

Unlocking State Budget Potential

November 2024

GOVERNMENT
OF KARNATAKA





Table of Contents

1. Project Background	4
2. Objectives of the Project	7
3. Executive Summary	10
4. Approach Followed	55
5. Baseline and benchmarking of State Budget	60
5.1: Tax receipts.....	63
5.2: Non-tax receipts	65
5.3: Expenditure	67
6. Recommendations: Asset Monetization	68
6.1: InvIT for transmission infrastructure	70
6.2: PPP for satellite township development.....	79
6.3: State-guided development of lands with Revenue Department.....	99
6.4: State-guided urbanization of Civic Amenity sites	109
6.5: PPP for affordable housing projects	125
6.6: State-guided development of Wayside amenities	135
7. Recommendations: Innovative Financing.....	150
7.1: Inter Corporate Deposits	152
7.2: State-owned NBFC.....	160
7.3: Interest-subvention for affordable housing	171
7.4: Blended finance.....	179
7.5: Green finance	190
8. Recommendations: Revenue Enhancement.....	198
8.1: Premium Floor Area Ratio (FAR)	200
8.2: Advertising fee	211
8.3: Insurance empanelment for specialty Government hospitals	223
8.4: Mining, irrigation and innovative revenue streams	234
9. Recommendations: Expenditure Rationalization.....	246
9.1: Water / Irrigation Department	248
9.2: Energy Department: Solarization of irrigation power.....	276
9.3: Health Department: Subcenter personnel optimization.....	293



9.4: Public Works Department	310
10. Appendix	330
10.1: PPP for satellite township development: land pooling model	331
10.2: PPP for satellite township development: land pooling benchmarks.....	332
10.3: PPP for satellite township development: SPV structure for seed phase	334
10.4: PPP for affordable housing projects: Draft PPP policy for affordable housing	336
10.5: Wayside amenities: Natural halting points	351
10.6: Wayside amenities: Minimum specifications and standards of project facilities	352
10.7: Wayside amenities: International benchmarks.....	356
10.8: Wayside amenities: Mandatory and permissible wayside amenities.....	364
10.9: Wayside amenities: revenue driver tree for wayside amenities	367
10.10: Inter Corporate Deposits: Draft investment circular for State PSUs.....	370
10.11: Water / Irrigation Department: CWC checklist for DPR preparation.....	378
10.12: Health (focus on subcenter personnel): Time-work study across 3 districts.....	392

Section 1: Project Background



1.0: Project Background

Karnataka has consistently been at the forefront of India's development trajectory. Karnataka is renowned for its innovation, industrial growth, and a highly skilled talent pool that excels across multiple economic and developmental parameters.

As the third-largest economy in India, Karnataka had a GSDP (Gross State Domestic Product) of INR 25,67,340 Crores¹ in 2023-24 growing at a robust 14% CAGR since 2013. The State also recorded the second-highest GSDP per capita among major Indian States². Notably, Karnataka's growth rate has consistently outpaced that of the national economy during this period. The following figure illustrates Karnataka's economic performance compared to other States.

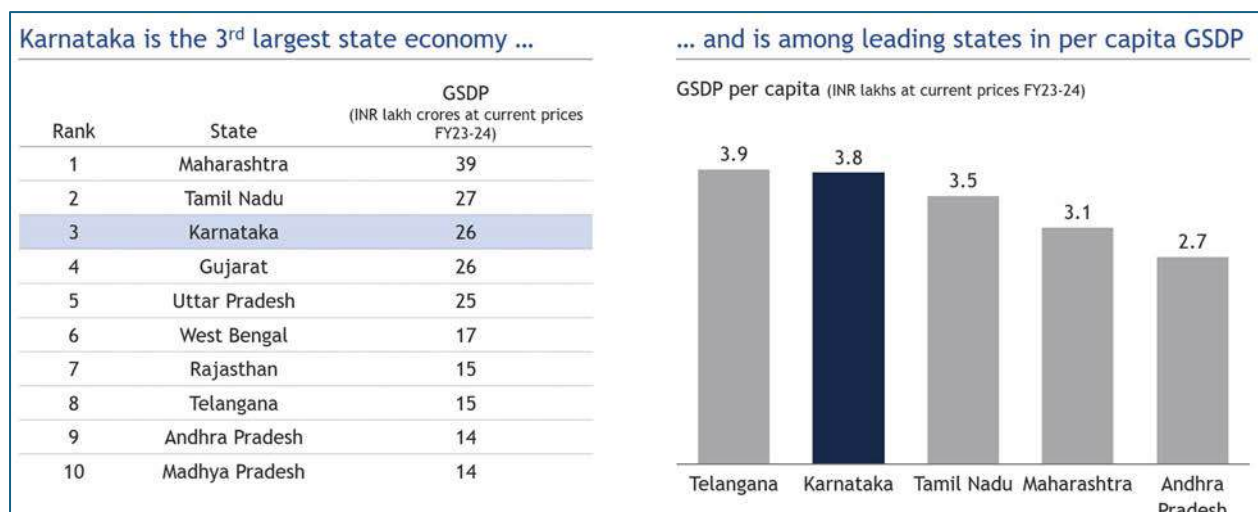


Figure 1.1: Comparison of Karnataka's GSDP vs other States²

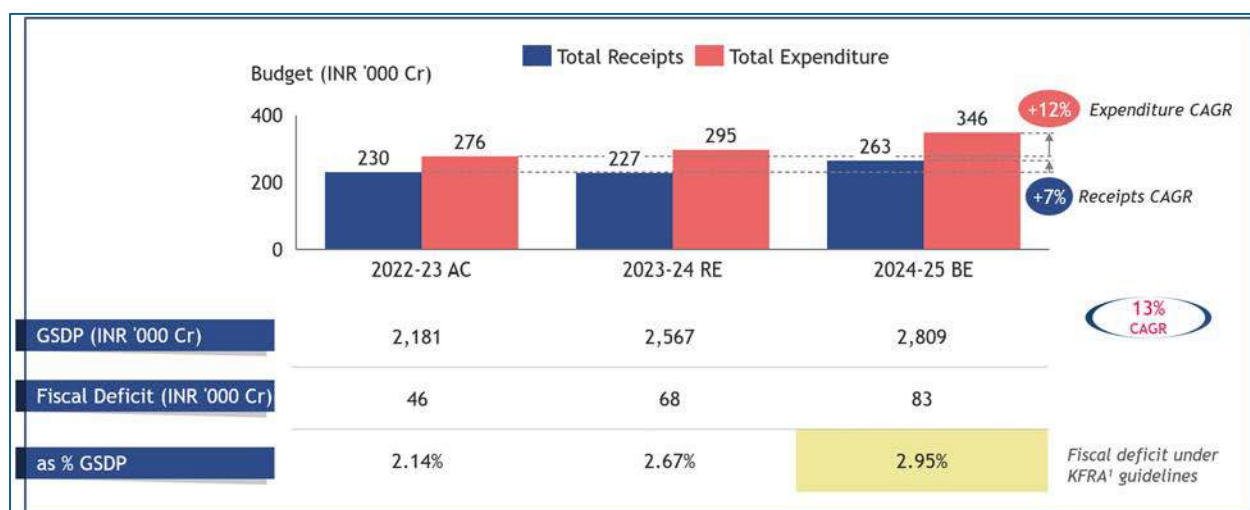
Karnataka is one of the largest contributors to GST collections, with revenues amounting to INR 161,494 Crores¹. Additionally, the State has garnered the second-highest share of Foreign Direct Investment in the country, receiving inflows of INR 389,483 Crores³ since October 2019 to March 2024, accounting for 22%³ of the national total. The strong R&D ecosystem and its top ranking in the Ease of Doing Business Index underscores Karnataka's leadership in fostering innovation and driving economic growth.

¹ State Budget overview 2024-25, as presented to the Legislature in February 2024

² RBI handbook of statistics on Indian States – National Statistical Office, Ministry of Statistics and Program Implementation

³ Department for Promotion of Industry and Internal trade statistics on Foreign Direct Investments

The figure below shows the growth in expenditure and receipts of the State since 2022-23 alongside the State's fiscal and revenue deficits.



To ensure continued fiscal sustainability and create the necessary financial headroom for future budgets, it is essential for the Government of Karnataka to explore the following 4 strategic elements, while ensuring improved socio-economic outcomes for the citizens.

1. Enable State-guided development-oriented asset monetization
2. Explore innovative sources and methods of financing
3. Increase receipts through innovative mechanisms
4. Rationalize expenses by improving spending efficiency without affecting results

Section 2: Objectives of the Project



2.0: Objectives of the Project

The overall objective of the project over the 24-week period from 10th June 2024 to 30th November 2024 was to identify opportunities to enhance the State's financial headroom for future budgets. This can be achieved through the following four strategic elements:

1. Enable State-guided development-oriented asset monetization

The State holds a diverse portfolio of assets, ranging from land parcels to transmission infrastructure, which can be monetized through strategic partnerships. Enabling State-guided, development-oriented asset monetization will enhance economic development and citizen outcomes, while unlocking upfront capital to fund further development.

2. Explore innovative sources and methods of financing

Identifying new and cost-effective sources of capital is critical for driving the State's economic development and enhancing financial resilience. Innovative financing mechanisms can support the State and parastatal bodies in accessing diverse funding sources for large-scale infrastructure projects as well as other capital requirements.

By adopting innovative financing strategies, the State can reduce reliance on traditional funding sources, alleviate fiscal pressure on the Department, and ensure more efficient capital allocation.

3. Increase receipts through innovative mechanisms

Independent revenue generation is essential for creating financial headroom for the State. The potential to enhance revenue generation has been assessed not only within Budget-supported departments but also extended to various parastatal bodies. Strengthening the revenue-generating capacity of these entities is crucial to reducing their reliance on the State Budget, thereby enabling them to deliver high-quality services to citizens in a more efficient and sustainable manner.

4. Rationalize expenses by improving spending efficiency without affecting results

Karnataka has potential to improve the efficiency of its expenditure without compromising the quality of service delivery. For example, Karnataka allocates 9%¹ of its revenue expenditure to the Energy Department, significantly higher than Maharashtra at 2%⁴, Tamil Nadu at 3%⁴, Telangana at 6%⁴, and a national average of 4%². Similarly, Karnataka dedicates 22%¹ of its total

⁴ Budget documents of Maharashtra, Tamil Nadu, Telangana, and Gujarat



capital expenditure to water and irrigation, as compared to 13%⁴ in Maharashtra, Telangana, and Gujarat, 5%⁴ in Tamil Nadu, and the national average of 9%².

This demonstrates the opportunity to improve expenditure quality, particularly in capital-intensive departments, by minimizing time and cost overruns and optimizing spending efficiency across the board.

The figure below summarizes the 4 key objectives of the project.

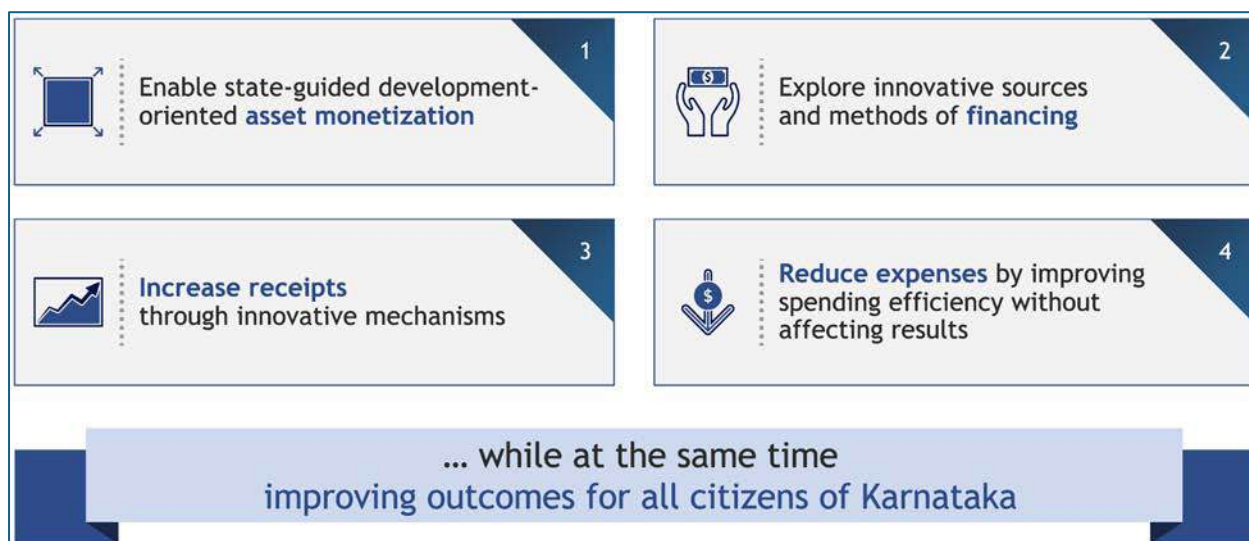


Figure 2.1: Four key objectives of the project

Section 3: Executive Summary



3.0: Executive Summary

Karnataka has consistently led India's development path, showcasing strengths in innovation, industrial growth, and a highly skilled workforce. The State has traditionally maintained strong fiscal discipline, adhering to the FRBM guidelines on fiscal deficit and outstanding debt.

Since 2022-23, Karnataka's expenditure has grown in parallel with its GSDP at a rate of 12-13%¹, while revenue receipts have seen a modest increase of 7%¹. This trend has contributed to a gradual rise in the fiscal deficit. As Karnataka continues to pursue inclusive growth across its diverse population segments and regions, the demand for funds is expected to increase to support balanced development.

With this background, the Finance Department undertook a project to 'Unlock State Budget Potential' to generate more funds for development. The objective of the project over the 24-week period from 10 June 2024 to 30 November 2024 was to identify opportunities to enhance the State's financial headroom for future budgets across four key strategic elements:

1. Enable State-guided development-oriented asset monetization
2. Explore innovative sources and methods of financing
3. Increase receipts through innovative mechanisms
4. Rationalize expenses by improving spending efficiency without affecting results

Across the four strategic elements, 19 recommendations were identified with annually recurring value potential of INR 6,500 - 8,000 Crores and one-time value unlock of INR 19,000 – 23,000 Crores.

The table below outlines the 19 recommendations across the four strategic elements, along with their respective value potential. Recommendations highlighted with a blue symbol represent a one-time value unlock, while those marked with a green symbol indicate a recurring annual value.



	Initiative	Value potential	
 Asset monetization	01 InvIT (Infrastructure Investment Trust) for transmission infrastructure	INR 4,000 – 5,000 Crores	
	02 PPP (Public Private Partnership) for satellite township development	INR 6,000 – 6,500 Crores	
	03 State-guided development of lands with Revenue Department	INR 3,500 – 4,000 Crores	
	04 State-guided urbanization for Civic Amenity (CA) sites	INR 2,500 – 3,500 Crores	
	05 PPP (Public Private Partnership) for affordable housing projects	INR 150 – 200 Crores	
	06 State-guided development of Wayside Amenities	INR 200 – 400 Crores	
 Innovative financing	07 Inter Corporate Deposits	INR 150 – 200 Crores p.a.	
	08 State owned NBFC (Non-Banking Financial Company)	INR 1,000 – 1,250 Crores p.a.	
	09 Interest subvention for affordable housing	INR 2,500 – 3,000 Crores	
	10 Blended finance	INR 200 – 250 Crores p.a.	
	11 Green finance	INR 75 – 100 Crores p.a.	



