Economic Affairs, Vol. **69**(02), pp. 1069-1081, June 2024
DOI: 10.46852/0424-2513.3.2024.30

AESSRA

REVIEW PAPER

Unlocking Economic Growth: The Transformative Role of Infrastructure Finance in India

Rakesh Kumar Garg[1], N. Biswas[2*], Binaca Agarwal[3], Vinay Pratap Singh[4] and Ruchi Tripathi[5]

[1]Department of Applied Science and Humanities, ITS Engineering College, Greater Noida, Uttar Pradesh, India
[2]Department of Business Administration, Aligarh Muslim University Centre Murshidabad, West Bengal, India
[3]Department of Economics, Ingraham Institute Girls Degree College, Ghaziabad, India
[4]Inmantec Institution, Ghaziabad, Uttar Pradesh, India
[5]SRM Institute of Science and Technology, Delhi-NCR Campus, Modinagar, Ghaziabad, Uttar Pradesh, India

*Corresponding author: nbiswas.mbd@amu.ac.in (**ORCID ID:** 0009-0004-4347-1045)

Received: 25-11-2023 **Revised:** 27-02-2024 **Accepted:** 01-03-2024

ABSTRACT

Recognizing the transformative impact of strategic investments in PPP Model, this study investigates how infrastructure development can serve as a linchpin for sustained economic prosperity. Through an exploration of key sectors such as transportation connectivity-air, road and rail, energy, and water supply & sanitation, the paper aims to highlight the multifaceted benefits of robust infrastructure on overall efficiency, business expansion, and job creation. The research emphasizes the need for a comprehensive and sustainable approach to infrastructure finance, advocating for a balanced mix of public and private investments. The paper also addresses the importance of transparent regulatory frameworks, risk mitigation strategies, and efficient project planning to attract private investors and ensure the successful implementation of infrastructure projects. By elucidating the potential multiplier effects and global competitiveness implications, the paper provides valuable perspectives for investors, policymakers, and scholars seeking to comprehend the intricacies of transformative dynamics of infrastructure-led economic growth in India. This research paper delves into the pivotal role of infrastructure finance as a catalyst for unlocking economic growth in India.

HIGHLIGHTS

- The pivotal role of infrastructure finance in serving as a catalyst for economic growth in India.
- The research paper tried to explore how strategic investments in key sectors such as transportation, energy, and water can stimulate overall economic development.
- There is a significance of Public-Private Partnerships in leveraging private sector capital for infrastructure projects.
- The effectiveness of investment mechanisms is attracting both domestic and foreign investments.
- The role of government policies and regulatory frameworks in shaping the infrastructure finance landscape.
- The social and environmental implications of infrastructure projects, emphasizing the importance of sustainable and inclusive development.

Keywords: Infrastructure Finance, Economic Development, Public-Private Partnerships, Transportation, Energy, Global Competitiveness

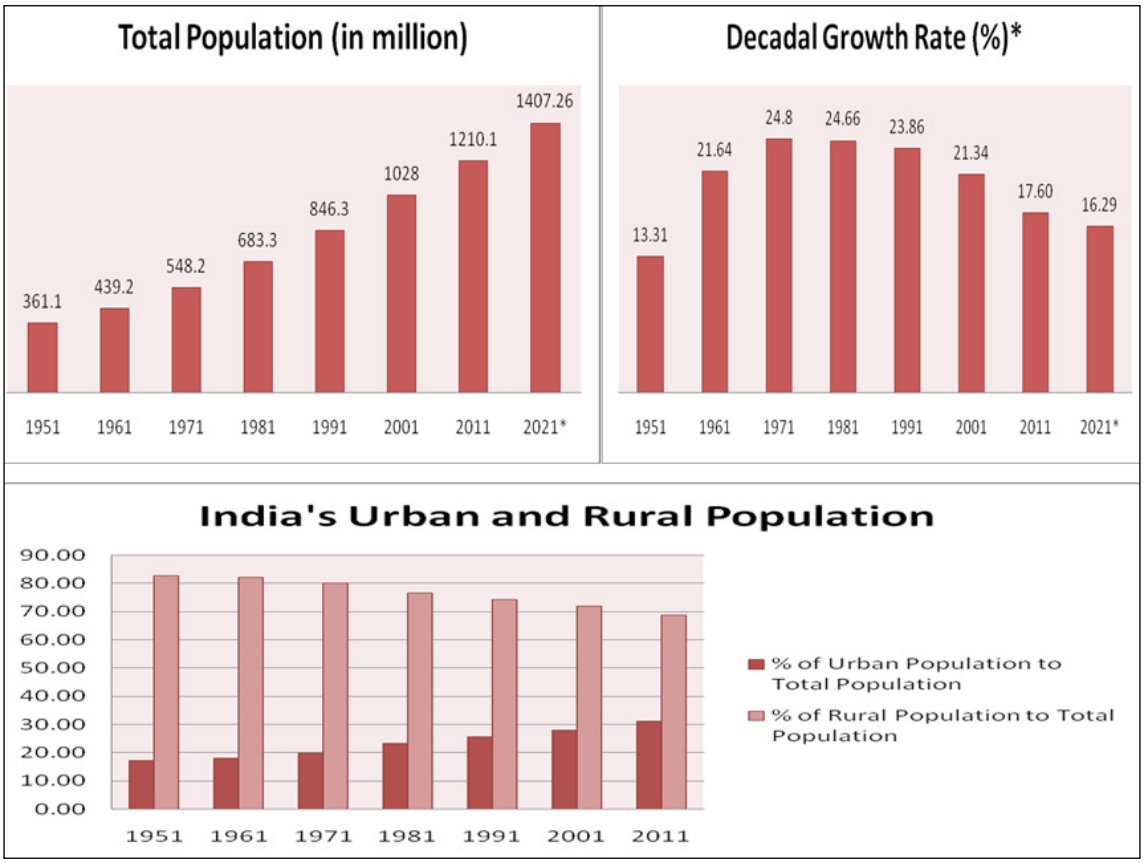
How to cite this article: Garg, R.K., Biswas, N., Agarwal, B., Singh, V.P. and Tripathi, R. (2024). Unlocking Economic Growth: The Transformative Role of Infrastructure Finance in India. *Econ. Aff.*, **69**(02): 1069-1081.

Source of Support: None; **Conflict of Interest:** None

The development of infrastructure not only influences the sustainability of economic growth but also plays a crucial role in shaping our future progress. There's ample evidence indicating that investing in infrastructure creates significant positive effects, contributing notably to reducing poverty (Gramlich, E., 1994). It's widely recognized, based on experiences across different Indian regions, that there's a clear connection between infrastructure development and the overall economic growth process. However, here's the challenge: infrastructure projects in India often take a considerable amount of time to yield returns. To make these projects work in the long run, they require sustained, long-term financing (Canning and Pedroni, 2008).

