

ROAD INFRASTRUCTURE IN KARNATAKA – A STUDY

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ABSTRACT

Karnataka has a relatively well-development and diverse transportation network that plays a vital role in the state's economic growth, trade, and connectivity. The transportation system includes roadways, railways, and waterways, facilitating the movement of people and goods across the state and beyond. The state government, along with the National Highways Authority of India (NHAI) and Karnataka Road Development Corporation Limited (KRDCL), has undertaken several initiatives to expand and improve road connectivity. The objectives of the present study are to know the trends in road infrastructure in Karnataka and specifically analyze the quantitative growth of different categories of roads in Karnataka and explain the government initiatives to develop road infrastructure in the state. The present paper is both descriptive and analytical in nature; this study depended on secondary data drawn from the review of existing literature, the government reports and statistical data related to Karnataka road infrastructure.

Keywords: Connectivity, Development, Economic Growth, Infrastructure, Transportation

1.0 INTRODUCTION

Karnataka, one of India's most economically and industrially significant states, has a relatively well-development road network that plays a crucial role in its overall growth. Roads serve as the backbone of transportation, facilitating trade, commerce, tourism, and connectivity between urban and rural areas. The state's road infrastructure includes National Highways (NHs), State Highways (SHs), Major District Roads (MDRs), Municipal Roads and Rural Roads, which together ensure seamless mobility across the state, as well link with the neighboring States.

The Government of Karnataka along with agencies like the NHAI and the KRDCL has undertaken various projects to expand and improve road connectivity. Major initiatives such as the Bengaluru-Mysuru Expressway, Peripheral Ring Road (PRR), and Bharatmala Project aim at enhancing transport efficiency to boost economic activities.

1.1 Review of literature

B. Jayarama Bhat and Yuvraja U (2012) in their study, "Rural Road Connectivity through PMGSY: A study in Karnataka", evaluated the implementation of the Pradhan Manthri Gram Sadak Yojana (PMGSY) in Karnataka, focusing on rural road connectivity. The study emphasizes the importance of infrastructure in achieving socio-economic balance and discusses the challenges in proving adequate rural road connectivity.

"A Study on Urban Road Widening Project Based on Prediction of Level of Service (LOS)- A Case Study in Bannerghatta Road, Bangalore" was done by B.S. Konthojam and M.R. Rajasheekara in 2015. The study evaluates Bannerghatta routes's traffic issues and suggests road widening to improve traffic flow and service levels. It provides a practical methodology for analyzing traffic congestion in Indian metro cities.

R. Shiva Kumar (2018) in his work “Urban Road Network Expansion; A Study on Mysore City” analyzed the expansion of Mysore’s urban road network from 1972 to 2016 using Geographic Information System (GIS) technology. The study reports a significant increase of 1,719 kilometers in road length over the analyzed period, attributing this growth to land transformation and urbanization. The study finds rapid urbanization has driven road network growth, but also raises concerns about uncontrolled expansion affecting sustainability.

Srinivas (2019) in his research paper on Road Transportation and Telecommunication in Karnataka examines the development of road transportation and telecommunication in the state, analyzing spatial disparities and their impact on regional development. The research highlights the correlation between infrastructure development and economic growth, emphasizing the need for balanced regional development. The researcher suggested that balanced infrastructure development can bridge the rural-urban divide.

P. Sharma (2020) in his paper “Urbanization and its Impact on Road Transportation Infrastructure in Karnataka” discussed about transport in Karnataka, driven by increasing urbanization and industrial growth. The study notes that while Karnataka has a high road density, traffic congestion in major cities like Bengaluru is a persistent issue.

P.Sunil Kumar and B. Jayarama Bhat (2021) in a paper, Rural Road Connectivity in Karnataka – An Analysis, explained about the road development plans, status of rural road in India in general and in Karnataka in particular. Further, the authors examined the growth of overall changes in rural development due to rural road in the long-run between 1956 and 2019 and in short-run from the years between 2007-08 and 2018-19, Furthermore, the study analyzability of rural road network and district-wise rural road network development in Karnataka.