		Recommendation	Value potential	
 Revenue enhancement	12	BBMP: Premium FAR (Floor Area Ratio)	INR 1,500 – 1,800 Crores p.a.	
	13	BBMP: Advertising fee	INR 400 – 550 Crores p.a.	
	14	Insurance empanelment for specialty Government hospitals	INR 40 – 60 Crores p.a.	
	15	Mining, irrigation and innovative revenue streams	INR 1,100 – 1,500 Crores p.a.	
 Expenditure rationalization	16	Water / Irrigation Department expenditure rationalization	INR 600 – 800 Crores p.a.	
	17	Energy Department: Solarization of irrigation power	INR 900 – 1,000 Crores p.a.	
	18	Healthcare personnel efficiency and subcenter optimization	INR 150 – 200 Crores p.a.	
	19	Public Works Department expenditure rationalization	INR 400 – 500 Crores p.a.	
Total	Annually recurring value potential		INR 6,500 - 8,000 Crores p.a.	
	One-time value unlock		INR 19,000 – 23,000 Crores	



Recurring every year



One-time value unlock

Table 3.1: 19 recommendations across 4 key strategic elements



3.1 Asset monetization

Recommendation #1: InvIT (Infrastructure Investment Trust) to monetize power transmission infrastructure

Objective

The future revenue streams of operational energy transmission assets can be monetized through an InvIT, thus unlocking upfront lumpsum funds for further infrastructure development.

Context

Karnataka Power Transmission Company Limited (KPTCL), a State PSU, undertakes the responsibility for transmission from power generating stations to various distribution companies in the State. As Karnataka's power transmission infrastructure demand continues to grow, KPTCL faces increasing capital requirements year on year to support the expansion and modernization of its network. Meeting this rising demand necessitates an innovative approach to raising capital beyond relying on traditional borrowing methods to fund the projects in a cost-effective manner.

Recommendation

It is recommended to set up an InvIT for KPTCL assets to unlock low-cost funds for transmission infrastructure development, by monetizing future revenue streams of operational assets.

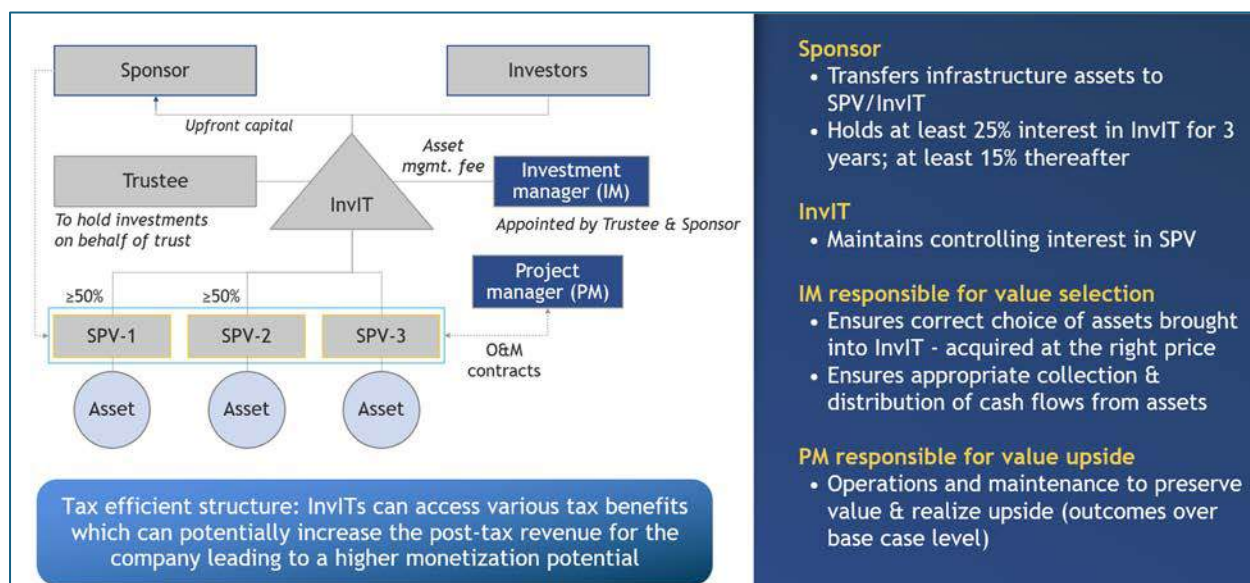


Figure 3.1: Structure of a typical InvIT



Power Grid (PGCIL), a Central Government PSU, had set up an InvIT in 2021, wherein it monetized five transmission lines initially valued at INR 6,500 Crores but raised INR 10,000 Crores, realizing a premium of INR 3,500 Crores. This premium was attributed to the tax-efficient nature of the InvIT, which operates as a pass-through entity, exempt from corporate taxes. Another example is IndiGrid, an InvIT set up by Sterlite Power, which has raised about INR 7,000 Crores across multiple years through 2017 to 2023.

KPTCL, an 'A'-rated State transmission company, manages assets valued at INR 17,000 Crores⁵ post-depreciation. These assets primarily consist of transmission lines and cable networks regulated under the Regulatory Tariff Mechanism (RTM). These assets help the company generate INR 4,800 Crores¹² in revenue and Free Cash Flow to the Firm (FCFF) of INR 2,700 Crores¹².

The recommendation involves KPTCL monetizing a portion of its transmission assets through an Infrastructure Investment Trust (InvIT) structure. This monetization is estimated to raise between INR 20,000 to 25,000 Crores, unlocking a monetization premium of 30% to 35% on the book value of its assets. KPTCL could raise capital amounting to INR 4,000 to 5,000 Crores assuming 20% of its assets are monetized via an InvIT structure.

By transferring KPTCL assets into a Special Purpose Vehicle (SPV) under the InvIT structure, KPTCL will benefit from the tax-efficient nature of trusts, which are exempt from the 25 – 30% corporate tax, significantly boosting the projected free cash flows. The cost of capital could be reduced to around 6 – 6.5%, compared to the current range of 9 – 9.5%, providing KPTCL with immediate capital for further expansion of power transmission projects and repayment of existing debt.

This recommendation not only secures the much-needed capital but also strengthens KPTCL's long-term financial sustainability, enabling the company to continue its development trajectory with reduced financial burdens and enhanced operational flexibility. However, there will be 2 key considerations for KPTCL as it plans to set up an InvIT:

1. It will be necessary to ensure tariff stability via KERC guarantee given KPTCL's assets operate with Regulated Tariff Mechanism (RTM) instead of Tariff Based Competitive Bidding (TBCB).
2. Institutionalizing timely payments from ESCOMs is necessary to provide investors with consistent and stable revenue streams.

⁵ KPTCL Annual Report (FY 23-24)



Value potential

KPTCL has the potential to raise INR 20,000 – 25,000 Crores through an InvIT if 100% of its assets were monetized. By initiating a pilot with 20% of the assets, KPTCL could secure a **one-time capital infusion of INR 4,000 – 5,000 Crores** through the InvIT structure.



Recommendation #2: PPP (Public Private Partnership) for Satellite Township Development

Objective

Satellite Townships can be developed in PPP mode in a phased manner to ensure timely and high quality of development with minimal fiscal burden to Government.

Context

The State Government is planning the development of satellite townships around Bengaluru. This will help enhance the socio-economic environment for citizens while reducing congestion within Bengaluru. The Bangalore Metropolitan Region Development Authority (BMRDA) has taken the lead in this effort, identifying five strategic locations for these townships: Bidadi, Nandagudi, Solur, Ramanagaram, and Satnur.

To ensure the successful development of these townships, it will be beneficial for the Government to adopt an Integrated Township Framework that ensures high quality development in a timely manner with minimal fiscal burden to the state. The Framework comprises of 5 elements: (1) Land consolidation, (2) Urban planning guidelines, (3) Project development model (incl. PPP), (4) Investor / Developer onboarding, and (5) Project implementation.

The first township to be developed is in Bidadi, covering an extensive area of approximately 8,000 to 10,000 acres across 10 villages. This area includes 2,100 acres of Government-owned land, 6,300 acres of privately owned land, with the remainder consisting of water bodies. The recommendations below have been designed taking the Bidadi township as an example. These recommendations can similarly be applied to other townships as well.

Recommendation

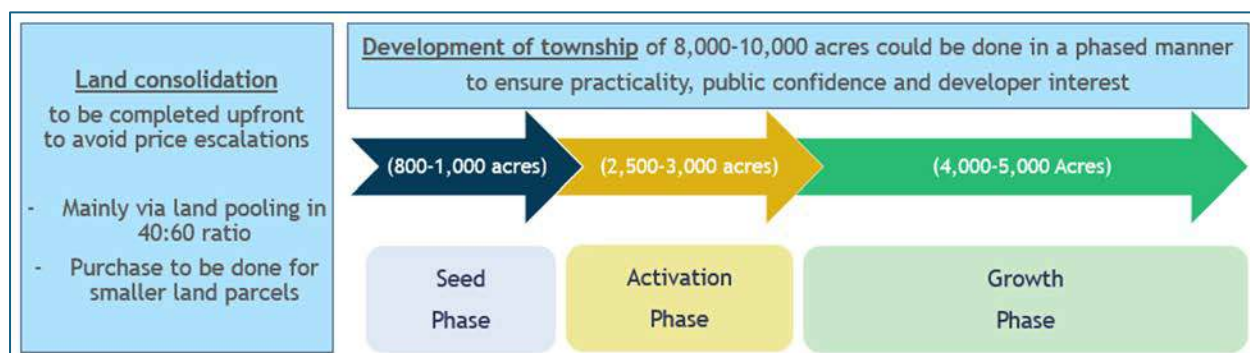


Figure 3.2: Recommendation for phased development of township

It is recommended to develop the Bidadi Township in three phases, namely the **Seed Phase**, **Activation Phase** and **Growth Phase**, leveraging **Public-Private Partnerships**. To mitigate



potential price escalations, it is recommended that land consolidation for the 6,300 acres of privately owned land be completed upfront, through a combination of land pooling for large parcels and land acquisition for smaller parcels. Under the land pooling model, 40% of the allottable developed land will be returned to the original landowners.

1. The **Seed Phase**, covering 800-1,000 acres of owned land, is designed to establish a strong foundation with substantial Government involvement over an estimated 3-4 year timeline. In this phase, the Government will undertake the master development of trunk infrastructure and plan the required connectivity to the Seed Phase land. It is then recommended to set up a Public-Private Partnership (PPP) through the formation of a Special Purpose Vehicle (SPV) to drive layout and property development. By contributing the master-developed land as equity, the Government will secure a **10-15% equity stake** in the SPV. This stake will allow the Government to foster public confidence, attract developer interest, and facilitate the regulatory approvals necessary for development.
2. The **Activation Phase**, spanning 2,500-3,000 acres, maintains Government oversight in master development, but subsequent development stages, i.e., layout and property development, are handed over to the private developer. The Government transfers the master-developed land to the developer on a 99-year long lease. The developer also takes over the responsibility to return the developed land to the pooled landowners. This approach minimizes Government cost outlay while ensuring quality development through private sector efficiency. The timeline for this phase is estimated to be 5-7 years.
3. The **Growth Phase**, spanning 4,000-5,000 acres, entrusts the developer with full responsibility for development, including master, layout and property development. The developer establishes a joint development model with the landowners and returns 40% of the allottable land or equivalent revenue share after development. With proven demand and heightened developer interest, Government involvement could be decreased. The timeline for this phase is estimated to be 8-10 years.

This phased development approach ensures a gradual and controlled transition from Government-led initial stages to a predominantly private sector-driven model, leveraging private sector efficiency while maintaining stability and strategic urban planning by the Government.

Value potential

The recommended approach could lead to **one-time savings of INR 6,000 – 6,500 Crores** by reducing the cost outlay for land consolidation using land pooling model, as well as driving minimal spend on development, just enough to ensure adherence of master plan.



Recommendation #3: State-guided development of lands with Revenue Department

Objective

The land parcels with the Government could be developed and monetized to enhance the State's socio-economic development in compliance with the Karnataka Land Revenue Act.

Context

The Government of Karnataka can explore strategic land monetization opportunities to enhance the State's revenue streams while ensuring compliance with the Karnataka Land Revenue Act. This recommendation aims to monetize Government land in alignment with the State's socio-economic development goals, unlocking value from lands managed by the Revenue Department.

A pilot study was launched in Kolar District to test and refine this approach. The Kolar pilot aimed to establish a scalable and adaptable framework for land monetization across the State, balancing revenue generation with sustainable, community-centered development. Drawing from successful land-use strategies in other states, the framework prioritized utilizing land for social infrastructure, agriculture, and public facilities, ensuring that monetization efforts contribute to broader societal benefits. An initial assessment has identified about 4 lakh acres of land across 35,000 parcels, with 1.7 lakh acres under the Revenue Department in Kolar. However, on ground validation revealed discrepancies, indicating that actual unencumbered land was lower than estimated, highlighting the need for rigorous verification before monetization.

Recommendation

It is recommended that the land monetization initiative in Kolar District, originally launched as a pilot study, be formalized as a scalable framework for repurposing Government land managed by the Revenue Department. This approach aims to achieve two primary objectives: (1) driving state-guided development as per local requirement, and (2) generating additional value unlock for the Government. The framework was designed to categorize and prioritize land parcels by size, location, and potential use, ensuring compliance with the Karnataka Land Revenue Act.

Several Indian states have successfully implemented land monetization strategies that offer valuable insights for Karnataka. Rajasthan has repurposed lands for renewable energy under joint ventures, transforming wastelands into energy parks, while Gujarat's Industrial Policy 2020 allows long-term leases on Government land to support industrial growth. Tamil Nadu's KAVIADP⁶ program focuses on converting barren lands into productive agricultural fields,

⁶ Kalaingar All Villages Integrated Agriculture Development Program



enhancing rural livelihoods. These models demonstrate how lands can be strategically repurposed to achieve socio-economic and environmental goals.

Strategic Land Categorization and Utilization

Land parcels, defined as contiguous plots with clear ownership and development potential, were categorized based on their suitability for various types of projects:

- **Large parcels (500+ acres)** were prioritized for integrated townships, multi-modal logistics hubs, and social infrastructure, in alignment with district development goals.
- **Medium parcels (200–500 acres)** were designated for warehousing, logistics, and industrial dormitories to support the district's growing industrial demand.
- **Smaller parcels (100–200 acres)** were allocated for community-centered infrastructure, such as affordable housing, sports facilities, and educational institutions.

	Near Urban	Semi Urban	Rural
>500 acres	• Integrated townships • Industrial parks • Multi-modal logistics park	• Solar farms • Wind farms • Industrial parks • Multi-modal logistics park	• Solar farms • Wind farms • Agro industrial farms • Food and spice parks
200-500 acres	• Warehouses • Logistics park • Industrial Dormitories	• Educational Institutes • Warehouses • Logistics park	• Hospitality and Resorts • Solar farms • Wind farms • Agroforestry Projects
100-200 acres	• Affordable housing • Sports complex • Industrial Dormitories	• Educational institutes • Hospitality and Resorts • Smaller Industrial Parks • Logistics Park	• Solar farms (PM-KUSUM FLS) • Educational Institutions • Agricultural Markets - Mandis

Figure 3.3: Framework for idle land monetization basis land parcel size

This structured approach ensures that land monetization efforts foster development and socio-economic growth, creating a balanced model that could be replicated across Karnataka.

