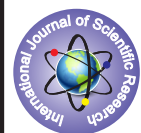


Construction and Maintenance of PMGSY Roads An Analysis



Botany

KEYWORDS: PMGSY, Rural Roads, Connectivity, Construction, Maintenance, Habitations

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ABSTRACT

Rural roads promote faster rate of rural economic growth. Newly constructed roads, the upgraded one and timely maintained roads shall offer multiple benefits in the deprived areas. It is true that roads are to be properly maintained to last longer. From the beginning of the Nagpur Plan (1943-61), all the Programmes have proved poor performance in road maintenance. Based on the lessons learnt, the programme of PMGSY has shown more concern towards the quality in construction with proper maintenance of such roads. The present paper attempts at an evaluation of construction and maintenance status of PMGSY roads in a region, geographically restricting itself to Bhadravathi taluk in Shivamogga district of Karnataka. The study depends on the secondary sources and discussion with the PIU engineers in Shivamogga division has been carried apart from the field observations made by the researchers. Based on the results, the findings and suggestions along with conclusion have been given at the end.

1.0. Introduction

In India still about 62 per cent of the population is in the rural areas. Provision of better socio-economic infrastructure facilities in these villages is the principal task of both the Central and State governments. Real transformation of rural India needs provision of basic infrastructure facilities like health, education, sanitation, power, transport and so forth. In India, under the road plans like Nagpur Plan (1943-61), Bombay Plan (1961-81) and Lucknow Plan (1981-2001), roads were constructed on the basis of number of villages with a population of 500-5000 aimed at providing employment and reduction of rural poverty. This has been emphasized in the successive Five Year Plans. The Ministry of Rural Development (MoRD) launched various programmes like the MNP, NREP, RLEG, JRY, PMBJPY, BMSP and so forth. Despite the efforts made by central and state governments, only about 60 per cent of the habitations in the country, in 2000, were connected by all-weather roads. Also, due attention towards the maintenance of newly constructed and upgraded roads has not been paid. Based on the lessons learnt earlier efforts, the Ministry of Rural Development has launched the Pradhan Mantri Gram Sadak Yojana (PMGSY) on 25th December, 2000 which stressed that the quality of roads construction should be the prominent commitment of the scheme with due attention to the maintenance of the roads¹. The PMGSY roads are designed for a 10 year life which may also last beyond its 10 year designed life².

1.1. The Paper

The main objective of the present study has been an evaluation of the construction and maintenance status of PMGSY roads in a single taluk, Bhadravathi, in Shivamogga district of Karnataka State. The study depended on the secondary information gathered from Volumes, Journals, Periodicals, Reports of the Governments, and Reports of office of the Programme Implementation Unit (PIU) of the PMGSY on maintenance of completed roads in Shivamogga division. The data on the PMGSY, as related with the study area, were gathered from the relevant websites (www.pmgys.org and www.pmgys.nic.in).

This study is descriptive and analytical in nature. For convenience, Bhadravathi taluk has been chosen randomly for the study. A total of 14 road works, out of the 34 completed works as on February 2014, have been chosen at random for evaluation in the taluk. These PMGSY road works are assigned with different package numbers (of works) of which 12 (total being 32 in number) have been covered under this study. The works covered under the above package numbers stretch to about 21 kilometers of road length being evaluated as regards their construction and maintenance in Bhadravathi taluk. Observation has also been made of the maintenance at different locations; images taken have used to justify the arguments made in the analysis. Further, researcher has also

carried out discussion with the PIU engineers on the issues related with the construction and maintenance status of the PMGSY roads in Shivamogga division and used the opinions of them appropriately at the discussion phase.

1.2. Review of Literature

Several studies have showed positive relationship between road maintenance and rural development. A few of them are briefly reviewed below.

