



NATIONAL INFRASTRUCTURE PIPELINE:

AN ANALYSIS OF PPP PROJECTS

National Infrastructure Pipeline: An analysis of PPP projects

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Table of Contents

1. Introduction-----	01
1.1 Lack of Actual Private Investment vis-a-vis Twelfth 5-year plan projections -----	02
1.2 Reasons behind lack of private investment -----	03
1.3 Union & Centre’s Expenditure on infrastructure and PPP initiatives -----	05
1.4 National Investment Pipeline -----	07
2. Methodology -----	10
3. Data & Analysis -----	11
3.1 Sources of Funds -----	15
3.2 Mode of PPP Implementation -----	21
4. Project Details in Sectors -----	23
4.1 Urban Public Transport -----	23
4.2 Roads & Bridges -----	24
4. Concluding Remarks -----	27

Abbreviations used

NIP	-	National Infrastructure Pipeline
NPA	-	Non-performing Assets
BE	-	Budget Estimates
RE	-	Revised Estimates
PPPAC	-	Public Private Partnership Appraisal Committee
PPP	-	Public Private Partnership
VGF	-	Viability Gap Funding
BOLT	-	Build-Own-Lease-Transfer
BOO	-	Build-Own-Operate
BOOT	-	Build-Own-Operate-Transfer
BOT	-	Build-Own-Transfer
BTL	-	Build-Transfer-Lease
DBFO	-	Design-Build-Finance-Operate
DBFOT	-	Design-Build-Finance-Operate-Transfer
HAM	-	Hybrid Annuity Model

Definitions

Build-Lease-Transfer (BLT) and Build-Own-Lease-Transfer (BOLT) involve the private sector building and owning a facility (in case of BOLT), leasing it to the public sector entity and transferring the facility to the public sector entity at the end of the lease period. In this variant, during the lease period, the public sector entity will make monthly or annual lease payments to the private sector entity for using the facility and as a means to repay the investment made. Here, the asset is owned by the private sector entity and then transferred to the public sector entity at the end of lease period

Build-Transfer-Lease (BTL) involves the private sector partner building an asset, transferring it to the government and then leasing it back. In this variant, the private sector delivers the service, assumes demand / traffic risk and collects user charges from consumers.

Build-operate-transfer (BOT) model has a public sector entity, the contracting authority, defining and granting rights to a private sector partner to build and operate an infrastructure facility/ service for a fixed duration or concession period (typically a long period of 15-30 years). At the end of the fixed duration/ concession period, the asset and its operations are transferred to the contracting authority.

Design-Build-Finance-Operate-Transfer (DBFOT) is a variant of the BOT model with additional flexibility for the private partner with respect to undertaking detailed design of the project during the construction period, based on the output specifications defined upfront in the concession agreement. In case of DBFOT also, the private partner builds, finances and operates the facility for a fixed duration or concession period, and then, the asset is transferred to the public sector authority. Throughout the concession period, the asset is owned by the public sector entity and operated by the private sector partner.

Under **Design-Build-Finance-Operate (DBFO)**, the private party assumes the entire responsibility for the design, construction, finance, and operation of the project for the period of concession.

Under **Build-Own-Operate (BOO)**, the private partner is responsible for construction and O&M of the asset. It also has the responsibility of providing the service/ facility to the users. The ownership of the asset is perpetually with the private partner.

Under **Build-Own-Operate-Transfer (BOOT)**, the public-sector partner contracts with a private developer - typically a large corporation or consortium of businesses with specific expertise - to design and implement a large project. The public-sector partner may provide limited funding or some other benefit (such as tax exempt status) but the private-sector partner assumes the risks associated with planning, constructing, operating and maintaining the project for a specified time period and is then transferred to the public entity.

Management Contract is a contractual arrangement between a public sector unit and a private sector entity, where the public sector entity owns a particular infrastructure asset and the private sector entity is responsible for the O&M of a part or the whole of the asset/ facility or service. Under the management contracts, the obligation to provide service remains with the public authority, but the day-to-day management of the asset is vested with the private sector. The duration of the arrangement is typically 3-5 years.

Hybrid Annuity Model (HAM) is a mix of the EPC and BOT models. The government will contribute to 40 per cent of the project cost in the first five years through annual payments (annuity). The balance 60 per cent is arranged by the developer, and is recovered as variable annuity amount after the completion of the project from NHAI which collects revenue.

Cost-plus contract is an agreement to reimburse a company for expenses incurred plus a specific amount of profit, usually stated as a percentage of the contract's full price.

1. INTRODUCTION

It is widely accepted that infrastructure is key to India's economic growth. The Reserve Bank of India (RBI) has termed it as an important pillar for the continued economic growth in the country, with focus on developing world class infrastructure. The National Infrastructure Pipeline (NIP) was launched in December 2019, for a period of 5 years, and aims to improve project preparation and attract investments into infrastructure. As per the Task Force Report of National Infrastructure Pipeline², which was constituted to identify, analyse and suggest reforms in the infrastructure sector as part of the NIP, it is estimated that India would need to spend US\$ 4.5 trillion on infrastructure by 2030 to sustain its growth rate and to realise the vision of a US\$ 5 trillion economy by 2025.

As will be discussed in detail in this report later, the need for the National Infrastructure Pipeline (NIP), and other initiatives, to encourage private participation in infrastructure development, at the intersection of pooling financial resources and technical expertise, was first observed as the Twelfth 5-year Plan (2012-17) projections for infrastructure investment saw a downward revision due to lesser actual private investments vis-a-vis the projections. According to the revised projections, investment (as a percentage of GDP) for the Twelfth Plan was down to 6.11 per cent, lower than the original projection of 8.18 per cent and 7 per cent achieved in the Eleventh Plan.

The quality of infrastructure is also of utmost importance given that expenditure on quality infrastructure in itself contributes to aggregate demand and growth, and also positively affects overall productivity, through creation of production facilities and encouraging economic activities or by reducing transaction costs and trade costs by improving competitiveness. More importantly, various infrastructural sectors, such as roads, ports, transport, railways, energy generation and transmission, are interlinked and share forward and backward linkages with each other and even other industries such as manufacturing and service.

As Hirschman had defined, a forward linkage is created when investment in a particular project encourages investment in other sectors which are associated with subsequent stages of production and a backward linkage is created when a project encourages investment in facilities that enable the project to succeed, i.e. the industries from where the industry sources its factor of production from. This suggests that the initial investments from public, union and state, in quality infrastructure has the potential to crowd 'in' private investment in the various infrastructural sectors and at various stages of production.

In this context, the task force for NIP also noted that India ranked 68th, out of 141, in the Global Competitiveness Index, 2019³. The ranking is determined on the basis of countries' performance on various indicators such as institutions, infrastructure, macroeconomic stability, health and others. In infrastructure, India was ranked 70th out of 141 countries. The report states, "Quality of infrastructure is among the biggest hurdles facing the Indian government's ambitious programme, called "Make in India," which aims to improve the nation's manufacturing capabilities and support higher growth for generating employment."

² <https://static.pib.gov.in/WriteReadData/userfiles/DEA%20IPF%20NIP%20Report%20Vol%201.pdf>

³ https://www3.weforum.org/docs/WEF_TheGlobalCompetitivenessReport2019.pdf

1.1 Lack of Actual Private Investment vis-a-vis Twelfth 5-year plan projections

The Twelfth 5-year Plan (2012-17) had projected an investment of Rs. 55,74,663 crore, with a share of 48 per cent from the private sector over the 5 years. But, as against the Annual Plan projection of Rs. 7,51,012 crore in FY 2012-13, the actual investment turned out to be Rs. 5,50,167 crore, about 74 per cent of the projected amount⁴. Similarly, against the Annual Plan projection of Rs. 8,87,454 crore in FY 2013-14, the investment was Rs. 6,25,020 crore, implying an achievement of 71 per cent. Consequently, revised projections for the coming 3 years were calculated, on the basis of which the revised projections for the Twelfth Plan were done.

Sectors	Share	Eleventh Plan (Actual)	Twelfth Plan (Projections)	Revised Projections of Twelfth Plan						
				2012-13 (Actual)	2013-14 (Anti Exp)	2014-15 (RE/Anti. Exp/Projections.)	2015-16 (BE/Projections)	2016-17 (Projections)	Twelfth Plan	
Electricity	Centre	2,14,955	4,40,796	57,729	64,951	64,614	74,673	82,141	3,44,109	
	States	1,77,155	3,47,043	45,872	57,466	63,212	69,533	76,487	3,12,570	
	Private	3,01,370	7,13,827	90,142	65,657	78,788	94,546	1,13,455	4,42,588	
Renewable Energy	Centre	10,080	33,003	2,983	1,847	3,888	3,661	4,027	16,405	
	States	952	5,425	1,420	1,777	1,955	2,151	2,366	9,668	
	Private	78,572	2,80,198	21,077	23,202	25,721	32,152	40,190	1,42,342	
Roads & Bridges	Centre	1,95,618	3,36,094	29,935	41,393	34,985	89,792	1,07,751	3,03,856	
	States	1,69,675	2,74,433	48,591	53,064	58,371	64,208	70,629	2,94,863	
	Private	94,992	3,04,010	27,129	29,591	32,895	36,185	39,803	1,65,604	
Telecommunications	Centre	80,828	72,110	3,840	13,951	18,149	16,887	18,576	71,403	
	Private	2,98,586	8,71,789	38,484	58,034	80,432	1,05,156	1,00,283	3,82,388	
Railways	Centre	1,90,849	4,19,221	50,383	53,989	58,719	68,550	81,675	3,13,316	
	Private	9,090	1,00,000	-	-	-	24,969	39,325	64,294	
MRTS	Centre	21,786	39,700	5,101	7,959	9,380	11,133	12,246	45,819	
	States	15,144	31,901	4,615	5,634	4,567	5,024	5,526	25,366	
	Private	6,528	52,557	2,675	2,743	3,324	3,656	4,021	16,420	
Irrigation (incl. Water Supply & Sanitation)	Centre	14,040	42,171	3,405	2,805	7,749	6,937	7,631	28,527	
	States	2,14,696	4,62,200	54,257	71,029	78,132	78,132	85,945	3,67,495	
Ports (incl. ILW)	Centre	46,050	98,382	12,988	11,935	12,100	6,236	6,860	50,119	
	States	70,722	1,50,582	19,804	22,264	24,491	26,940	29,634	1,23,133	
	Private	164	6,355	235	448	864	864	864	3,275	
Airports	Centre	6,033	20,670	1,924	3,779	2,505	2,800	3,080	14,088	
	States	3,243	5,563	1,169	1,021	1,123	1,236	1,359	5,909	
	Private	39,569	1,71,548	6,522	10,446	8,256	9,907	11,888	47,019	
Storage	Centre	11,749	15,041	1,800	1,076	1,642	1,688	2,002	8,208	
	States	1,030	2,449	-	106	112	118	125	461	
	Private	22,758	70,224	3,237	3,431	3,775	4,152	4,567	19,163	
Oil & Gas pipelines	Centre	6,059	12,280	2,624	1,906	2,731	1,572	1,729	10,561	
	States	2,131	4,198	1,396	1,386	1,525	1,677	1,845	7,829	
	Private	13,240	41,963	2,391	4,203	4,833	5,558	6,392	23,378	
Total	Centre	32,726	71,594	5,865	5,387	6,923	7,616	8,377	34,168	
	States	4,070	5,969	405	267	1,559	1,715	1,887	5,833	
	Private	23,284	71,370	2,168	2,268	4,885	5,374	5,911	20,606	
Grand Total	Centre	8,30,774	16,01,061	1,78,577	2,10,979	2,24,743	3,17,356	3,58,071	12,89,727	
	States	6,58,818	12,89,762	1,77,529	2,14,016	2,35,047	2,50,733	2,75,802	11,53,127	
	Private	8,88,155	26,83,840	1,94,061	2,00,025	2,49,495	3,03,330	3,34,312	12,81,223	
GDP (at market price)		23,77,747	55,74,663	5,50,167	6,25,020	7,09,285	8,71,419	9,68,185	37,24,077	
Investment as % age of GDP (at market price)		7.02	8.18	5.51	5.51	5.66	6.2	6.1	5.84	

Table 1.1: Sector-wise Investments as per twelfth plan and revised projections⁵

On aggregate, the revised projections of investment for the Twelfth Plan were Rs. 37,24,077 crores, which is about 66 per cent of the original Plan projections of Rs. 55,74,663 crore.