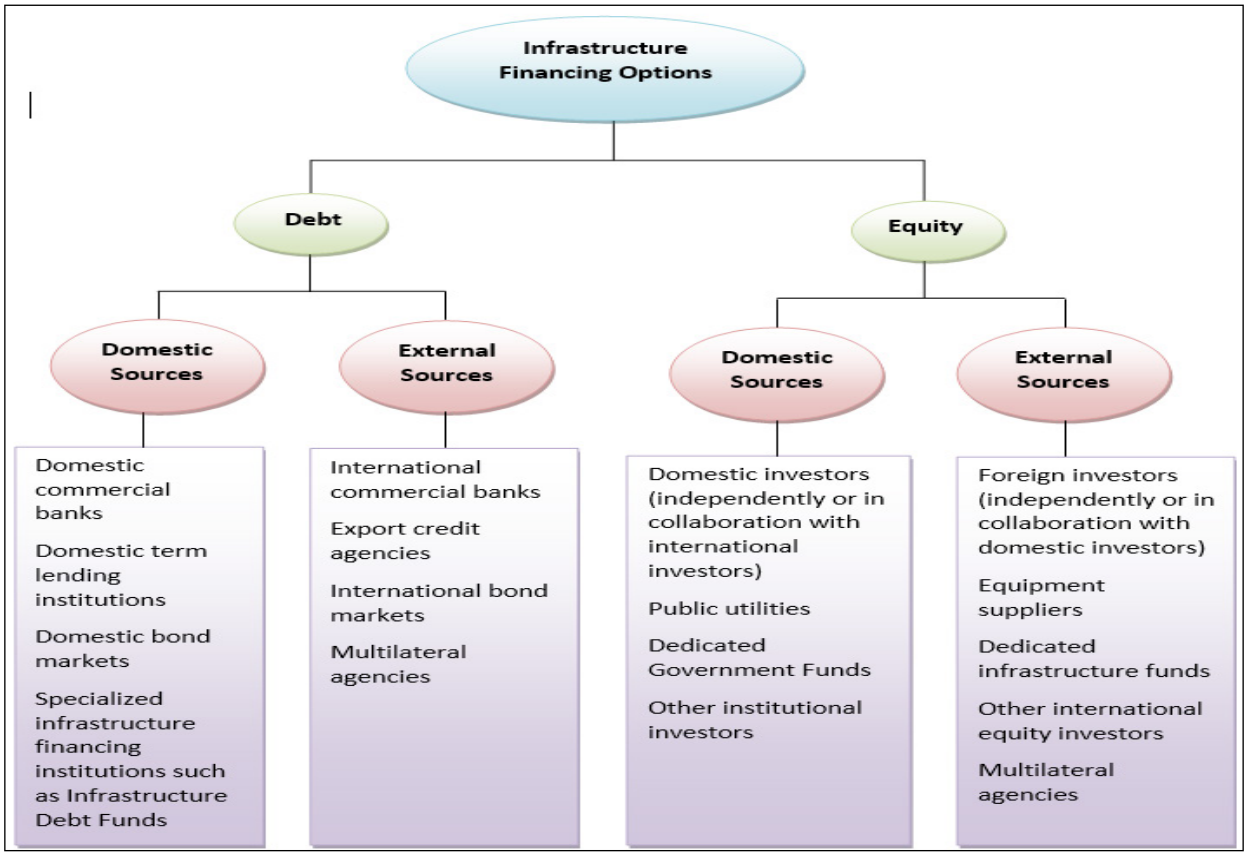
Fig. 1 depicts Investment in infrastructure financing in urban areas is rapidly increasing after 2014 in India, while it falling short when compared to the rapid growth of the Indian population. Despite this, more than 35% of the population in India (2022) resides in urban areas. This emphasizes that the development of any region significantly hinges on its rate of urbanization, which, in turn, is closely linked to the population growth rate.

Khan, (2015); Agarwal, R. (2020) highlight that increased urbanization contributes positively to the GDP. Consequently, areas with higher population densities, such as Gujarat, Maharashtra, Tamil Nadu, and Karnataka, tend to contribute more to the GDP when compared to states like Bihar and Orissa. However, as the population growth rate in an area rises, the need for various infrastructure facilities becomes crucial. These facilities include transportation connectivity-air, road and rail, energy, and water supply and various government service centers. Addressing these infrastructure needs is essential for sustaining the development momentum, especially in the context of India, however we should also have an insight in various infrastructural finance options whether they are debt or equity, domestic or external resources (Fig. 2).



** estimated [Source: Researcher's Compliance and Census of India].*

Fig. 1: Trends of India's Urban and Rural Population with Growth Rate



Source: *Finnacle Capital Research (2013).*

Fig. 2: Infrastructure Financing Options

OBJECTIVES OF THE STUDY

The present study aimed to examine the development of infrastructure and the financial landscape in India. The research sought to achieve the objective of

- To examine the infrastructure progress in India subsequent to 2014.
- To scrutinize the channels employed for financing infrastructure in India.
- To Evaluate the government's initiatives to t funding for infrastructure development under PPP Model and,
- To suggest ways to enhance Investment in infrastructure development in India.

METHODOLOGY

A pragmatic investigation was conducted to identify the measures undertaken by the RBI and Central Government in order to encourage the development of infrastructure and amplify investment in infrastructure under PPP Model within the country. This research relied on secondary sources, with data sourced from various reports from public sector, scholarly papers, agency publications, and various resources available online.

LITERATURE REVIEW

The pivotal role of infrastructure in fostering robust economic growth cannot be overstated. A decline in income inequality is observed with the improvement in both the quantity and quality of infrastructure. Calderón & Servén (2004) in their work found the impact of infrastructure expenditure and qualitative aspects on economic variables. Public infrastructure's influence on economic growth extends beyond the conventional factors such as crowding-out effects, compatibility, and productivity, commonly highlighted in review of literature (Agénor & M Dodson 2006). This impact encompasses considerations of infrastructure's role in adjusting investment costs, influencing the durability of private capital, and contributing to the provision of health and education services,

highlighting a broader spectrum of effects. Despite the extensive benefits associated with infrastructure expenditure, a pronounced deficit in global capital investment for new infrastructure remains evident (OCED 2007; ADB, 2009). In their study, Sahoo and Dash (2009) utilized causality analysis to demonstrate the crucial role of infrastructure development in reducing poverty and fostering economic growth. Utilizing Indian data spanning from 1870 to 1930, Donaldson (2010) demonstrated that the development of railroads led to a reduction in trading costs and Inter-area price disparities, stimulated overall trade, and increased real income. Emerging markets, particularly low-income countries, require essential initiatives to enhance their investment in infrastructure development, addressing the challenges posed by growing urbanization and fostering inclusive economic growth (Bhattacharya, 2012). Panigrahi and Beura (2013) found that the Public-Private Partnership (PPP) model stands out as the optimal approach for bridging the divide between infrastructure requirements and the financing of such projects. They emphasize the necessity of creating a dedicated fund to foster the development of innovative infrastructure. Unsuccessful Public-Private Partnerships (PPPs) underscore the significance of considering institutional frameworks in the formulation of policies, with neglect of this crucial aspect being a primary cause of failure in certain cases (Dutz *et al.* 2006; W B 2007; Chou *et al.* 2015). A fundamental obstacle in executing.