L.P. Singh (2009) points out that a rupee spent on maintenance does save two to three rupees in vehicle operating cost³. *Tarique M.D. (2009)* opined that the infrastructure development can play a key role in both economic growth and poverty reduction⁴. Due to inadequate finance, weak technology, the use of heavy equipment on road, corruption and lack of political will of the government or its agencies, more than 70 per cent of the rural road network has been in deplorable condition, states *Olusiyi Ipingbemi (2008)*. Further, the author also suggested for the adoption of Labour Based Approach in road construction, which will not only improve the quality of life of the rural people through creation of job opportunities and lowering of transport cost but will ensure sustainable maintenance of rural roads in the country⁵. Project documentation on *Social Assessment of Pradhan Mantri Gram Sadak Yojana [PMGSY] (2008)* has proved that the PMGSY is a means of increasing agriculture and other income by improving economic and social services in rural areas⁶. *Olusiyi Ipingbemi (2008)*, in another study, has proved that rural roads enhance agriculture production, facilitate access to educational and health facilities and provide spatial interaction among rural communities⁷.

Cement Manufacture Association Report entitled *Cement Concrete Roads Vs Bituminous Roads-A Cost Analysis (2006)* found that the initial cost of the rigid pavement is high compared to flexible pavement; and the maintenance life cycle cost is low in rigid pavement as compared to flexible pavement⁸. According to *Gupta D.P. (2005)*, India being a fast growing country should continue to allocate sufficient funds for road maintenance; otherwise sustainable economic development cannot be achieved⁹. *Susant Baliga (2005)* discussed about the impacts of financial assistance of the World Bank (WB) and the Asian Development Bank (ADB) for rural road construction under PMGSY. The proposed projects of the WB and the ADB are intended to reduce poverty by two ways: i). contributed to the development of economic activity in project implemented areas by enhancing mobility and this provides more opportunities for employment, trade specialization and growth within the rural economy, and ii). Improved rural roads will provide better physical access to basic service and thereby increase the

quality of life of the poor in the project influenced areas¹⁰.

1.3. Bhadravathi Taluk- A Brief Profile

Geographically, the present study has been restricted to a taluk level, Bhadravathi, in Shivamogga district, in the State of Karnataka. Bhadravathi taluk, which is in the *Malenadu* Region, covers an area of 680sq kms and located in the eastern part of Shivamogga district. It has six Hobalies, 39 Grama Panchayaths and 145 Villages as per the 2001 census. The total population of the taluk was **3,38,989 (2001)** being the second highest dense, population wise, taluk in the district. Agriculture is the primary occupation in the study area. The average rainy days in the taluk is 79 (2009) against the average of 87 days in the district¹¹. Both the road and rail transport net work are found in the taluk. Road transport plays significant role in carrying passengers and freight in the study area. Further, nearly 50 per cent of the total villages in the study area have been provided with the Black Top (BT) roads. National Highways, State Highways (No.65 and 116) and Major District Roads also meet peoples' transport needs.

An Overview of PMGSY-Construction

The programme has been intended to provide connectivity to all the 1,000+, 500+, and 250+ (in hilly region) population habitations in the country. Further, it is also committed for providing connectivity to below 250 population habitations in tribal and desert regions of North Eastern states in India. Since its inception (2000), it was proposed to provide connectivity to about 1.78 lakh Unconnected Habitations and 3,70,000 km Upgradation works with a cost estimate of Rs. 79,000 crore and Rs. 53,000 crore respectively, making the total envisaged cost of the Project to about Rs. 1,32,000 crore up to 2009¹². Recent data revealed that as on March 2016 about 4,87,007 km length of road constructed under PMGSY (together new connectivity and up gradation) across the country. Similarly, as same above, about 18,310 km of length of road network has been completed under PMGSY in Karnataka, which is 3.90 per cent share of national total in this respect. Shivamogga is one of the Districts of the state which located in southern region of the state. During the period of 2001-to 2016 about 833 km length of road network has been constructed under PMGSY in Shivamogga District which is 4.76 per cent of share of the state total. The detailed information about the performance of the PMGSY (from 2000-2001 to 2013-14) in the study region has discussed as follows.

1.4. PMGSY Programme in the Study Area

Here, it is worth for providing a brief picture of the physical and financial position of the PMGSY in the district as a whole.

