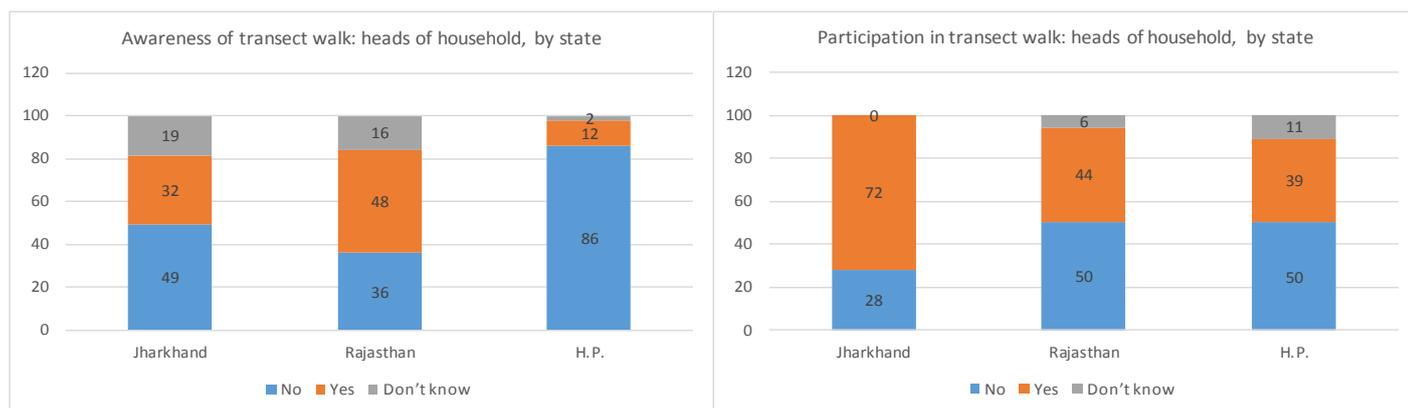
Source: Household survey

7. PMGSY roads influenced the cropping patterns to shift towards commercial crops. In Jharkhand, there was indeed such an 'effect', as paddy and wheat were both found to be relatively less important in the PMGSY than in the control villages, with all other crop groups more so. In Himachal Pradesh too, there was such an 'effect', largely expressed as wheat and maize and coarse grains gaining at the expense of paddy. In Rajasthan, no conclusion could be drawn as to whether the provision of PMGSY roads affected the cropping pattern in that state. The effect of PMGSY roads in increasing the gross cropped area was mixed; indeed, the contrary can be argued (there was a 16 percent drop in gross cropped area in Jharkhand which needs investigation). This needs to be seen in context of the stressed agricultural sector and farmers looking for higher income opportunities at the national level.
8. Participation and direct employment of villagers in the planning and building of their PMGSY roads was weak though there were some differences among the states (Figure 4). The majority were satisfied with the final alignment. Fewer than one-in-five of all households was employed in the construction, with fewer than one-in-16 in Himachal Pradesh.

⁸ For example, between housework, idleness/other, family's farm, unskilled wage labor, education, self- and salaried employment

⁹ This may possibly stem from a switch in conventions or procedures in enumeration and must therefore be viewed with considerable reserve

Figure 4: Awareness of and participation in transect walk: heads of household, by state



Source: Household survey

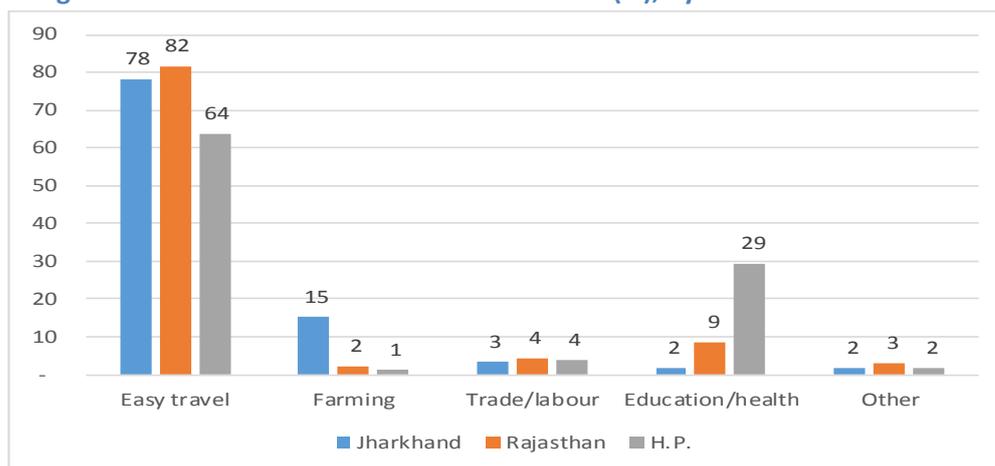
Key messages from Question 1:

- New/ additional employment and business opportunities are being generated.
- Time saving due to new connecting road is resulting in better access to employment and business opportunities.
- There is a shift in distribution of primary source of income from cultivation and self-employment to unskilled wage labor.
- There is a shift away from cultivation and livestock towards unskilled work in Rajasthan.
- There is a movement towards 'specialization' in economic activities, i.e. a reduction in percentage of households reporting secondary and tertiary sources of income in both PMGSY and control villages.
- There is a shift in cropping patterns in Jharkhand and Himachal Pradesh.