Public-Private Partnership (PPP) projects in India stems from the insufficient capacity within the public sector. The potential imposition of explicit and implicit obligations placed on the government of PPP initiatives is a noteworthy concern. In multiple instances, the government has struggled to establish an environment conducive to optimal private sector performance. Within a developing nation like India, the primary reasons behind the PPP model's setbacks include a deficit of trust between the public and private sectors and the public sector's inadequacy in managing interactions with the private sector effectively (Sharma and Bindal 2014). According to Chou *et al.* (2015), they contend that a robust institutional framework is crucial to incentivize private investment in public works. They advocate for a participative approach in establishing a strategic governance model to ensure the effective management of Public-Private Partnerships (PPPs). Bansal, Ali, and Sharma (2019) identified planning, monitoring, ensuring availability of material, and estimating time as the foremost time performance factors significantly impacting the performance of infrastructure projects in India. Tagariya & Dalvadi (2019) conducted a study titled, "'Measuring Shareholders Returns of Selected Infrastructure Companies in India", wherein they endeavored to gauge the stakeholders returns of specific companies specializing in infrastructure within India using ratio analysis. The research spanned the covering fiscal year 2017-18 to 2013-14. The findings of the research underscored that for the infrastructure industries to excel, increased capital investment and substantial efforts are imperative, as only through such measures can performance levels be elevated.

Findings- ***Economic Growth and Infrastructure Development in India***

India's infrastructure landscape is poised for a promising future over the next decade, offering an optimistic tableau marked by enticing government initiatives and an extensive roster of substantial projects. This favorable trajectory is underpinned by substantial funding and financing, setting the stage for robust growth in the sector. One of the noteworthy aspects of India's infrastructure development is the emphasis on sustainability. The nation is steering its focus towards constructing eco-friendly and energy-efficient structures. This paradigm shift necessitates the use of greener materials and advanced technologies that not only enhance construction efficiency but also contribute to environmental conservation.

The government's commitment to sustainable development is evident in various schemes and policies designed to incentivize the incorporation of eco-friendly practices. This forward-thinking approach aligns with global efforts to address climate change and positions India as a proactive player in the quest for more environmentally practices.

As the demand for infrastructure continues to surge, the construction industry in India is gearing up for a transformative phase. This evolution is not merely quantitative, with an increased number of projects, but also qualitative, with a focus on

innovation and sustainability. The symbiotic relationship between the government's vision, financial backing, and industry adaptability creates a conducive environment for stakeholders to thrive in the coming decade.

Status of Transportation Connectivity- after 2014

The government has placed a substantial emphasis on advancing infrastructure development, considering it a pivotal driver towards achieving the ambitious goal of propelling India into a $5 trillion economy by 2025. As outlined by the DEA (Dept. of Economic Affairs), Government of India, a significant injection of $4.5 trillion into infrastructure development by 2030 is deemed essential. This strategic investment is not only critical for realizing the immediate target of a $5 trillion economy but is also envisioned as a sustained catalyst for maintaining robust economic growth in the foreseeable future.

The recognition of infrastructure as a linchpin in economic expansion underscores the government's commitment to fostering a conducive environment for growth. This substantial financial commitment is poised to fuel a spectrum of projects, spanning transportation, energy, communication, and other critical sectors, thereby catalyzing comprehensive national development.

Road Transport

Road transport plays a paramount role in India, holding sway not only in terms of its significant traffic share but also in its substantial contribution to the nation's economic landscape. Beyond merely enabling the transportation of goods and passengers, road transport assumes a pivotal role in fostering balanced development of socio-economic across various regions within India. Additionally, it serves as a crucial catalyst for the integration of social and economic facets, propelling the overall development of the nation the heightened importance of road transport in both passenger and freight traffic stems from its advantages in easy accessibility, operational flexibility, door-to-door service, and reliability, surpassing alternative modes.

With an extensive road network spanning approximately 66.71 lakh km, India boasts the world's second-largest road infrastructure, underscoring its considerable reach and connectivity (Source- "Basic Road Statistics of India).