Data presented in Table 01 reveal the physical and financial position of the PMGSY in Shivamogga district between the period 2000-01 and 2013-14, from which it can be observed that in the district as a whole a total of 168 works under the programme have been carried. The road length covered stood at 751.56km with an expenditure of about Rs. 17,171.07 lakh. Further, the data also reveal that excepting Hosanagara and Soraba taluks, in all other taluks the expenditure incurred on the programme exceeded the allocations made over time. This clearly explains about the impact of cost escalation in the implementation of the programme in the district as whole. A special reference to Bhadravathi taluk would be worth here as the study has been carried in the taluk per se. Of the total road works undertaken during the above period, the taluk's share was about 20.23 per cent; in terms of road length covered the share remains at 14.85 per cent. Yet, it is disheartening to note that in terms of the share in the habitations covered under the programme, the taluk occupies the last position being a meager 8.06 per cent in the district total (out of 424, 34 habitations).

Table 02 provides the time series data as regards the physical and financial progress of the programme in the study area. It can be revealed that beginning 2000-01 to 2008-09, in Bhadravathi taluk, a total of 34 works under the programme have been sanctioned covering about 111.67 km of rural road length, with an allocation of Rs. 2,304.31 lakh, while the expenditure incurred on the programme,

over a decade (2000-01-2013-14), stood at about Rs.2,616.89 lakh. Further, the data also prove that varying stretches of road lengths have been covered under the programme in the taluk; all the 34 sanctioned works have been completed by 2013-14. The fact to be brought home here is that, the PMGSY guidelines mandate completion of the works sanctioned within a stipulated span of nine months from the date of issue of work order. From the data presented in Table 02, it is clear that, to quote an instance, the total number of works sanctioned in the year 2000-01 was eight; instead of completing the same within the stipulated period, the works were completed by 2003-04, lending evidence to the fact of inordinate delay of two to three years. Similar is the fact in the case of works sanctioned, under the programme in the years post 2003-04 in the study area.

Curiously, the researcher, on discussion with the PIUs engineers, was given to understand that due to the lack of co-ordination among the departments of the state government like the Forest, and the Electricity ones, due to the heavy rains in the region, lack of speed gained in the process, farmers' filed litigation and the like are found the major reasons causing delay in timely completion of the works under the PMGSY in the study area. This should be a matter of concern for the governments implementing the programme of rural road connectivity under the PMGSY and should be resolved appropriately so that provision of physical connectivity gets momentum and thereby the intended purpose shall be served benefiting the rural population as a whole. Also, expenditure analysis proved from the data that between 2000-01 and 2013-14, the total amount allocated towards laying down a road length of about 111.67 km, in the study area has been Rs. 20.63 lakh per km; whereas the expenditure incurred exceeded by about Rs. 3.43 lakh per km, which in absolute terms stood at Rs. 23.43 lakh per km taking the above total road length into account. The reasons ascribed here (for expenditure exceeding the allocation) could be cost escalation in terms of the materials, the labour and so forth.

1.5. Maintenance of Rural Roads

Proper maintenance of rural roads will gain additional life of the roads (Guidelines of the PMGSY Programme)¹³. Here, due attention should be given to: dressing and maintenance of shoulders, surface dressing, drainage works, crack sealing, repair of damages caused by floods and so forth¹⁴. The maintenance of already constructed roads is much needed to get optimum service from the roadway structure during its designed life. Due to the financing gap between what is needed and what is allocated for road maintenance, PMGSY roads are becoming the victims over the years. Non-plan grants under regular budgetary and finance commission allocations are the standard funding sources for the road maintenance. The road and fuel cess are also the additional sources of funds for maintenance of roads at the state level¹⁵.

1.5.1. Need for Maintenance of Rural Roads It is well known that the construction of new roads as well as regular maintenance of already existing roads should bring more benefits to the rural community through better access for health, education and market centers. Proper maintenance of rural roads shall reduce transit delay, minimize the vehicle maintenance cost and thereby will reduce the social losses in general. Further, it also ensures continual and comfortable service for the road users. As regards to PMGSY roads, H.K. Srivastava (2002), in his study on *Maintenance, Management for Rural Roads*, opined that the new construction and up gradation of rural roads under PMGSY programme would increase the social and economic benefits all around but poor maintenance of these roads would reduce the usefulness of the programme¹⁶. Thus, proper maintenance of rural roads will keep up the road development efforts for long time. In general, regular maintenance of rural roads will result in benefits together for the government and road users in the form of: Reduced cost of road maintenance, Additional life of the roads, Controlled maintenance cost of vehicles, Saved traveling time, Increased fuel efficiency, Comfortable journeys, Reduction in accident rates and so forth.