KEY QUESTION 2: Extent to which these shifts yield higher or more regular income

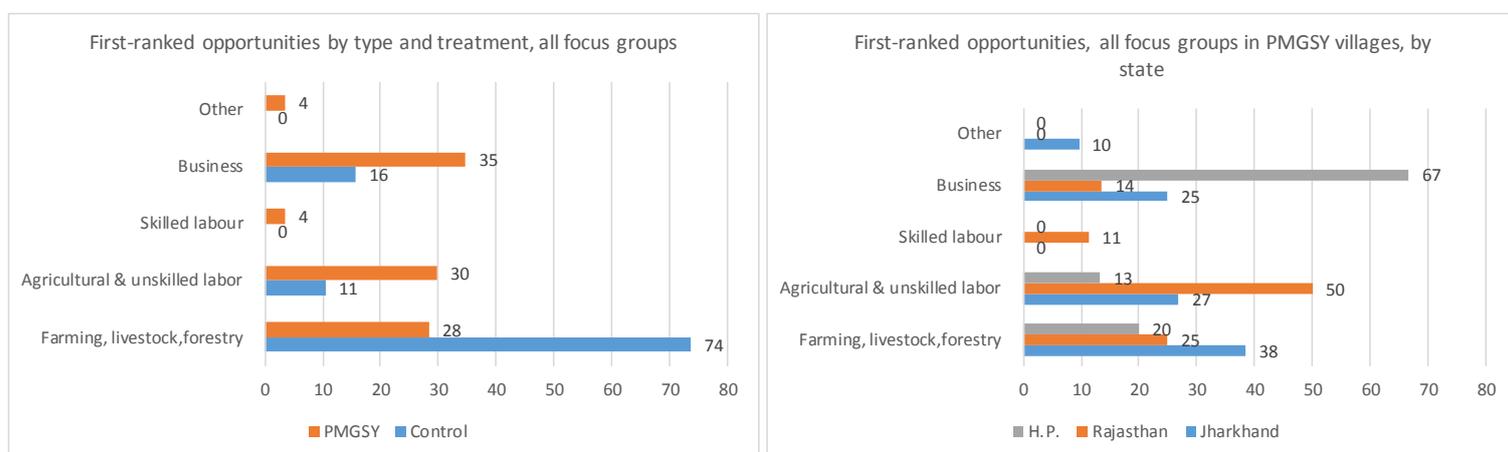
1. *Main benefits of PMGSY roads:* The category "easier travel" dominated ranking 1 and was most frequently mentioned in rank 2 and 3. Nearly 30 percent ranked health and education in Himachal Pradesh, whereas very few ranked it first in Jharkhand and Rajasthan (Figure 5).
2. First ranked opportunities by type are presented in Figure 6. As expected of rural communities, overall agricultural activities and unskilled labor accounted for two thirds of the rankings 1 and 2, but business opportunities also featured in ranking 1. At the state level, opportunities in agricultural activities and unskilled labor dominated in Jharkhand, unskilled labor and business in Rajasthan, and only business in Himachal Pradesh.
3. Similar findings were reported also from the 2004 assessment -- increase in on-farm employment where there was a shift in cultivation from grains to cash crops; increase in non-farm opportunities like opening of shops, small business, cottage industries in Himachal Pradesh, Madhya Pradesh, Mizoram, Tamil Nadu and Uttar Pradesh; and increase in employment opportunities due to expansion of local industries.

Figure 5: First-ranked benefits of PMGSY roads (%), by state



Source: Household survey

Figure 6: First-ranked opportunities by type and treatment, and in PMGSY villages by state



Source: Focus Group Discussions

- A majority in all three states reported that their incomes resulting from new/additional employment and business opportunities being generated were *higher, but not more regular, than before* (Table 5). In this last matter, the women were closely in agreement with them. This is corroborated by findings from the qualitative survey. The 2004 survey had revealed increase in the families rearing goats/sheep for commercial purpose in Rajasthan, Himachal Pradesh, and Uttar Pradesh.

Table 5: Income effect ranked 1, declared PMGSY beneficiaries, by state, %

	Jharkhand	Rajasthan	Himachal Pradesh	Total
Higher	69.4	76.4	73.9	71.6
More regular	29.9	23.6	26.1	28.0
Both	0.7	0	0	0.4
Total	100.0	100.0	100.0	100.0

Source: Household survey

“In Tharu, Kathod/Jeen, Haar Jalari and Balota, transport service has made accessing health services easier for people. This has been especially beneficial for women who can now consult doctors in times of pregnancy and childbirth. “Pregnant women can go to hospitals for check-ups and childbirth,” said a villager from Panjei, a village in Himachal, which has benefited from utilizing an ambulance service. Connectivity also means better access to auxiliary nurse and midwives (ANMs) and to door-to-door vaccination services initiated by the government.” - Views from Himachal Pradesh

2. In Jharkhand and Rajasthan, these gains in income were realized mostly through direct movements¹⁰; but these played a much smaller role in Himachal Pradesh (Table 6). Meeting local demand¹¹ was of greater importance in the latter state, and led the women respondents’ rankings in all three states (as corroborated by qualitative surveys).

Table 6: How opportunities ranked 1 yielded income effects, declared by PMGSY beneficiaries, by state, %

	Jharkhand	Rajasthan	H.P.	Total
Direct movement	66.0	45.5	34.8	57.8
Indirect (demand)	21.1	34.6	65.2	28.9
Indirect (supply)	11.6	9.1	0	9.8
Other	1.4	10.9	0	3.6
Total	100.0	100.0	100.0	100.0

Source: Household survey

“In Himachal villages, PMGSY roads have reduced the work burden of women, as they do not have to travel long distances to fetch ration and other materials for household work”. “After road construction, connectivity of our village has improved and now at periodic intervals of time, officials from the Vibhaag (Department) come to teach women how to stitch, knit and make papad/pickles. With these skills many women now work from home and earn money. I allowed my wife to undergo training, now she is earning.” - High caste villager, Himachal Pradesh.