Value potential

The Bhoomi Monitoring Cell has mapped approximately 1.7 lakh acres of idle land, though ground verification revealed some discrepancies. Conservatively, a pilot project in Kolar could generate around **INR 3,500–4,000 crore (one-time)** by monetizing 5-8% of grazing lands and 10-15% of wastelands, based on guidance values of INR 50 lakh to 1 crore per acre. This figure could be significantly higher when expanded across Karnataka's 31 districts.



Recommendation #4: State-guided urbanization for Civic Amenity (CA) sites

Objective

1,900 CA sites with BMRDA, spanning across 700 acres could be monetized efficiently by amending Allotment of Civic Amenity Sites Rules (Karnataka Planning Authority Rules 2016)

Context

The Bangalore Metropolitan Regional Development Authority (BMRDA) manages 1,900 Civic Amenity (CA) sites across 1,250 layouts, totaling approximately 700 acres, of which only 10-15 sites have been allotted so far. These CA sites have an estimated land value of INR 4,700 Crores, with a monetizable potential of INR 2,500–3,500 Crores, based on a 50-70% allotment rate and a 10-20% premium over the guidance value.

However, BMRDA's current policy restricts CA site allotments to Government and non-profit entities, uses a fixed lease structure with no escalation, and relies on a lottery system, limiting both flexibility and revenue potential. In contrast, the Bangalore Development Authority (BDA) allows private sector participation, offers flexible payment options with annual lease escalation, and permits modern amenities, enabling faster monetization and greater adaptability.

Recommendation

It is recommended to align the BMRDA Rules to the BDA Rules, and further amend certain clauses - in total across eight key areas to enhance the efficient monetization of Civic Amenity Sites:

1. **Inclusion of Private Players:** Amend the Karnataka Planning Authorities Rules to allow CA site allotments to private organizations, in addition to Government and local bodies, following BDA's model. This change would broaden participation by including private players offering public services.
2. **E-Tendering System:** Replace the current lottery system with an E-tendering process for leasing CA sites, using an H1-based selection where bidders compete on premium offers above a set floor price. This change would increase transparency, competitiveness, and efficiency.
3. **Bundling of CA Sites Across Layouts:** Allow CA sites to be bundled across multiple layouts, enabling larger and more integrated projects. This flexibility would attract private players for multi-use developments, optimizing CA site utilization.
4. **Annual Lease Rate Escalation:** Introduce an annual escalation of lease rates in line with guidance values, preserving the real value of leases over time and aligning with market trends.



5. **Flexible Lease Payment Options:** Offer varied payment structures, including a 30-year upfront lump sum, a 10-year bullet payment plan, and a 30-year annuity with annual escalation.
6. **Expand Permitted Amenities:** Update permitted amenities to include modern utilities like multiplexes, hotels, co-working spaces, and EV charging stations, making CA sites relevant to evolving urban needs and supporting innovation.
7. **Right of First Refusal for Lessees:** Introduce a clause granting lessees the right of first refusal upon lease expiration to match the new tendered price, incentivizing long-term investments in site development and maintenance.
8. **Streamlined Allotment Process:** Open applications for CA site allotment to Government bodies, non-profits, and private organizations simultaneously. This streamlined approach would reduce processing time while maintaining the priority order, with Government entities retaining first preference.

Value potential

Assuming an allotment rate of 50-70% and a premium of 10-20% over the guidance value, the potential monetizable value of CA sites ranges from **INR 2,500 to 3,500 Crores (one time)**.

Objective

Context

The demand for these housing units is evident, with 57,156 applications received through the RGHC's online portal. However, only 12,153 beneficiaries have secured units by paying the initial deposit of INR 50,000. Notably, only seven units have been registered, with full payments received from the beneficiaries. The beneficiary's inability to contribute their share of construction costs has resulted in lack of funds. Due to this, only 4,073 units have been completed till October 2024 and more than 41,000 units have been stalled across project sites.

The land share ratio should be evaluated basis land Guidance Value and developer incentives including increase in maximum permissible Floor Area Ratio (FAR) on developer site, and maximum Transferrable Development Rights (TDR) transferrable from affordable housing site to developer site.

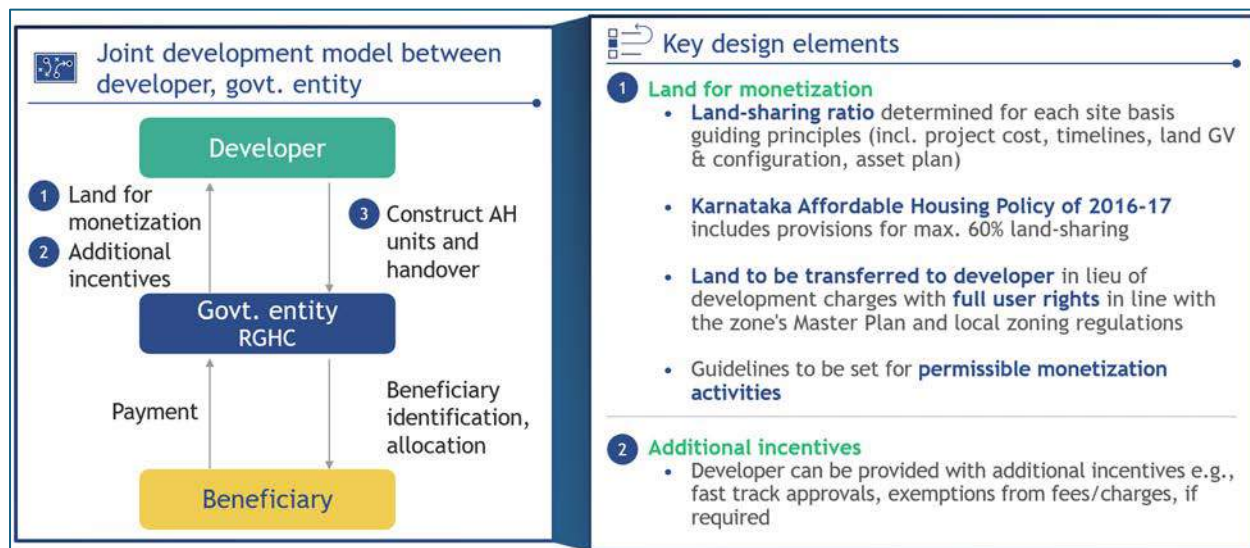


Figure 3.4: PPP-based joint development model for affordable housing

Other states have successfully implemented the PPP-based joint development model. In Gujarat, 37,000+ houses have been constructed in PPP-mode. The State also received an award under the PMAY (Urban) scheme for “Best Affordable Housing Project under PPP model 2021”. In Rajasthan, 13,600+ units have been constructed via PPP-based joint development model including EWS, LIG, and MIG housing across Jaipur, Kotputli, Jodhpur, Udaipur, and Churu. In Odisha, 2,600 affordable housing units have been constructed on 14 acres with 6.5 acres of land monetized on a free-hold basis.

While the current KAHP policy permits PPP-based joint development model, a new policy has been drafted which defines the methodology to identify land-share ratio at a site level, defines land use norms across residential and commercial usage and lays out guidelines for operations and maintenance of the constructed units for the developer.

Value potential

This recommendation can help the State undertake Affordable Housing projects in a financially sustainable manner. As an immediate value unlock, **one time savings of INR 150 – 200 Crores** has been identified across three priority sites for PPP (Muddayanapalya 18 acres, Hunasemarenahalli 5 acres, Hulimangala 4.9 acres). Across these three sites, PPP-based joint development model can create financial headroom to cross-subsidize construction cost of INR 10.9 Lakhs for 1,563 units. The value is estimated based on the potential to cross-subsidize construction cost of units from the land value of developer’s share subject to its Guidance Value.



Recommendation #6: State-guided development of Wayside Amenities

Objective

A design framework for the development of Wayside Amenities along highways in Karnataka can be established.

Context

Development of Wayside Amenities (WSAs) is critical to ensure that road travelers in Karnataka benefit from adequate amenities along with superior road infrastructure. The Public Works Department (PWD), authorized by Government Order No. PWD 172 CRM 97 dated August 20, 1998, can proactively develop comprehensive WSAs along State highways to enhance road infrastructure and traveler convenience.

Initiative

It is recommended that a stepwise framework for the development of Wayside Amenities may be implemented. The three key steps include:

- Strategically identify optimal location for WSAs
- Define a tiered range of amenities for passenger and commercial traffic, and
- Identify optimal opportunities to consolidate and utilize land

The stepwise framework is detailed below:

Step 1: Strategically identify optimal location

To optimize the placement and design of WSAs, it is recommended to establish them on state roads with traffic over 2,000 vehicles per day. WSAs should be spaced 40-60 km apart, with clustering allowed within a 10-15 km range as needed. Further, WSAs must be at least 1 km from toll plazas, following Government access guidelines, and 5 km outside municipality limits to reduce urban congestion. A land area of 1-2 hectares with sufficient frontage is ideal.

For high-quality development, four design principles should be adopted:

1. Allocation of 60% open space for parking, vehicle movement, and landscaping
2. Limiting covered areas to a maximum of 40% of the site or as per local byelaw limits
3. Mandating essential amenities (such as food outlets, washrooms, and drinking water) along with accessibility features
4. Incorporating green practices, including rainwater harvesting and bio-waste recycling.



Step 2: Define a tiered range of amenities for passenger and commercial traffic

To meet the diverse needs of roadway users and ensure that both passenger and commercial traffic are effectively served, WSAs can be organized into three distinct models: Type 1 offers comprehensive services for cars, buses, and trucks, accommodating all types of travelers; Type 2 focuses on car and bus passengers exclusively; and Type 3 caters specifically to truck drivers and their helpers.

Type 1: Comprehensive facility for car, bus and truck users: Caters to all users with 24 services across 5 categories – including services such as parking, fuel & charging stations, restaurants, restrooms, toilets, ATMs, village haat, and areas marked for future expansion.

Type 2: Facility for only car and bus passengers: Smaller facility compared to Type 1 and includes 4 service categories - section for bus and car passengers, a fuel station, village haat and reserved area for future expansion.

Type 3: Facility for only truck drivers and helpers: Similar to Type 2, this facility is also smaller than Type 1 and has 3 service categories - section for truck drivers, a fuel station and an earmarked area for expansion in future.

Step 3: Identify optimal opportunities to consolidate and utilize land

For land consolidation and development, 2 strategic models have been recommended:

Model 1: Government owned land and bidding (standalone / bundled sites) – For Government-owned land, the development is leased through a competitive bidding process. The Agreement and Lease terms depend on whether the site is already developed. Annual lease amount increases are adjusted for inflation. When the lease ends, the facility goes back to the Highway Authority. Further, bundling of sites is considered to mitigate traffic risk.

Model 2: Private Land allocation – By utilizing private land, the Government avoids the expense of land acquisition, while ensuring steady revenue through lease rentals or revenue shares from private developers who provide consistent, high-quality infrastructure. Selected private landowners are required to construct and maintain WSAs based on provided prototypes.

Value potential

Karnataka's State highway network spans 27,814 kms. With new Wayside Amenities at every 100 km, around 250 facilities are required translating to 50-60 sites developed annually over 4–5 years. Assuming 25% of the land taken up for the Wayside Amenities is Government-owned, with land appreciation of 2-3X post development (INR 30-50 Lakhs per acre) and an average amenity size of 2 hectares (5 acres), the value potential amounts to **INR 200 – 400 Crores** as a total **one-time unlock** across 4-5 years.



3.2: Innovative Financing

Recommendation #7: Inter Corporate Deposits

Objective

Cost-effective borrowing and lending among PSUs can be enabled via Inter Corporate Deposits (ICD), to retain more value within the State finances and drive self-sufficiency.

Context

Loss-making Public Sector Undertakings (PSUs) in the State face elevated cost of borrowing ranging from 9 – 11% due to weak financial performance (e.g., ESCOMs, RTCs). On the other hand, a few State PSUs with surplus funds, currently are holding them in bank deposits with relatively moderate interest rates of 7.7 – 7.9%.

This underutilization of surplus funds could be deployed to ESCOMs and RTCs. In doing so, the PSUs with surplus funds will be able to achieve higher returns than from bank deposits. At the same time, the ESCOMs and RTCs will be able to access funds at lower interest rates than through market borrowing.

Recommendation

It is recommended to institutionalize Inter Corporate Deposits for 20 PSUs by modifying the existing investment circular to manage the usage of surplus funds with State PSUs.

Inter-Corporate Deposits (ICDs), as permitted under the provisions laid down under the Companies Act, 2013, Chapter XII, Section 186 titled “Loan and investment by Company” paragraphs 1 through 13 offers a mechanism for the State PSUs to lend and borrow funds amongst themselves.

For PSUs with surplus funds, ICDs present a strategic opportunity to achieve higher returns by deploying surplus capital at competitive interest rates, thereby improving returns compared to traditional bank deposits. Simultaneously, borrowing entities benefit from accessing funds at interest rates lower than those typically offered by commercial banks or other financial institutions.

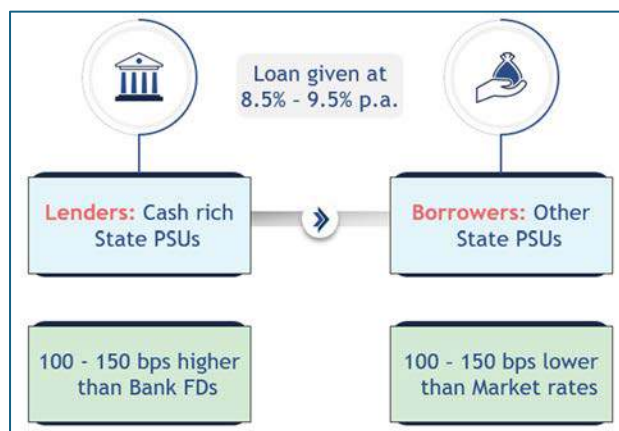


Figure 3.5: Illustrative for Inter Corporate Deposits

Illustration: The Karnataka State Minerals Corporation Limited (KSMCL) currently holds INR 4,012 Crores in reserves and surplus, distributed across various term deposits at 7.9%. Borrowers currently secure loans from the market at a high interest rate. For example, BESCOM's loan book's weighted average interest rate is 9.3%.

By facilitating an inter-corporate transaction between the two at an assumed interest rate of 8.7%, KSMCL would realize an additional interest benefit of 0.8%, resulting in an annual gain of INR 16 Crores on a principal of INR 2,000 Crores. Simultaneously, BESCOM would benefit from an interest saving of 0.6%, yielding savings of INR 12 Crores annually. This would generate a combined financial benefit of INR 28 Crores per annum for the system from 1 transaction.

Investment circular permitting Inter Corporate Deposits may be rolled out for 11 potential lenders (including KSMCL, KREDL, KSBCL, HGML, KSIIDC, KSDL, KRIDL, KSIC, KSSIDC, MSIL, and KUIDFC) with INR 12,771 Crores in reserves invested in Fixed Deposits at a weighted average interest rate of 7.9%. The eligible borrowers include 9 commercial undertakings including ESCOMs (BESCOM, HESCOM, GESCOM, MESCOM, CESC) and RTCs (BMTTC, NWKRTC, KSRTC, KKRTC).

Value potential

Lenders, currently earning 7.9% on fixed deposits, stand to gain up to 1% by participating in ICD transactions at 8.9%. This translates into an annual financial gain of INR 67 Crores. For borrowers, who typically secure loans at an interest rate of 10.3%, the ICDs offer up to 1.3% reduction in borrowing costs, resulting in an annual saving of INR 83 Crores. In total, this recommendation is estimated to generate **total benefit of INR 150 – 200 Crores per year** across borrowers and lenders thus making it overall beneficial for Karnataka's PSUs.