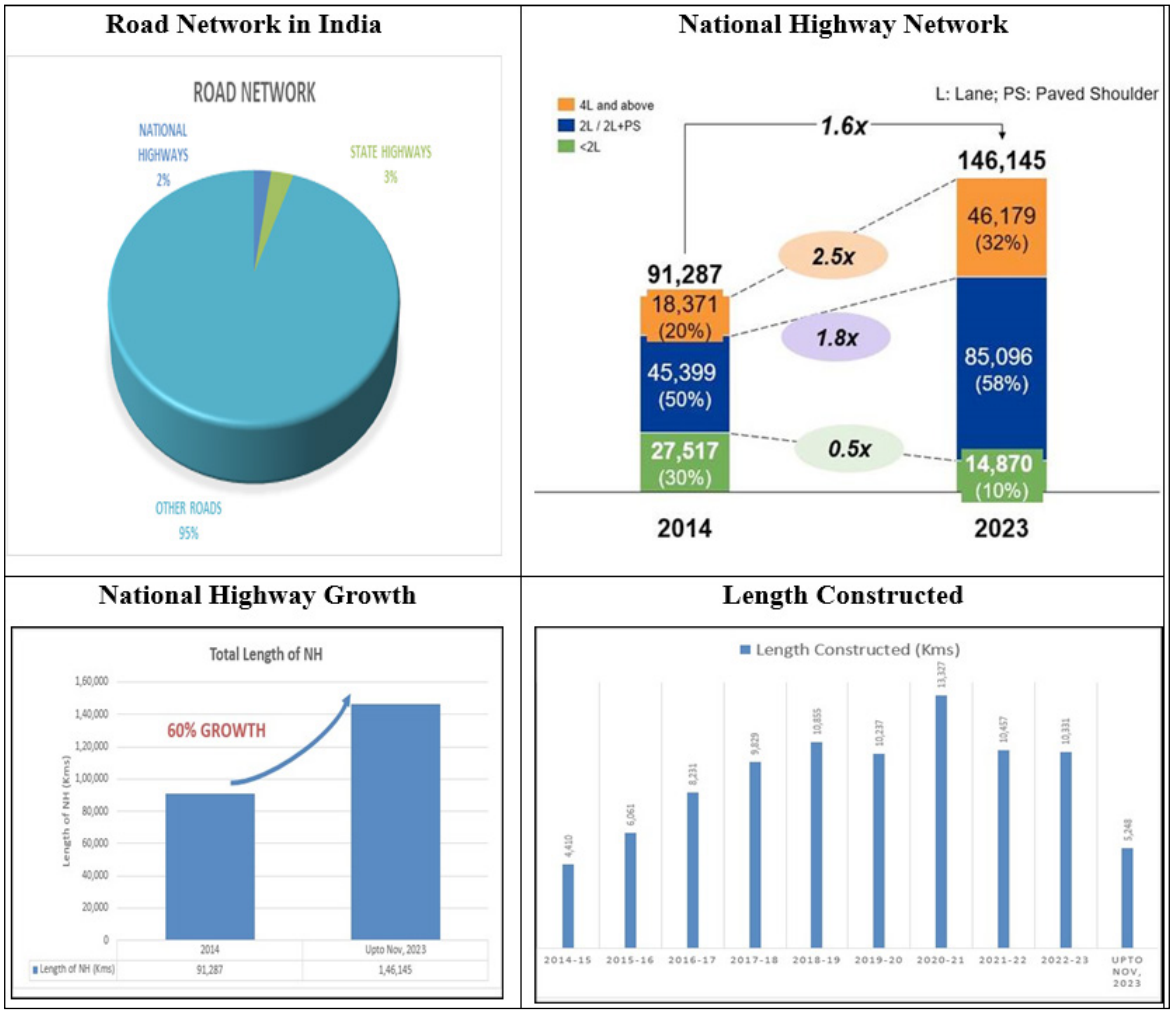
According to Nitin Gadkari, the National Highways' cumulative length witnessed substantial growth, surging from 91,287 km in 2013-14 to 1,46,145 km in 2022-23—an impressive increase of over 59% during this timeframe (Fig. 3). The National Highway (NH) network experienced a substantial growth of approximately 60%, expanding from 91,287 km in 2014 to reach 1,46,145 km by the year 2023. The implementation of FASTag has led to a substantial surge in toll collection, as per the minister's disclosure. Toll revenues escalated from ₹ 4,770 crores in 2013-14 to a noteworthy ₹ 41,342 crores in 2022-23. The government has set an ambitious target of reaching ₹ 1,30,000 crores in toll revenue by the year 2030.

The pivotal role of National Highways in fostering the growth and development of India is underscored by their facilitation of seamless movement for both freight and passengers. These highways serve as vital connectors, linking people and facilitating a spectrum of economic activities essential for overall progress.

Rail Transport

In 2023, India's railway system experienced a significant modernization and expansion drive, marking a transformative era with modernized stations, advanced trains, and the integration of modern technology. The year showcased remarkable progress for Indian Railways across various aspects, including freight loading, revenue generation, the introduction of new Vande Bharat Trains, capital expenditure allocation, station redevelopment, Kavach implementation, track laying, and electrification. Over the past four years, capital expenditure on railway infrastructure has consistently risen, reaching ₹ 2.5 lakh crore in FY22-23—a substantial 29% increase from the previous year. Notably, the electrification of railway tracks has made significant strides, covering 37,011 route kilometers in the past nine years.

Record Budget Allocation: For the fiscal year 2023-24, the Gross Budgetary Support (GBS) has witnessed a substantial increase, reaching ₹ 2.4 Lakh Crore. This represents a remarkable growth, being 30 times higher than the GBS in 2004-05, which



Source: *Annual Reports of Ministry of Road, Transport and Highways.*

Fig. 3: Development of Transportation Connectivity in India

stood at ₹ 8,000 Crore, and 8 times higher than the GBS in 2013-14, which amounted to ₹ 29,055 Crore in the Railway budget.

Record New tracks: Between 2004 and 2014, a total of 14,985 Route Kilometers (RKM) of rail track work was completed. In contrast, the subsequent nine years (2014-2023) saw a notable acceleration, with a significant 25,871 RKM of track laying work accomplished. In the fiscal year 2022-23, the daily track laying achievement reached 14 km, and the current target for the year is to further enhance this pace to achieve 16 km per day.

Record Electrification-Up to 2014, a significant achievement marked the electrification of 21,801 kilometers within the broad gauge network. Fast-forward to November 2023, the entirety of the Broad Gauge (BG) network, spanning an impressive 60,814 kilometers, has been successfully electrified. Noteworthy progress is evident in 14 states and Union Territories, namely Delhi, Uttar Pradesh, Haryana, Chandigarh, Himachal Pradesh, Chhattisgarh, Jammu & Kashmir, Meghalaya, Odisha, Jharkhand, Telangana, Madhya Pradesh, Uttarakhand and Puducherry, where rail tracks boast complete electrification, demonstrating a substantial leap in modernization efforts.

Record Freight & Passenger Revenue

In the fiscal year 2022-23, Indian Railways achieved a notable milestone by originating a freight loading of 1512 million tonnes (MT). This accomplishment signifies a substantial growth of 7%, with an incremental loading of 94 MT compared to the previous record of 1418 MT achieved in FY 2021-22, showcasing the railway's commitment to continuous improvement and efficiency in freight operations.

In 2022-23, Indian Railways generated a revenue of ₹ 1,60,158.48 Crores from freight services, emphasizing the significant contribution of freight operations to the financial performance of the railways during that period.

Indian Railways demonstrated commendable performance in the passenger segment, witnessing a remarkable surge of over 80%, as the number of passengers utilizing its services increased to 623 crores in FY 2022-23, compared to 344 crores in the preceding fiscal year 2021-22. This substantial growth underscores the railways' effectiveness in catering to the increasing demand for passenger transportation.

Air Transport

Aviation Sector of India is undergoing a rapid ascent, driven by escalating demand and steadfast government initiatives fostering its expansion. With the implementation of favorable policies, the industry has experienced transformation a notable transformation, surpassing previous constraints to emerge as a dynamic and competitive force. This transformative trajectory has elevated India to a prominent position in the global aviation landscape, solidifying its standing as the world's third-largest domestic aviation market, following the USA and China.