1.2 Objectives

The objectives of this paper are:

1. To know the trends in the growth of road infrastructure in Karnataka in general.
2. To analyze the quantitative growth of different categories of roads in the state.
3. To explain about the government initiatives to develop road infrastructure in Karnataka.

1.3 Paper Design

1.3.1 The Data

This study is depended on secondary data to analyze the trends in road infrastructure in Karnataka; the data were drawn from the review of existing literature, the government reports and statistical data related to Karnataka road infrastructure.

1.3.2 Methodology

The present paper is both descriptive and analytical in nature. The data are analyzed using simple statistical tools of parentages and averages.

1.3.3 Limitations

1. The study confines to only the road infrastructure in Karnataka.
2. Only the quantitative growth of roads is focused on. The limitations are set keeping the size of the paper in view.

1.4 Road Lengths in Karnataka

The expansion and improvement of road infrastructure play a critical role in connectivity, regional development and finally in economic growth and development. The trends in the development of the road categories in Karnataka from 2012-13 to 2023-24 are presented in Table 01.

Table – 01
Road Lengths in Karnataka -2012-13- 2022-23

Year	Category of Roads					
	National Highway s	State Highway s	Major District Roads	Municipal Roads	Rural Roads/ Other Roads	All Roads
(1)	(2)	(3)	(4)	(5)	(6)	(7)
2012-13	4490	20,770	49,959	8,366	1,48,412	2,31,997
2013-14	4686 (4.36)	20,773 (0.01)	49,683 (-0.55)	8,366 (-)	1,48,412 (-)	2,31,922 (-)
2014-15	6540 (39.56)	19,720 (-5.06)	49,928 (0.49)	8,366 (-)	1,55,545 (4.80)	2,40,131 (3.53)
2015-16	6572 (0.48)	19,578 (-0.72)	49,909 (-0.03)	8,366 (-)	1,77,542 (14.14)	2,61,967 (9.09)
2016-17	6572 (-)	19,578 (-)	49,909 (-)	40,108.71 (379.42)	1,77,542 (-)	2,93,709.71 (12.11)
2017-18	6572 (-)	19,578 (-)	49,909 (-)	40,108.71 (-)	1,90,862 (7.50)	3,07,029.71 (4.53)
2018-19	7257 (10.42)	19,445.9 8 (-0.67)	49,552.7 5 (-0.71)	40,108.71 (-)	1,90,862 (-)	3,07,227.07 (0.06)
2019-20	7257.63 (0.008)	19,445.9 8 (-)	49,603 (0.10)	40,487.59 (0.94)	1,98,500.80 (4.00)	3,15,295.00 (2.69)
2020-21	7652 (5.44)	28,985 (49.05)	55,474 (11.83)	40,487.59 (-)	1,98,500.80 (-)	3,31,099.39 (5.01)
2021-22	7652 (-)	28,985 (-)	55,474 (-)	43,964.01 (8.58)	1,94,438.02 (-2.04)	3,30,513.03 (-0.17)
2022-23	7652 (-)	27,880 (-3.81)	56,115 (1.15)	44,084.54 (0.27)	1,97,282.83 (1.46)	3,33,014.37 (0.75)
2023-24	7332*	27880*	56115*	44,084.54* *	1,97,331.61 ***	3,32,743.15*
Percentage change over the period 2012-13	63.29	34.23	12.28	426.94	32.96	43.42

Note: 1.Figures in brackets show percentage change over the previous period, which are calculated.

2. Figures in the last row show percentage change over 2012-13 which are calculated.

Source: Economic Survey 2012-13 to 2023-24 Planning, Programme Monitoring and Statistics Department, Government of Karnataka.