“Ambalal Meena, 24, of Dekarha village, Girwa block, Udaipur says that of the 100 families in the village, 20-25 went outside for work before PMGSY road connectivity. Post-PMGSY road construction, at least 50 people travel to Debari market, located on highway NH 8 at a distance of 12 km from the village. Meena and his fellow village labor-wage earners work in Debari 20-25 days in a month. Prior to the current transport facilities, not only could they not seek employment in Debari, but if goods had to be transported from or sent to the Debari market, two or three villagers had to pool in money and hire an auto rickshaw. The total cost was Rs. 100, which in their previous earning circumstances was extremely difficult on them, whereas now, with an increased income, they are able to avail this service easily.” - Views from Rajasthan

3. Direct movement seems to be the main factor causing respondents to gain access to and exploit these opportunities, closely followed by meeting local demand; but there was

¹⁰ These arise when the road functions as a direct channel, i.e. when people use the road to travel to work or a marketplace outside the village. The indirect channels may require more concerted, complementary actions

¹¹ Higher incomes will result in greater demand for goods that are not readily tradable across the village’s boundaries, such as personal and repair services

complementary action, in the form of both private investment¹² (which mainly refers to access to credit, found to be deficient in the states studied) and public intervention.¹³ Direct movement dominated ranking 1 and to a lesser extent, ranking 2; but complementary actions seem important.

“After road connectivity NGOs and community based organizations started visiting our villages said Panchayat members. These organizations train the women in stitching, improved agriculture practices, dairy products and encourage thrift and credit among SHG members. In Gumla Pradan, an NGO working with a community group maintained that road connectivity has helped the cultivators to grow vegetables and fetch better price for their produce by selling in the distant markets of Ranchi and Lohardanga. Earlier, farmers were forced to sell produce in local markets”.

“Gafur Khan, a Shivrajpur resident, who runs a small store selling grains, fertilizers and seeds would travel once or twice a month to the market prior to the PMGSY for wholesale procurement of seeds and fertilizer, but with difficulties in transporting goods, he was unable to stock a sufficient amount of supplies. With the ease of transportation, he now procures items in large quantities. Additionally, now traders from Ghaghara are able to visit the villages frequently in order to procure grains”.

Views from Jharkhand

Sukaram resident of Nawakheda said “It’s easier to commute from the village with better transport facility. This has helped in earning more as we reach on time to the town. It is important for us to reach the local labor market by 7-7.30 AM, to have bargaining space with multitude of potential service seekers. Most deals are finalized by 8.30 in the morning.”

View from Rajasthan

Key messages from Question 2:

- Easier travel was the most reported category in terms of main benefits.
- Agricultural activities and unskilled labor followed by business opportunities ranked the most by PMGSY beneficiaries.
- A majority in all three states reported higher but not more regular incomes than before.
- In Jharkhand and Rajasthan, these gains in income were realized mostly through direct movements; but these played a much smaller role in Himachal Pradesh. There is also a role for complementary action, in the form of both private investment and public intervention, in how the respondents got access to, and were able to exploit, these opportunities.

¹² *Complementary investment*: Exploiting an opportunity may involve the household making a (private) investment, such as installing an irrigation borehole and pump, adding livestock, or purchasing a vehicle

¹³ *Complementary intervention (policy)*: This is a complementary action by the public sector, whereby it is useful to distinguish between investment in public infrastructure and other policies. Examples of the former are irrigation facilities and electric power connections. Examples of the latter are the provision of training and information about government schemes, the extension of banking services, and the promotion of bus services.

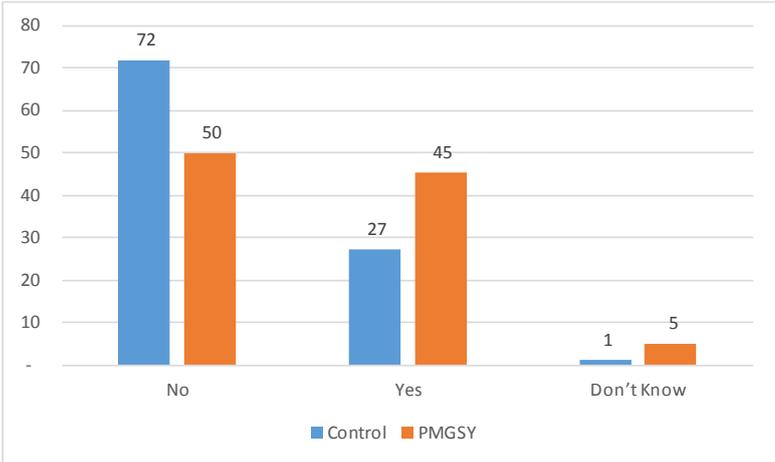
KEY QUESTION 3: Extent to which these shifts vary across groups (women, SC, ST and 'others')

- Under one-half of all women respondents in the PMGSY villages said that at least some people had benefited (Figure 7) in comparison to two-thirds of men household heads. The FGDs yielded similar qualitative findings.
- At the state level, the difference between the sexes' views was marked in Rajasthan and Himachal Pradesh where a much lower proportion of women respondents felt that there were new opportunities for anyone in the village; but none in Jharkhand (Figure 8). However despite such results, the qualitative survey indicated that there were pockets where women have benefited (see quotes), though this was probably too small to have an impact on the overall statistical results.