Recommendation #8: State-owned NBFC (Non-Banking Financial Company)

Objective

An NBFC can be set up by the State to raise off-budget capital from new avenues to provide cost-effective financing to commercial undertakings.

Context

As the State grows, it is imperative to explore new avenues for raising capital to support developmental growth by commercial undertakings. Other States such as Tamil Nadu and Gujarat have set up State-owned NBFCs to secure funds from various sources including Inter Corporate Deposits and public debt.

Tamil Nadu operates 3 NBFCs to mobilize capital for infrastructure development across power, transport, and urban infra sectors. For instance, Tamil Nadu Power Finance Corporation (TNPFC), operational for 33 years, has raised a cumulative capital of INR 40,067 Crores—comprising INR 29,438 Crores from institutional deposits and INR 10,629 Crores from public deposits. Public deposits, with tenures ranging from 1 to 5 years, carry interest rates between 8.10% and 8.25%. Institutional deposits are offered at rates of 7.5% to 8% for 1- to 5-year tenures and 3.5% to 4% for tenures under a year. The capital is ringfenced and managed by a Board of Directors that includes senior officials from the Finance and Energy Departments. The capital is exclusively utilized to finance power sector projects under the Tamil Nadu Generation and Distribution Corporation (TANGEDCO).

Similarly, Gujarat State Financial Services has raised cumulative capital of INR 49,500 Crores via Inter Corporate Deposits from State PSUs.

Recommendation

It is recommended that the State may set up a State-owned NBFC in the long term to serve as a strategic vehicle to optimize off-Budget borrowings by:

1. Enabling parastatal bodies (e.g., ESCOMs, RTCs, urban local bodies) to borrow on more favorable terms compared to prevailing market rates
2. Expanding access to diverse capital sources, including Inter-Corporate Deposits, public debt, international market instruments (e.g., masala bonds), and green bonds, among others
3. Financing critical infrastructure projects without contributing to an increase in the State's official debt stock



A State-owned NBFC offers a diversified product portfolio for lenders, providing flexibility with both short-term and long-term investment options, along with the added advantage of callable deposits. Establishing an independent entity with relevant domain experts will enhance the focus on prudent financial management and ensure a professional approach. Further, the State-owned NBFC will not only help access diversified funding sources but also help systematize Inter Corporate Deposits. Further, the NBFC offers an opportunity to de-risk the investment portfolio by effectively managing Non-Performing Asset (NPA) risks through stringent risk management protocols.

To operationalize the NBFC effectively, establishing a robust governance framework is essential to ensure the secure deployment of funds. An independent Board of Directors, comprising of senior State Government officials and private-sector experts, should be constituted to provide oversight. Pre-defined, stringent Articles and Memorandum of Association will help prevent fund misuse. Additionally, the NBFC needs to secure a deposit-taking license from the Reserve Bank of India (RBI) to maintain regulatory compliance.

Value potential

Assuming the State-owned NBFC funds at an interest differential of 200 – 250 bps vs market borrowing rates and builds a loan book of INR 50,000 Crores; the total value potential is estimated to be **INR 1,000 – 1,250 Crores per annum**.



Recommendation #9: Interest subvention for affordable housing

Objective

The access to affordable housing for Economically Weaker Sections can be improved by reducing loan burden via an interest subvention scheme.

Context

Dept. of Housing, via Rajiv Gandhi Housing Corporation (RGHC), is developing Affordable Housing units under the “1 Lakh Multi-Storied Bengaluru Housing Scheme”. 45,124 units are under construction while 54,876 units are yet to be planned.

The demand for these housing units is evident, with 57,156 applications received through the RGHC’s online portal. However, only 12,153 beneficiaries have secured units by paying the initial deposit of INR 50,000. Notably, only seven units have been registered, with full payments received from the beneficiaries. The beneficiary’s inability to contribute their share of construction costs has resulted in the completion of only 4,073 units till October 2024. This lack of funds has led to stalled affordable housing projects to the tune of 41,051 units. If beneficiaries are unable to finance their share of payments, the State’s financial burden could reach INR 4,003 Crores.

Recommendation

It is recommended to launch a beneficiary interest subvention scheme to reduce the effective interest rate for beneficiaries, thereby alleviating the financial burden associated with housing loans. Under this scheme, the Government will bear a portion of the interest charged on the loan, effectively lowering the EMI payments for beneficiaries.

Beneficiaries currently need to source loans averaging INR 8.9 Lakhs. Housing Finance Corporations/NBFCs offer an interest rate of approximately 11% for a 15-year tenure. The total EMI burden for this loan amounts to around INR 10,100 per month for the beneficiary.

Under the proposed subvention scheme, the State will cover 3% of the total interest rate offered by the lender for the first 10 years of the loan tenure. This 3% subvention reduces the beneficiary’s EMI burden by INR 1,200 –2,200 per month, effectively lowering the minimum monthly payment to around a minimum INR 7,900. The State reimburses the subvention amount each month to the beneficiary after their EMI payment is confirmed by the lender. This approach incentivizes timely payments and minimizes the risk of defaults.

The scheme is expected to reduce the cost burden for the State Government. If beneficiaries are unable to finance their share of payments, the State’s financial burden could reach approximately



INR 4,000 Crores. The subvention scheme, covering 45,124 beneficiaries for units currently under construction, would cost the State an average of INR 96 Crores per year over 10 years, amounting to a Net Present Value of INR 615 Crores.

It is proposed that the scheme can be implemented in a phased manner, beginning with pilot projects for Affordable Housing in and around Bengaluru. Based on insights and outcomes from this initial phase, the scheme may then be expanded to cover all housing units across the State in Phase 2.

Value potential

An interest subvention of 3% for the 45,124 beneficiaries under the “1 Lakh Multi-Storied Bengaluru Housing Project” over a 10-year loan tenure is projected to cost the State INR 968 Crores over 10 years resulting in a net present value (NPV) cost to the State of INR 615 Crores.

Assuming only 10% of the beneficiaries can finance their entire share of payment under the status quo, the State would have to incur an expenditure of INR 3,600 Crores to cover the payments of the remaining 90%. Conversely, the cost of implementing the subvention amounts to INR 615 Crores providing the State with **one-time savings of INR 2,500 to INR 3,000 Crores.**



Recommendation #10: Blended finance

Objective

Blended Finance Facility can mobilize an aggregation of public, private, and philanthropic capital to lower borrowing costs and scale investments in critical development areas.

Context

The Government undertakes numerous essential projects, particularly in the climate and sustainability sectors, which are crucial for long-term growth but often lack commercial viability and face challenges in securing external financing. These projects, due to limited profitability, contribute to increased Government debt liability. Examples include infrastructure for electric vehicle charging stations, rooftop solar installations, coastal protection initiatives, forest restoration, green hydrogen supply chains, and biomass/biofuel plants. These projects often involve high initial costs, long gestation periods, uncertain revenue streams, or nascent technologies, making them less attractive to private investors.

To address these challenges, blended finance presents a promising approach. By combining public, private, and philanthropic capital, blended finance can help de-risk these projects, making them more appealing for private sector participation. Financial tools such as concessional debt, carbon credits, payment guarantees, and equity funding can be strategically employed to reduce investment risks and enhance the commercial attractiveness of such initiatives.

For projects in the climate and sustainability sectors, innovative financing mechanisms like those offered through a blended finance facility can provide the necessary support to address risk, attract external investment, and ensure that critical sustainability goals are met without placing excessive strain on Government finances.

Recommendation

It is recommended to establish a Blended Finance Facility as a strategic, long-term initiative aimed at mobilizing public, private, and philanthropic capital to support sustainable development. This facility would not only provide essential funding but also offer critical project implementation support, enhancing execution and maximizing impact. Blended finance effectively mitigates investment risks by deploying public or philanthropic capital to absorb certain project risks, making these projects more attractive to private investors.

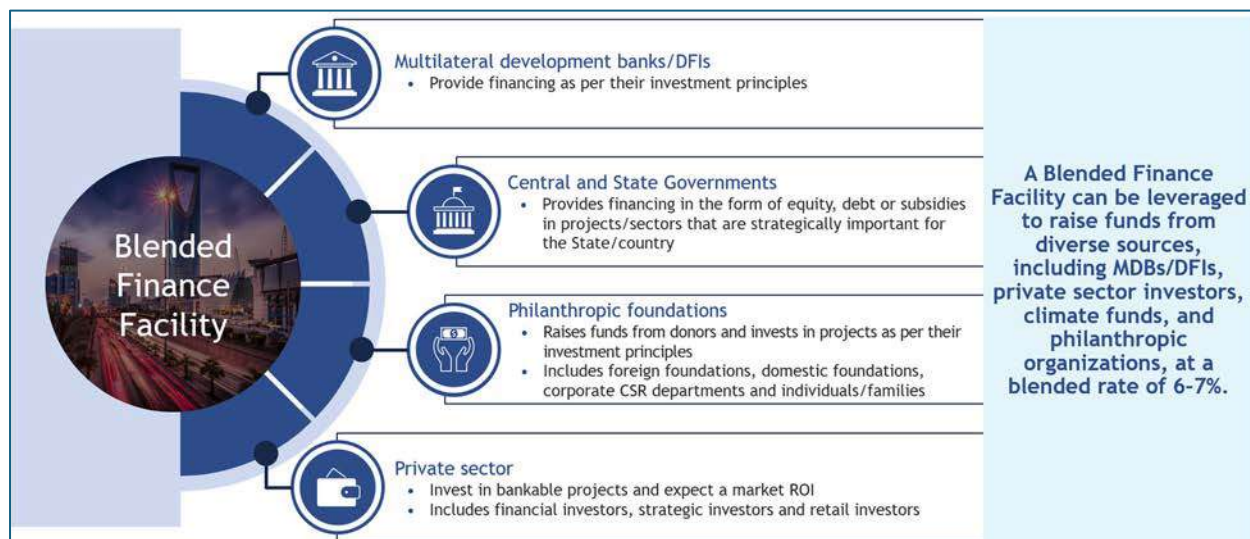


Figure 3.6: Key tenets of Blended Finance Facility

A model example is the Government of Goa's Blended Finance Facility, developed under the Environment Department's Climate Change Cell as a Special Purpose Vehicle (SPV). Registered as an Alternate Investment Fund (AIF) in GIFT City, an International Finance Center, the facility benefits from tax exemptions and is positioned to attract international contributions. Goa's facility aims to pool INR 25,000–30,000 Crores by 2030 at a blended cost of 6-7%, with a robust project pipeline that includes electric vehicle infrastructure, compressed biogas (CBG) initiatives, inland waterways, solar energy solutions, biomass and biofuel plants, green hydrogen supply chain development, forest densification, and coastal protection and agroforestry projects. For Goa's Blended Finance facility, intermediaries including SIDBI, NABARD, NaBFID, Energy Efficiency Services Limited (EESL), Tata Cleantech Capital, Macquarie, and Energy Supply Companies (ESCOs) empaneled by the Bureau of Energy Efficiency (BEE) will be partnering.

Through this blended finance approach, Karnataka could attract substantial capital to advance its sustainability initiatives, ensuring both financial viability and significant environmental impact.

Value potential

If the facility targets to raise INR 10,000–15,000 Crores at a blended rate of 6-7%, it could generate a recurring annual value potential of **INR 200–250 Crores p.a.**, based on an interest rate differential of 1-2% for such projects.



Recommendation #11: Green finance

Objective

‘Green’ financing instruments can be leveraged to avail concessional capital for climate and sustainability-oriented projects.

Context

India’s high vulnerability to climate change underscores the urgent need for robust climate action. Ranked among the top ten on the Global Climate Risk Index, India is one of the three largest global GHG emitters, with emissions rising by 5% since 2016. Over 75% of Indian districts are hotspots for extreme climate events, leaving millions exposed to severe floods, droughts, and cyclones. The economic toll is substantial, with climate-related losses totaling around USD 69 billion (INR 580,305 crore) in 2019 alone.

In response, global green financing has intensified, with innovative instruments like green bonds, sustainability-linked bonds, climate-focused philanthropic capital, and blended finance (as detailed in Section 7.4) emerging to fund climate projects. Key players in this space include the World Bank, IFC, Green Climate Fund, and Global Environment Facility, alongside private entities like BlackRock, HSBC, and Goldman Sachs. Philanthropic organizations such as the Rockefeller Foundation, MacArthur Foundation, and Bezos Earth Fund are also significantly expanding their climate-focused contributions. Together, these institutions are channeling resources to support scalable, impactful climate initiatives in vulnerable regions like India.

Recommendation

It is recommended that Karnataka actively pursue green finance instruments to secure concessional capital for climate and sustainability projects. Green finance supports funding specific sustainability goals by attracting diverse sources of capital, thereby reducing investor risk. Karnataka can explore the following key instruments:

1. **Sovereign Green Bonds:** These bonds are issued by the Government of India for central schemes like PM KUSUM, with interest rates between 7.1%–7.4%. Karnataka could initiate discussions with RBI to access on-budget sovereign green bonds for state-level projects at rates below 7.5%.
2. **Municipal Green Bonds:** Municipal corporations, such as Pimpri Chinchwad and Ghaziabad, have successfully issued green bonds for solar, sewage, and water infrastructure at rates of 8.1%–8.25%. Karnataka’s local bodies could explore this off-budget mechanism, allowing compliance with FRBM limits.



3. **Sustainability-Linked Bonds (SLBs):** SLBs are tied to emission reductions and energy efficiency goals, with rates of 3%–6% depending on KPI outcomes. Karnataka could use SLBs to refinance existing projects, linking finance costs to carbon reduction performance.
4. **Climate-Focused Funds:** Funds like the Green Climate Fund (GCF), Bezos Earth Fund, and Clean Technology Fund (CTF) provide concessional loans, equity, and grants for projects such as renewable energy and sustainable agriculture. Karnataka could access these funds for climate resilience and socio-economic projects.

Additionally, Karnataka could consider establishing a dedicated institution Karnataka Green Climate and Sustainability Company (KGCSC) similar to the Tamil Nadu Green Climate Company (TNGCC), an independent entity for mobilizing climate finance, project implementation, and building partnerships.

Value potential

With the volume of green projects in the state, there is potential to raise INR 15,000–20,000 Crores at an interest rate advantage of approximately 0.5%, potentially generating a recurring annual value of **INR 75–100 Crores p.a.**



3.3: Revenue Enhancement

Recommendation #12: BBMP: Premium Floor Area Ratio (FAR) Policy

Objective

BBMP's (Bruhat Bengaluru Mahanagara Palike) revenues can be enhanced by introducing a Premium Floor Area Ratio (P-FAR) policy to monetize State-guided urbanization.

Context

The BBMP currently enforces a Floor Area Ratio (FAR) policy combined with Transferable Development Rights (TDR) within its jurisdiction. This policy allows developers a free base FAR and specifies the maximum TDR. However, BBMP does not generate revenue from the existing FAR/TDR framework. To support State-led urbanization, BBMP is considering a P-FAR policy, allowing developers to purchase additional FAR beyond the base at a fee. This would create a new revenue stream for BBMP while enabling controlled urban growth in Bengaluru.