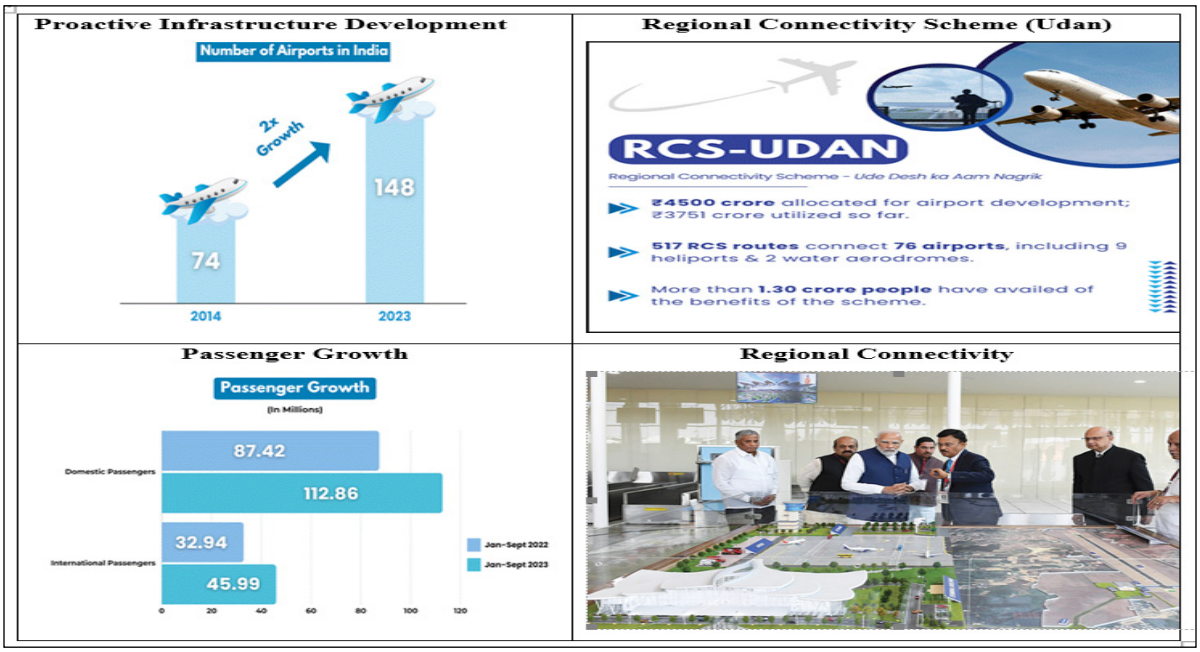
"The last 9 years have been transformative for India's aviation sector. Existing airports have been modernized, new airports have been built at quick pace and record number of people are flying." P M Narendra Modi.

Over the past nine years, India's aviation sector has undergone substantial expansion, marked by a doubling of operational airports from 74 in 2014 to 148 in April 2023 (Fig. 4). This notable growth can be attributed to the impetus provided by government policies and initiatives, serving as the catalyst for the industry's positive trajectory.

Fig. 4 clearly depicts the RCS-UDAN initiative has played a pivotal role in fostering the growth of the civil aviation industry, leading to the emergence of four new and successful airlines within the last six years. Experiencing a notable revival post-Covid, this sector is witnessing a noteworthy comeback propelled due to an increase in passenger requests

Status of Energy Sector - after 2014

Following a decade, the power supply deficit stood at a remarkable 4.5%. Nevertheless, through governmental initiatives, an impressive 185GW of generation capacity has been accumulated, leading to a shift from a power deficit to a power surplus in the country. Presently, the accumulated installed capacity has reached 417GW, almost twice the



Source: *Annual Reports of Ministry of Civil Aviation.*

Fig. 4: Development of Aviation Connectivity and Infrastructure in India

peak demand of 222GW (Table 1). Consequently, India has transitioned to exporting power to its neighboring nations. Significant strides have been achieved in the transmission sector as well. Starting from 2013, an expansive network of transmission lines, covering almost two lakh circuit kilometers, has been developed. This network seamlessly connects the entire nation into a unified grid, operating at a single frequency and possessing the capacity to transfer 112 GW of power from one corner of the country to another. This is a substantial increase from the 36 GW capability in 2014.

Before ten years, Electricity was absent in over 18,000 villages and numerous hamlets, but now there is no corner left behind the electricity. A total of 2.86 crores homes have been connected in last ten years. In enhancing distribution systems, the government executed comprehensive schemes throughout all states, with an approved budget exceeding ₹ Two lakh crores. This encompassed incorporating new substations, enhancing existing ones, deploying transformers, and building or replacing thousands of kilometers of LT and HT lines. These initiatives have notably enhanced power accessibility in rural regions, elevating the average availability from 12 hours in 2015 to 22.5 hours presently. Simultaneously, urban areas now experience an average power supply of 23.5 hours.

In 2015, government aimed to achieve a renewable energy capacity installation target of 175 GW by the year 2022 (Fig. 5). India has fulfilled its pledge to attain 40% of power generation capacity from renewables by 2030, accomplishing this goal nine year ahead of schedule. At present, non-fossil fuel sources constitute 43% of the accumulated power generation capacity, amounting to 180 GW.

Status of Water Supply and Sanitation after 2014

As per recent official data available, Tap water connections have been extended to 11.49 crore Indian households and central government has provided the supply of potable water to over 1.53 lakh approximately villages to ensure access to drinking water for everyone (Table 2). As of March 2021, there was a noteworthy increase in piped water supply to schools, community centers, aspirational villages, blocks, cities, and districts. This progress followed the government's allocation of ₹ 70,000 crore for this initiative in the financial year 2022-23.