⁴ https://www.thehinducentre.com/multimedia/archive/03189/Appraisal_Document_3189085a.pdf

⁵ https://www.thehinducentre.com/multimedia/archive/03189/Appraisal_Document_3189085a.pdf (pg 178)

The revised projections of the share of public investment (Centre & States) stood at 88% of the target (revised from Rs. 28,90,823 crore to Rs. 24,42,854 crore), while the revision in private investment is estimated at 34% of the target (revised from Rs. 26,83,840 crore to Rs. 12,81,223 crore). **It was evident that the downward revision of investment projections was largely due to a shortfall in realising the projected private sector investments of 48% amounting to Rs 26,83,840 crores, which now stood at 34%, amounting to Rs 12,81,223 crores - also lower than the actual share of private investment in the Eleventh Plan (37.5%).**

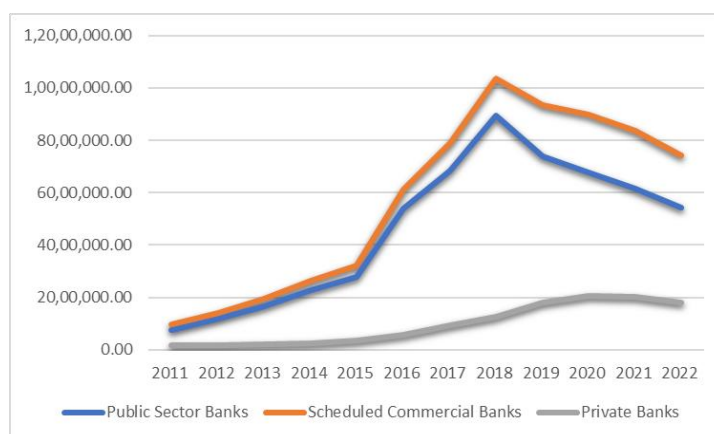
1.2 Reasons behind lack of private investment

The Appraisal Document of the Twelfth 5-year plan⁶, also identified the principal reasons for shortfall in private investment across sectors relates to issues in financing of infrastructure projects, which were as follows -

1. Increase in Non-Performing Assets (NPAs) of banks.
2. Shrinkage of equity & debt flows in PPP projects due to stranded and stressed projects.
3. Lack of long-term finance.

The prominence of NPAs and stressed loans in infrastructure projects are due to a variety of risks that such projects carry.

- Financial Risks - Given the long-term nature of these projects, these projects carry significant risks in the form of interest rate risks; asset-liability mismatches and liquidity risks in case of banks and other investors, who are not well equipped to invest in long-term projects; long gestation period between financing a project, project operationalisation and finally, revenue generation to pay interest and principal back; currency devaluation risks, enforcement of contracts and resolution of conflicts in cases of failure amongst others.



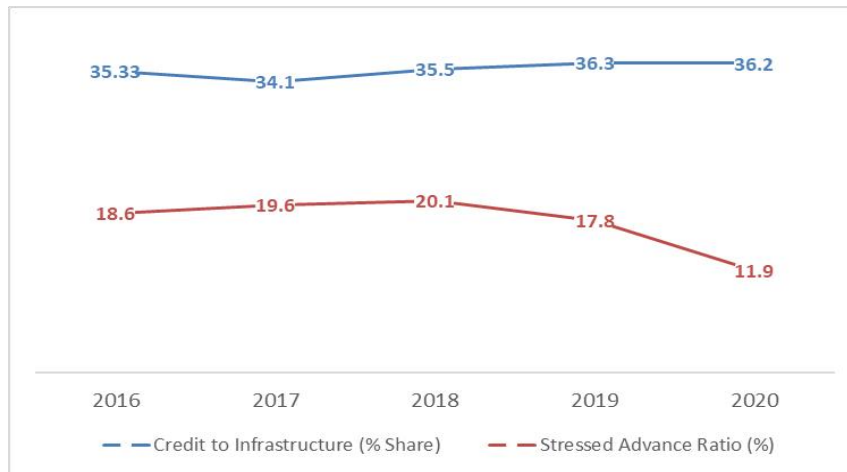
Graph 1.1 - Trends in NPAs of Public Sector Bank, Scheduled Commercial Bank & Private Banks⁷

The period of the 5-year plan, 2012 to 2017, saw the amount of NPAs increasing consistently. Also, the share of NPAs in the infrastructure sector had increased from 16.7 per cent in FY17 to 22.6 per cent in FY18. Additionally, Stressed assets in the infrastructure sector had touched a high of 32.6 per cent in 2016, from just 4.7 per cent in 2009. Banks' bad loans, to the tune of Rs 9,91,640 crore, had

⁶ https://www.thehinducentre.com/multimedia/archive/03189/Appraisal_Document_3189085a.pdf

⁷ <https://info.ceicdata.com/en-products-india-premium-database>

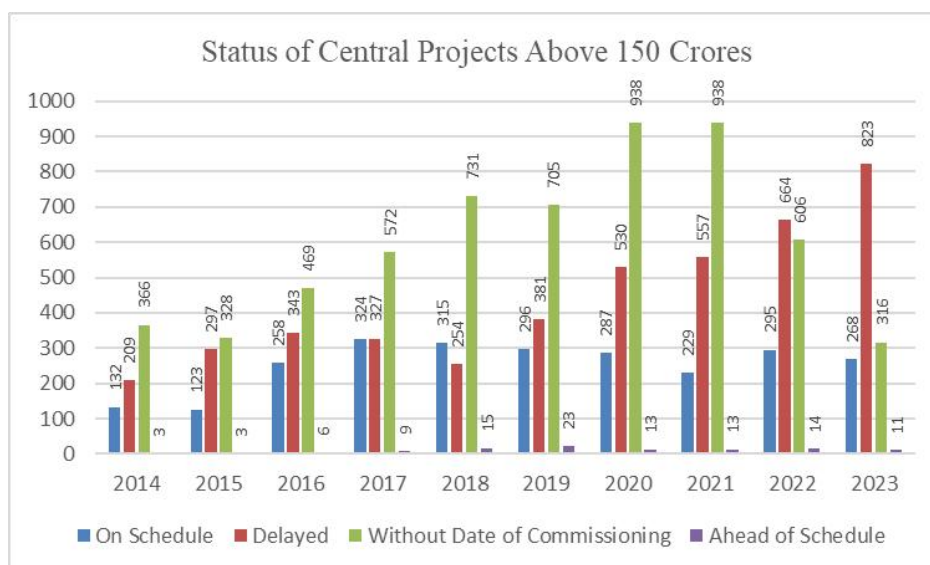
been written off between 2017-18 to 2021-22, which also explains the downward trend in the NPAs post 2018.⁸



Graph 1.2 - Credit to Infrastructure and Stressed Advance Ratio⁹

The Stressed Advances Ratio increased between 2016-2018 and stood at 20.1 per cent and only began to decrease from then onwards. Reflecting various policy measures and establishment of institutions, such as the withdrawal of regulatory forbearance, setting up of the National Company Law Tribunal (NCLT) and the Insolvency and Bankruptcy Board of India (IBC). Stressed assets include NPAs and the reduction post 2018 is also due to the fall in NPAs (as has been seen above).

- Project-Specific Risks - These risks are related to the development of projects such as construction delays or cost overrun, quality of performance of the project, market risk and more. For example, the graph below shows the status of Central Projects, costing more than Rs. 150 crores.



Graph 1.3 - Status of Central Projects Above 150 Crores¹⁰

⁸ <https://bfsi.economicstimes.indiatimes.com/news/banking/banks-write-off-loans-worth-rs-10-lakh-crore-in-last-5-years/93302298>

⁹ <https://www.rbi.org.in/Scripts/PublicationReportDetails.aspx?UrlPage=&ID=1190>

¹⁰ http://www.cspm.gov.in/english/pio_report/PIO_Feb_2023.pdf

Over the last decade, it can be seen that an overwhelming majority of projects are either delayed or without a commissioning date - more than 70 per cent of the projects have either been delayed or don't have a commissioning date. Since 2020, there have been more than 80 per cent such projects, riddled with delays and uncertainty. There are a list of reasons for these time delays and uncertainties -

- Delay in land acquisition
- Delay in obtaining forest/environment clearances
- Lack of infrastructure support and linkages
- Delay in tie-up of project financing
- Delay in finalisation of detailed engineering
- Changes in scope
- Delay in tendering, ordering and equipment supply
- Law & Order problems
- Geological surprises.
- Pre-commissioning teething troubles
- Contractual issues
- Encroachment
- Inadequate manpower
- Delay in technical approval.
- State wise lockdown due to COVID 19
- Delayed due to financial issues.
- Court cases
- Delay in getting clearance from local authorities.

These underlying risks, in infrastructure long-term project finance and development, are the reason why private investments in infrastructure have maintained a degree of reluctance. Reforms to reducing/sharing of risks in financing and bettering project-specific issues have also been suggested.

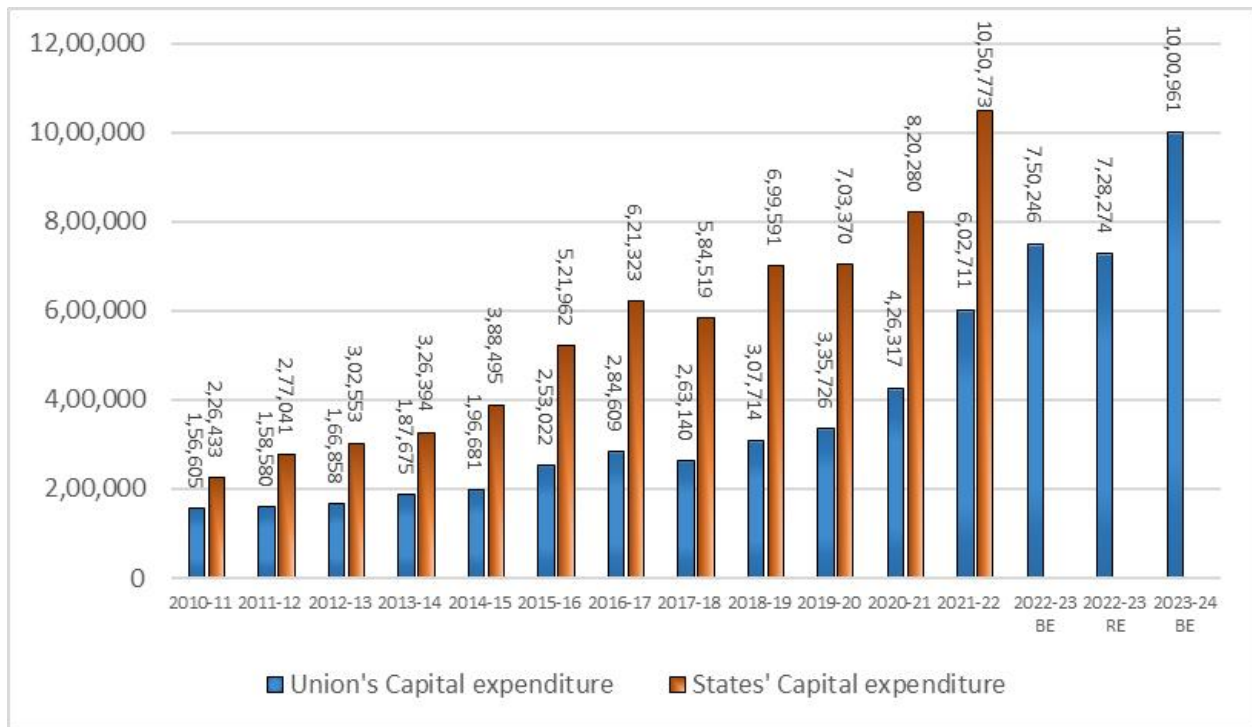
1.3 Union & State's Expenditure on infrastructure and PPP initiatives

Both, union and state governments, have also consistently increased their capital expenditure over the past decade. In 2021-22, it stood at Rs 16.53 lakh crores. It can be seen that the state's capital expenditure has been higher than that of the union government. The union's Capital Expenditure (RE) between 2022-23 and BE 2023-24 has increased by 37.4% to Rs 10 lakh crores.

