

RURAL ROAD CONNECTIVITY IN KARNATAKA - AN ANALYSIS

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Abstract

Rural roads provide connectivity to rural areas which helps in the transportation of goods and services for the purpose of production, consumption, investment in pursuit of education and employment, besides transporting them for the purpose of travel and tourism. The rural connectivity helps in the mobility of rural population and rural production and helps in improving the rural population and increasing of their per capita income. Karnataka state's road density is 3rd amongst the ten largest states of India (As on 31st March 2017). Nearly 1,77,542 kms length of rural roads is found in Karnataka in the year 2016 which has the highest per cent share (67.79 %) in the total road length of all categories and the same was increased to 1,90,862 kms by March 2019. The study explains the road development plans, status of rural road in India in general and in Karnataka in particular. Further authors examine the growth of overall charges in the rural development of rural road in long-run from the year between 1956-2019 and in short-run from the year between 2007-08 and 2018-2019. Furthermore, the study analyses accessibility of rural road network and district-wise rural road network development in Karnataka. The present study has been conducted based on the secondary data.

Key Words: *Village Road, Rural Road Network, Road Development Plans, Accessibility,*

1.0. INTRODUCTION

The term rural road has a very wide implication. Any stretch of land joining two terminals is a road. It may be quite narrow, muddy or short (as is common within villages). Rural roads provide connectivity to rural areas which help in the transportation of goods and services for the purpose of production, consumption, investment in pursuit of education and employment besides carrying them for the purpose of travel and tourism. The entire rural road network has spread all over the states and two Union Territories of Daman and Diu and Puducherry. The rural roads in India form a substantial portion of the Indian road network. These roads are in poor shape affecting the quality of life in rural area and Indian farmers' ability to transport their agricultural produce to the market after the harvest. Nearly 30 percent of agricultural produce in India is wasted due to poor quality of roads. Many rural roads are of poor quality, potholed and unable to withstand the loads of heavy farm equipment. Most of the roads are not all seasons roads. The total length of rural road found in India is about 2.7 million kilometers in 2001 and it increased to 3.1 million kilometers in 2011 of which 1.2 million kilometers are paved and unmaintained rural roads and 1.9 million kilometers are unpaved rural roads¹. As on March 2017 in India, out of 19,35,693 km of Gram Panchayat roads about 10,21,602 kms (53 %) were surfaced and the remaining 9,14,091 kms (47 %) were unsurfaced roads and total PMGSY road consisted of 6,84,343 kms which included 5,949,27 km (87%) surfaced and 89,416 km (13%) unsurfaced and total rural road in India consisted of 32,66,916 kms which included 21,63,920 kms surfaced roads (66.24%) and 11,02,996 kms of unsurfaced rural roads (33.76%)².

1.1. VILLAGE ROADS

Village roads serve as the feeder roads as well as the roads for inter-village movements. They pass through rural areas connecting the villages to one another road to nearest road of higher category; viz., District Roads, State Highways and National Highways. Village roads are under the control of Rural Development and

Panchayat Raj Department. The rural road network in India remained at 41,66,916 kms in the year 2017 which amounts to 70.65 percent of the total road network and Karnataka state has a share of 2,13,227 km (5.11%) in it in the year 2017.

Geographically, Karnataka is the 7th largest state in India with an area of 1,91,791 sq. kms. and ranks 8th in population with 6,10,95,297 persons (as on 2011 census). Karnataka is well connected 6 neighboring states³ and other parts of India through 25 National Highways (NHs) and 161 State Highways (SHs) that run through the state. The state's road density is third amongst the ten largest states and 13th overall in India⁴ (As on 31st March 2017).

In a report published in the famous magazine **The Economist (2011)**, it is noted that the Rural Road Scheme and Mahatma Gandhi National Rural Employment Guarantee Programme (Now it is named as MGNREGA) which is India's biggest single welfare project costing over \$ 8 billion a year. Further, it is noted that it swallows over 3 per cent of all public spending in India⁵.

1.2. OBJECTIVES OF THE STUDY

The main objectives of the present paper are:

1. To analyze the present rural road connectivity in India & Karnataka.
2. To analyze the Rural Road Development in Karnataka in the year between 1956-2019.
3. To know accessibility of Rural Road Network in Karnataka between 2007-08 and 2018-19.