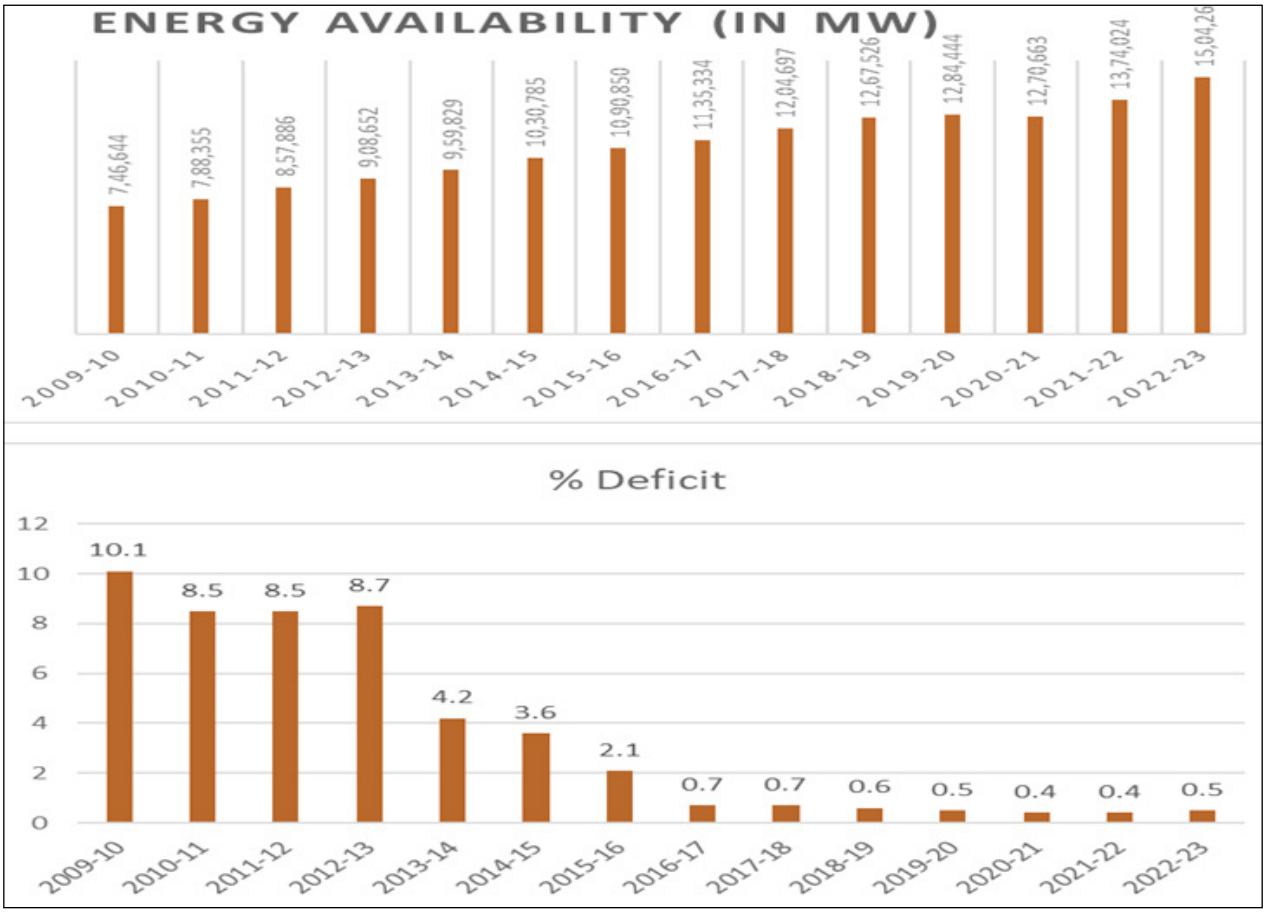
According to the, UNWWDR (2023) "26% of the global population lacks access to safe drinking water, and 46% do not have access to fundamental sanitation".

The central government is executing diverse programs such as the, Atal Bhujal Yojana, Jal Jeevan Mission Namami Gange, PMKSY and Mapping of

Table 1: Energy Generation, Requirement, Availability and Deficit

Sl. No.	Year	Total Generation	% of Growth	Energy Requirement	Energy Availability	Deficit	% Deficit
1	2009-10	808.498	7.56	8,30,594	7,46,644	-83,950	-10.1
2	2010-11	850.387	5.59	8,61,591	7,88,355	-73,236	-8.5
3	2011-12	928.113	9.14	9,37,199	8,57,886	-79,313	-8.5
4	2012-13	969.506	4.46	9,95,557	9,08,652	-86,905	-8.7
5	2013-14	1,020.20	5.23	10,02,257	9,59,829	-42,428	-4.2
6	2014-15	1,110.39	8.84	10,68,923	10,30,785	-38,138	-3.6
7	2015-16	1,173.60	5.69	11,14,408	10,90,850	-23,558	-2.1
8	2016-17	1,241.69	5.8	11,42,929	11,35,334	-7,595	-0.7
9	2017-18	1308.146	5.35	12,13,326	12,04,697	-8,629	-0.7
10	2018-19	1,376.10	5.19	12,74,595	12,67,526	-7070	-0.6
11	2019-20	1,389.10	0.95	12,91,010	12,84,444	-6,566	-0.5
12	2020-21	1,381.86	-0.52	12,75,534	12,70,663	-4,871	-0.4
13	2021-22	1,491.86	7.96	13,79,812	13,74,024	-5,787	-0.4
14	2022-23	1,624.16	8.87	15,11,847	15,04,264	-7,583	-0.5

Source: *Annual Reports Ministry of Power, GOI, 2024.*



Source: *Annual Reports Ministry of Power, GOI, 2024.*

Fig. 5: Status of Energy Availability and Deficit in India

Table 2: State Wise Household Tap Water Supply and Sanitation Status

Sl. No.	States/ UT	No of Households	Tap Water Supply Covering Households	Tap Water Supply Covering Households (%)	No. of individual Household Latrines between 2014 to 2023
1	A & N Islands	62,037	62,037	100	22,378
2	Andhra Pradesh	95,45,821	69,51,376	72.82	42,71,773
3	Arunachal Pradesh	2,28,545	2,28,539	99.99	1,44,608
4	Assam	70,39,936	51,36,305	72.96	40,05,740
5	Bihar	1,66,30,250	1,60,34,186	96.42	1,21,26,567
6	Chhattisgarh	50,00,371	38,41,161	76.82	33,78,655
7	D&NH and D&D	85,156	85,156	100	21,906
8	Goa	2,63,002	2,63,002	100	28,637
9	Gujarat	91,18,449	91,18,449	100	41,89,006
10	Haryana	30,41,314	30,41,314	100	6,89,186
11	Himachal Pradesh	17,08,727	17,08,727	100	1,91,546
12	Jammu & Kashmir	18,71,511	14,35,575	76.71	12,61,757
13	Jharkhand	62,03,305	30,80,754	49.66	41,29,545
14	Karnataka	1,01,16,046	74,53,678	73.68	46,31,316
15	Kerala	70,79,445	36,91,554	52.14	2,39,360
16	Ladakh	40,808	37,674	92.32	17,241

17	Lakshadweep	13,370	10,568	79.04	NA
18	Madhya Pradesh	1,11,85,645	67,29,206	60.16	71,93,976
19	Maharashtra	1,46,64,263	1,22,74,909	83.71	67,93,541
20	Manipur	4,51,566	3,52,083	77.97	2,68,348
21	Meghalaya	6,51,412	4,83,918	74.29	2,64,828
22	Mizoram	1,33,060	1,32,898	99.88	44,141
23	Nagaland	3,69,204	3,10,067	83.98	1,41,246
24	Odisha	88,63,458	62,94,659	71.02	70,79,564
25	Puducherry	1,14,969	1,14,969	100	29,628
26	Punjab	34,25,723	34,25,723	100	5,11,223
27	Rajasthan	1,06,65,229	49,25,840	46.19	81,20,658
28	Sikkim	1,31,880	1,17,485	89.08	11,209
29	Tamil Nadu	1,25,25,692	1,00,61,068	80.32	55,11,791
30	Telangana	53,98,219	53,98,219	100	31,01,859
31	Tripura	7,46,985	5,70,199	76.33	4,40,514
32	Uttar Pradesh	2,63,67,805	2,04,54,973	77.58	2,22,10,649
33	Uttarakhand	14,54,582	13,15,522	90.44	5,24,076
34	West Bengal	1,75,02,701	74,85,909	42.77	74,49,451
Total		**19,27,00,486**	**14,26,27,702**	**74.02**	**10,90,45,923**

Source: *Jal Jeevan Mission Dashboard & Press Information Bureau, GOI (2024).*

National Aquifer. These initiatives aim at water conservation and elevating the groundwater level. Since the commencement of the Jal Jeevan Mission (2019), supply of tap water has been extended to over 5.5 crore households.