*Information Provided from EIC, PRAMC office (as on March 2023), National Highways roads development has been undertaken by NHAI and the road length has been reduced due to the development of geometric alignment of highways

** Director, Directorate of Municipal Administration, (as on March- 2021)

*** Rural Development and Panchayath Raj Department (as on March 2023)

The above table reveals that from 2012-13 to 2023-24, the National Highway network grew by 63.29%, while the State Highways increased by 34.23%. The Major District Roads grew only by 12.28%, while municipal roads increased by 426.94%; as a result of urbanization and local government initiatives, rural roads increased by 32.96%, and the overall road network grew by 43.42%. Municipal roads increased by 379.42% in 2016-17, while the State Highways decreased from 2014-15, and where as has increased by 49.05% in 2020-21, while National Highways decreased by 2023-24 as a result of stalled projects of reclassification.

1.5 Government Initiative to Develop Road Infrastructure in Karnataka

The Government of Karnataka in collaboration with central agencies like the NHAI and the Ministry of Road Transport & Highways (MoRTH), has undertaken several initiatives to improve road infrastructure in the state. The objectives of these projects are to promote economic growth, lessen traffic, and improve connectivity.

1. National Highway Development Projects in Karnataka

Karnataka has a relatively well-developed National Highway (NH) network spanning over 7,500 km. The central government has implemented multiple projects under the Bharatmala Pariyojana, including.

a. Bharatmala Pariyojana

The project aims to improve interstate connectivity in Karnataka by constructing expressways, four-lane highways, and ring roads, including the Bengaluru-Chennai Expressway, Bengaluru-Mysore Expressway and Mumbai-Kanyakumari Economic Corridor.

b. Golden Quadrilateral & NH Expansion

The Golden Quadrilateral Projects has significantly improved trade and transportation by connecting Bengaluru with Chennai, Mumbai, and Hyderabad, while the expansion of NH-75, NH-4 and NH-48 has also improved industrial transport.

2. State Government Initiatives

The Government of Karnataka has launched various state-sponsored projects through the Karnataka Road Development Corporation Limited (KRDCL) and Karnataka State Highway Improvement Projects (KSHIP).

a. Karnataka State Highway Improvement Project (KSHIP)

The project, funded by the World Bank and ADB, aims to upgrade the State Highways to four-lane and six-lane roads; the projects include improvements of highways connecting Hubballi, Belagavi, and Shivamogga.

b. Karnataka Road Development Corporation (KRDCL)

Karnataka Road Development Corporation (KRDCL) was established in 1999 to promote surface infrastructure, improve road network, and establish connectivity throughout the state. As a wholly owned Government of Karnataka Company, it undertakes road works, bridge construction, and maintenance projects, aiming to improve road connectivity.

The entire responsibility of construction and maintenance of district roads, bypass roads, and expressways, with key projects including the peripheral Ring Road in Bengaluru, Satellite Town Ring Road (STRR) and the up gradation of 3,500 km State Highways rests with the KRDCL.

3. Rural Road Development in Karnataka

Rural roads in Karnataka are crucial for socio-economic development, connecting villages, promoting agriculture growth, facilitating trade, and improving access to education, healthcare, and markets.

a. Pradhan Manthri Gram Sadak Yojana (PMGSY)

The Pradhan Manthri Gram Sadak Yojana (PMGSY) was launched in December 2000 by the central government to provide village connectivity with All-Weather Roads, with the Ministry of Rural Development responsible for master plans.