1.3. METHODOLOGY AND PAPER SCHEME

This paper mainly aims at having a bird's eye view on rural road transport in India and it particularly throws light on rural roads in Karnataka. The secondary data is collected to examine the growth of overall changes in the development of rural roads in the long-run between 1956 and 2019 and in short-run between 2007-08 and 2018-2019. Census reports, journals, articles, books, periodicals and other reports published by government are referred to collect the secondary data.

1.4. REVIEW OF LITERATURE

A review of earlier research works help in identifying the conceptual and methodological issues relevant to the present study. Many studies have already been conducted on the broad topic of transport and rural road connectivity in general. The review made here is restricted keeping the size of the paper in view.

A paper entitled, '*The Structure of Transportation Network* by Garrison and Marble' (1962), analyzed the structure geometrical pattern or layout of transportation networks in the study area of Ireland. Further study gave more attention to motions of arrangement of routes intersections and terminals on the Earth's surface and their motions provide an adequate general identification. Later, researchers treat changes in the structures of networks when transportation system are expanded and operational definitions are given at the time of consistent with the needs regarding subject. Suitable operational definitions are given for the comparison of transportation network with each other⁶.

Talvitie (2000), in his study on '**Evaluation of Road Projects and Programmes in Developing Countries**' made an economic evaluation of World Bank supported road projects in developing countries using Cost-Benefit Analysis (CBA). The study found that the road transport cost comprises of five interacting sets of costs. They are as follows; Construction cost, Rehabilitation and periodic maintenance cost, Routine maintenance and system operation cost, Road users cost, External cost of society⁷.

A Research Paper by **Paul Starkey et al. (2002)** on '*Improving Rural Mobility: Options for Developing Motorized and Non-motorized Transport in Rural Areas*' stated that many inhabitants of rural areas in developing countries have lack of adequate and affordable access to transport infrastructure and services. The study also argued that poor access to transport constrains of economic and social development contributes to poverty. Better transport services can stimulate economic activity and social improvement leading to easier accesses and a virtuous circle that reduces poverty and improves the lives of poor rural residents. The study also focuses on improving rural mobility by facilitating the provision of affordable means of transport and transport services⁸.

In their study on '*Rural Roads – A path to Rural Development* by Amit Sharma (2009)' argued that the World Bank is building roads in Indian villages to raise rural incomes and improve people's access to health and educational services. The researcher also discussed that rural roads projects are going on in 6 states – Himachala Pradesh, Jharkhand, Rajasthan, Uttar Pradesh, Andra Pradesh and Assam, Rajasthan was one of the very few states which would reach the target in time and it has been widely acknowledged that these roads have improved social, physical, financial and human capital of the population of the connected villages. Further the study concluded with rural roads its impact on rural economy and Rural Road Development Plan Vision – 2025, its future and the major recommendation of the vision⁹.

Archana Kaushik (2012), in her article on '*Boosting Rural Development through Road-Connectivity: The Orissa Experience.*' The article is an outcome of an evaluated research, appraises implementation of Pradhan Mantri Gram Sadak Yojana (PMGSY) in five districts of Odisha specially in those districts where naxal activities have mounted sharply. The study found that the extent of rural road connectivity in Odisha was far less than the requirements. Only 40% of all villages have all weather road connectivity as compared to the national average of 60%. Further, researcher gives a few suggestions for improvement of the rural road connectivity¹⁰.

In his thesis on '*Rural Road connectivity in Karnataka – A study of PMGSY*' by Yuvaraj. U (2013), discussed on the study between the period of 2000-01 and 2010-11. He pointed out that the rural road network in North Karnataka registered about 70.88% growth higher than the South Karnataka's 62.23% growth in which researcher offered a few suggestions for the improvements of rural road network. The study found that in the state of Karnataka there is a scope for providing new connectivity to rural region which has been taking place from the present study under the PMGSY provided a physical connectivity to rural regions helps in improving the health, education, marketing, dairying and other activities in the rural areas in the study area of Gulbarga and Mysore districts.¹¹