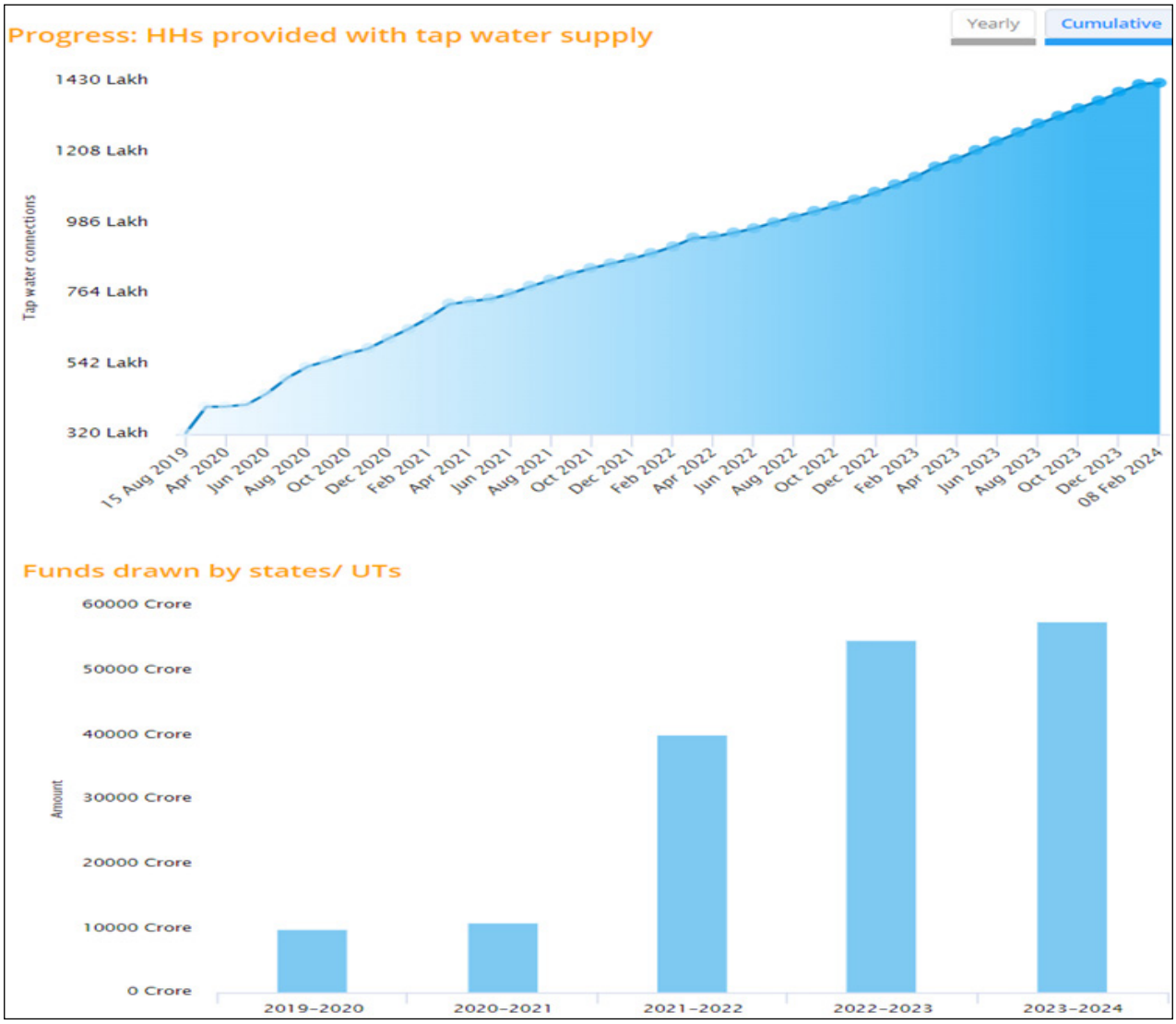
Smt Nirmala Sitharaman (MoF), asserts that the Jal Jeevan Mission aims to ensure sufficient access to potable water by providing individual household tap connections to rural population till 2024. This initiative is expected to benefit over 19 crore rural families, comprising more than 90 crore individuals. (*The Economic Survey*, 2021-22).

Providing specifics, the Survey notes that in 2019, out of approximately 18.93 crore rural households, around 3.23 crore (17 percent) had access to tap water connections within their homes (Fig. 6). As of January 2, 2022, tap water supply has been extended to 5,51,93,885 households since the inception of the mission. 06 States/UT have attained the esteemed milestone of providing tap water supply to 100 percent of households. These regions include, Telangana, Goa, Pondicherry, Dadra and Nagar Haveli, Andaman and Nicobar Islands, Haryana and Daman and Diu. Similarly, 128893 villages, 62748 panchayts, 1017 blocks and 83 districts, successfully attained the status of providing tap water supply to 100 percent of households. As of January 19, 2022, the Jal Jeevan Mission has facilitated water supply to 8,39,443 schools.

Sanitation

In 2015, basic sanitation was accessible to 44%, with urban areas at 65% and rural areas at 34%. By 2017, the coverage of at least basic sanitation had risen to 59.5%. Over Significant strides have been achieved in rural sanitation under SBM-G since its commencement on October 2, 2014. From its initiation until December 28, 2021, over 10.87 crore toilets have been constructed in rural areas of India (Table 2). The implementation of Open Defecation Free Plus under Phase II of SBM (G) commenced in 2020-21 and is set to continue until 2024-25, aiming to achieve Open Defecation Free status for all villages. In the fiscal year 2021-22 (as of October 25, 2021), a comprehensive effort has resulted in the construction of 7.17 lakh Individual Household Latrines to accommodate recently formed families. Additionally, 19,159 Community Sanitary Complexes have been built, and the Open Defecation Free (ODF) Plus status has been achieved in 2,194 villages.

The period from 2014 to 2019, the Indian Government asserts the construction of approximately 110 million toilets nationwide. Consequently, the percentage of



Source: *Jal Jeevan Mission Dashboard (2024)*

Fig. 6: Status of Annual Tap Water Progress and Fund Drawn

basic sanitation coverage surged from 38.6% in 2014 (Oct) to 93.4% in 2019.

Over the years, the predominant sanitation solution for the majority of Indians in rural areas has been on-site facilities, primarily in the form of pit latrines. The government has been making substantial investments in the construction of sanitation units through a nationwide initiative known as the SBM. From 2014 to 2020, the GoI successfully ensured that household toilets were accessible to more than 99% of the population. This equates to the construction of a total of 110 million toilets since the year 2014.