Under the draft P-FAR policy, an extra 20%-40% P-FAR over the base FAR defined in the Master Plan is permitted, subject to TDR usage requirement. The developers could obtain the additional FAR by paying a premium charge set at 30% of the land's guidance value.

As a % of base FAR				Actuals				
Road width (m)	Max. additional FAR via P-FAR	Min. additional FAR via TDR	Max. permissible additional FAR	Road width (m)	Base FAR range	Max. additional FAR via P-FAR	Min. additional FAR via TDR	Max. permissible total FAR
9-12	20%	-	20%	9 - 12	1.50 - 1.80	0.36	-	1.86 - 2.16
12-18	30%	10%	40%	12 - 18	1.50 - 2.00	0.60	0.20	2.30 - 2.80
18+	40%	20%	60%	18+	1.80 - 2.25	0.90	0.45	3.15 - 3.60

Proposed premiumization for additional FAR via P-FAR policy to be priced at **30% of land Guidance Value**

Figure 3.7: Proposed draft P-FAR policy under the BBMP jurisdiction

Recommendation

It is recommended that the proposed P-FAR draft policy for BBMP has three key areas for enhancement to boost revenue while effectively managing urbanization.

- ## Value potential

BBMP revenue estimate (INR Cr PA)

Scenario	Revenue Estimate (INR Cr PA)
Proposed P-FAR policy	~1,100
Maximize total FAR	800 - 900
Customize premiumization model	350 - 450
Rationalize min. TDR requirement	350 - 450
Full potential	2,600 - 2,900

38

Objective

Context

The draft advertising byelaws have been reviewed to identify considerations by benchmarking best practices from other metropolitan areas. The objective is to enhance the value delivered to BBMP while maintaining control over advertisements within its jurisdiction.

Recommendation

It is recommended that BBMP's advertising fee draft byelaws can be augmented to improve the earnings to the authority and ensure its effective implementation. The four recommendations are as follows:

1. **Revision of base rates:** The BBMP's current strategy of charging a low minimum reserve price and taking a smaller share of advertisement agency revenue, despite the potential for bids to be 5 - 10 times higher, risks generating suboptimal revenue. To maximize potential, BBMP could consider increasing the advertisement fee by 2 - 3 times, particularly in regions with higher demand.

The Municipal Corporation of Delhi sets a Minimum Reserve Price of INR 446 / sq ft / month while Bengaluru's draft by laws set it at INR 70. Further, the bids come in at 3 – 4 times the MRP, Delhi earns a significantly higher income of INR 4,31,711 per 100m as against BBMP's projected INR 77,000 per 100m. The unit economics of advertising agencies emphasizes the scope to increase advertising fees. For every INR 100 in revenue earned by the advertising agency, the agency earns INR 60 – 70. In Delhi, the fee constitutes INR 15 - 40 subject to demand. However, in Bengaluru, the current charges are only INR 2 - 5 of the total revenues of the agency.

- 2. Incorporation of differently charged rates for digital advertisements:** The draft byelaws could introduce differently charged rates for digital advertisements at 1.5 – 2X the normal



rates. In other corporations, and even in earlier BBMP byelaws, digital advertisements have been charged at a premium.

3. **Pre-determined terms of tender and interest guidelines:** Incorporate guidelines on tenure of auctioned property, post-auction procedures, and annual fee hikes to make the byelaws comprehensive and robust. For example, in Delhi, the agency is permitted to advertise for a 3 + 2-year tenure. At the end of the initial three years, the agency and the Corporation can mutually extend the contract for another two years based on the agency's interest and past performance. Further, rationalization of interest rates basis objective benchmarks e.g., prime lending rates could lower penalty burden and improve collections.
4. **Comprehensive legal vetting by experienced lawyers/ legal consultancy:** The byelaws have been drafted in a detailed and robust manner, addressing auctions, mechanisms, rules, and other key aspects. However, there may be ambiguity within the byelaws that could potentially lead to litigation. To mitigate this risk and ensure the byelaws are contestation-proof, the BBMP could consider legal vetting of these byelaws, as well as the auction and contract documents.

Value potential

Revising BBMP's advertising rates across Bangalore's 10,200 km road network could generate INR 700 – 1,000 Crores annually. With 4,000 hoardings covering 40% of the network, each at 800–1,000 sq. ft., current revenue amounts to INR 300 – 350 Crores. A 2–3X revision of base rates would add an additional **INR 400 – 550 Crores annually**.



Recommendation #14: Insurance empanelment for specialty Government hospitals

Objective

Government hospitals can empanel 2-5% of beds with private insurers at rates higher than standard Government and AB-Ark (Ayushman Bharat Arogya Karnataka) rates to cross subsidize services for underprivileged.

Context

Karnataka is home to 22 Government medical colleges and research institutes, along with 10 specialized centers offering advanced care across diverse fields. Notable institutions include the Shri Atal Bihari Vajpayee Medical College & Research Institute in Bengaluru specializing in orthopedics, neurology, and obstetrics-gynecology, Sri Jayadeva Institute of Cardiovascular Sciences & Research, specializing in cardiology, Kidwai Memorial Institute of Oncology, specializing in cancer care, and the Institute of Gastroenterology & Organ Transplant, specializing in organ transplants and gastroenterology.

With an **average 20-30% unoccupied capacity**, these facilities could strategically leverage vacant beds for insurance empanelment. This approach would enable hospitals to generate additional revenue streams by accommodating insured patients, thereby enhancing financial sustainability. The increased revenue could then be redirected to support cross-subsidized care for underprivileged patients, allowing the institutions to expand access to high-quality healthcare services without compromising their primary mission of serving vulnerable populations.

Recommendation

The recommendation focuses on the insurance empanelment of high-yield medical procedures within Government hospitals to generate additional revenue. By empaneling 2-5% of hospital beds for private insurance at rates higher than standard Government charges and above AB-Ark rates (Ayushman Bharat Arogya Karnataka), the recommendation aims to boost the financial capacity of these institutions.

Government hospitals in Karnataka have specific high-demand medical procedures in which they specialize however, there are some vacant beds which can be leveraged for private insurance coverage.

This recommendation seeks to bridge this gap by designating a small portion of beds as private/special rooms for insured patients. By setting competitive rates—higher than for underprivileged patients but lower than private hospital rates—Government hospitals can serve these insured patients and leverage the additional revenue to support underprivileged care.



The recommendation targets high-demand procedures with strong revenue potential. Manipal Cigna, currently the leading private insurer for Karnataka, has agreed to cover select procedures at substantially higher rates than Government prices. The examples are listed below:

- **Total knee replacement (unilateral):** A total knee replacement is priced at INR 22,710 in hospitals, while private hospitals charge approximately 10 times this amount, around INR 2,25,000. A private insurer has offered a rate of INR 1,22,000 for empaneled specialty Karnataka hospitals, which is about 5-6 times the standard rate.
- **Hip replacement (bilateral):** The cost for a bilateral hip replacement is INR 38,400 in government hospitals, while private hospitals charge up to INR 2,35,510—about six times more. A private insurer has offered INR 2,03,000 for empaneled specialty hospitals in Karnataka, around 5.3 times the government rate.
- **Tonsillectomy:** The cost of a tonsillectomy is INR 3,390 in government hospitals, while Manipal Cigna offers coverage up to 7.1 times that amount, around INR 24,000, for empaneled specialty hospitals in Karnataka.
- **Temporary pacemaker implantation:** The procedure is priced at INR 4,100 in government hospitals, while Manipal Cigna offers coverage at approximately 3.7 times that rate, around INR 15,000, for empaneled specialty hospitals in Karnataka.

In addition to these high-demand procedures, Manipal Cigna has provided a standardized rate sheet covering over 100 procedures, offering rates that are 3-4x higher than AB-ArK prices. These selected procedures and standardized rates offer competitive pricing for insured patients while providing a sustainable revenue source for Government hospitals

Value potential

The Jayadeva Institute's 12% revenue boost through insurance partnerships highlights the potential of empanelment for Karnataka's hospitals. Key institutions like Kidwai Memorial and Karnataka Institute of Medical Sciences generate over INR 150 Crores annually. A 10% increase from empanelment could add INR 15 Crores annually for these hospitals, with an estimated **INR 40–60 Crores p.a.** possible across all state institutions, including 25+ other Government medical colleges and specialty hospitals.



Recommendation #15: Mining, irrigation, and innovative revenue streams

Objective

Revenues of the State can be enhanced across three key categories namely mining & metallurgy, irrigation and innovative revenue streams.

Context

Karnataka's mining and metallurgical sectors contribute INR 9,000 Crores⁹, representing 0.32% of the GSDP. In comparison, Telangana, generates 0.40% of its GSDP – a higher contribution of GSDP and generates INR 6,588 Crores⁹ from mining and metallurgy.

Irrigation represents a significant revenue source for States such as Maharashtra and Gujarat, contributing INR 4,130 Crores⁹ and INR 2,459 Crores⁹ respectively, underscoring its importance as a key revenue-generating category in other States while contributing only INR 38 Crores in Karnataka.

Additionally, there is scope to increase revenue from various assets and state-guided operations including metro stations, parking spaces, F&B joints, among others.

Recommendation

It is recommended that the State undertake measures across 3 key categories to improve revenues including mining, irrigation, and additional revenue streams.

Across the mining value chain, the State can potentially take four key steps to improve revenues:

1. Private participation in the prospecting and exploration stage can be increased
2. Royalty rates for four minor minerals: ordinary stone, murum, sand, and granite can be rationalized
3. Pilferage from Work Executing Departments can be minimized by improving collections of Average Periodic Price (APP) and District Mineral Foundations (DMF) when Mineral Dispatch Permits (MDPs) is not provided by leveraging Integrated Lease Management System (ILMS) and weighbridges for real-time monitoring
4. Technological interventions like hyperspectral imaging, air quality monitoring via drones and acoustic monitoring can be implemented to control illegal mining from non-licensed locations and quarrying beyond lease boundaries can be implemented

In order to improve revenues from irrigation, the State can undertake 2 key recommendations:

1. Collection efficiency of fees from agricultural and industrial consumers can be improved
2. Rates for agricultural usage can be rationalized



Lastly, 4 innovative revenue streams can be implemented to raise additional revenue:

1. Naming rights for public spaces can be introduced for assets like buildings, metros, stations, and parks for private sector
2. Permits for restaurants to operate 24/7 in select zones to generate additional revenue from licensing fee and additional taxation can be provided
3. Monetization of public spaces e.g., parks, flyovers, lakes, among others by providing for private events can be implemented
4. Digital parking management system can be introduced to collect parking fee and fines

Value potential

The overall value potential of improving non-tax revenues across mining, irrigation, and additional revenue streams amounts to **INR 1,100 – 1,500 Crores p.a.** The figure below details the value potential across each category.

S. No.	Category	Additional value
1	Mining	INR 400 – 500 Crores
2	Irrigation	INR 150 – 200 Crores p.a.
3	Additional revenue streams	INR 550 – 750 Crores p.a.
Total		INR 1,100 – 1,500 Crores p.a.

Table 3.2: Value potential across non-tax revenue streams

The total potential to increase revenues from mining stands at INR 400 – 500 Crores, achievable through two key strategies.

1. Rationalizing royalty rates for four minor minerals: ordinary stone (INR 70/MT to INR 80/MT), murum (INR 40/ MT to INR 130/MT), sand (INR 80/MT to INR 130/MT), and granite (INR 200/MT to INR 235/MT) generating an incremental **INR 200 – 250 Crores**.
2. Establishing an Integrated Lease Management System (ILMS) to enable real-time tracking and reduce pilferage, further contributing **INR 200 – 250 Crores annually**.

For irrigation, total revenue potential of **INR 150 – 200 Crores** can be unlocked through improved collection efficiency and rate revisions. By enhancing collection efficiency from 1% to 80% in agriculture and from 63% to 100% in industrial sectors, the State could secure an additional INR 130 – 180 Crores. Furthermore, adjusting irrigation rates with benchmarks could add another INR 20 – 30 Crores in annual revenue. Additional innovative revenue streams could significantly boost revenues by an estimated **INR 550 – 750 Crores annually**.



3.4: Expenditure Rationalization

Recommendation #16: Expenditure Rationalization for WRD/Irrigation

Objective

WRD / irrigation works expenditure can be rationalized by ensuring standardization across Nigamas, stronger review and approval mechanisms, and improved planning and monitoring of projects, while maintaining citizen outcomes.

Context

In FY24-25, Karnataka allocated approximately **INR 19,000 Crores** to the Water Resources Department, with **INR 16,834 Crores** dedicated to Major and Medium Irrigation projects and **INR 2,345 Crores** to Minor Irrigation. A comparative analysis reveals that Karnataka's per capita irrigation spending is substantially higher than in states like Maharashtra and Tamil Nadu—by **57% and 142% per capita**, respectively. Similar trend is observed in irrigation spend per hectare of agricultural land. This elevated expenditure indicates potential inefficiencies in resource allocation. With a significant INR 16,500 Crores allocated to them, the four Nigamas (KBJNL, KNNL, CNNL and VJNL) lead project execution in the state and act as special purpose entities.

Issues observed

5 key issues have been identified which impact WRD's operational and financial efficiency, as listed below:

1. **Significant Cost and Time Overruns:** Major delays and budget escalations are frequent, mainly due to prolonged land acquisition and clearance processes, compounded by inadequate initial project planning. Less than 10% of projects valued above INR 100 Crores, initiated since FY19, have been completed, while 60% remain delayed. These delays lead to annual price escalations of 7-10% and have potentially resulted in losses of INR 7,000-10,000 Crores over the past five years. An analysis of projects worth more than INR 10 Crores revealed that almost 75% projects awarded since FY11 have reported time overruns, whereas almost 35% projects awarded since FY13 have reported cost overruns amounting to almost INR 1,500 Crores.

The following table shows project completion analysis of projects worth more than INR 100 Crores, since FY19:

Table 3.3: Project completion analysis for projects > INR 100 Crores only

- ## Recommendation

46

- By implementing these targeted reforms, WRD can significantly enhance its operational efficiency, reduce cost overruns, and ensure that public funds are utilized effectively to achieve sustainable improvements in Karnataka's irrigation infrastructure.

There is scope for the Department to **save INR 600 – 800 Crores every year** from the expenditure towards WRD works, by managing overruns in time and cost, considering 25-30% reduction in spends towards the annual overruns of INR 2,000 – 2,500 Crores each year.



Recommendation #17: Energy Department: Solarization of irrigation power

Objective

The implementation of solarization of irrigation pumps can be expedited and enhanced via (1) Viability Gap Funding (VGF), and (2) Low-cost financing for private players to rationalize subsidy outflow.

Context

The Government of Karnataka incurs an annual subsidy cost of approximately INR 13,000 Crores for free power to irrigation pump sets—significantly higher than other states such as Maharashtra and Tamil Nadu. Karnataka's per-acre subsidy is around INR 4,300, compared to Maharashtra's INR 1,400 and Tamil Nadu's INR 4,000, highlighting the need for more sustainable energy solutions in agriculture.

To address this, Karnataka has aligned its solarization strategy with the PM KUSUM scheme's Component C, focusing on Feeder-Level Solarization (FLS) with 2 MW to 25 MW solar plants dedicated to agricultural feeders. Although Maharashtra targets [REDACTED] similar scheme, Karnataka has so far tendered 1,200 MW and requires an estimated 12,000-13,000 MW for full solarization, with an investment need of INR 55,000 Crores. Based on KPTCL's feasibility study, Karnataka is targeting solarization of 7,000 MW.