A paper entitled '*Development of Rural Roads – Are we on The Right Track?*' Carried by Ishita G. Tripathy (2014), explained that more than 83 crore people of India lives in rural India according to causes of 2011. Almost 3/5 of India's road network consists of more than 28 lakh kms provides connectivity to these rural segments. Further, researcher argued that during 2002-12 decade the rural road network registered a moderate rate of growth of 3.3% marginally lower than that of the total road network of the country which grows at 3.6%. Further, the study found that out of the entire 28 lakh kms of rural road length in the country only around 11 lakh kms is surfaced. Uttar Pradesh has the highest proportion of surfaced rural roads (61%) as compared to the other two states which have a large rural population Bihar (39.3%) and West Bengal (15.4%). Although Assam and Odisha have a larger rural road network the proportion of their surfaced roads has very low ranging between a mere 10-12% of their rural road networks¹².

A Report of *World Bank (2015)*, on '*Rural Roads – A Lifeline for villages in India*' stresses that the rural roads sector which was a state subject also lacked adequate planning and management due to poor coordination between multiple sounding strives and agencies. Investing in rural roads was given low priority and viewed in isolation from the need for state and national highways¹³.

1.5. DEVELOPMENT OF RURAL ROADS IN INDIA

Rural Development Plans were drawn periodically and the rural road development programmes were spelt out clearly in each road development plan. Various schemes launched in rural areas focused the main attention of poverty alleviation through employment generation. Thus, the rural road development was incidental to these programmes in place of systematic planned development of rural roads in India. The latter becomes one of the components of various poverty alleviation programmes.

1.6. STATUS OF RURAL ROADS IN KARNATAKA

The total length of rural roads in Karnataka as on March 2019 is 1,90,862 kms as per District Rural Road Map. Details of rural connectivity are shown below in Table 1.1

Table 1.1: Rural Road Statistics of Karnataka as on March 2019 (Road Length in kms)

Category of Road	Length (kms)	Percentage of Length
(01)	(02)	(03)
Bituminous surface	52,521	27.51
Metal surface	26,026	13.63
Earthen/Gravel Roads	1,12,315	58.86
Total	1,90,862	100.00

Source : *Economic Survey of Karnataka 2019-20, Planning, Programme, Monitoring and Statistics Department, Government of Karnataka, Bengaluru, March 2020, pp. 484-487.*

1.7. RURAL ROAD DEVELOPMENT IN KARNATAKA

The rural connectivity helps in the mobility of rural population and rural agricultural produce, helps in improving in the rural population and increases in their per capita income. In Karnataka, about 1,77,542 kms length of rural roads are found in the year 2016 which has the highest amount of 67.79 percent share in the total road length of all categories in india.¹⁴

1.7.1. RURAL ROAD DEVELOPMENT IN THE LONG-RUN (1956-2019)

The progress of rural road network in Karnataka from 1956 to 2019 is provided in Table 1.2

Table 1.2
Rural Roads in Karnataka 1956-2019, (Road Length in kms)

Years	Rural Roads	Decadal Growth
(01)	(02)	(03)
1956	2373	-
1966	11532	385.96
1976	62602	442.85
1986	85335	36.31
1996	85361	00.03
2006	115840	35.70
2016	177542	53.26
2017	177542	-
2018	190862	7.50
2019	190862	-
% increase over 1956		7943.06

Source : 1) *Hand Book of Karnataka-2010, Karnataka State Gazetteer, Government of Karnataka.*

2) *Annual Report 2016-17, Rural Development and Panchayat Raj Department, Bengaluru, Government of Karnataka, March 2016.*

3) *Directorate of Economics and Statistics 2017-2020, Bengaluru, Government of Karnataka, Rural Development and Panchayat Raj Department, March 2017-2020.*

From the above table 1.2, it can be observed that from 1956 to 2019 rural road network in Karnataka has grown by 79 times. In the year 1956 the rural road length was only about 2,373 kms in the state which was substantially increased to 11,532 in 1966 (386 percentage points increase) the road length in the year 2016 has

1,77,542 kms registering 53.26 per cent growth rate over 2006. In the decade 1986 to 1996, the growth of rural road was the lowest registering 0.03 per cent.

1.7.2. RURAL ROAD DEVELOPMENT IN THE SHORT-RUN (2007-08 – 2018-19)

Year-wise data including that of quality and type of rural roads in the state represented in table 1.3 from 2007-08 to 2018-19.