1.6. Maintenance Status of PMGSY Roads –Shivamogga Division

As per the PMGSY regulations, maintenance is one of the core objectives of the programme. Due to heavy rains, movement of heavy laden vehicles on the roads, large area under irrigation in the district and so forth, usually, roads get deteriorated in a short span of their construction. Therefore, regular maintenance of such roads under the scheme in the district should be taken on priority. Here, statistical information pertaining to maintenance of Shivamogga division PMGSY roads between Phases III and VIII-II is provided in Table 05. Regular maintenance of PMGSY roads by the works contractors' has been made mandatory post 2004 to mean the works under the programme contracted out in Phase III and onwards.

It is crystal clear from the figures presented in Table 03 that of the total 168 works completed, under the programme, in Shivamogga division, hardly 43 works have been taken up (constituting a meager 25.59%), for maintenance. Such works account for a coverage of about 250 km length of roads under the programme constituting just 33.35 per cent of the total road length of 751.56 km which should have come under a five year regular maintenance index till January 2013 in Shivamogga division. This clearly depicts the inadequate attention being paid by the authorities concerned towards the maintenance aspect. Further, the figures presented in columns 05 and 06 of Table 03 also justify the above argument. Excepting the case of Phase IV, in all other packages of works under the programme the percentage of amount spent does not match the amount earmarked for maintenance, explaining the fact of spending a meager 6.10 per cent of the amount spent for the purpose. This makes the researchers strongly argue that due priority towards regular maintenance of the roads constructed under the programme has not been paid in Shivamogga division. Further, this shall call the attention of all concerned in the implementation of the programme of rural connectivity under the PMGSY.

Data pertaining to the maintenance status of PMGSY roads in Bhadravathi Taluk are presented in Table 04. It can be inferred that Bhadravathi taluk constitutes about 41.17 per cent of the total number of Packages in maintenance work under the programme in Shivamogga division (the total number of Packages in the Division stood at 34). In the taluk, under different Phases in different Packages (2004 to March 2013), a total road length of about 112 kms have been constructed; total number of works being 34. Of the total, 72 kms length of roads (constituting 64%) have been covered under maintenance with a cost allotment, for the purpose, to the tune of about Rs.121 lakhs. However, it is astonishing to note that a meager 2.5 per cent of the total amount earmarked has been spent on maintenance of PMGSY roads in the taluk as on February 2013. Further, on the spot observation and the images taken by the researchers also lend evidence to the fact that due attention towards maintenance has not been paid in the study area. The relevant images taken as a proof have been appended to the paper at the end.

1.7. Current Conditions of the PMGSY Roads in the Study Area

The first author paid visits to different locations in which the PMGSY works have been implemented in the study area of Bhadravathi taluk in the month of September 2015 to observe and find out the ground realities in respect to maintenance of the roads at the spots. The images provided at the end of the present paper provide evidence to the fact. Further, he also had discussions, focused on the issue of maintenance of the roads, with the PIU engineers of Shivamogga division. In the light of this, the following were found as some of the reasons for deteriorated condition, at present, of the PMGSY roads in the study area.

High Moisture: Due to the flow of Bhadra Right and Left Canals over the taluk, significant percentage of geographical area is moisture-bound which directly causes the roads to depreciate very early (Images 4,9&15 justify the fact).

Laden Vehicles: Agricultural products like Paddy, Maize, Ragi,

Jowar, Sugarcane, Raw Arecanuts and so forth are being carried by heavy laden goods vehicles causing severe damage to the roads (Refer Image 14).

Topography: The topography of the district, being Malendu, is such that it receives heavy rains, the number of rainy days, on an average, range between 85 and 90 during the monsoon. Due to this, the roads get deteriorated within a short span of their construction.

Quality Input: According to the PIU engineers, even though the roads constructed under this scheme have strong base, the inputs used for surfacing (Block Top) the roads may be of poor quality making the roads lose strength early (Refer Images 3, 6, & 12).

Uniform Design of Roads: The roads are being constructed under this scheme following a uniform design irrespective of low rain-fed and heavy rain-fed areas causing the roads deteriorate early in heavy rain-fed areas in the taluk.