Additionally, 'Special Assistance as Loan to States for Capital Expenditure' by the union government has increased from Rs 15,000 Crores (RE 2021-22) to Rs 76,000 crore (RE 2022-23)¹¹ and to Rs 1.3 lakh crores (BE 2023-24).¹²

¹¹ <https://www.indiabudget.gov.in/>

¹² <https://www.indiabudget.gov.in/doc/eb/stat18.pdf>



Graph 1.4 - Capital Expenditure by Union and State Governments¹³
 Note - 2021-22 data is Revised Estimates, 2022-23,2023-24 data is Budget Estimates¹⁴
 Note - Data for 2022-23 BE, 2022-23 RE, 2023-24 BE State Capital Expenditure NA

The Union and State governments have continuously increased their capital expenditure to bolster growth and laying the first steps for future growth as capital assets contribute to economic efficiency and potential growth and crowd ‘in’ private investments in the form of PPPs, which brings in private investors’ resources, competitiveness in project selection, expertise in infrastructure development and reduces the burden of expenditure on the government, giving it more fiscal space to enhance priority sector expenditure.

The government has also come up with various initiatives to encourage PPP arrangements such as -

- Formation of Public Private Partnership Appraisal Committee (PPPAC), the apex body for appraisal of PPP projects in the Central Sector has streamlined appraisal mechanism to ensure speedy appraisal of projects, eliminate delays, adopt international best practices and have uniformity in appraisal mechanism and guidelines
- To provide financial assistance to financially unviable but socially/ economically desirable PPP projects, DEA launched the Viability Gap Funding (VGF) scheme in 2006. Under this scheme, economic sector projects may get up to 40 per cent of Capex as a VGF grant. The Scheme includes higher provisions of the VGF grant for social sectors. Social sectors may get up to 80 percent of the Capex and up to 50 per cent of the Operating Expenditure (Opex) for five years after Commercial Operation Date (CoD) as VGF grant.
- Private participation is supported by various PPP models, including management contracts like Build-Operate-Transfer (BOT), Design-Build-FinanceOperate-Transfer (DBFOT), Rehabilitate-Operate-Transfer (ROT), Hybrid Annuity Model (HAM), and Toll-Operate-Transfer (TOT) model. Under the BOT model, there are two variants – BOT (Toll) and BOT (Annuity) depending on who bears the traffic risk. In the case of BOT (Toll), the traffic risk is

¹³ <https://dbie.rbi.org.in/DBIE/dbie.rbi?site=statistics>

¹⁴ https://www.indiabudget.gov.in/doc/Budget_at_Glance/bag6.pdf

borne by the PPP concessionaire, while in the case of BOT (Annuity), it is borne by the public authority.

- Various infrastructure financing options of InvITs and REITs, creation of Dedicated Financing Institution National Bank for Infrastructure Development (NaBFID), recapitalisation of other sectoral DFIs, push to PPP ecosystem through Model Concession Agreements by line ministries have also been introduced.
- In 2022, introduced a Scheme for Financial Support for Project Development Expenses of PPP Projects – ‘IIPDF Scheme’ (India Infrastructure Project Development Fund Scheme) for providing necessary support to the PSAs, both in the Central and State Governments, by extending financial assistance in meeting the cost of transaction advisors and consultants engaged in the development of PPP projects.¹⁵

1.4 National Infrastructure Pipeline

A marquee exercise of the union government is the National Infrastructure Pipeline (NIP), for FY 2019-25. It is a first-of-its-kind, whole-of-government exercise to provide world-class infrastructure to citizens and improve their quality of life. It aims to improve project preparation and attract investments into infrastructure. It was born with a projected investment of around Rs 111 lakh crore for 6,835 projects, in FY20-25¹⁶, for developing a comprehensive view of infrastructure development in the country, monitoring its progress for timely completion, and enabling a pipeline view for investors for them to plan infrastructure investments. The funding for infrastructure comes from a variety of sources, from government to private sector to multilateral/bilateral financial institutions.

The Task Force for NIP had estimated the following projections for funding arising from various sources.

Source	Share of NIP being financed
Centre's budget	18-20%
State's budget	24-26%
Internal accruals - PSUs	1-3%
Banks	8-10%
Infra NBFCs (PFC, REC, IRFC, IREDA, IIFCL and private sector NBFCs)	15-17%
Bond markets	6-8%
Equity/PPP	2-4%
Multilaterals/bilaterals	1-3%
Others	3-5%
From new DFIs	2-3%
Asset monetisation-Centre	2-3%
Asset monetisation-States	1-2%
Shortfall	8-10%

Table 1.2 - Projected sources of funding under NIP¹⁷

As per the projections, these were identified as potential sources for funding projects under NIP. State's Budget, Centre's Budget and NBFCs are expected to fund 57-63% of the cumulative project costs, bringing in Rs 63.27 - Rs 69.93 lakh crores out of the proposed Rs 111 lakh crores project costs.

¹⁵ <https://pib.gov.in/PressReleasePage.aspx?PRID=1873659>

¹⁶ Revised estimates Rs 142 lakh crores (approx.) and total projects more than nine thousand as of 26th May 2023.

¹⁷ https://www.pppinindia.gov.in/documents/20181/55954/Report+of+the+Task+Force+National+Infrastructure+Pipeline+%28NIP%29+-+volume-ii_0.pdf/2a4cb70c-2dc8-467a-a0ac-a7111537d633

Further, 3-5% will be brought in by asset monetisation, at both union and state level. PPP, in the form of equity investments, is expected to bring to 2-4%, which amounts to Rs 2.22 - Rs 4.44 lakh crores.

NIP is hosted on the India Investment Grid (IIG)¹⁸ platform and provides opportunities for States/UTs and Ministries to collate all major infrastructure projects at a single online location. IIG thus acts as a centralised portal to track and review project progress across all economic and social infrastructure sub-sectors. The portal also enables project-sponsoring authorities to showcase investment opportunities to national and international investors.

Task Force for creating National Infrastructure Pipeline¹⁹ listed various reforms that would be targeted under the NIP, which are as follows -

- Robust project preparation framework consisting of (i) transparent policy and legislative framework, (ii) presence of an overarching, capable and empowered public institution for infrastructure planning, (iii) presence of guidelines, national standards, model bidding documents and standard procedures, design considerations, including technology choices and disaster resilience, (iv) well-defined workflows, multi-stage reviews, audits and approvals for quality assurance of project preparation documents, and (v) establishment of a project organisation or SPV with such structure and capabilities
- Collaborations and joint-ventures with strong global infrastructure developers to be facilitated to build domestic capacity and adopt uniform regulation and output-based performance standards, developing consistent processes for updating/setting standards, improving compliance mechanisms, alignment with development strategy and social and environmental sustainability, adoption of global benchmarks such as G20 Principles for Quality Infrastructure Investment
- Adoption of international contract standards (such as FIDIC standards) by all infrastructure departments, including Railways, with clear procedures for change of scope, standardisation of contract and safe exits for parties. Project bidding and awards are to be done only after fulfilling conditions precedent such as 90% of contiguous land acquisition and all clearances for the project.
- Maintaining sanctity and enforceability of contracts, and institutionalisation and efficiency of dispute resolution
- Creation of a Credit Enhancement Fund (CEF) to revitalise bond markets and work towards and maintaining credit ratings (AA) of various municipal and public sector bonds to encourage institutional investors such as pension and mutual funds, who are less prone to asset-liability mismatches. Also, encouraging usage of innovative mechanisms such as loan securitisation, InvITs, etc. and increased participation of Infrastructure Development Funds (IDFs), Development Finance Institutions (DFIs) are also key to tackle the lack of long-term finance issues.
- Building up the capacity of banking institutions, including IIFCL and SBI, to provide long-term infrastructure finance is critical for growth of the sector.

¹⁸ <https://indiainvestmentgrid.gov.in/national-infrastructure-pipeline>

¹⁹ Report of the Task Force for NIP Vol I -

https://dea.gov.in/sites/default/files/Report%20of%20the%20Task%20Force%20National%20Infrastructure%20Pipeline%20%28NIP%29%20-%20volume-i_1.pdf,

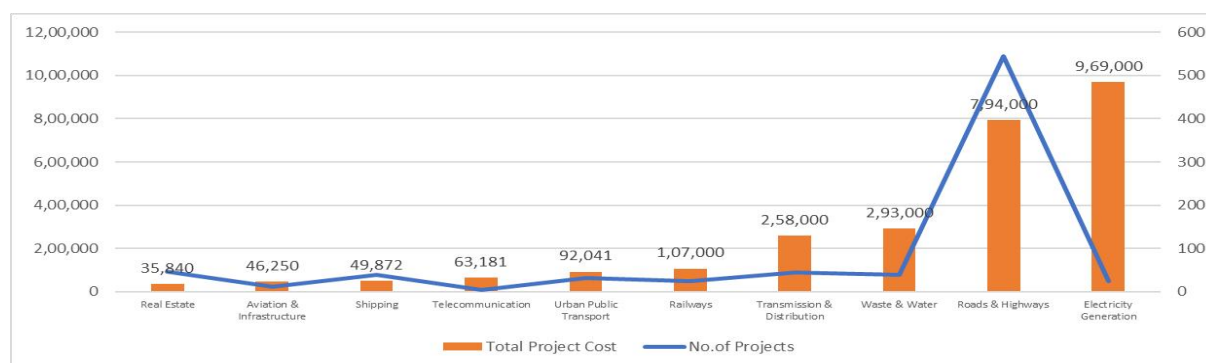
Vol II -

https://www.dea.gov.in/sites/default/files/Report%20of%20the%20Task%20Force%20National%20Infrastructure%20Pipeline%20%28NIP%29%20-%20volume-ii_0.pdf

- Asset monetisation undertaken through sale of land, non-operational assets through long-term lease with significant upfront lease payment, toll-operate-transfer (TOT) model for operational road assets, Infrastructure Investment Trusts (InvITs), sale of portfolio of assets to strategic/ financial investors, loan asset monetisation through securitisation and value capture financing (VCF).

The projects under NIP are the ones included under the economic and social infrastructure projects as per Updated Harmonised Master List of Infrastructure²⁰ and greenfield/ brownfield projects \geq Rs 100 crore per project (at the conceptual stage, under implementation, and under development). The NIP projects, which are under PPP, are conducted on various business models such as BOLT, BOO, BOT, BTL, cost plus contract, DBFO, DBFOT, Hybrid Annuity, Management Contract and others.

As of March 2023, there are a total of 8,969 projects, out of which 2,075 are under development, amounting to a total project cost of Rs 142.14 lakh crores across 47 SUB-SECTORS. Out of which, under PPP mode, 945 projects are being implemented with a total project cost of Rs 28.181 lakh crores, which amounts to 19% of the total project cost under NIP.



Graph 1.5 - Number of Project and Project Cost under National Investment Pipeline²¹

The graph above shows the ten sectors with the highest cumulative project costs under PPP mode. Electricity Generation, Roads & Highways, Waste & Water, and Transmission & Distribution have the project costs above Rs 2 lakh crores.