Solar power for irrigation is currently priced at INR 3.17 per unit, considerably lower than the INR 5.69 per unit for grid power, offering up to 40% savings in subsidy costs. Expanding solar power in agriculture could significantly enhance fiscal sustainability and energy security for Karnataka.

Recommendation

To reduce Karnataka's expenditure on irrigation power subsidies, it is recommended that the State Government could consider two innovative financing models for the PM KUSUM Component C (Feeder Level Solarization - FLS) scheme. These models aim to make the solarization of agricultural feeders more cost-effective, while encouraging private sector participation and ensuring long-term financial sustainability. A target of 7,000 MW in solar capacity is assumed for this analysis, though numbers can be adjusted based on the State's actual targets.

Model 1: Viability Gap Funding (VGF): This model proposes a VGF from the Karnataka Government, covering 20% of capital costs in addition to the 25% PM KUSUM subsidy. This would reduce solar tariffs to INR 2.48 per unit, yielding annual savings of INR 750–900 Crores, with a 25-



year NPV of INR 7,500–9,700 Crores. An annual VGF of INR 1,200 Crores over five years is required to support phased solarization. Offering VGF upfront could attract more bidders and accelerate execution.

Model 2: Low-Cost Loans: Facilitating low-cost loans through institutions like NABARD and IREDA could lower interest rates from 10.7% to 9%, reducing solar tariffs to INR 3.01 per unit. Without additional state investment, this model could save INR 80–140 Crores annually, with an NPV of INR 700–1,300 Crores over 25 years. Lower financing costs would make solar projects more attractive to private developers.

Hybrid Model: VGF + Low-Cost Loans: Combining VGF and low-cost loans could achieve the lowest tariff, at INR 2.36 per unit, saving the state INR 900 – 1,000 Crores per year, with a 25-year NPV of INR 8,500 –11,000 Crores. The VGF commitment would remain at INR 1,200 Crores annually over five years, while low-interest financing would further reduce costs.

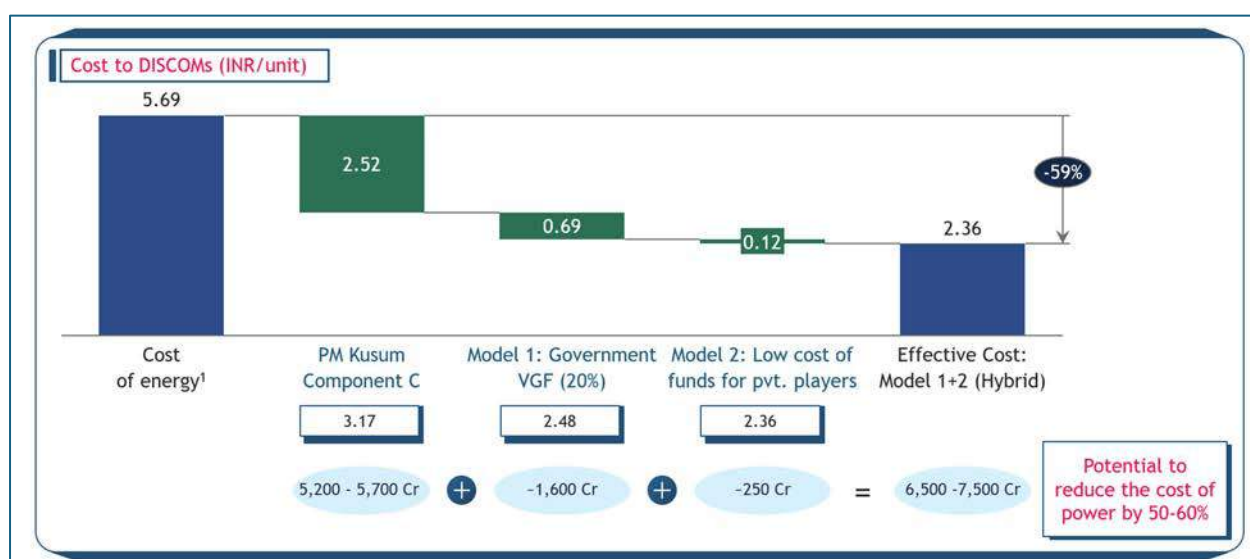


Figure 3.9: Potential recommendations to expedite solarization via PM-KUSUM C (FLS)

These financing models are designed to accelerate Karnataka's solarization efforts, potentially reducing irrigation power subsidy costs by 50-60% (INR 6,500–7,000 Crores annually) while increasing private sector participation and speeding up project timelines.

Value potential

For Karnataka's target of solarizing 7,000 MW across various ESCOMs, implementing both concessional loans for private players and Government-provided Viability Gap Funding (VGF) could yield annual savings of **INR 900–1,000 Crores p.a.**



Recommendation #18: Healthcare personnel efficiency and subcenter optimization

Objective

Additional requirement for rural health subcenter infrastructure and workforce can be optimized without impacting access to healthcare and delivery of services.

Context

The Health Department of Karnataka has submitted a request to the Finance Department to recruit 3,000 to 3,500 Primary Health Care Officers (PHCOs) and approximately 1,000 Health Inspection Officers (HIOs) for the State's 9,160 subcenters. To assess this request, a comprehensive cost-efficiency study was conducted to optimize subcenter infrastructure and staffing needs. The objective of the study was to optimize workforce deployment and subcenter operations by evaluating the workload of PHCOs, Community Health Officers (CHOs), and HIOs.

The study, carried out across three districts—Kolar, Haveri, and Koppal—focused on three key areas of optimization: Subcenter Footprint, Workforce Capacity utilization, and Vacancy Management. Population projections, population density, and accessibility within 30 minutes for Outpatient Department (OPD) services were key factors in determining the optimal distribution of subcenters. A detailed workload analysis was conducted for PHCOs, CHOs, and HIOs to assess staffing needs based on actual work hours. The study also explored the potential use of contractual employees under the National Health Mission (NHM) to fill vacancies and reduce costs.

Throughout this process, ensuring uninterrupted service delivery remained the top priority, with an emphasis on maintaining healthcare access. This study provides a model for other districts to follow when requesting additional healthcare staff, ensuring cost-efficient operations while safeguarding the quality of healthcare services.

Recommendation

To meet the staffing and infrastructure requirements of Karnataka's healthcare subcenters, the following recommendations are proposed across various parameters, emphasizing cost-efficiency while ensuring high-quality service delivery:



	Parameters	Description
A. Footprint Optimization	1. Population	2027 rural projected–Decreasing growth rate method
	2. Population Density	Geo mapping shall be done on google maps - template shared (Assuming uniform population distribution in taluk and serviceable distance based on population density - maximum 30 minutes to avail OPD)
	3. Time/ Distance to be travelled	
B. Workforce capacity optimization	4. Workload Analysis (Work–time mapping)	PHCOs = operating optimally (90-100% capacity) - Continue with 1 PHCO per 5,000 population CHOs = operating at 30-35% capacity - Scope to repurpose the role HIOs = operating at approximately 50% - 55% capacity - Scope to tag to a larger population – can serve 4 subcenters instead of 2 currently
C. Vacancy management	5. Leverage contractual NHM employees	Contractual employees to be utilized to fill vacancy (INR 14,000 (40% borne by State) vs INR 40,000)

Table 3.4: Recommendations for Karnataka's healthcare subcenters

This study serves as an exemplar for guiding other districts in rationalizing their staffing and infrastructure demands before submitting new requests.

Value potential

The Health Department's request for staffing Karnataka's 9,200 subcenters was optimized, reducing the need for Public Health Care Officers (PHCOs) from 3,000 – 3,500 to 700–1,000 and Health Information Officers (HIOs) to zero additional hires. Through footprint adjustments, capacity utilization, and leveraging 2,300 existing NHM staff, projected costs can be reduced by 40–50%, saving **INR 150–200 crores** annually while ensuring efficient service delivery.



Recommendation #19: Expenditure Rationalization for PWD

Objective

PWD roads expenditure can be rationalized without affecting outcomes by ensuring stronger review and approval mechanisms, improved planning and monitoring of projects, and introducing Performance Based Maintenance Contracts.

Context

The PWD Department was assigned a budget of INR 9,111 Crores for FY24, with 90% of the budget allocated towards Roads and Bridges heads of account. This was divided between KRDCL, KSHIP, SHDP and the PWD divisional offices for implementing construction & maintenance works.

Issues observed

After analysis of the roadworks in the PWD department, three key issues have been identified:

1. Significant Cost and Time Overruns

- In the 10 packages for Bengaluru surrounding roads implemented by KRDCL, a cost overrun of more than 60% is anticipated, with the original approved project cost at INR 2,095 Crores. The primary contributors to this overrun are construction costs (38%), land acquisition costs (31%), and price adjustments (17%).
- In the KSHIP-I and KSHIP-II projects, 90% of packages experienced delays, with nearly half of them delayed by more than a year.
- Key reasons for these overruns include frequent scope changes, inadequate surveying and investigation during the DPR stage, and delays in land acquisition and clearances.

The following Figure 3.11 depicts the extent of cost overrun in KRDCL and key contributors to the overrun across ten packages:



Package	Approved Project Cost (Cr)	Expected revised cost (Cr)		Contribution to total revision in project cost			
				Construction cost	LAQ	Price Adjustment	Utilities shifting
1	254 Cr	367 Cr	+44%	17%	42%	15%	17%
2A	233 Cr	275 Cr	+18%	27%	-12%	42%	13%
2B	316 Cr	336 Cr	+6%	105%	-192%	108%	24%
2C	69 Cr	156 Cr	+126%	67%	-3%	18%	-1%
2D	97 Cr	215 Cr	+121%	70%	-1%	17%	4%
3A	199 Cr	294 Cr	+47%	28%	46%	19%	4%
3B	194 Cr	312 Cr	+61%	7%	60%	13%	10%
4A	312 Cr	457 Cr	+47%	18%	49%	13%	41%
4B	287 Cr	553 Cr	+93%	25%	62%	11%	-5%
4C	134 Cr	362 Cr	+171%	9%	14%	15%	-2%
Total	2095 Cr	3327 Cr	+59%	38%	31%	17%	7%

Table 3.5: Cost overrun analysis in KRDCL⁷

2. Lack of Standardization Guidelines:

- There are currently no state-level guidelines for comparing and analyzing project cost variations, resulting in project costs that can vary up to 4 times across different projects.

3. Schedule of Rates (SoR) not at par with other States:

- The Schedule of Rates (SoR) for site preparation, base and sub-base creation, and equipment hire charges (e.g., road rollers) are 15-30% higher in Karnataka compared to neighboring states like Maharashtra, Tamil Nadu, and Telangana.

Recommendation

6 key recommendations have been proposed to increase spending efficiency, with potential to reduce costs due to time & cost overruns by 25-30%:

1. Improving the quality of DPR creation

- DPR consultant qualification criteria should be revised with an increased focus on surveying, technology adoption, and site inspection to enhance the quality of project planning.

⁷ Bangalore surrounding roads projects revised estimate prepared by KRDCL and submitted to PWD Secy in July'23. Numbers are subject to changes and further revisions. Changes in costs of DPR consultants and PMC consultants were negative for all projects except Package 4C. Package 3B is complete. Other cost heads include: contingency, admin charge, road safety, railway deposits, supervision, etc.



- Standardizing payment terms for DPR consultants can improve accountability by linking payments to project milestones and deliverables.

2. Changes in Obligations of the authority

- Conditions Precedent should be introduced and enforced, requiring that 80% of land is acquired before floating the tender and 90% before awarding the contract, to ensure smoother project execution.

3. Establishing stronger review mechanisms

- A multi-disciplinary review committee should be created, comprising representatives from the Finance Department, PWD, Urban Development Department, Rural Development Department, and private experts to conduct a holistic review before project approval.

4. Standardizing costs and specifications across projects

- An action-focused committee should be established to develop state-specific normative cost guidelines for different types of projects, bringing consistency in cost estimation.
- The Schedule of Rates (SoR) should be reviewed and updated regularly to ensure the inclusion of essential items and alignment with competitive market rates.

5. End-to-end digital project monitoring

- Digital interventions should be leveraged to enhance project monitoring and establish a single source of truth, providing real-time insights and transparency across project stages.

6. Rationalize O&M spends

- Performance-Based Maintenance Contracts can be introduced to optimize spending on repair and maintenance, ensuring that expenditures align with performance outcomes.

Value potential

Implementing the above reforms will lead to improved project delivery with minimal cost and time overruns, rationalized O&M spends, and enhanced outcomes for citizens. The Department can potentially save **INR 400 – 500 Crores** annually, considering a 15-20% reduction in overruns of potentially INR 2,500 Crores across PWD.

Section 4: Approach Followed



4.0: Approach Followed

A structured approach covering all key elements has been deployed to understand the starting position/ baseline, study relevant benchmarks and best practices, and define key recommendations across each of the four priority areas.

Through the course of the project, we have interacted with 100+ stakeholders across 25+ Departments and parastatal bodies, benchmarked over 5 countries and 10 States in India, and defined 19 key recommendations for the Government of Karnataka.

Enable State-guided development-oriented asset monetization

- **Step 1:** Review and identify key assets owned by the State and parastatal bodies including Department of Housing, Department of Revenue, Energy Department, and parastatal bodies like ESCOMs (Energy Supply Companies), KPTCL
- **Step 2:** Assess the quality of assets, including financial viability, legal considerations, and technical soundness,
- **Step 3:** For land parcels, understand locations and layouts, their current and potential use cases, logistics and connectivity to the parcels, and current regulations and acts governing land monetization.
- **Step 4:** Benchmark asset monetization methodologies adopted by other States/ Countries / Government agencies across priority sectors including leading States like Telangana, Tamil Nadu, Gujarat, Rajasthan, Odisha, and central agencies like PGCIL (Power Grid Corporation of India Limited)
- **Step 5:** Determine suitable monetization strategies for shortlisted assets and quantify potential value from monetization
- **Step 6:** Align the proposed monetization strategies with relevant line departments and develop a comprehensive implementation roadmap

Explore innovative sources and methods of financing

- **Step 1:** Establish a baseline of the current cost of finance for State and parastatal bodies, detailing sources of funds, interest rates, tenure, moratorium periods, and other key terms and conditions including Finance Department, Energy Department, Department of Housing



- **Step 2:** Benchmark innovative financing solutions implemented by other States/ Countries/ Government agencies to secure cost-efficient capital for large-scale infrastructure projects including States like Tamil Nadu, Gujarat, and Goa
- **Step 3:** Evaluate strategic institutions set up by States/ Countries/ Government agencies to streamline multiple infrastructure financing solutions while maintaining fiscal discipline
- **Step 4:** Identify applicable innovative financing methods and potential strategic institutions that can be tailored to Karnataka's context
- **Step 5:** Build a pipeline of potential low-cost investors / funders, conduct outreach and set up conversations with the Finance Department, and line Departments to finance ongoing / planned Externally Aided Projects at lower cost.
- **Step 6:** Coordinate with relevant line Departments to align and build implementation road map for the proposed financing models

Increase receipts through innovative mechanisms

- **Step 1:** Identify opportunities to increase non-tax revenues generated by the State and parastatal bodies, enhancing their independent capacity to execute projects including Urban Local Bodies like Bruhat Bengaluru Mahanagara Palike (BBMP)
- **Step 2:** Draw learnings from benchmark States including Maharashtra, Gujarat, Tamil Nadu. Define and develop potential innovative mechanisms that State and parastatal bodies can implement to access new revenue streams.
- **Step 3:** Collaborate with relevant departments and parastatal bodies to formulate strategies, ensuring transparency and accountability
- **Step 4:** Develop a comprehensive implementation roadmap, clearly outlining the roles and responsibilities of key stakeholders to ensure execution

Rationalize expenses by improving spending efficiency without affecting results

- **Step 1:** Conduct comprehensive baseline assessment of expenditures and financial commitments for key Departments including Water Resources Department, Public Works Department, Energy Department, and Health and Family Welfare Department
- **Step 2:** Identify specific areas with cost saving potential and reduction in outflows
- **Step 3:** Benchmark expenditure metrics with other States including Maharashtra, Gujarat, Tamil Nadu and synthesize findings relevant to Karnataka



- **Step 4:** Engage with key departments to continuously evaluate the utilization of existing commitments versus planned allocations, identifying opportunities for optimization
- **Step 5:** Develop detailed, data-backed recommendations to reduce outflows, supported by analysis that validates proposed cost-saving measures and build a detailed implementation roadmap
- **Step 6:** Design a robust monitoring and reporting system to track expense reductions and cost-saving recommendations, ensuring transparency and accountability throughout the process

A Strategic Project Management Office (SPMO) has also been suggested to be set up under the Chairmanship of the ACS Finance to monitor successful implementation of high priority recommendations. It provides a structured framework to monitor progress and enable timely intervention to address potential delays or risks.