Public Non-cooperation: The general public uses all types of roads for personal reasons such as installing water pipe lines and others (Image 2 may be referred). Also, particularly, the farmers drive vehicles on such roads equipped with iron-bound wheels which cause damage to the roads.

Further, the analysis carried above prove for sure that the PMGSY roads are not found in good condition; at a few spots the roads, as observed by the researchers, are severely damaged. This should necessarily draw the attention of the concerned officials to set right the things so that there shall be smooth vehicular flow. The analysis can further be strengthened by the data presented in Tables 03 and 04 which also prove that, of the total works, only 25.29 and 41.17 per cent of works come under maintenance category in Shivamogga district as a whole and Bhadravathi taluk respectively.

1.8. The Findings

The present micro level study found the following findings.

- Of the targets set for Karnataka, under the PMGSY, about 73.77 per cent of the works have been completed as on 2009.
- In Shivamogga district in particular, a total of 424 habitations have been benefited by the PMGSY programme.
- No new works have been sanctioned under the programme in the district; as well in Bhadravathi taluk in the years 2009-10 and 2013-14.
- Of the total completed works under the PMGSY, only 25.59 and 41.17 per cent of the works are found under the regular five year maintenance works list, respectively, in Shivamogga district and Bhadravathi taluk.
- Mainly because of heavy rain and large area under high moisture, the roads get severely damaged which adversely affect the regular maintenance efforts of such roads in the study area.
- The claim of 10 year -life span of the PMGSY roads has not been fulfilled in general. The images provided at the end justify the argument.

1.9. Suggestions offered

Before concluding the paper, it would be contextual to offer a few suggestions for better implementation of the programme in any region for that matter.

- It would be better; the Programme be reframed with restructured guidelines for the works' implementation taking into account the geographical conditions prevailing in the respective regions. This shall go a long way in accruing larger benefits to a greater number in targeted areas.

- Strict vigilance over the use of such roads by the heavy laden (HGVs) vehicles should be kept, so that these roads do not get damaged early.
- The general public should also co-operate (in using the roads) in all respects with all the authorities concerned keeping the societal interest in view.

1.10. Limitations

This being a micro level study, the arguments made here may only be applicable in such geographical areas similar to that of Malenadu and/or the Coastal. Further, the suggestions made based on the study, may not be universally accepted in wholesome; some suggestions shall have region – specific applicability. The authors are aware of the non-universality of the study with the bound limitations.

1.11. Conclusion

It can now be concluded that development is a continuous effort which is to be carried with newer and well-conceived strategies suited to the contemporary requirements in question. Introduction and implementation of any new programme of development will add to the already existing ones. What is more important in countries like India, where multifarious ends are to be met simultaneously, is more commitment to the cause; otherwise the programme will end with a short life, however well thought it may be. In the case of the PMGSY in vogue, based on the present micro level study, it can be concluded that all-out attention needs to be paid towards the regular maintenance of such roads so that the programme shall accrue larger benefits to the greater numbers in the areas targeted at. Joint efforts of all the providers and of all the users of services are the urgent need of the hour.



Table -01 Physical and Financial Position of the PMGSY in Shivamogga District (2000-01 - 2013-14)

Name of the Taluk	No. of Road Works	R o a d Length (in Kms)	No. of Habit Coverations (in Cover ed)	Allocation (Rs. in Lakhs)	Expenditure incurred (Rs. in Lakhs)	Column No (06)-(07)
(01)	(02)	(03)	(04)	(05)	(06)	(07)
Bhadravathi	34 (20.23)	111.67 (14.85)	34 (8.06)	2304.31	2616.89	-312.58 (-13.56)

Hosanagara	17 (10.11)	75.47 (10.04)	39 (9.19)	1553.01	1552.08	0.93 (0.05)
Sagara	16 (9.52)	73.605 (9.79)	41 (9.66)	1576.72	1582.37	-05.65 (-0.35)
Shikaripura	24 (14.28)	101.33 (13.48)	38 (8.96)	2428.58	2901.84	-473.26 (-19.48)
Shivamogga	30 (17.85)	122.235 (16.26)	46 (10.84)	2903.46	3110.17	-206.71 (-7.11)
Soraba	25 (14.88)	145.235 (19.32)	47 (11.08)	3349.27	3020.01	329.26 (9.83)
Thirthahalli	22 (13.13)	122.015 (16.26)	179 (42.21)	2275.12	2386.99	-111.87 (-4.91)
Total	168 (100.00)	751.56 (100.00)	424	16390.47	17171.07	-779.88 (-4.76)

Note: Figures in brackets are percentage to total.