Especially, in Electricity Generation, where 25 projects account for Rs 9.69 lakh crores, which amounts to an average project cost of Rs 38,760 crores.

In Roads & Highways, a high number of projects, 545, have been issued, averaging Rs 1,456 crores per project. In Telecommunication total project cost amounts to Rs 63,181 crores but only has 4 projects, which equals to Rs 15,795 crores per project on average.

On the other hand, social infrastructure such as affordable housing, medical, education and health infrastructure has not received as much attention under PPP mode, with a total of Rs 16,620 crores, which is only 1.9% of the total project cost of Roads & Highways. The average project costs in these sectors amounts to Rs 213 crores, which is among the 5 sectors with lowest average project cost.

²⁰ https://dea.gov.in/sites/default/files/updated%20%20Harmonized%20Master%20%20List%20of%20%20Infrastructure%20%20Sub-sectors%20dated%2024-8-2020_1.pdf

²¹ <https://indiainvestmentgrid.gov.in/opportunities/nip-projects?modeOfImpl=500016>

2. Methodology

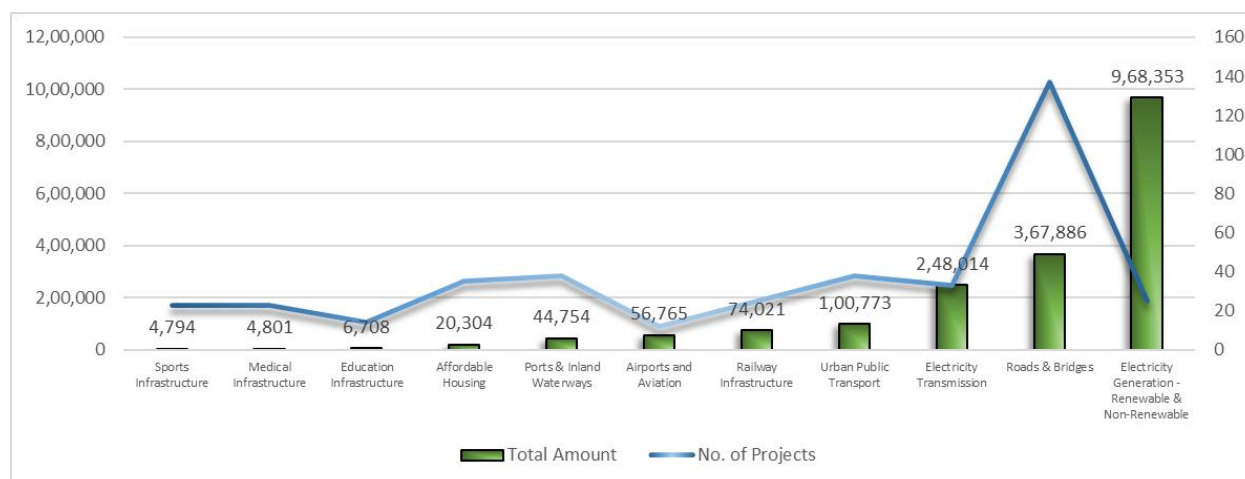
Given that the National Infrastructure Pipeline was created to enhance forging of public-private partnerships in infrastructure project finance and development, the intent of this report is to study the broad trends of PPPs and private investments, as a source of funding vis-a-vis other funding sources, and type of business model, across sectors and states.

Therefore, the data collected for this report, in July 2022, from the India Investment Grid website on NIP projects is restricted to projects implemented under PPP mode. Data is collected for projects across the various sectors, on parameters such as project status, project cost, state, business model (such as BOT, DBFOT, Hybrid Annuity and others), sources of funds such as union, state, external aid, debt, PPP and other sources.

Few sectors such as IT/ITEs, food processing, utility & resource pipelines, and textiles were excluded since they have less than 5 projects in the pipeline.

3. Data & Analysis

In total, we collected information on 403 projects, with a total project cost of Rs 18.97 lakh crores, in 12 sectors. -



Graph 3.1 - Number of Project and Project Cost

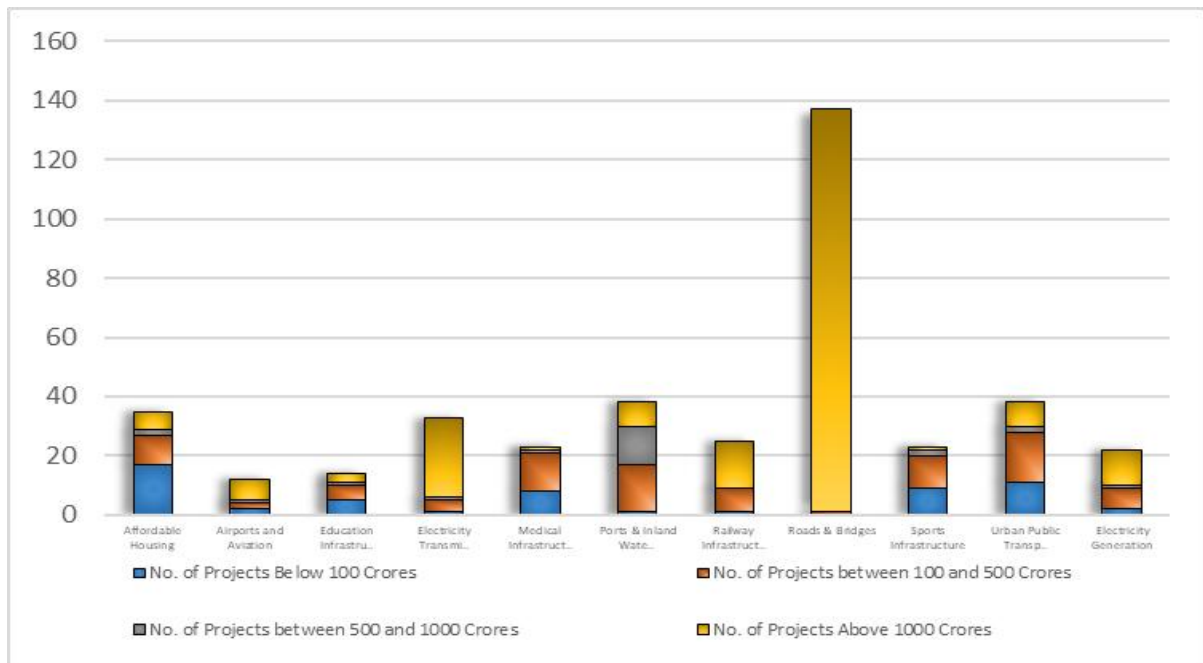
The sample shows a similar trend as compared to the sectoral aggregates given on the IIG website. Electricity Generation has the highest amount, Rs 9.68 lakh crores, for 25 projects (average project cost of Rs 38,734 crores), followed by Roads & Highways, with 137 active projects amounting to Rs 3.67 lakh crores (average project cost of Rs 2,685 crores), and Electricity Transmission amounting to Rs 2.48 lakh crores (average cost of Rs 7,515 crores)

In comparison, the sectors pertaining to social expenditure such as Sports, Medical and Education Infrastructure have very limited projects under PPP mode, with our data showing a combined project cost of the three sectors amounting to Rs 16,302 crores. After adding affordable housing, with a project cost of Rs 20,304 crores, to this mix, it amounts to only 9.9% of the total project cost in Roads & Bridges only.

Electricity Generation includes both renewable and non-renewable energy. Under non-renewable, there is only 1 project, with a project cost of Rs 1,500 crores. The rest of the projects, 24, with a cumulative project cost of Rs 9.67 lakh crores is under Renewable Energy.

All the projects under renewable energy include solar, wind and waste-to-energy projects. It is important to note that no hydro project is being implemented under PPP mode as per the data available on the IIG portal. According to various reports, several large hydro projects are being implemented through PPP mode in various states across the country, especially in the north-east region and the Himalayan states. Examples of large hydro projects such as under construction Bajoli Holi hydroelectric project of GMR Energy Ltd., Panan hydroelectric project of Himagiri Hydro Pvt. Ltd., Attunli of Jindal Power Ltd.²²

²² <https://cea.nic.in/wp-content/uploads/hpi/2021/01/Status%20of%2050000.pdf>



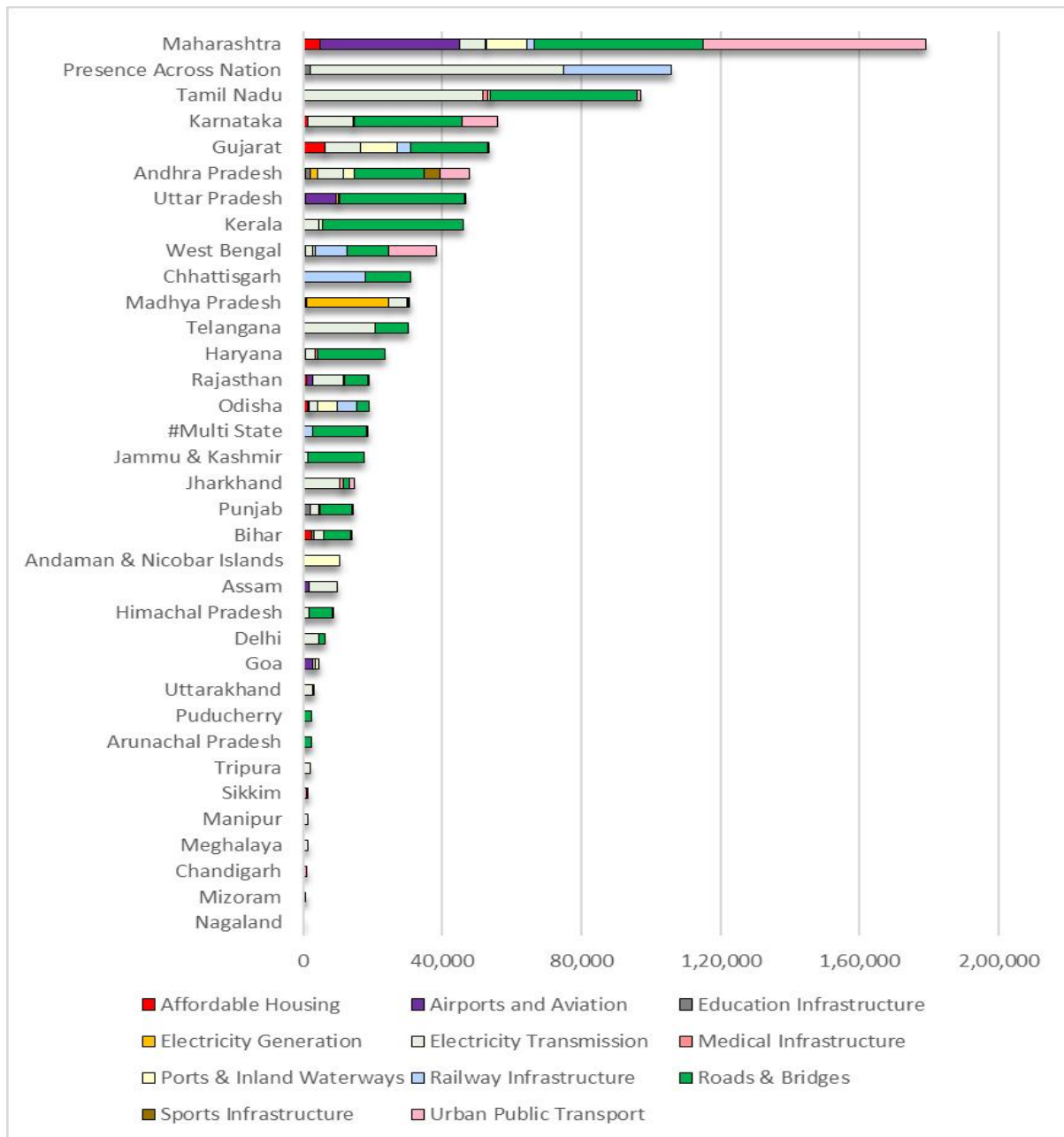
Graph 3.2 - Number of projects demarcated by project cost threshold

The graph above shows the number of projects, across sectors, demarcated using a threshold for project costs. It can be seen clearly that the number of projects in Roads & Bridges, 137, is the highest compared to any other sector and 136 (99%) of those projects are above Rs 1,000 crores project cost. For Electricity Transmission, 27 out of 33 (81%) projects are above Rs 1,000 crores. Similarly, Railway Infrastructure (64%), Airports and Aviation (58%) and Electricity Generation (54%) have projects above Rs 1,000 crores.