Moreover, the SPMO fosters accountability by setting clear timelines and responsibilities, ensuring that resources are efficiently allocated and that recommendations stay on course for successful execution within the desired timelines.

The figure below summarizes the approach followed by the project across each of the four priority areas.

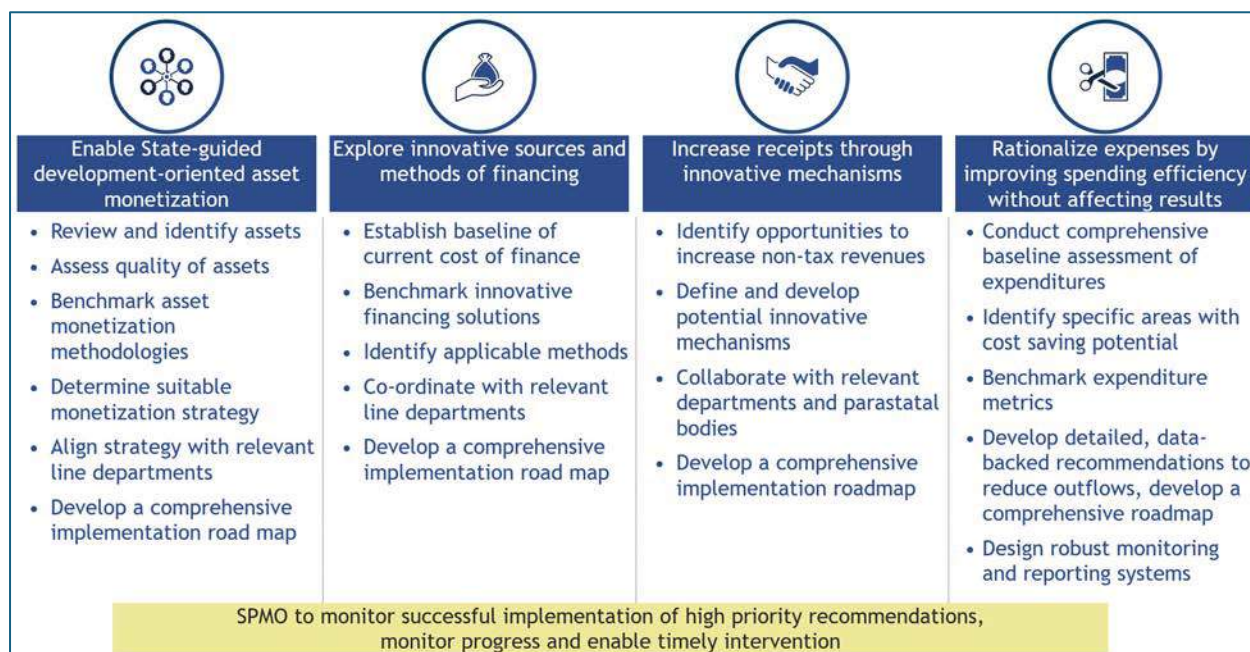


Figure 4.1: Approach followed for the project



Six deliverables have been submitted to the Finance Department, Government of Karnataka including this report which is the final deliverable “Final Project Report – Deliverable 6” as per the Contract for ‘Consultancy Services to Unlock State Budget Potential’ dated 01.08.2024 and **RFP Ref. No. FD/08/GIE/2024** dated 07.03.2024. The list of the deliverables is mentioned below.

S. No.	Deliverables	Timeline (from project start)	Due date of submission	Submission date
1	Report #1: Inception Report	T0 + 2	24 th Jun 2024	24 th Jun 2024
2	Report #2: Baseline and Benchmarking Report	T0 + 6	22 nd Jul 2024	22 nd Jul 2024
3	Report #3: Monthly Progress Report 1	T0 + 10	19 th Aug 2024	19 th Aug 2024
4	Report #4: Monthly Progress Report 2	T0 + 14	16 th Sept 2024	16 th Sept 2024
5	Report #5: Monthly Progress Report 3	T0 + 18	14 th Oct 2024	14 th Oct 2024
6	Report #6: Final Project Report	T0 + 22	11 th Nov 2024	11 th Nov 2024
7	Acceptance of Final Project Report	T0 + 24	25 th Nov 2024	

Table 4.1: Project deliverables and timelines



5.0: Baselining and benchmarking of State Budget

Since 2022-23, the State's expenditure has grown in line with GDP at 12-13%¹. For 2024-25, the budgeted expenditure is set at INR 3,46,408 Crores¹. However, the State's receipts have increased at a slower pace, averaging 7%¹ growth since 2022-23, trailing State's GDP growth. For 2024-25, total receipt collections are projected at INR 2,63,427 Crores¹.

The State's GDP has maintained growth at 12-13%, with an estimated value of INR 28,09,063 Crores¹ in 2024-25. Concurrently, the fiscal deficit has expanded from INR 46,622 Crores¹ (2.14% of GSDP) in 2022 to an estimated INR 82,980 Crores¹ (2.95% of GSDP) in 2024-25. Additionally, the revenue balance has shifted from a surplus of INR 13,496 Crores¹ (0.6% of GSDP) in 2022 to a revenue deficit of INR 27,353 Crores¹ (1.0% of GSDP) in 2024.

The figure below shows the growth in expenditure and receipts of the State since 2022-23 alongside the State's fiscal deficits.

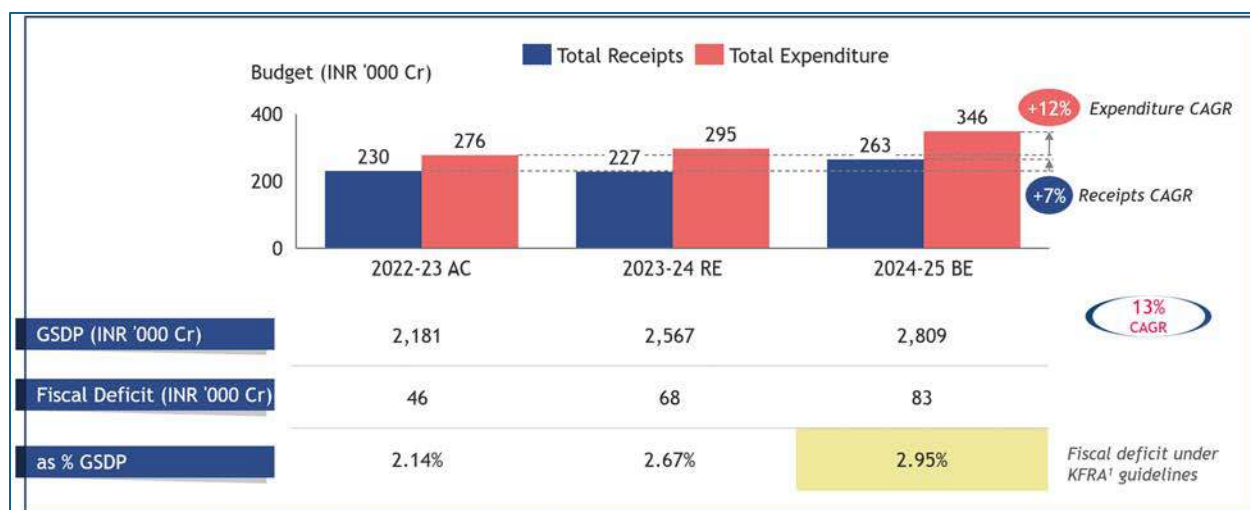


Figure 5.1: Karnataka's expenditure and receipts trajectory since 2022-23¹

A substantial portion of the total receipts is attributed to revenue receipts. Approximately 89% of the total receipts, amounting to INR 2,34,378⁸ Crores, is expected to be generated from tax revenues, while non-tax revenues are projected to contribute INR 13,499 Crores, constituting 5% of the total receipts. Additionally, the State estimates receiving INR 15,299 Crores as grant-in-aid,

⁸ Excludes GST compensation



with capital receipts making a minimal contribution, accounting for less than 1% of the total receipts.

The figure below summarizes the total receipts of Karnataka including 2022-23 accounts, 2023-24 revised estimates and 2024-25 Department estimates.

All values in INR '000 Cr	2022-23 Accounts	2023-24 Rev. Est.	2024-25 Bud. Est.	% of total receipts	Growth
Revenue Receipts (RR)	229	227	263	99.9%	7%
• Tax revenue	178	201	235	89%	15%
• Non-tax revenue	14	12	13	5%	-2%
• Grant in aid	37	14	15	6%	-45%
Capital Receipts	0.5	0.1	0.3	<1%	-28%
Total Receipts	230	227	263	100%	7%

Tax revenue contributes to **89% of Revenue Receipts** (largest amongst benchmarked states - TN, MH, GJ, TS); growing largely in line with GSDP

Non-tax revenue contributes **5% of Revenue Receipts**; marginal degrowth observed

Figure 5.2: Total receipts of Karnataka

Notably, Karnataka's tax revenue contribution to its overall revenue receipts has been the highest among comparable States, such as Tamil Nadu (82%), Maharashtra (81%), and Gujarat (84%)⁹ in 2023-24. However, it is observed that the State's non-tax revenue has experienced a 1.5% decline since 2022 in absolute terms.

⁹ State Budget documents – Karnataka, Maharashtra, Telangana, Gujarat, Tamil Nadu



5.1: Tax receipts

The table below details out the State's tax receipts with 7 major components¹

S. No.	Tax component (2024-25 BE) ¹⁰	Value
1.	GST	INR 100,075 Crores
2.	State excise	INR 38,525 Crores
3.	Taxes on income and expenditure	INR 30,763 Crores
4.	Taxes on property and capital transaction	INR 26,361 Crores
5.	Taxes on sales, trade	INR 22,125 Crores
6.	Vehicle taxes	INR 13,000 Crores
7.	Tax and duties on electricity	INR 2,005 Crores

Table 5.1: Karnataka's key tax receipt components

Karnataka is a significant contributor to the GST pool. The total GST collections of INR 100,075 Crores amount to 3.6% the State's GDP. This metric is comparable to States such as Telangana (3.6%⁹) and Gujarat (3.2%⁹) but remains below Maharashtra (4.2%⁹).

State excise collections, totaling INR 39,067 Crores (1.4% of total receipts), constitute a key component of Karnataka's tax revenues. The State's excise collections surpass those of most comparable States, including Telangana (1.6%⁹), Maharashtra (0.7%⁹), and Tamil Nadu (0.4%⁹). Recent revisions in excise duty are expected to further enhance revenue generation in this category in the coming years.

Taxes on income and expenditure, contributing INR 30,763 Crores (1.1% of State GDP), are in line with benchmark States such as Maharashtra (1.3%⁹), Telangana (1.1%⁹), Tamil Nadu (1%⁹), and Gujarat (1%⁹).

Taxes on sales and trade (INR 22,125 Crores) amount to 0.8% of the State GDP, lower than all comparable states: Tamil Nadu (2.2%⁹), Telangana (2.1%⁹), Maharashtra (1.5%⁹), and Gujarat (1.2%⁹). Similarly, taxes on property and capital transactions (INR 26,361 Crores) account for 0.9% of State GDP, lower than Maharashtra (1.4%⁹) and Telangana (1.1%⁹).

Vehicle tax collections in Karnataka (INR 13,000 Crores, 0.5% of GSDP) surpasses all benchmark States both in absolute terms and as a share of total receipts. Comparatively, Maharashtra

¹⁰ Only includes the high-value tax receipt components, non-exhaustive



collects INR 15,000 Crores⁹ (0.3% of GSDP), Tamil Nadu INR 11,559 Crores⁹ (0.4% of GSDP), Telangana INR 8,477 Crores⁹ (0.5% of GSDP), and Gujarat INR 5,600 Crores⁹ (0.2% of GSDP).

The figure below summarizes the tax receipts in absolute terms and as a % of GSDP in Karnataka in comparison to Maharashtra, Telangana, Tamil Nadu and Gujarat.

Tax Receipts 2024-25 BE (in '000 Cr/ as a % of GSDP)	KN	MH	TS	TN	GJ
GST	100 3.6%	179 4.2%	59 3.6%	89 2.8%	89 3.2%
State excise	39 1.4%	31 0.7%	26 1.6%	12 0.4%	0.1 <0.1%
Taxes on income & expenditure ²	31 1.1%	54 1.3%	18 1.1%	33 1.0%	27 1.0%
Taxes on property & capital transaction	26 0.9%	58 1.4%	18 1.1%	24 0.8%	22 0.8%
Taxes on sales, trade	22 0.8%	63 1.5%	33 2.1%	70 2.2%	34 1.2%
Vehicle taxes	13 0.5%	15 0.3%	8 0.5%	12 0.4%	6 0.2%
Tax & duties on electricity	2 <0.1%	14 0.3%	1 <0.1%	4 0.1%	12 0.4%

Figure 5.3: Tax receipts 2024-25 for Karnataka and benchmark States

Karnataka's non-tax revenue is driven by the mining and metallurgical sectors, which contribute INR 9,000 Crores⁹, representing 0.32% of the GSDP. This sector has demonstrated robust performance and now stands as the largest contributor to Karnataka's non-tax revenue.

Other contributors to Karnataka's non-tax revenue include:

- Police Revenues: INR 611 Crores⁹ (0.02% of GSDP)
- Administrative Services (including judiciary penalties and court fees): INR 515 Crores⁹ (0.02% of GSDP)
- Dividends & Profits: INR 477 Crores⁹ (0.02% of GSDP)
- Forestry & Wildlife: INR 241 Crores⁹ (0.01% of GSDP)
- Irrigation: INR 38 Crores⁹ (<0.01% of GSDP)

Irrigation represents a significant revenue source for States such as Maharashtra and Gujarat, contributing INR 4,130 Crores⁹ and INR 2,459 Crores⁹ respectively, underscoring its importance as a key revenue-generating category in these States. In contrast, administrative services generate notably higher revenue in States like Tamil Nadu (INR 6,366 Crores⁹) and Maharashtra (INR 1,890 Crores⁹) compared to Karnataka.

The figure below summarizes the non-tax receipts in absolute terms and as a % of GSDP in Karnataka in comparison to Maharashtra, Telangana, Tamil Nadu and Gujarat.