PMGSY has been implemented in three phases to ensure comprehensive rural road connectivity, up gradation, and network consolidation.

b. Namma Grama Namma Raste Yojane (NGNRY)

Namma Grama Namma Raste Yojane (NGNRY), also known as “Our Village, Our Road”, a flagship rural road development initiative by Government of Karnataka launched in October 2009, is a state-funded initiative aimed at improving 10,000 km of rural roads across Karnataka. It provides All-Weather connectivity to previously disconnected communities and allows upgradation of existing roads post basic connectivity.

c. Pragathi Path Programme

The Pragathi Path Programme was announced by the Government of Karnataka in the Budget 2024-25 to upgrade major district roads (MDRs) and taluk-level roads across the state. Its primary aim is to boost economic development by improving connectivity between rural areas, markets, industrial hubs, and towns.

d. Kalyana Patha Programme

The Kalyan Karnataka region is the focus of the Kalyan Patha Scheme. The Hyderabad Karnataka region was its previous name. Among these are the districts of Bidar, Bellary, Vijayanagar, Kalaburagi, Koppal, Raichuru, and Yadagiri.

4. Bengaluru's Road Infrastructure Development

The capital and technological center of Karnataka, Bengaluru, is overly congested. In light of this, the state government has started a number of initiatives to address the issue.

a. Bengaluru Elevated Corridor Project

The Proposed elevated roads spanning 102 km aims to ease congestion. The key corridors include North-South Corridor, East-West Corridor, and Peripheral Corridors Bengaluru.

b. Namma Metro Expansion

The Phases 2 and 3 metro expansion aims to reduce road congestion by providing an alternative mass transit system. Integration with BMTC buses and suburban rail also under progress.

c. Smart City Roads (Tender SURE Model)

Roads redesigned with pedestrian-friendly feature, cycle tracks, uniform carriageways, utilities laid underground, better drainage and lighting.

5. Public-Private Partnership (PPP) Projects in Karnataka

The Government of Karnataka has been a pioneer in adopting the Public-Private Partnership (PPP) Model for infrastructure development, particularly in the road sector. Major PPP road projects are:

a. Bengaluru-Mysuru Infrastructure Corridor (BMIC)

The Bengaluru-Mysuru Infrastructure Corridor (BMIC) is one of Karnataka's most ambitious Public-Private Partnership (PPP) road projects. Conceived in the mid-1990, it was developed by Nandi Infrastructure Corridor Enterprises (NICE) to improve connectivity between Bengaluru and Mysuru, two of the state's major economic hubs.

This is the first major PPP road projects in Karnataka, which provides a high-speed corridor between Bengaluru and Mysuru, reducing traffic on NH-275.

b. Toll Roads and Expressways

Several roads, such as Bengaluru-Hassan-Mangaluru Road and Tumukur-Chitradurga Road, have been developed under the Build-Operate-Transfer (BOT) model. The state is exploring Hybrid Annuity Model (HAM) projects for sustainable road development.

6. Sustainable Transport and Green Initiatives

Karnataka has emerged as one of the leading states in India to promote sustainable transport and green mobility initiatives. With rapid urbanization and rising vehicular emissions, the state has adopted policies and projects that focus on eco-friendly public transport, non-motorized mobility, and clean energy integration, Initiatives such as,

a. Karnataka Electric Vehicle (EV) Policy 2021

This policy promotes the use of electric buses and vehicles to reduce road transport emissions; also plans to install charging stations along the National and State Highways.

b. Non-Motorized Transport (NMT) Promotion

Development of dedicated cycling tracks and pedestrian-friendly zones in under areas help reduce congestion. Bengaluru's Tender SURE project focuses on integrating pedestrian-friendly infrastructure.

c. Green Highway Initiatives

The Green Highways (Plantation, Beautification & Maintenance) Policy promotes tree planting along roads sides. Solar-powered streetlights are being installed along Benaggluru-Mysuru Expressway and Nice Road.

CONCLUSION

The Government of Karnataka has undertaken extensive road development initiatives to enhance connectivity, improve public transport, and reduce congestion. While expressways,

smart roads, and rural roads projects have made significant progress, challenges such as land acquisitions, funding gaps, and environmental concerns remain, confronting. Therefore, the future strategies must focus on sustainable road transport, multi-model integration, and digital traffic management to ensure long-term development. Let us hope for the best

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