Table 1.3
Rural Roads in Karnataka in the short-run 2007-08 to 2018-19. (Road Length in kms)

Years	Rural Roads	Percentage of Growth	Surfaced Rural Roads			Total No. of Habitation	No. of Habitations access to all Weather Roads
			BT	WBM	Un-surfaced*		
(01)	(02)	(03)	(04)	(05)	(06)	(07)	(08)
2007-08	1,47,212	00.00	39394 (26.76)	24730 (16.79)	83088 (56.45)	-	-
2008-09	1,47,212	00.00	39394 (26.76)	24730 (16.79)	83088 (56.45)	1718	-
2009-10	1,47,212	00.00	43845 (29.78)	22059 (14.98)	81308 (55.24)	2235	-
2010-11	1,47,212	00.00	45393 (30.83)	22359 (15.17)	79460 (54.00)	57,417	36,720
2011-12	1,47,212	00.00	47744 (32.43)	25771 (17.50)	73697 (50.07)	57,417	38,057
2012-13	1,55,546	05.77	58184 (37.40)	21495 (13.81)	75867 (48.79)	57,417	39,376
2013-14	1,55,546	00.00	58184 (37.40)	21495 (13.81)	75867 (48.79)	68,431	47,043
2014-15	1,55,546	00.00	58184 (37.40)	21495 (13.81)	75867 (48.79)	68,431	47,043
2015-16	1,76,565	13.51	63103 (35.73)	23150 (13.11)	90312 (51.16)	68,431	36,760
2016-17	1,77,542	0.55	63374 (35.70)	23059 (13.00)	91109 (51.30)	64,049	41,631
2017-18	1,90,862	7.50	52521 (27.51)	26026 (13.63)	112315 (58.86)	-	-
2018-19	1,90,862	-	52521 (27.51)	26026 (13.63)	112315 (58.86)	-	-
% increase over 2007-08	29.65		33.32	5.24	35.17		

Note : BT = Black Tap (Asphated Roads), WBM = Water Bound Macadam

* Unsurfaced Roads includes Earthen, Gravel, Track.

Source : 1) Annual Reports, 2007-08, 2017-18, Rural Development and Panchayat Raj Department, Bengaluru.

2) Economic Survey of Karnataka 2019-20, Planning, Programme, Monitoring and Statistics Department, Government of Karnataka, Bengaluru, March 2020, pp. 434, 487.

The data presented in table 1.3 reveals that the rural road length remained at 1,90,862 kms in Karnataka in the year 2018-19 as against 1,47,212 kms in the year 2007-08. This evidenced the fact that the rural road network in Karnataka has increased by 29.65 percent. Total number of habitations in the state 41,631 have access to all weather roads. Further, the Water Bound Macadam Roads converted into block top roads increased to 26,026 kms in 2018-19 as compared to 24,730 in 2007-08 in Karnataka. As on 2018-19 of the total rural road networks about 58.86 per cent was unsurfaced in the state which registered only of 35.17 per cent over 2007-08 and it is really a matter of concern.

1.8. ACCESSIBILITY OF RURAL ROAD NETWORK IN KARNATAKA

The data represented in the table 1.4 reveals that the information about the rural road length per lakh of population and per 100 sq.km in Karnataka from 2007-08 and 2018-19.

Table 1.4.
Accessibility of Rural Road Network in Karnataka (Road Length in km)

Years	Rural Roads	Road Length per lakh Rural Population*	Road per 100 sq.km
(01)	(02)	(03)	(04)
2007-08	1,47,212	421.94	76.75
2008-09	1,47,212	421.94	76.75
2009-10	1,47,212	421.94	76.75
2010-11	1,47,212	392.01	76.75
2011-12	1,47,212	392.01	76.75
2012-13	1,55,546	414.20	81.10
2013-14	1,55,546	414.20	81.10
2014-15	1,55,546	414.20	81.10
2015-16	1,76,565	470.18	92.06
2016-17	1,77,542	472.78	92.57
2017-18	1,90,862	508.25	99.51
2018-19	1,90,862	508.25	99.51

Note : *As on 2001 Census, Karnataka have 3,48,89,033 rural population and 1,91,791 geographical area.

*As on 2011 Census, Karnataka have 3,75,52,529 rural population and 1,91,791 geographical area.