Women's view of things

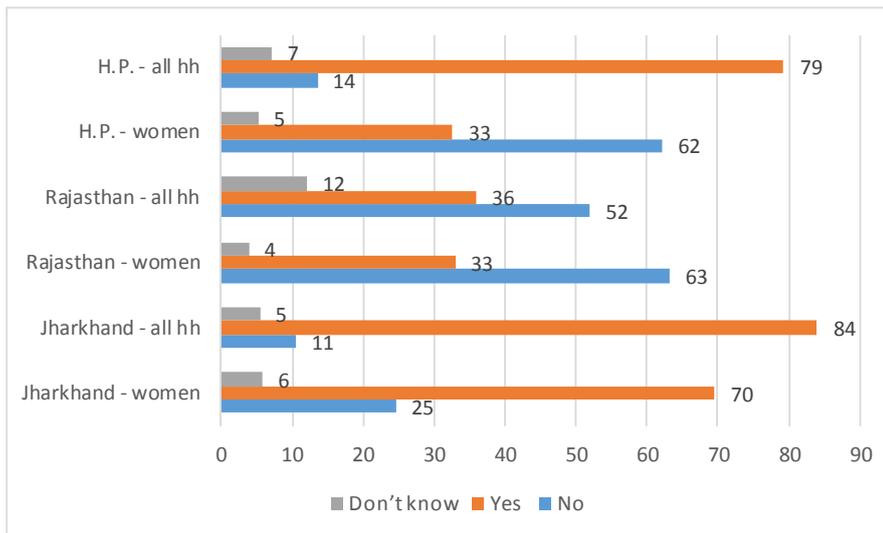
- Just under a half of all women in the PMGSY villages said that at least some people had benefited.
- In Rajasthan and Himachal Pradesh a much lower proportion of women respondents felt that there were new opportunities for anyone in the village.
- Over one-half of the 'top' women respondents thought that the lower orders (STs, OBCs) were doing best.
- A clear majority of those who were female, members of the SC and 'other' groups, or with little schooling claimed not to have benefited themselves by the new opportunities.
- For women, direct movement was the most important means by which they could seize opportunities, very closely followed by complementary private investment.

Figure 7: New opportunities for anyone in the village, all female respondents



Source: Household survey

Figure 8: New opportunities for anyone in PMGSY villages, female respondents vs PMGSY households, by state



Source: Household survey

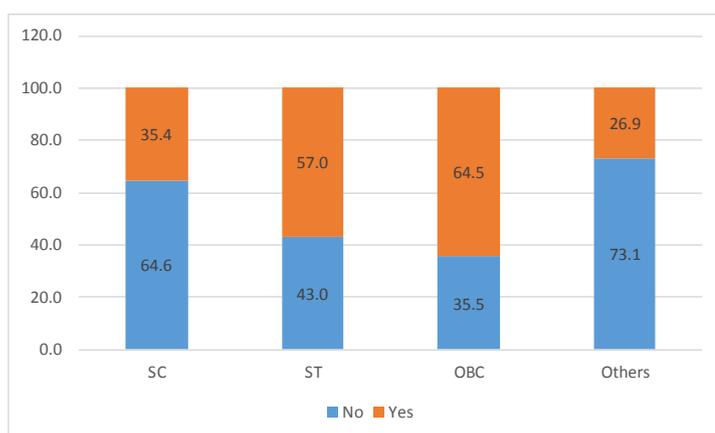
New roads have created additional economic opportunities for women and weaker groups. With new roads women/weaker groups are able to scale up their micro-enterprises (cooked food items, tailoring, and boutique) and get involved in commerce and trade of grains, cash crops, vegetables, etc. In PMGSY villages new roads, increased the mobility of women (32% of FGDs) thus enhancing their work participation and contribution to the household economy. 30 percent of FGDs from weaker village groups articulated increased work/employment options now with easy accessibility to neighboring villages and towns.

Economic activities requiring minimum or no investment are the activities with which these women tend to be associated. Women of weaker groups who are marginal farmers with small land holdings or involved in backyard farming or kitchen garden are now getting to market their produce as road connectivity has given them an opening to market their produce year round. Some of the women of weaker groups were getting associated with the milk supply chain. Poor women who depended on sale of minor forest produce are now able to sell more and earn more.

Views from Rajasthan

- Household heads laid heavy emphasis on caste (the women less so – even though care had been taken to formulate the question in a neutral way) in answer to which groups benefited from the opportunities that arose. *Members of the SC group felt themselves to be excluded, and the rest concurred with their view* (Figure 9). Members of the ST group took a less radical view of things, and OBCs a rather neutral one, in the sense that a large proportion of them thought that their group was doing well, with the rest dividing their votes evenly up and down the scale.

Figure 9: New opportunities for PMGSY respondents' households, by caste



Source: Household survey

4. A majority of household heads in the 'others' group declared that its members were the chief beneficiaries, a view widely shared by the other groups; but over one-half of the 'top' women respondents thought that the lower orders were benefiting the most (Table 7). There was near unanimity in the FGDs that 'other castes' and 'others' were the chief beneficiaries, and that SCs and STs the main non-beneficiaries.