While the roads & bridges sector has the highest number (and percentage) of projects above Rs 1,000 crores, the average cost of projects (Rs 2,685 crores) isn't higher than that of Electricity Generation (Rs 38,734 crores). This is why the cumulative project cost of electricity generation is more than 2.5 times that of roads and bridges.

On the opposite end, Medical Infrastructure has 91% of its projects below Rs 500 crores, Sports Infrastructure 86%, Affordable Housing 77%, Education Infrastructure 71% and Urban Public Transport 73%.

Almost half of the projects (48%) under Affordable Housing have a cost of less than Rs. 100 crores.



Graph 3.3 - State-wise cumulative project costs across sectors

The above graph shows the state-wise projects across different sectors. It is important to note that the above data includes two categories -

1. Multi State - This category refers to projects which are spread in more than 1 state
2. Presence Across Nation - This category refers to projects which are spread in all states

Since it was not possible to divide the project cost appropriately for the states, we have kept these two categories as it is. For instance, many electricity transmission and railway infrastructure projects span two or more states but a breakup of the project cost has not been given.

Also, for projects worth Rs 9.42 lakh crores, under electricity generation, the names of the states have not been given and consequently, we have removed these projects from the graph above as well.

Maharashtra tops the list with the highest cumulative project costs. For comparison, Maharashtra and Andhra Pradesh, both, have 35 projects issued but Maharashtra has a cumulative project cost totaling Rs 1.79 lakh crores, while Andhra Pradesh has Rs 47,720 crores. Gujarat, which has 36 projects issued, the cumulative cost is Rs 53,137 crores. This difference in project cost is attributable to the type of projects being developed. In Andhra Pradesh, most projects are under Sports Infrastructure, which have low project costs, while Maharashtra has projects in Roads & Highways, Ports and Urban Public Transport which are rather capital intensive.

In Maharashtra, the highest share of the total project cost is accounted for by Urban Public Transport, Rs 63,956 crores. 63% of project cost, under Urban Public Transport, are being implemented in Maharashtra. Similarly, Airports & Aviation has a cumulative project cost of Rs 56,765, out of which Rs 40,331 crores (71%) worth of projects are in Maharashtra. Roads & Bridges is also prominent in Maharashtra, with projects worth Rs 48,672 crores.

91.7% of the Sports Infrastructure project cost has gone to Andhra Pradesh, and 82% of the Education project cost has gone to Andhra Pradesh, Punjab, and towards projects which have a presence across the nation. 52% of the Medical Infrastructure project cost is present in Sikkim and Tamil Nadu.

Roads & Bridges is a sector with a widespread presence in 22 states in the country, which is evident from the green bars in the graph above. More than 80% of the cumulative project's costs in Arunachal Pradesh (92%), Puducherry (99%), Himachal Pradesh (80.9%), Jammu & Kashmir (93.2%), Multi State (84%), Haryana (82%), Kerala (88%) and Uttar Pradesh (77.7%) accrued to Roads & Bridges projects. The highest number of projects, we have recorded, are in Roads & Bridges and accounts for almost 20% of the total project costs across all sectors.

For 11 states, Delhi, Bihar, Punjab, Rajasthan, Telangana, Chhattisgarh, West Bengal, Andhra Pradesh, Gujarat, Karnataka, and Tamil Nadu, more than 30% of the cumulative project for each state is accorded for by Roads & Bridges. The impetus for road projects has come from budget announcements from the previous years, where they have continuously increased capital expenditure, particularly accorded to NHAI for the development of national highways. Between 2021-22 (Actuals) and 2023-24 (BE), the budgeted capital expenditure for NHAI has increased by Rs 1,05,127 crores, an increase of 184%.²³

Similarly, Electricity Transmission is spread across 27 states in the country, accounting for 95% of the cumulative project cost in Tripura, 90.6% in Uttarakhand, 82% in Assam, 70% in Jharkhand, 69.5% in Delhi, 68% in Telangana and for category Presence Across Nation.

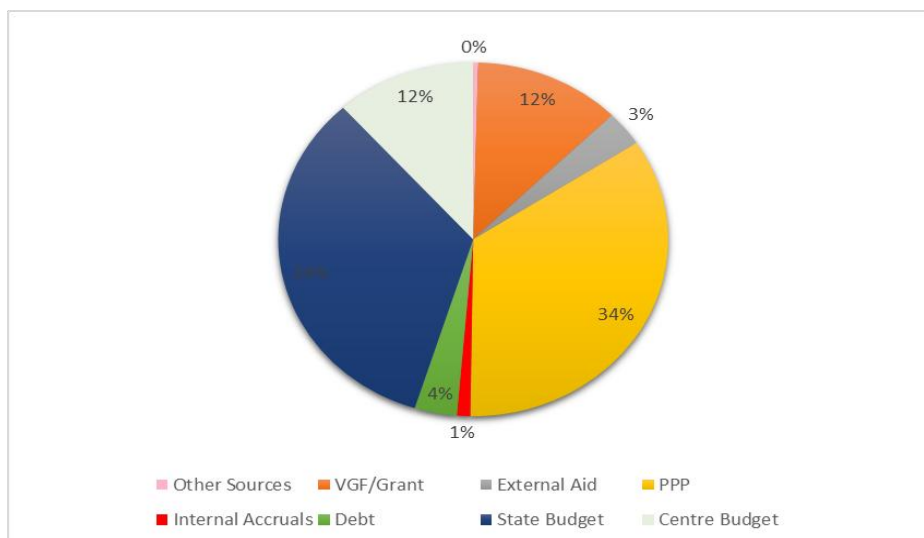
72% of the cumulative project costs, under Ports & Inland Waterways, is accounted for by 3 states - Andaman & Nicobar Islands, Gujarat, and Maharashtra. Similarly, 65.8% of the project cost for Railways Infrastructure are in Chattisgarh (23.9%) and have a presence across the nation (41.8%). The sectors with the smallest cumulative project costs are Sports Infrastructure (Rs 4,794 crores), Medical Infrastructure (Rs 4,801 crores) and Education (Rs 6,708 crores).

Affordable Housing is spread in 25 states. The cumulative project costs under this sector amount to Rs 20,704 crores, more than half of which has gone to Gujarat and Maharashtra. Nagaland, Mizoram, Tripura, Arunachal Pradesh, Himachal Pradesh, Jammu & Kashmir, Telangana, Chhattisgarh, West

²³ <https://www.indiabudget.gov.in/doc/eb/sbe86.pdf>

Bengal and Andhra Pradesh have projects worth less than 100 crores in this sector. Out of the 35 projects in Affordable Housing, 24 projects are in-situ slum redevelopment projects, 3 are integrated group housing facilities, and 2 are for rehabilitation.

3.1 Sources of Funds



Graph 3.1.1 - Sources of funding and their respective shares

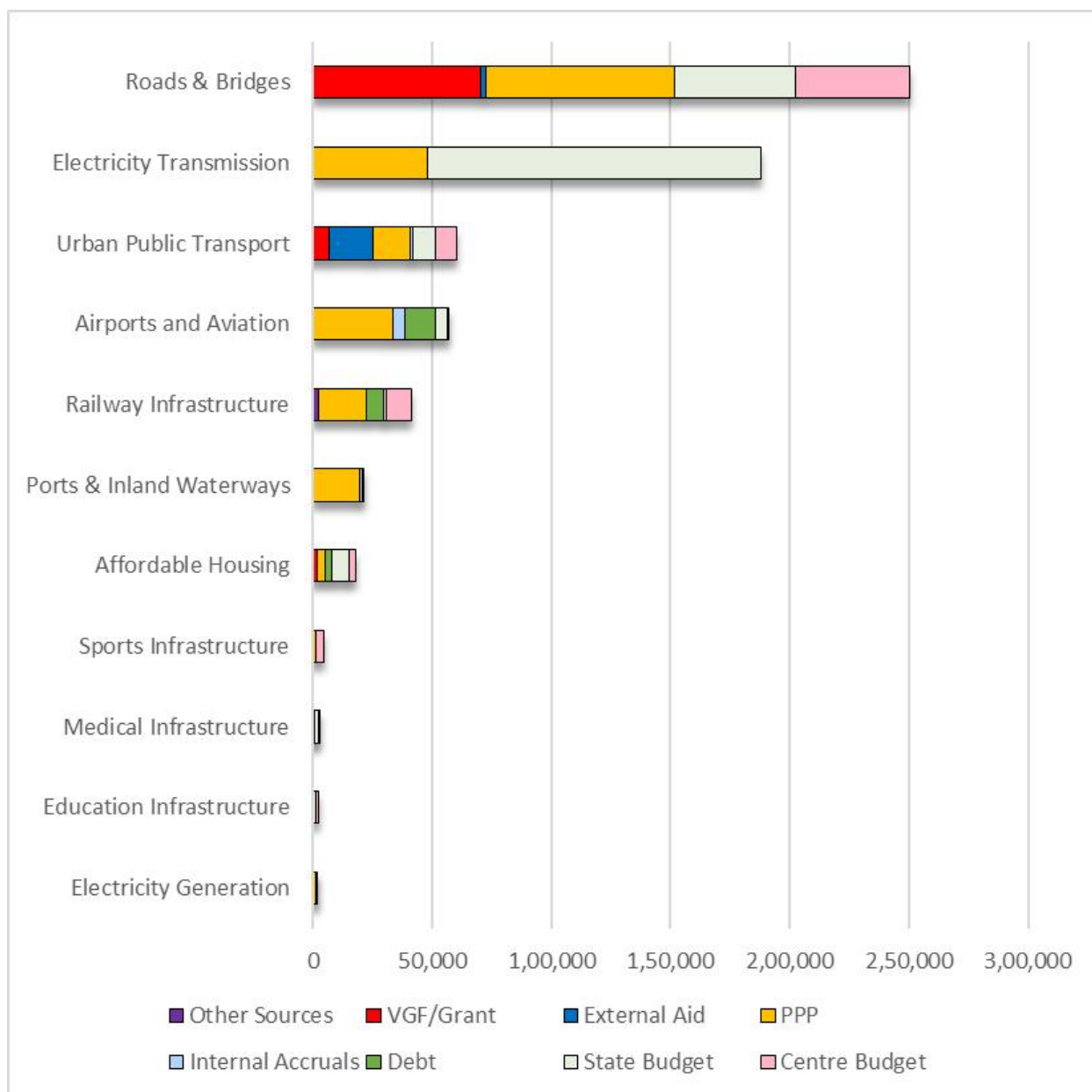
The pie chart above shows the different sources from which funds have been allocated to cover the project costs under NIP. Given that only projects conducted under PPP mode have been selected, it was expected that the share of funds coming from PPP would be high. 34% of the project costs are being met by PPP and State Budget, followed by Union Budget and VGF/Grant, with 12% and debt, external aid, internal accruals and other sources having a share below 5%. State budgets also include funds from the union government in the form of loans and ‘special assistance for capital expenditure’, amounting to Rs 1 lakh crores in 2022-23²⁴

Source	Total Allocation
Other Sources	2,626
Internal Accruals	7,162
External Aid	20,655
Debt	22,645
Centre Budget	75,072
VGF/Grant	78,788
State Budget	2,16,290
PPP	2,22,123

Table 3.1 - Total allocation from various sources

²⁴ https://finance.cg.gov.in/Special_Assistance.pdf

In value terms, PPP amounts to Rs 2.22 lakh crores, State budget Rs 2.16 lakh crore.