Of the total, 02 works are New Connectivity works.

Source: www.pmgysy.org.

Table-02 Physical and Financial Status of the PMGSY Programme in Bhadravathi Taluk: 2000-01 - 2013-14

Year	Works Details	Completion Details	Completion Details	Completion Details	Completion Details	Completion Details
	No. of Road Works Sanctioned*	Road Length Covered (in Km.)	Allocation (Rs. in Lakhs)	No. of Works Completed	Road Length Completed (in Km)	Expenditure incurred (Rs. in Lakhs)
(01)	(02)	(03)	(04)	(05)	(06)	(07)
2000-01	08	22.65	113.07 (4.99)	--	--	--
2001-02	10	14.9	91.46 (6.13)	--	--	--
2002-03	--	--	--	04	17.1	75.59
2003-04	03	4.88	57.85 (11.85)	04	5.55	36.64
2004-05	01	2.10	35.00 (16.66)	10	14.9	92.16
2005-06	--	--	--	--	--	--
2006-07	02	7.59	221.5 (29.18)	03	4.88	51.34
2007-08	01	3.13	86.02 (27.48)	--	--	--
2008-09	09	56.42	1699.41 (30.12)	03	9.69	275.15
2009-10	--	--	--	06	35.81	1386.4
2010-11	--	--	--	04	23.74	699.61
2011-12 to 2013-14	--	--	--	--	--	--

Total	34	111.67	2304.31	34	111.67	2616.89
Note: *The works Sanctioned are implemented after following the Tender process which may take 5 to 6 months postSanction.						
Source: www.pmgysy.org						

Table-03 Maintenance status of the PMGSY Roads in Shivamogga Division-February2013

Phase	Package No	No. of works	Road Length (in km)	Amount earmarked for Maintenance (Rs. in Lakhs)	Expenditure As on March 2013	% of Amount Spent
(01)	(02)	(03)	(04)	(05)	(06)	(07)
III	KN-2408	10	17.33	11.20	05.45	48.66
IV	KN-2411	01	02.10	02.12	02.12	100.00
Missing Links I&II	KN - 2415A	02	04.86	7.03	06.36	90.46
V	--	--	--	--	--	--
VI	KN-2419, 20, 21,22,24, 25,	07	73.26	115.79	15.85	13.68
VII	KN2427, 30,31,42	04	19.72	39.48	--	--
VIII-I	KN2443, 44,45,46, 47,48,49, 50,51, 52, 53, 54, 55, 56	14	91.73	191.26	04.45	2.32
VIII-II	KN-2462, 63, 77, 86,88	05	41.69	82.51	--	--
Grand Total	43	250.69	449.40	27.43	6.10	
Total Number of Works Completed	168	751.56				
% of Works covered Under Maintenance	25.59	33.35				
Source: Report on Maintenance of Completed Roads (2014)supplied by the PIU Office, Shivamogga Division, Shivamogga.						

Table-04 Maintenance status of the PMGSY Roads in Bhadravathi Taluk -February2013

Phases	Package Number	No. of works	Road Length (in km)	Amount earmarked for Maintenance (Rs. in Lakhs)	Expenditure As on March 2013	% of Amount Spent
(01)	(02)	(03)	(04)	(05)	(06)	(07)
III	KN-2408	03	04.88	03.14	00.90	28.66
IV	KN-2411	01	02.10	02.12	02.12	100.00
V	--	--	--	--	--	--

VI	KN-2419, 25,	02	07.59	08.06	--	--
VII	KN2427,	01	03.13	08.16	--	--
VIII-I	KN2443, 44,45,46, 47,48,	06	44.96	89.67	--	--
VIII-II	KN-2462,	01	08.84	09.45	--	--
Grand Total	14	71.50	120.60	03.02	02.50	
Total No. of Constructed Works	34	111.67				
% of Works Under Maintenance	41.17	64.02				
Source: Report on Maintenance of Completed Roads (2014)supplied by the PIU Office, Shivamogga Division, Shivamogga						

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