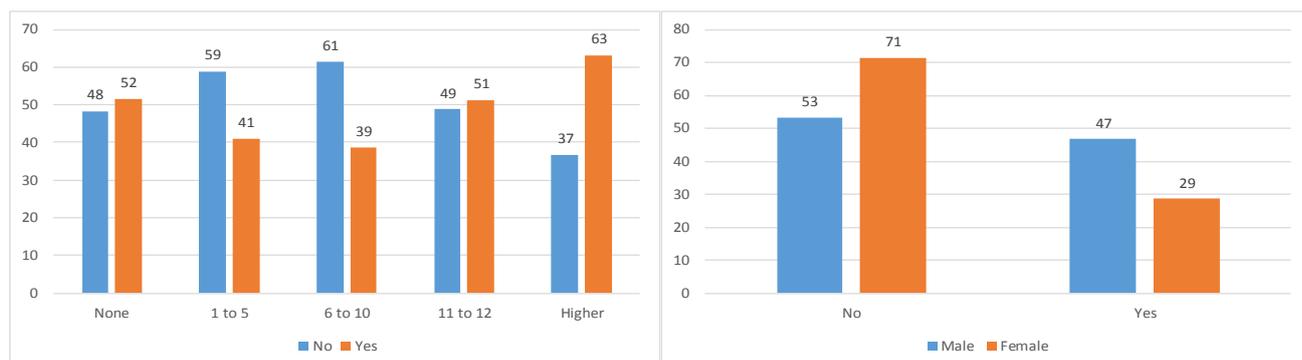
Table 7: Female respondents' perceptions of main beneficiaries of PMGSY roads

Main beneficiaries	Respondents' caste group				Total
	SC	ST	OBC	Others	
SC	7	4	8	7	26
ST	1	119	33	22	175
OBC	27	85	54	35	201
Others	24	56	29	44	153
Total	59	264	124	108	555

Source: Household survey

5. Of those household heads who claimed that some others were profiting, slightly fewer than one-half reported that their own households were actually seizing the opportunities in question, i.e. only about one-third of the households sampled in the PMGSY villages. A majority of those who were *female, members of the SC and 'other' groups, or with little schooling* (Figure 10) claimed not to have benefited. Women respondents took a view of things broadly similar to the men.

Figure 10: New opportunities for PMGSY respondents' households, by education and sex of head of household



Source: Household survey

Key messages from Question 3:

- Female respondents had a comparatively dim view of new employment and economic opportunities in PMGSY villages at about 45 percent.
- Members of the SC group felt themselves excluded, and the rest concurred with their view.
- Focus group discussions revealed that `other castes' and `others' were the chief beneficiaries, and that SCs and STs the main non-beneficiaries.
- The majority of those who were female, members of the SC and `other' groups or with little schooling claimed not to have benefited themselves.

KEY QUESTION 4: Enabling factors and main obstacles that prevent weaker groups from exploiting the more attractive possibilities and sharing more fully in the benefits

1. Among those whose households did benefit, direct movement in the form of travel was the chief means by which they were able to seize these new opportunities (particularly for men). This is consistent with the conjecture that men use PMGSY roads to exploit opportunities outside the village, while the women engage more heavily in the village economy. For women, direct movement was (just) the most important means, very closely followed by complementary private investment; but meeting local demand was not insignificant (Table 8). *The role of direct movements was especially prominent for members of the OBC and ST groups, who tend to depend heavily on unskilled wage labor.*

Table 8: How opportunities yielded income effects, declared female PMGSY beneficiaries

	Rank 1		Rank 2		Rank 3	
	Freq.	Percent	Freq.	Percent	Freq.	Percent
Direct movement	82	38.1	13	33.3	1	50
Complementary investment	81	37.7	6	15.4	1	50
Complementary intervention	11	5.1	8	20.5	0	0
Local demand	36	16.7	11	28.2	0	0
Other	5	2.3	1	2.6	0	0
Total	215	100	39	100	2	100

Source: Household survey

2. Household heads in PMGSY villages who claimed that some of their fellow villagers had been able to benefit from new employment opportunities, but that their own households had not done so, were more numerous than those who claimed to have profited. The main reason they gave for their failure was the lack of complementary public policies (Tables 9a and 9b). The women, in contrast, put the chief blame on their households' lack of productive endowments, naming especially the lack of skills. All the focus groups also named the lack of complementary policies as the main cause.

Table 9a: Non-beneficiaries' reasons for failure to exploit new opportunities (rankings 1-3)

	Rank 1		Rank 2		Rank 3	
	Freq.	Percent	Freq.	Percent	Freq.	Percent
Inadequate endowments	31	11.3	8	5.2	2	5.7
Lack of complementary infrastructure	60	21.9	38	25	9	25.7
Lack of complementary intervention	148	54.2	61	40.1	7	20
Lack of local demand	27	9.8	43	28.2	17	48.5
Other	7	2.5	2	1.3	0	0
Total	273	100	152	100	35	100

Source: Household survey

Table 9b: Female non-beneficiaries' reasons for failure to exploit new opportunities (rankings 1-3)

	Rank 1		Rank 2		Rank 3	
	Freq.	Percent	Freq.	Percent	Freq.	Percent
Inadequate endowments	107	42.8	46	27.9	7	18.9
Lack of complementary infrastructure	33	13.2	38	23.0	5	13.5
Lack of complementary intervention	73	29.2	48	29.1	15	40.5
Lack of local demand	1	0.4	2	1.21	0	0
Other	36	14.4	31	18.8	10	27.0
Total	250	100	165	100	37	100

Source: Household survey

2. While direct movements (rather than complementary public policies) dominated the reason for how access to the first-ranked opportunity was obtained, *complementary policies dominated (and outweighed complementary infrastructure by almost 5 to 1) household heads' first rankings on measures needed to improve their abilities to fully exploit the new opportunities generated by their PMGSY roads* (Table 10). The women and all caste groups were in broad agreement. The focus groups also declared complementary policies to be the first priority. In the control villages, in contrast, they named complementary infrastructure as the most pressing need, which can be plausibly interpreted as a desire for a PMGSY road.