Graph 3.1.2 - Source-wise cumulative project cost in various sectors

Out of the 403 observations, information on the source of funds was not available for 148 observations and, subsequently, have been excluded from this graph.

For the projects on which the information is available on, Roads & Bridges has the highest amount, Rs 2.50 lakh crores, derived from the above mentioned sources, with PPP, VGF/Grant, State Budget and Centre Budget. 64% of the total centre budget allocation has gone towards Roads & Bridges. Similarly, 89% of the total VGF/Grant allocation has gone towards the same. Rs 79,049 crores have been sourced from PPP, which is the highest amount of PPP allocation compared to other sectors.

Funds to meet project costs, amounting to Rs 1.87 lakh crores, under Electricity Transmission have been sourced from state budget and PPP. 64% of the total State budget allocation, amounting to Rs 1.39 lakh crores, has gone towards this sector.

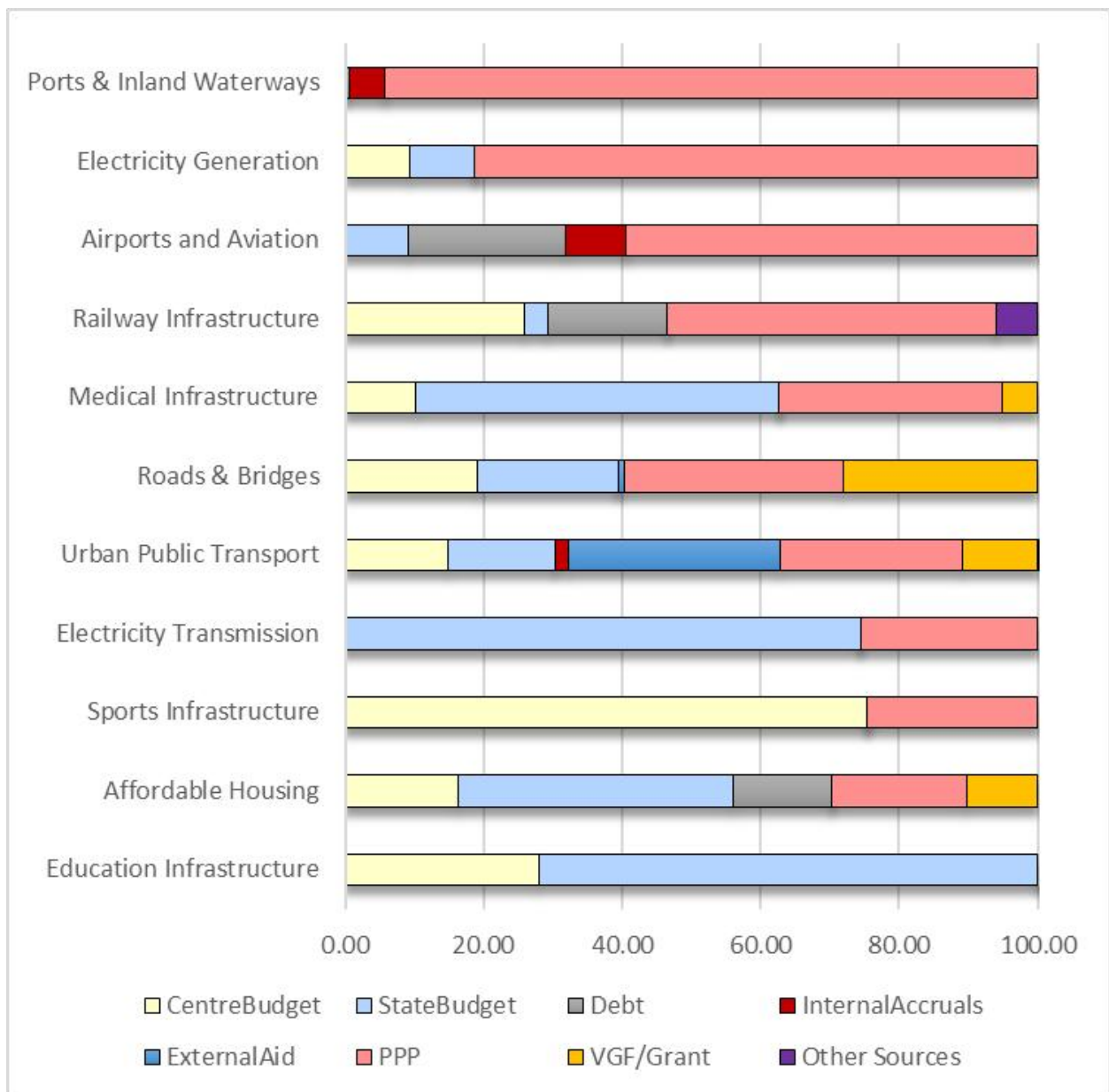
The Urban Public Transport sector has received funding from External Aid amounting to Rs 18,402 crores, 89% of the total external aid allocation. VGF/Grant, Internal Accruals, State and Centre budget are also present in this sector.

It has been observed above that the social infrastructure funding, which includes affordable housing, medical, education and sports, is low compared to commercial infrastructure expenditure, under PPP mode. Information available for source of funding in these sectors amounts to Rs 26,687 crores. Out of which, union has allocated Rs 7,011 crores, a mere 9% of its total allocation under NIP. Out of the total funds sourced from PPP, only 2%, amounting to Rs 5,310 crores, has been allocated to social infrastructure - education receiving no funds from PPP. Affordable housing has received VGF/Grant amounting to Rs 1,828 crores.

Except for education, funds arising from PPP have gone to all the other sectors, with 35% going to Roads & Bridges, 21% to Electricity Transmission, 15% to Airports & Aviation, another 24% to Railway Infrastructure, Ports & Inland waterways and Urban Public Transport cumulatively.

88% of the total debt, amounting to Rs 20,105 crores, has gone towards Ports & Inland Waterway, Railway Infrastructure and Airports and Aviation.

Sources of funds information was mainly not available for Electricity Generation. Out of a total project cost of Rs 9.69 lakh crores, information on sources of funds amounts to only Rs 1,301 crores.



Graph 3.1.3 - Source-wise cumulative project cost in various sectors (as percentage of total)

While the above graph focused on the share of funds (as value) from a particular source went to which sector. The graph above shows the share of funds (as percentage) coming from various sources accruing to each sector. This is a good exercise since, in terms of value, Roads & Bridges has received Rs 79,049 crores from PPP, which is the highest by value, but, if one looks at the graph above, ports and inland waterways have sourced 94.2% of its total allocation from PPP, followed by Electricity Generation 81.2%, Airports and Aviation 59% and Medical Infrastructure 47.39%

A trend is also visible that as we move from the top towards the bottom of the graph, the share of PPP continues to decrease (and finally is 0 for education) and simultaneously, this share is being filled by Centre and State budgets.

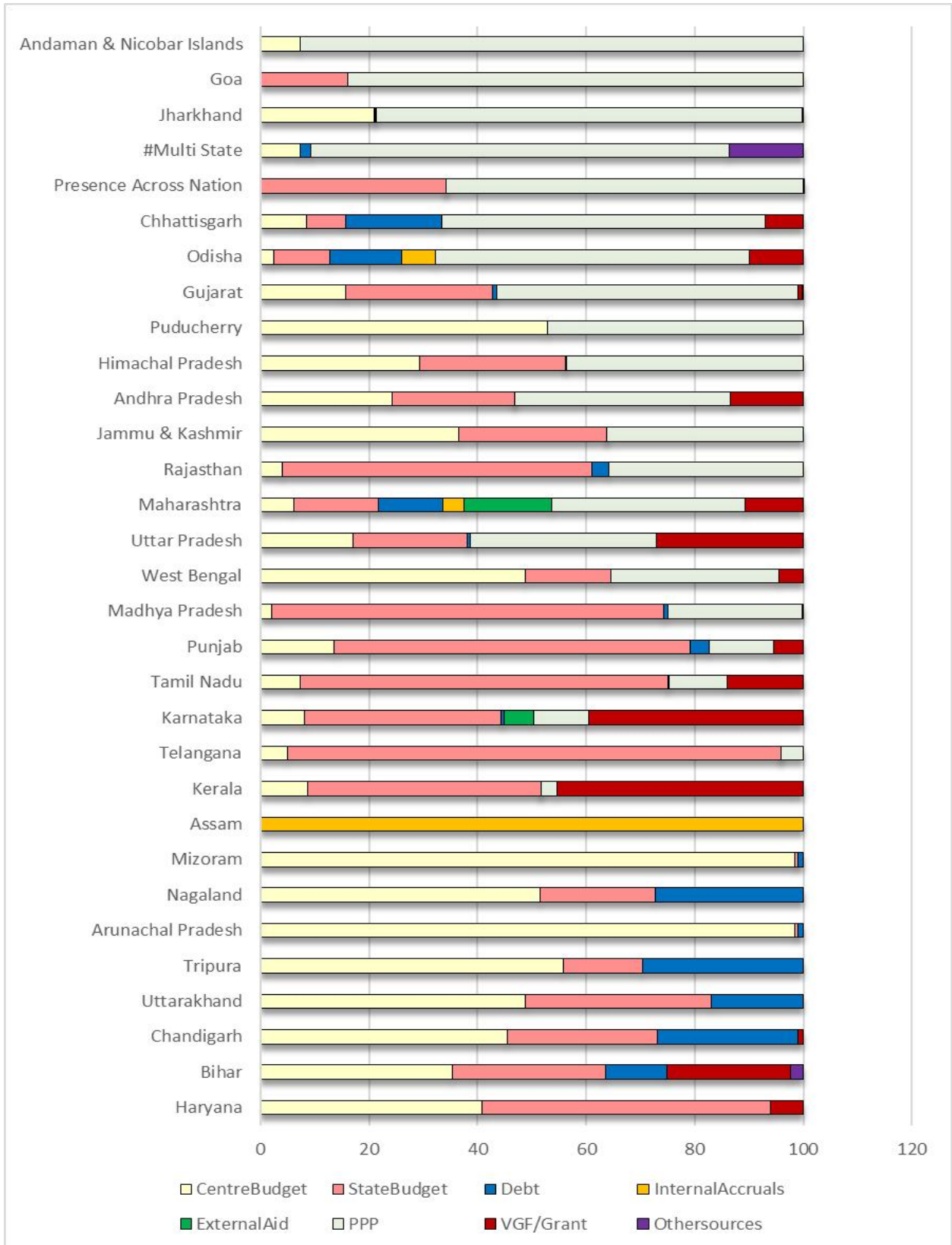
In ports and inland waterways, there is no presence of centre and state allocations and instead, are entirely being funded by internal accruals and PPP. Most projects under Ports & Inland waterways include development of oil jetties and container terminals. Similarly, in electricity generation, less

than 20% has been met by centre and state and, in airports and aviation, there is no funds coming from centre.

Centre has a good presence, with more than 20% of the total allocation in the sectors coming from its own budget, in Education Infrastructure (28.05%), Sports infrastructure (75.42%), and Railway Infrastructure (25.95%).

State budget has provided a majority of funds in sectors such as Education Infrastructure (71.94%), Affordable Housing (39.79%), Medical Infrastructure (52.48%) and Electricity Transmission (74.46%) .

Debt is present in Affordable Housing, Railway Infrastructure and Airports & Aviation. 30.5% of the funds coming to Urban Public Transport are sourced from External Aid, a majority of which has gone to metro projects. Similarly, Roads and Bridges is the only sector which has received significant VGF/Grant, 28% of the entire allocation.