CONCLUSION

On the analysis of various sectors discussed above, this can be concluded easily that the Government is putting its best efforts in various schemes of infrastructure development in terms of financing & implementing and the results are also showing positive and concrete development. But it is also considerable that urban areas significantly contribute to the GDP, and recent population projections indicate a trend towards approximately 40 percent urbanization in the forthcoming years, so there is utmost necessity to focus on infrastructure development. This is not only essential to maintain India's economic growth, but also be critical for comprehensive growth however this would not be possible between proper balancing and bridging between urban & rural sectors.

The agriculture is backbone of our economy as it affects our all walks of life such as social, economic, and industrial. The agricultural development is not possible without developing rural infrastructure supported with rapid road and rail transport, continuous power and water supply, weather forecasting, information exchange and market development. This needs a sincere efforts and investments in infrastructure development from the Government.

The investments in infrastructure necessitate sufficient capacity at every government level to conceive, develop, and sustain physical assets. The Indian government needs to take measures to offer essential fiscal support for overseeing the processes of industrialization and urbanization in the country. Simultaneously, focus should be directed towards the establishment of a robust long-term debt market and exploring alternative financing methods for infrastructure, such as the PPP model, with a comprehensive consideration of the overall economic growth.

REFERENCES

Agénor, P.-R. and Moreno-Dodson, B. 2006. Public infrastructure and growth: New channels and policy implications (World Bank Policy Research Working Paper No. 4064). Washington, DC: The World Bank. Retrieved from http:// documents.worldbank.org/curated/en/485431468141267544/Public-infrastructure-and-growth-new-channelsand-policy-implications

Asian Development Bank. 2009. Infrastructure for a seamless Asia. Tokyo: Author. Retrieved from https://www.adb.org/sites/default/files/publication/159348/adbi-infrastructure-seamless-asia.pdf

Bansal Rajat, Ali Nasir, and Sharma Abhishek. 2019. 'Identification of Critical Factors Affecting Infrastructure Project Performance in India'. *IRJET*, **6**(9): 1294–99.

Bhattacharya, A., Romani, M. and Nicholas, S. 2012. Infrastructure for development: Meeting the challenge, policy paper, centre for climate change economics and policy Grantham research institute on climate change and the environment, G-24, Mimeo. Retrieved from http://www.lse.ac.uk/GranthamInstitute/wp-content/uploads/2014/03/PP-infrastructure-for-development-meeting-the-challenge.pdf

Calderón, C. and Servén, L. 2004. Examining the impact of infrastructure development on economic growth and income distribution (Policy Research Working Paper No. 3400). Retrieved from http://documents.worldbank.org/curated/en/438751468753289185/pdf/WPS3400.pdf

Canning, D. and Pedroni, P. 2008. Infrastructure, long run economic growth and causality tests for cointegrated panels. *The Manchester School*, **76**: 504–527.

Chou Jui-Sheng, Tserng H. Ping, Lin Chieh, and Huang Wen-Haw. 2015. 'Strategic Governance for Modeling Institutional Framework of Public–Private Partnerships'. *Cities*, **42**(B): 204–11.

Donaldson, D. 2010. Railroads of the RAJ: Estimating the impact of transportation infrastructure (NBER Working Paper No. 16487). Retrieved from https://www.nber.org/papers/w16487.pdf

Dutz Mark, Harris Clive, Dhingra Inderbir, and Shugart Chris. 2006. 'Public-Private Partnership Units: What Are They, and What Do They Do?'

Gramlich, E. 1994. "Infrastructure Investment: A Review Essay." *Journal of Economic Literature*, **32**: 1176–96.

Khan, H.R. 2015. Financing for infrastructure: Current issues and emerging challenges. Keynote address delivered by Shri Harun R. Khan, Deputy Governor at the Infrastructure Group Conclave of the SBICAP, August 2015. Retrieved from https://www.rbi.org.in/scripts/BS_SpeechesView.aspx?Id=968

OECD. 2007. Infrastructure to 2030 (Vol. 2): Mapping policy for electricity, water and transport. Paris: OECD Publishing, July 2007. Retrieved from https://www.oecd.org/futures/infrastructureto2030/40953164.pdf

Panigrahi, S. and Beura, D. 2013. 'An Exploratory Study on Infrastructure Financing in India'. *International Journal of Science and Research*, **4**(3): 405–8.

Agrawal, R. "Review of Infrastructure Development and Its Financing in India", *Paradigm*, **24**(1): 109–126.

Sahoo, P. and Dash, R.K. 2009. 'Infrastructure Development and Economic Growth in India'. *Journal of the Asia Pacific Economy*, **14**(4): 351–65.

Sharma, M. and Bindal, A. 2014. 'Public-Private Partnership'. *International Journal of Research*, **1**(7): 1270–4.

Tagariya Mukesh, B. and Dalvadi Yagnesh, M. 2019. 'Measuring Shareholders Returns of Selected Infrastructure Companies in India'. *Pramana Research Journal*, **9**(5): 318–26.

World Bank. 2007. *Public-Private Partnership Units: Lessons for Their Design and Use in Infrastructure*. Washington, DC: World Bank. www.pppindia.gov.in

https://economictimes.indiatimes.com/news/economy/infrastructure/almost-50000-km-of-national-highways-added-in-9-years/articleshow/99707174.cms?utm_source=contentofinterest&utm_medium=text&utm_campaign=cppst

http://timesofindia.indiatimes.com/articleshow/96241231.cms?from=mdr&utm_source=contentofinterest&utm_medium=text&utm_campaign=cppst

https://www.civilaviation.gov.in/sites/default/files/migration/AR-Eng-2020-21.pdf

https://www.civilaviation.gov.in/sites/default/files/migration/annual_report-2017_18_en.pdf

https://indianrailways.gov.in/railwayboard/uploads/directorate/stat_econ/pdf/Indian%20Railways%20Annual%20Report%20%26%20Accounts%20English%202021-22_web_Final.pdf

https://morth.nic.in/sites/default/files/MoRTH%20Annual%20Report%20for%20the%20Year%202022-23%20in%20English.pdf

https://morth.nic.in/sites/default/files/Annual%20Report_21-22-1.pdf

https://powermin.gov.in/sites/default/files/uploads/MOP_Annual_Report_Eng_2022-23.pdf

https://powermin.gov.in/sites/default/files/uploads/MOP_Annual_Report_Eng_2021-22.pdf

https://www.niti.gov.in/sites/default/files/2023-02/Annual-Report-2022-2023-English_1.pdf

https://www.niti.gov.in/sites/default/files/2022-02/Annual_Report_2021_2022_%28English%29_22022022.pdf