Table 10: Type of measure needed to exploit opportunities (rankings 1-3), all PMGSY households

	Rank 1		Rank 2		Rank 3	
	Freq.	Percent	Freq.	Percent	Freq.	Percent
Provision of complementary infrastructure	107	14.4	102	39.5	21	51.2
Provision of complementary intervention	553	74.7	92	35.6	6	14.6
Demand measures	67	9.0	58	22.4	14	34.1
Other	13	1.7	6	2.3	0	0
Total	740	100	258	100	41	100

Source: Household survey

Key messages from Question 4:

- Among those who benefited, females attributed complementary investment and local demand for enjoying the benefits whereas male household heads largely attributed it to direct movement.
- The role of direct movement was prominent among OBC and ST groups.
- The main reason for failure of non-beneficiaries to benefit from opportunities was the lack of complementary policies.
- Women put the chief blame on their households' lack of productive endowments, naming especially the lack of skills.
- The villagers' engagement in the planning and building of their PMGSY roads was weak though there were some differences among states.

KEY QUESTION 5: Policy and programmatic alternatives that could shift the distribution of benefits in favor of these groups

1. While an overwhelming majority of the respondents in the PMGSY villages claimed to have enjoyed benefits in one form or another from their new road, only about one-third reported that they were able to exploit the newly generated employment and business opportunities. When asked to suggest remedies, *they emphasized a set of measures that can be clubbed as complementary policies.*
2. The package of complementary policies needs to be tailored to the profile and need of every state. Families in Jharkhand depend heavily on farming and livestock, and when they think about complementary policies, it is probably minor irrigation and subsidized credit to finance private wells and pump-sets. Measures to promote food processing, for example, would be complementary. To start up new ventures capacity and skills are required, such as training on farming and livestock related activities. Their better-educated counterparts in Himachal Pradesh, with their small holdings in the hills, are interested in support for business and the provision of salaried jobs nearby. The state's great natural beauty makes the promotion of tourism an obvious candidate, especially hiking of tourism in the higher tracts. The larger and poorly educated families in Rajasthan have yet to be widely convinced that their PMGSY roads are particularly useful for any purpose, so that the task facing policy-makers there is especially challenging. Handicrafts and tourism appear, nevertheless, to have some potential, whereby villagers would supply products to the established centers of trade. Better access to credit has been desired across all three states. This leads us to explore the possibility of converging PMGSY with National Rural Livelihood Program under the same Ministry of Rural Development.
3. NRRDA should take a lead role in improving co-ordination among the various departments. This can be accomplished by inviting officers of the departments involved to take part in the transect walk. The invitation would send a clear signal that new demands for government services will come from the habitations so connected; and the officers' presence would give the villagers the opportunity to make their needs clear well in advance. There is a need for accompanying awareness creation regarding type of employment and economic activities triggered by new connectivity and mobilization measures targeting females, weaker social groups and the poorly educated. Geographical targeting in terms of backward and tribal areas is also suggested. With specific attempts made to encourage women and members of the weaker sections to participate, the transect walk would gain in importance.

4. *Community participation:* Villagers' participation in the planning and building of their roads was very weak and therefore a matter of real concern to the NRRDA. Although the majority of respondents declared themselves satisfied with the final alignment, there is considerable scope to getting villagers much more engaged in the planning phase, not least by ensuring that they are well-informed in good time. This is also key to achieving one of the aims of the program – that of

Targeting specific interventions at women

- Women chiefly blamed their inability to benefit from new opportunities on their households' lack of productive endowments, naming especially the lack of skills.
- Complementary policies dominated women's first rankings on measures needed to improve their abilities to exploit the new opportunities generated by their PMGSY.
- For women, complementary policies must be tailored to focus on a more skill based approach.
- Women were better informed about concepts such as 'transect walk' but their participation was limited.
- Women need to be targeted for participation in different stages of planning and construction of the PMGSY road.

“sustainable and inclusive growth”. Getting more of the villagers to work on the roads runs up against various problems, not least of which is the issue of who is supposed to provide the funds for the management and upkeep of the roads. Each all-weather link is an almost ideal local public good, whose beneficiaries are readily identifiable and ought to be engaged in its management and upkeep.

5. The MNREGA¹⁴ program that is already in place can greatly mitigate these difficulties. It is fully funded and thus, those villagers willing to work can be sure of receiving the regulated wage - as opposed to contributing their labor for free. In practice, there may be administrative obstacles: the village level agent must develop proposals, and an officer at the district level must sanction them. If these hurdles can be overcome, the fiscal liability of the state would never exceed the cost of materials and machinery. Any such contribution will constitute a matching grant, in keeping with sound fiscal principles. Ongoing studies on road maintenance by communities may offer better solutions.
6. Whereas public policies can do little to promote local demand directly, *all measures that raise local incomes will do so indirectly.*¹⁵ *Effective complementary public actions and improved co-ordination will therefore yield a bonus indirectly.*
7. *Intra-household substitution and self-employment:* When improving such opportunities for women in particular, substitution within the household enterprise emerged repeatedly in this analysis. An all-weather road greatly reduced the cost of moving people and goods. Men appeared to exploit this new mobility by seeking employment outside the village economy; and when they did, the women were faced with the opportunity - and need - to take up the resulting slack inside the village, especially on the family farm or in the family business. To exploit this opportunity fully, they often required formal training. The women respondents pointed to a lack of productive endowments as the leading obstacle to making the most of the (potential) employment opportunities generated by their PMGSY road; that of their own and their household members' lack of skills. A complementary policy in the form of training programs to impart new skills would very likely strengthen the effect of drawing women into self-

¹⁴ Mahatma Gandhi National Rural Employment Guarantee Act, which aim at enhancing the livelihood security of people in rural areas by guaranteeing hundred days of wage employment in a financial year to a rural household whose adult members volunteer to do unskilled manual work.