Source: 1) Annual Reports, 2007-08, 2017-18, Rural Development and Panchayat Raj Department, Bengaluru.

2) Economic Survey of Karnataka 2018-19 and 2019-20, Planning, Programme, Monitoring and Statistics Department, Government of Karnataka, Bengaluru, March 20, pp. 484, 487.

3) Karnataka at a Glance, 2010, Government of Karnataka.

The data represented in Table 1.4, reveal that as on 2018-19 the rural road network in Karnataka remained at 1,90,862 kms working out to a length of 508.25 kms per lakh of population (2011 census) and 99.51 kms per 100 sq.km as against of the 421.94 km length per lakh population (2011 census) and 76.75 kms per 100 sq.km in the year 2007-08. Thus, it can be argued that during a decade availability of rural road network per unit of geographical area has been continuously increased in the state of Karnataka.

1.10 FINDINGS

1. The rural connectivity helps in the mobility of rural population and transport of rural agricultural produce which helps increase in their per capita income. In Karnataka about 1,90,862 kms length of rural roads is found in the year 2018-19 which is the highest amount of 58.86 percent share in the total road length of all categories.
2. As on March 2016, 18,60,573 km of Gram Panchayat Roads only 9,98,624 kms (53.70%) were surfaced and 8,61,949 kms (46.30%) were unsurfaced roads. In respect of PDD roads 4,58,021 kms (83.58%) were surfaced and 90,366 (16.48%) were unsurfaced. These figures do not cover those roads beings added by the PMGSY. 5,51,132 km (88%) PMGSY roads were surfaced and 75,245 km (12%)

unsurfaced and total rural road consists of 30,35,337 kms and it includes surfaced roads of 20,07,777 kms (66.15%) and unsurfaced road length of 10,27,560 kms (33.85%).

3. As on March 2017, total rural road in India consists of 32,66,916 kms which includes 21,63,920 kms surfaced roads (66.24%) and 11,02,996 kms of unsurfaced (33.76%) it is a noticeable feature.
4. From 1956 to 2019 rural road network in Karnataka has grown by 79 times. In the year 1956, the rural road length was only about 2,373 kms in the state which substantially increased to 11,532 in 1966 (386 percentage points increase) the road length in the year 2019 was 1,90,862 kms registering 53.26 per cent growth rate over 2006. In the decade of 1986-1996 the growth of rural road was lowest registering just 0.03 per cent.
5. In the year 2018-19 the rural road length remained at 1,90,862 kms in Karnataka as against 1,47,212 kms in the year 2007-08. This evidenced the fact that the 64,049 inhabitants benefited from rural road network and 41,631 had an access to all weather roads in the year 2016-17.
6. The Water Bound Macadam Roads converted into block top roads increased to 26,026 kms in 2018-19 as compared to 24,730 in 2007-08 in Karnataka. As on 2018-19 of the total rural road networks about 58.86 per cent was unsurfaced in the state which registered only of 35.17 per cent over 2007-08 and it is really a matter of concern.
7. The rural road network in Karnataka remained at 1,90,862 in the year 2018-19 kms working out to a length of 508.25 kms per lakh of population as per 2011 census and 99.51 kms per 100 sq.km as against of the 421.94 km length per lakh population according to 2011 census and 76.75 kms per 100 sq.km in the year 2007-08. Thus, it can be argued that during a decade, availability of rural road network per unit of geographical area has been continuously increasing in the state of Karnataka.

1.9. CONCLUSION

The rural road connectivity helps in the mobility of rural population and rural agricultural produce, help in improving in the rural population and increase in their per capita income. It is well-known that the rural roads are playing a prominent role in uplifting the social, economic and cultural life of the people access to better road network to rural areas substantially enhances the socio-economic status and improves the living condition of rural population. For this reason, government of India and Karnataka state have given importance to rural road construction by launching Pradhana Manthri Gram Sadak Yojana (PMGSY), Chief Minister's Grama Sadak Yojana (CMGSY), Bharath Nirman, Rural Infrastructure Development Fund (RIDF), Namma Grama Namma Raste Yojane (NGNRY) etc., These programmes provide improved infrastructure to rural farm sector and improving agriculture and socio-economic upliftment of rural poor in the nation.

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