Graph 3.1.4 - Source-wise cumulative project cost in states (as percentage of total)

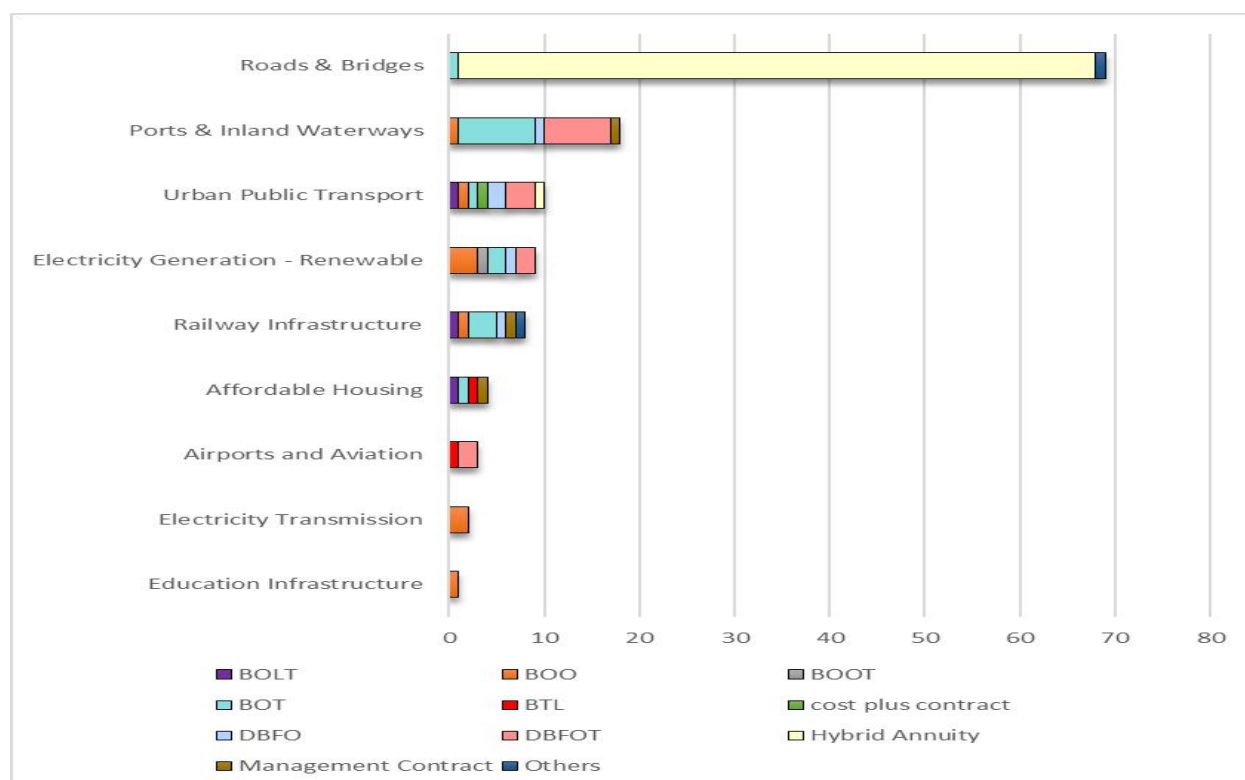
We have done the same exercise of seeing the percentage of share of funds for the states. This was done to see if sector-wise share of sources of funds were different for states.

The highest number of projects are in Gujarat (25), Maharashtra and Andhra Pradesh (23 each), Uttar Pradesh and West Bengal (21 each).

It was noted above that there was no presence of PPP fund allocation in education. In terms of states, Bihar, Chandigarh, Mizoram, Assam, Tripura have no PPP. And alternatively, see a higher percentage of centre and state budget accompanied by debt or VGF/Grant. Assam has 1 project in Airports and Aviation, which accounts for its entire fund allocation from Internal Accruals. Assam, Mizoram, Nagaland, Arunachal Pradesh and Tripura are all north-eastern states. For many of these states, either the sources of funds have not been given or there are miniscule number of projects being implemented. For instance, in Sikkim, there are a total of 16 projects and sources of funding is not given for any of these. Sikkim has all its projects in Sports and Medical Infrastructure.

In Bihar, out of 9 projects, 6 are in roads and bridges, urban public transport and railway infrastructure. While roads & bridges have received such high funding from PPP, in Bihar there is no funding from PPP for these projects. Assam has just 2 projects, in Airports & Aviation and Electricity Transmission, where no PPP is present.

3.2 Mode of PPP Implementation



Graph 3.2.1 - Number of Projects demarcated by mode of PPP

Out of 403 observations, data on the type of PPP model was available only for 124 projects. A large number of projects, 67, are under Hybrid Annuity model, since it is the preferred model for roads and highways.

Similarly, Education Infrastructure and Electricity Transmission has all their projects under BOO mode. Airports & aviation has BTL and DBFOT models being used. 18 Projects, in Ports & Inland

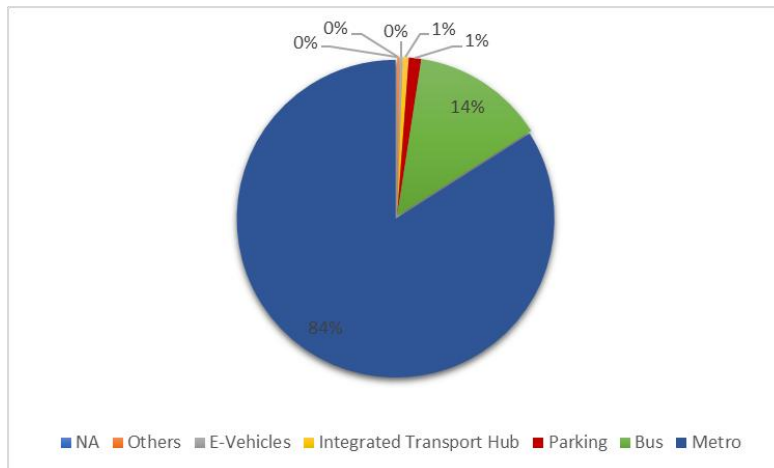
Waterways, are being implemented under BOT (8), DBFOT (7) and 1 each under BOO, DBFO and others.

Similarly, projects in Urban Public Transport, Affordable Housing, Railway Infrastructure, Electricity Generation are being implemented using many models - there is no particular model which is most desirable in these sectors.

4. Project Details in Sectors

4.1 Urban Public Transport

In Urban Public Transport, there are a total of 38 projects, with a cumulative project cost amounting to Rs 1.01 lakh crores.



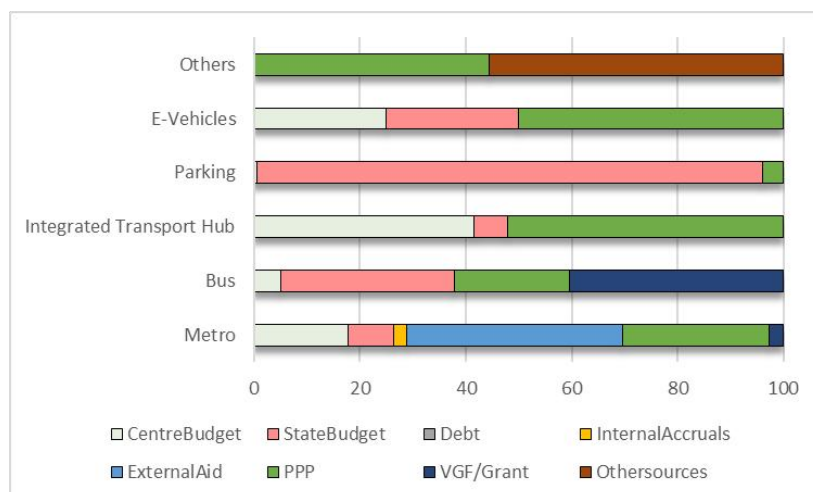
Graph 4.1.1 - Types of Projects and their share in total project cost

Out of the 1.01 lakh crores, the highest share, 84%, is accounted for by Metro projects alone, amounting to Rs 84,660 crores. In total, there are 7 metro projects being implemented in Andhra Pradesh, West Bengal and Maharashtra.

Bus projects are next in the list, with 19 projects, amounting to Rs 13,650 crores, spread across 19 states.

The rest of the sectors such as parking, E-vehicles and others have a very small share, amounting to Rs 2,195.54 crores.

Others include projects such as city card payments systems and street lighting.



Graph 4.1.2 - Sector-wise share of funds by different sources (as percentage)

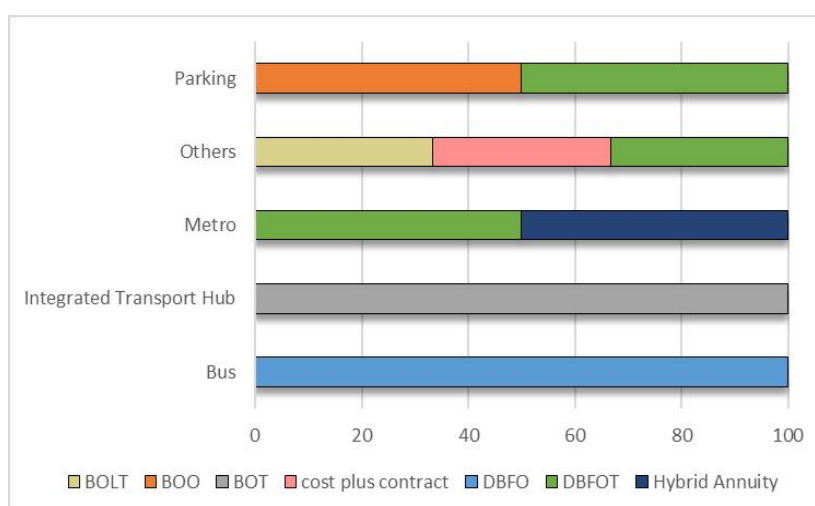
Buses and Metro both have received funding from State and Centre.

But, in case of buses, the State Budget has a larger share, Rs 4,246 crores, while the Centre budget amounts to Rs 654 crores. On the contrary, for metro projects, the centre has allotted Rs 7,998 crores, while states have given Rs 3,888 crores.

For metro projects, the highest share has arisen from External Aid, amounting to Rs 18,401 crores (40.8%), followed by PPP, amounting to Rs 12,449 crores.

Buses, on the other hand, have seen a large share coming from VGF/Grant, amounting to Rs 5,235 crores.

Parking projects have been funded by the State budgets primarily.



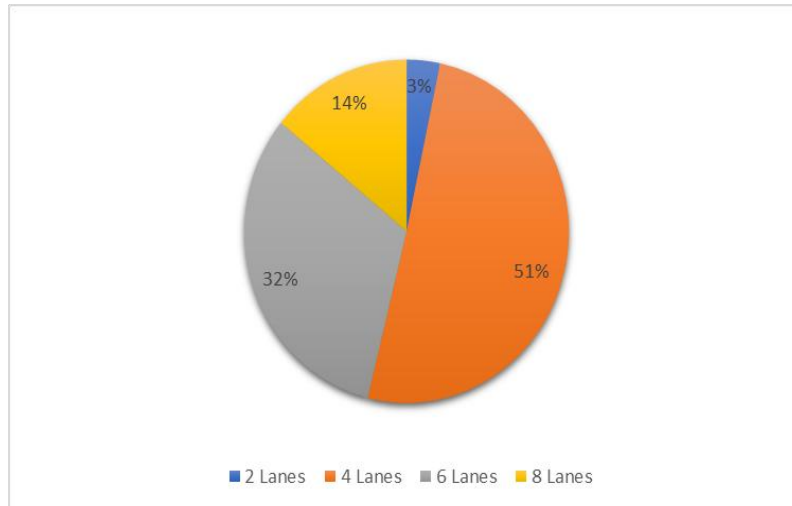
Graph 4.1.2 - Sector-wise share of mode of PPP (as percentage)

Information available on the type of PPP being implemented in these sectors was for only 10 projects.