¹⁵ If, by inducing higher incomes or lowering transport costs for traded inputs and outputs, the road brings about changes in activities within the village, then it is said to operate as an indirect channel

rather than wage-employment, even as the men are drawn into the latter. It is all the more important, therefore, that such self-employment be truly gainful. Policy measures to support creation of income opportunities close to the village (local demand) potentially through sectors such as food processing, small enterprises, trade and tourism, could be beneficial.

8. For women too, training must be tailored to the prevailing circumstances. Women in Himachal Pradesh are better educated than women in Jharkhand and Rajasthan, so training them should be easier and more ambitious. Living as the former do on small-holdings up in the hills, appropriate training is likely to involve handicrafts and particular activities related to tourism, rather than market gardening and livestock, as in Jharkhand.

Key messages from Question 5:

- Respondents in the PMGSY villages emphasized the need for ‘complementary policies’, which need to be packaged and tailored to the situation of each state, and by gender and caste.
- Complementary policy would help in improving access to credit, training, as well as opening up opportunities close to villages through sectoral policy interventions.
- Better integration of existing schemes such as MNREGA and NRLM is needed to draw out the synergies between them.
- Greater community participation and awareness building is needed regarding type of employment and economic opportunities triggered by PMGSY through for example better co-ordination between departments.

KEY QUESTION 6: How changes in policy are to be achieved in practice

1. PMGSY, as it was conceptualized, was expected to provide improved connectivity to villages. This improvement in connections in turn was expected to trigger benefits such as improved connections to markets that would raise the incomes of villagers and provide incentives to pursue new activities and opportunities. There was evidence that income benefits have mainly been realized through direct movement for wage labor to nearby town. *The distribution of the primary source by category also shifted, with unskilled wage labor gaining at the expense of cultivation and self-employment both in PMGSY and control villages.* This pattern has been seen nationally too by other recent studies that found that the rural labor market is undergoing significant changes mainly due to rising employment opportunities outside agriculture.¹⁶ There is a need to realign program expectations in terms of incentives to increase cultivation.
2. As the program expanded and to a large extent met the targets that it set out to achieve (largely through building roads and some community participation), its impact on the states and the different groups it has touched (particularly the weaker sections of society such as women and lower castes) has not been uniform. While men have benefited in terms of seizing opportunities outside the village, the women, less educated, or lower castes have not gained equally and have possibly been forced to engage more heavily in the village economy. There is a need for better targeting of women and weaker social groups in the forthcoming phases of the program.

¹⁶ “Changes in the Rural Labour Market and their Implication for Agriculture”, Ramesh Chand and S.K. Srivastava, Economic and Political Weekly, March 8, 2014

3. Smaller towns (population less than 50,000) while being poorer experience a higher (15 percentage point) reduction in poverty levels.¹⁷ Not only does poverty reduction in these smaller conurbations target most of India's urban poor, but there is also evidence that it would have a *larger spillover effect on rural poverty*. PMGSY is one of the various mechanisms that may explain the greater connection of small towns with rural areas by offering greater scope for daily commuting from rural areas to adjacent towns. At the same time, rural areas are being slowly transformed by the growth of the non-farm sector; however the quality of this non-farm employment is falling and obstacles to non-farm occupations in the form of inadequacy or high cost of credit still exist. *There is a need for not only improving the connections from rural areas to small towns but also for ensuring better non-farm employment opportunities in these towns.*
4. Another finding from the study was the low level of community participation in planning and building of roads. Given that one of the end objectives of the program is to achieve 'sustainable and inclusive' growth of the country and thus enable reduction in poverty, this aim cannot be met without *ensuring that the roads constructed are properly maintained, which requires that the community has 'ownership' right from road design to construction and maintenance*. There is a need to build community mobilization in the *same time sphere* in the implementation of the next phases of the program. This can be achieved with better integration of PMGSY with existing schemes of the Ministry of Rural development such as NRLM¹⁸ and MNREGA.

The above findings suggest that the PMGSY program needs to rely on a set of *complementary policies and programs, some state specific, others national*, to provide the much needed catalyst for the relatively excluded groups to share in the benefits equally. These interventions should be in the form of a 'clubbed' activity which takes place *in the same time and same geographical space as the PMGSY program in order to have maximum impact*. Nearly 90 percent of the reform measures suggested would fall within the control of the Ministry of Rural Development, and the Ministry already has most of the tools to address these changes. There is a strong need for a *much more integrated approach to rural development by exploiting the synergies between various programs which are currently running independent of each other*.

The reform measures suggested to address the above would fall under any of three groups listed below and would accordingly need to be acted upon (Figure 11):

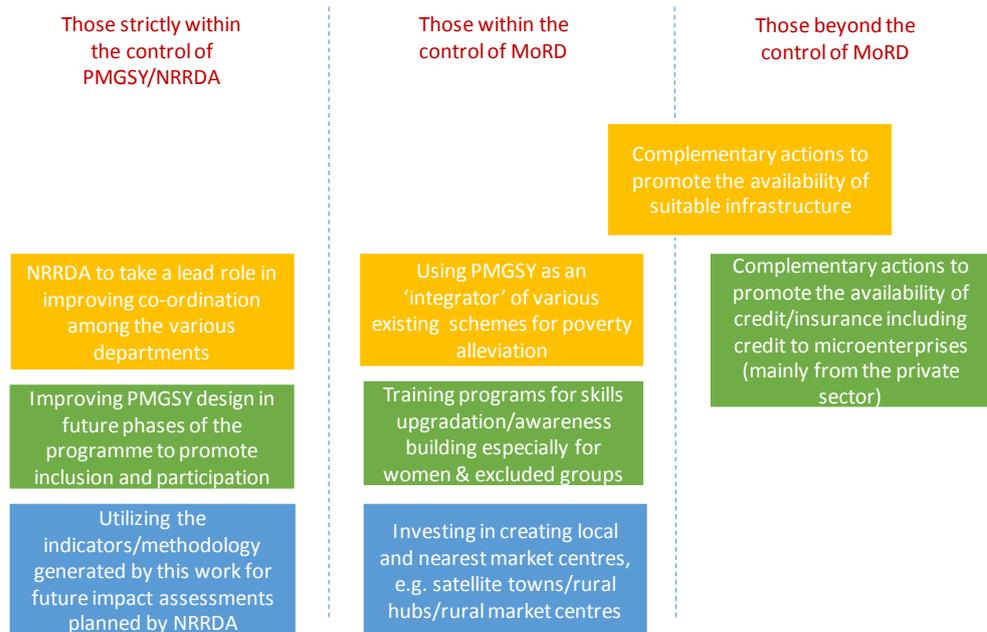
- (i) *those strictly within the control of PMGSY/NRRDA*¹⁹ (e.g. improved participation framework, ancillary infrastructure);
- (ii) *those within the control of the Ministry of Rural Development* (using PMGSY as an 'integrator' of various schemes such as NRLM and MNREGA); and
- (iii) *those beyond the control of the Ministry of Rural Development* and which would need to be acted upon at both the state and central levels, e.g. improved access to agricultural extension services, labor and commodity markets, irrigation facilities, credit and skill development.

¹⁷ "Perspectives on Poverty in India: Stylized facts from survey data", The World Bank, 2011

¹⁸ National Rural Livelihoods Mission, a poverty alleviation project implemented by Ministry of Rural Development, Government of India. This scheme is focused on promoting self-employment and organization of rural poor.

¹⁹ National Rural Roads Development Agency, which was established in the Ministry of Rural Development in 2002 for providing operational and management support to the PMGSY.

Figure 11: Suggested complementary interventions classified by “who intervenes”



The suggested set of complementary reforms in the areas of policy and infrastructure should be tailored to each state and focus on the following:

- Investing in training programs for skills upgradation/awareness building especially for women to exploit new opportunities within the village, e.g. in preparing semi-finished goods, processing of agricultural outputs, etc. (supply side interventions).
- Investing in creating local and nearest market centers, e.g. small towns, etc. (increasing local demand).
- Complementary actions to promote the availability of credit/insurance including credit to microenterprises (mainly from the private sector).
- Complementary actions to promote the availability of suitable infrastructure, e.g. infrastructure linked to agriculture equipment, infrastructure for grain storage, etc. (mainly from the public sector).
- Complementary action to support transport services.

Other suggested steps include:

- Using PMGSY as an 'integrator' of various schemes such as NRLM and MNREGA to better link the benefits of the scheme and promote community participation.
- NRRDA to take a leading role in improving co-ordination among the various departments by, e.g. inviting officers of the departments involved to take part in the transect walk.

Conclusions and Next Steps

This study reiterates the findings of the 2004 PMGSY assessment that rural roads have made an impact on agriculture, income opportunities, education aspects and health. An increase in non-farm employment in adjacent small towns was reported in this study, which highlights the rural urban transformation story. Since the early 1990s, urban growth has been helping to bring down rural poverty. This is because small towns offer greater scope for daily commuting from rural areas to town; employment opportunities in small towns may be less skill and human capital intensive; and many small-town services and industries may be oriented around the support of agriculture in surrounding areas. All these factors make it lucrative for the rural poor with access to all-weather roads to find gainful employment and increase their earnings.

Given the strong links between small towns and rural areas, ensuring lack of barriers to small-town growth and policy biases (such as access to basic infrastructure) will help the growth of these towns and subsequently help in increasing potential earning options for connected village populations.

In order to ensure inclusive growth, public infrastructure projects would require policy and design alternatives to address barriers identified in the study through complementary interventions by both public and private sector.

Studies from around the world have shown that a government objective to reduce rural poverty should be to direct policies toward maintenance of existing rural roads rather than opening of new roads, and introducing interventions in urban centers bordering the villages as also established in this study. A change in occupation pattern (away from farm employment) supports the need for interventions in small towns that was outside the realm of PMGSY.

Thus while last mile connectivity of all-weather roads is useful, it may be more beneficial to introduce interventions to improve urban and semi-rural centers to generate jobs and work opportunities. Interestingly, PMGSY (phase two) being implemented since August 2013 is already applying a modified program that reflects the findings from this study, of enhancing the role of rural roads by facilitating the growth of satellite town infrastructure, markets, rural market centers and rural hubs thus laying the foundation for sustainable and inclusive growth.

This study can also serve other useful purposes, such as to: (i) improve PMGSY design for future phases of the program especially to benefit the relatively excluded groups; (ii) help converge PMGSY with other large national programs to exploit synergies between them; and (iii) inform the methodology for future impact assessment studies, such as a potential study being planned for impact evaluation of the larger PMGSY program. The dissemination strategy for this work would specifically target some of the agencies identified in this report, as well as key stakeholders at the central, state and local level including community service organizations and NGOs.