There are two projects for development of bus stands, which have been implemented under DBFO. Similarly, the two metro projects have used Hybrid Annuity and DBFOT models.

4.2 Roads & Bridges

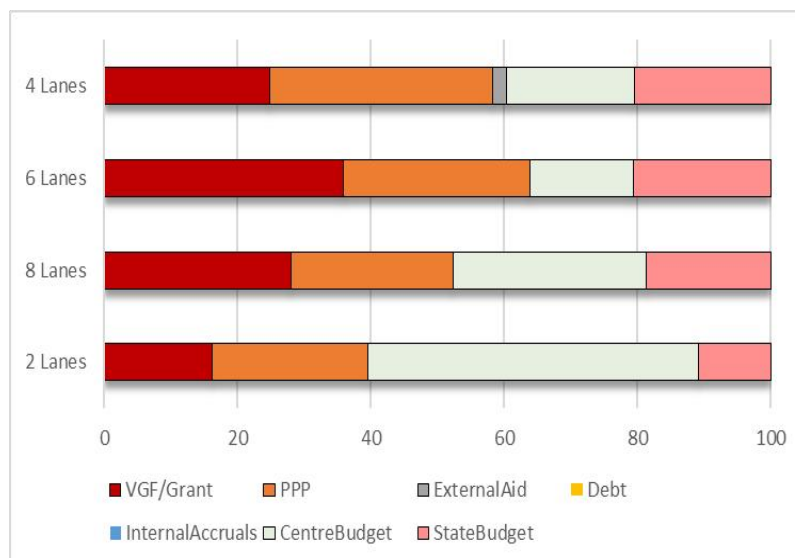
Roads & Bridges has 137 active projects amounting to Rs 3.67 lakh crores. In this section, we focus on roads, demarcated according to the number of lanes, and so we have removed bridge projects and projects for which information on the number of lanes was not available. In total, we have 127 projects in this segment, which have a cumulative project cost of Rs 3.44 lakh crores.



Graph 4.2.1 - Types of Projects and their share in total project cost

Among roads, 51% of the project cost accrues to 4 lanes, 67 projects amounting to Rs 1.74 lakh crores, followed by 6 lanes, amounting to Rs 1.10 lakh crores for 36 projects. There are 18 8-lanes projects, grossing a cumulative project cost of Rs 48,589 crores.

The average cost of a 2-lane project amounts to Rs 1,903 crores, while the same for a 8-lane project amounts to Rs 2,669 crores. It is important to note that the difference between a 2-lane and 8-lane is not as big due to the fact that many 6 and 8 lane projects are broken into packages and then tenders are released.



Graph 4.1.2 - Sector-wise share of funds by different sources (as percentage)

As had been noted earlier, VGF/Grant had maintained a relatively higher presence in the Roads & Bridges sector. In the graph above, the spread of VGF/Grant can be seen, with 6 lanes claiming VGF/Grant of 35.8%, followed by 8 lanes (27.9%).

Centre's budget in 2-lanes amounts to almost 50% of the entire allocation. The centre's allocation goes down as we see for other lanes projects. VGF/Grant and Centre budget, both of which are sources from the centre government, are highly prominent in road projects. PPP has a share, between 23% and 33%, across all lanes.

The mode of implementation, primarily, is Hybrid Annuity in roads. Hybrid Annuity is the preferred mode of implementation for Road projects since risk-sharing is better for the private operator. While the private sector continues to bear the O&M costs, the government pays 40% of the construction costs, and the balance 60% is arranged by the developer, which is recovered as variable annuity amount, after the completion of the project, from NHAI, which collects revenue.

Concluding Remarks

Pooling financial resources and technical expertise from the private sector has been one of the key focus areas in infrastructure since the downward revision of private investment in the 12th 5-year plan.

- The government, both union and state, have consistently increased their capital expenditure to facilitate productive capacities and crowd ‘in’ private investments. The National Infrastructure Pipeline was envisaged with Rs 111 lakh crores investment, out of which 50% would be coming from union and state governments. From the data collected, we have recorded that a total of 58% of the total project cost, amounting to Rs 3.7 lakh crores, has come from State, Union and VGF.
- Initiatives such as creation of infrastructure trusts (InvITs) to bring in investments in the form of equity, loan, asset monetisation through securitisation and value capture financing (VCF) and others would enhance risk sharing possibilities for the private sector. For example, Oriental InfraTrust was created to primarily take up works in roads & highways development, Virescent Renewable Energy Trust for projects in renewable energy development and several others.
- Development of municipal and public sector bonds, development of Infrastructure Development Funds (IDFs) and Development Finance Institutions (DFIs), credit enhancement fund (CEF), building up the capacity of banking institutions, including IIFCL and SBI, who are better suited for long-term financing and less prone to asset-liability mismatches.
- Better project preparation, enforcement of contracts, improving compliances and others to enhance project development.
- VGF/Grant Scheme has also been launched using which 40% of the capex of projects may be received as grants. Our data shows that 89% of the total VGF/Grant has gone towards the Roads & Bridges sector.
- The use of various PPP business models such as BOT, HAM, DBFO and others have been developed to bring in PPP in project development. The analysis above shows the different business models being used in different sectors. While the choice of business model is largely dependent on the project particulars, in some sectors one model has been a large success. For instance, our analysis shows that, in roads & highway projects, Hybrid Annuity Model has been highly used. Ports & Inland Waterways projects are primarily being implemented under the BOT and DBFOT models.
- 89% of the total external aid allocation, amounting to Rs 18,402 crores, has gone to Urban Public Transport, and more specifically, to Metro projects, within the country.

The Task Force projected that PPP, in the form of equity investments, would bring to 2-4%, which amounts to Rs 2.22 - Rs 4.44 lakh crores. Out of the total 403 PPP projects we collected data on, data on source of funds was available only for 255 projects, in which PPP amounts to Rs 2.22 lakh crores (it is anticipated that data on all the projects would furnish PPP amount higher than this). This shows that the projections for PPP have been realised.

We looked past the aggregate values to see whether PPP investments accrued to all sectors symmetrically or certain sectors attract higher PPP share. It has been observed that PPPs have contributed a major share in sectors such as Roads & Bridges, which has received Rs 79,049 crores from PPPs, which is the highest by value. Ports and Inland waterways have sourced 94.2% of its total allocation from PPPs, followed by Electricity Generation 81.2%, Airports and Aviation 59%. On the other hand, social sectors such as Affordable Housing, Education Infrastructure and Sports

Infrastructure have received the least share of PPPs. Education Infrastructure, particularly, has received no funding from PPPs. For example, all projects in Chandigarh are Affordable Housing and Medical Infrastructure and have not received funding through PPP projects.

Similarly, there are states such as Bihar, Mizoram and Assam, who have projects in commercial sectors such as Urban Public Transport, Roads & Bridges, Electricity Transmission and Airports and Aviation and still did not receive any PPP funding. For many states, such as Meghalaya, Mizoram, Nagaland, Assam, Uttarakhand, Sikkim and Tripura either the number of projects is very low or information on sources of funding is not given. As has been noted above, no sources of funding have been given for all the projects in Sikkim.

In the case of Roads & Bridges, the high PPPs is largely due to the favourable risk-sharing conditions set forth in the Hybrid Annuity Model. 40% VGF for capex and 60% is recoverable as annuity payments from NHAI.

Energy generation projects tend to have greater revenue visibility in the form of contracted revenues through power purchase agreements making them attractive for private operators. Also, auxiliary infrastructure such as transmission lines are developed as separate projects from energy generation, which makes them more lucrative. For solar plants especially, solar parks are being developed within the country, where the responsibility to acquire land, getting land clearances, developing internal transmission system and maintaining it, making arrangement to connect to the grid, providing basic drainage; and providing water supply (minimum essential quantity), is taken by the Solar Power Park Developers (SPPD), who are state government designated agency or JVC between the state government designated agency and the Solar Energy Corporation of India (SECI) or JVC between the state governments designated agency and private agency or fully private agency. This encourages PPP participation in Electricity Generation projects.

The internal rate of return on projects in sectors, such as Airports & Aviation and Ports & Waterways, is generally higher as compared to social sectors.

The participation of the private sector in infrastructure might be a step towards pooling resources and technical expertise to develop world-class infrastructure in a competitive manner, which also has incremental effects on the overall growth of the economy. This is true for more commercially viable sectors such as airports, ports, roads & bridges, electricity generation. While physical infrastructure is duly appreciated for economic growth, an important prerequisite to long-term and sustained growth in building inclusive human capacities and protection of the environment, especially in the times of increasing climate crisis. Social sectors such as expenditure on health, education and affordable living, are key not only to develop strong human capital, which enhances labour and overall productivity, but also helps counter various inequalities, in terms of opportunities and potential, which are needed in the country.

One also needs to be wary of the implication of privately-held infrastructure assets, which finally will be used by the general public. Public goods are described as 'non-excludable', which means that there should not be restrictions to access these utilities. If private ownership of such assets leads to higher user charges or other means of access control, it could possibly deter large sections, especially from the weaker sections of society, from using these assets, even though they are beneficial/crucial for them. This would be counterproductive as economic activities from all sections of the society

contribute to the growth of the country and could potentially reinforce inequalities in the forms of segmented access to such resources.

It is remarked that sourcing financing from the private sector for infrastructure will free up ample fiscal space for the union and state governments to increase spending on social infrastructure and while it is true that these sectors have received funding largely from the governments as demonstrated in NIP projects under PPP mode, it is important to note that social infrastructure projects have smaller cumulative project costs in comparison to commercial sector projects.

As per our data, medical, education, sports and affordable housing infrastructure have a total project cost of Rs 36,606 crores. Total project cost under Roads & Bridges itself is 10 times this amount, demonstrating the inclination of the private sector towards more profitable commercial infrastructure projects rather than building social infrastructure. Even if we remove the PPP filter, under NIP, there are 1,289 projects, with a cumulative project cost of Rs. 17.37 lakh crores in social infrastructure. In comparison, in roads and bridges alone, there are 3,562 projects, with a total project cost of Rs 31.77 lakh crores. Similarly, some states such as Bihar, Meghalaya, Sikkim, Mizoram and others seem to be at an unequal footing in comparison to others, such as Maharashtra or Tamil Nadu, for attracting PPPs, sometimes even in the case of commercial sector projects. The presence of the union and respective state governments in project development is very important for such states so that development, within the country, is not unequally concentrated in some states and instead capacities are built overall within the country.

The India Investment Grid website has a section on Stressed Assets, which shows that, as of March 2023, there are 2,645 active stressed assets. These assets, though stressed, are being repackaged as opportunities to invest with the rationale that investors, with a considerable risk appetite, will be able to get these assets, at a lower valuation, and potentially make them profitable. A quick observation of the various opportunities presented shows that many of the stressed assets are private companies. For instance, in Energy Infrastructure, there are 152 stressed assets in various sub-sectors such as electricity generation - renewable energy and non-renewable; electricity transmission and distribution. Most of the stressed assets are private companies such as Athena Energy Pvt Ltd and Natural Power Asia Pvt Ltd. It shows that, in practice, reliance of private entities to better project success rate, in terms of cost overruns and productivity, is often not true. Finally, the government, on one hand, is providing encouragement to PPPs by the various policy initiatives, grants and supporting expenditures on associated infrastructure that it has taken charge of, and on the other hand, it is also helping with sale of these when the projects fail, in hope that someone else may be able to turn the projects productive.



Centre for Financial Accountability (CFA) engages and supports efforts to advance transparency and accountability in financial institutions. We use research, campaigns and trainings to help movements, organisations, activists, students and youth to engage in this fight, and we partake in campaigns that can shift policies and change public discourse on banking and economy.

We monitor the investments of national and international financial institutions, engage on policies that impact the banking sector and economy of the country, demystify the world of finance through workshops and short-term courses and help citizens make banks and government more transparent and accountable, for they use public money.