Non-tax Receipts (in INR Cr/ as a % of GSDP)	KN	MH	TS	TN	GJ
Mining & metallurgical industries	9,000 0.32%	8,000 0.19%	6,588 0.40%	3,354 0.11%	4,379 0.16%
Police	611 0.02%	1,045 0.02%	227 0.01%	401 0.01%	627 0.02%
Other admin services (includes judiciary penalties & court fees)	515 0.02%	1,890 0.04%	225 0.01%	6,366 0.20%	245 0.01%
Forestry & wild-life	241 0.01%	347 0.01%	31 <0.01%	101 <0.01%	57 <0.01%
Dividends & profits	477 0.02%	105 <0.01%	112 <0.01%	607 0.01%	600 0.02%
Irrigation (incl. major, medium & minor)	38 <0.01%	4,130 0.10%	99 <0.01%	145 <0.01%	2,459 0.09%

Figure 5.4: Non-tax receipts 2024-25 for Karnataka and benchmark States
(key categories only)



5.3: Expenditure

The total expenditure planned by the State for 2024-25 is INR 3,464 Crores of which revenue expenditure accounts INR 2,905 Crores, capital expenditure accounts INR 529 Crores and loan expenditure accounts INR 29 Crores.

The expenditure split across the State Departments is highlighted in the figure below.

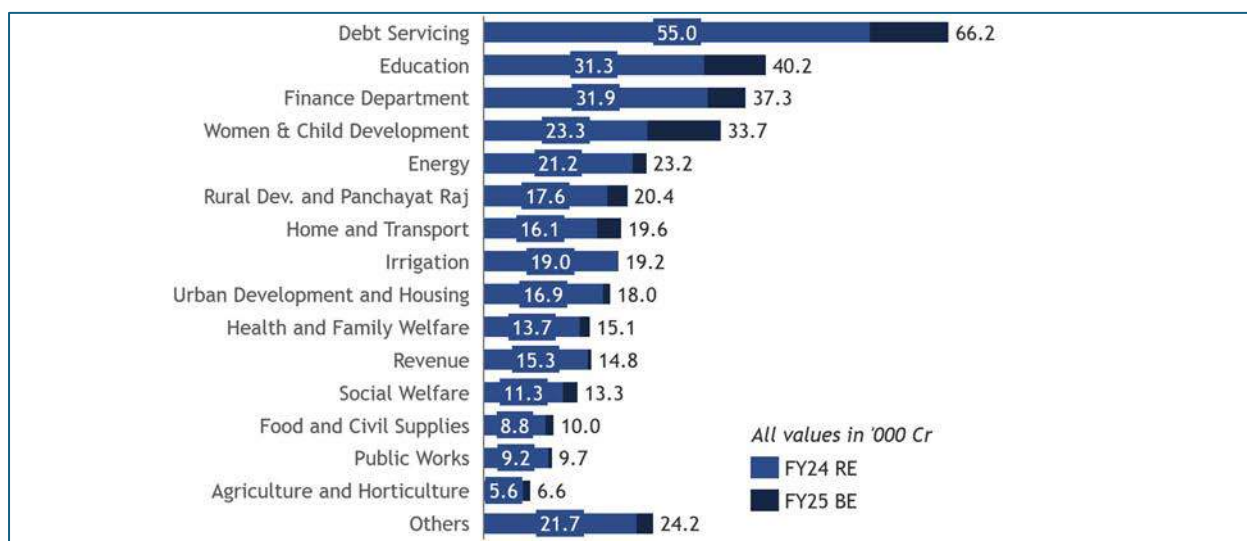


Figure 5.5: Key expenditure heads of Karnataka for FY24 RE and FY25 BE

It is observed that the State's spending has increased from FY24 to FY25 across all the key Departments. Karnataka's budgeted expenditure underscores key sectors identified for substantial capital outlays, notably irrigation, and public works.

For example, Karnataka allocates 9%¹ of its revenue expenditure to the Energy Department, significantly higher than Maharashtra at 2%¹¹, Tamil Nadu at 3%⁴, Telangana at 6%⁴, and a national average of 4%². Additionally, Karnataka dedicates 22%¹ of its total capital expenditure to water and irrigation, as opposed to 13%⁴ in Maharashtra, Telangana, and Gujarat, 5%⁴ in Tamil Nadu, and the national average of 9%².

¹¹ Budget documents of Maharashtra, Tamil Nadu, Telangana, and Gujarat

68



6.0: Asset Monetization

The State holds a diverse portfolio of assets, ranging from land parcels to transmission infrastructure, which can be monetized through strategic partnerships. Enabling State-guided, development-oriented asset monetization holds the potential to enhance economic development and citizen outcomes.

This section presents six recommendations to monetize State assets including:

	Initiative	Value potential	
 Asset monetization	InvIT (Infrastructure Investment Trust) for transmission infrastructure	INR 4,000 – 5,000 Crores	
	PPP (Public Private Partnership) for satellite township development	INR 6,000 – 6,500 Crores	
	State-guided development of lands with Revenue Department	INR 3,500 – 4,000 Crores	
	State-guided urbanization for Civic Amenity (CA) sites	INR 2,500 – 3,500 Crores	
	PPP (Public Private Partnership) for affordable housing projects	INR 150 – 200 Crores	
	State-guided development of Wayside Amenities	INR 200 – 400 Crores	

 Recurring every year
  One-time value unlock

Table 6.0: Recommendations for asset monetization



6.1: InvIT for transmission infrastructure



6.1: InvIT for transmission infrastructure

6.1.1: Context and background

The Karnataka Power Transmission Company Limited (KPTCL) is a Public Sector Undertaking responsible for electricity transmission from power generating stations to various distribution companies in the State.

As Karnataka's demand for power transmission infrastructure continues to grow, KPTCL faces increasing capital requirements year on year to support the expansion and modernization of its network. Meeting this rising demand necessitates an innovative approach to raising capital beyond relying on traditional borrowing methods to fund the projects in a cost-effective manner.

6.1.2: Recommendation

KPTCL an 'A'-rated State transmission company, manages assets valued at INR 17,000 Crores¹² post-depreciation. These assets primarily consist of transmission lines and cable networks regulated under the Regulatory Tariff Mechanism (RTM). The company generates INR 4,800 Crores¹² in revenue and a Free Cash Flow to the Firm (FCFF) of INR 2,700 Crores¹²

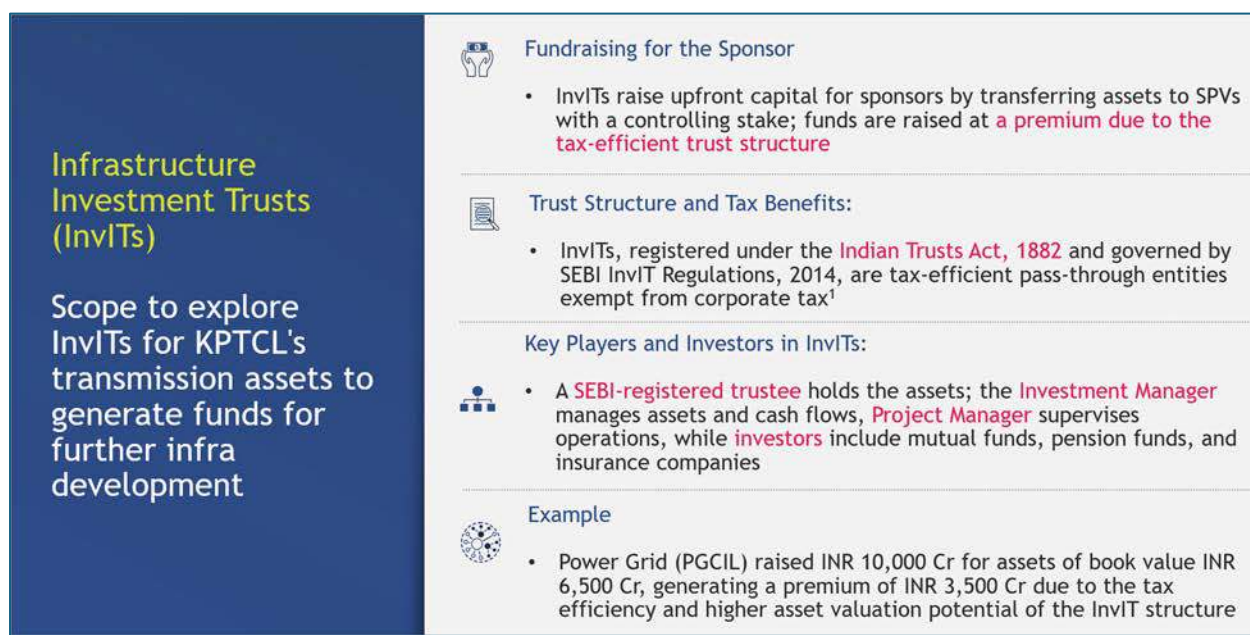
The recommendation involves KPTCL monetizing a portion of its transmission assets through an Infrastructure Investment Trust (InvIT) structure. This monetization is estimated to raise between INR 20,000 to 25,000 Crores, unlocking a monetization premium of 30% to 35% on the book value of its assets. KPTCL could raise capital amounting to INR 4,000 to 5,000 Crores assuming 20% of its assets are monetized via an InvIT structure.

By transferring KPTCL assets into a Special Purpose Vehicle (SPV) under the InvIT structure, KPTCL will benefit from the tax-efficient nature of trusts, which are exempt from the 25% – 30% corporate tax, significantly boosting the projected free cash flows. The cost of capital could be reduced to around 6% – 6.5%, compared to the current range of 9% – 9.5%, providing KPTCL with immediate capital for further expansion of power transmission projects, repayment of existing debt, and potential investments in Government instruments like Inter-Corporate Deposits (ICDs).

This recommendation not only secures the much-needed capital but also strengthens KPTCL's long-term financial sustainability, enabling the company to continue its development trajectory with reduced financial burdens and enhanced operational flexibility.

The figure below summarizes the key tenets of the InvIT structure.

¹² KPTCL Annual Report (FY 23-24)



6.1.3: Description of recommendation

Given KPTCL's growing capital needs and the demonstrated success of InvITs in India's power transmission sector, the monetization of KPTCL's assets through an InvIT presents a compelling opportunity. It not only promises to reduce cost of borrowing but also unlocks capital for future projects while enabling more efficient asset management and providing higher financial returns to the organization.

The figure below demonstrates the structure of a typical InvIT.

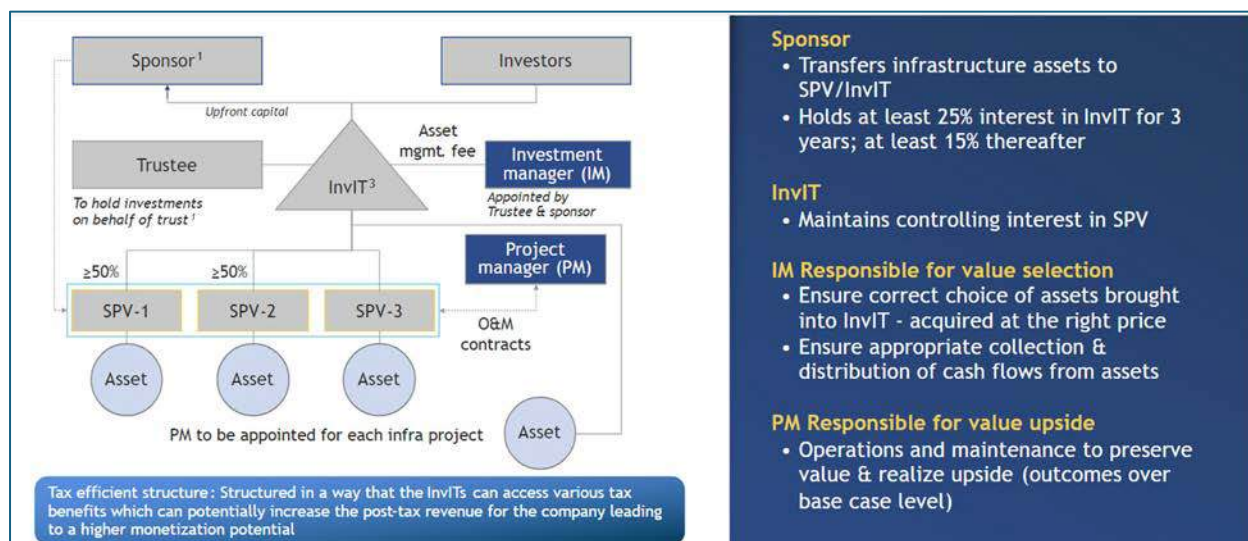


Figure 6.1.2: Structure of a typical InvIT

Benchmark: Power Grid Corporation of India Limited (PGCIL) InvIT

PGCIL's 2021 InvIT serves as a valuable benchmark for KPTCL. PGCIL monetized five transmission lines initially valued at INR 6,500 Crores¹³ but raised INR 10,000 Crores¹³, realizing a premium of INR 3,500 Crores. This premium was attributed to the tax-efficient nature of the InvIT, which operates as a pass-through entity, exempt from corporate taxes. The higher projected cash flows and investor confidence in the InvIT model led to this significant valuation uplift. Furthermore, PGCIL reduced its cost of capital to 6% - 6.5%, underscoring the financial efficiency of the InvIT structure.

¹³ PGInvIT Annual Reports



While the monetization of power transmission assets through InvITs offers substantial opportunities for KPTCL, a tailored approach is essential due to the distinct nature of its assets compared to those in PGCIL and Sterlite Power's InvITs. Key factors, including asset type, regulatory frameworks, operational impacts, and financial health, must be carefully considered to ensure efficient and successful implementation.

Transmission assets can be categorized into two types: Regulated Tariff Mechanism (RTM) assets and Tariff Based Competitive Bidding (TBCB) assets.

- **RTM Assets:** Regulated by the Karnataka Electricity Regulatory Commission (KERC), the revenue stream on these assets are based on tariffs set by the regulator. Thus, the revenue fluctuations due to regulatory changes can impact future cash flows. Although KERC tariffs have been stable in recent years, the potential for future regulatory shifts requires caution when including these assets in an InvIT.
- **TBCB Assets:** Acquired through a competitive bidding process, these assets offer higher revenue predictability, as tariffs are fixed for the contract duration, often spanning several years. These assets are generally more attractive for InvIT inclusion due to their stable and predictable cash flows, boosting investor confidence. KPTCL is planning to prioritize transmission infrastructure projects valued above INR 100 Crores under the TBCB model to leverage these stable revenue streams in long run.



2. Delay in payments from ESCOMs

KPTCL faces significant delays in receiving payments from Electricity Supply Companies (ESCOMs), with delays ranging from 1 to 1.5 years. These delays can severely affect the cash flow and financial stability of an InvIT. To maintain investor confidence and financial health, timely payments from ESCOMs, especially BESCO, must be ensured. One way to tackle the aforementioned issue is to set up escrow accounts for payments due from ESCOMs to the InvIT's assets. Adherence to strict payment schedules is critical to avoiding liquidity issues within the InvIT structure.

3. Need for demerger into an SPV

For KPTCL to successfully monetize its assets, demerging selected transmission assets into a Special Purpose Vehicle (SPV) is necessary. This process involves identifying relevant assets for transfer to the SPV, which would be included in the InvIT. The demerger must be carefully structured to ensure the SPV is legally and operationally sound. This is crucial for isolating the assets within the InvIT, thereby shielding them from liabilities linked to KPTCL's broader operations.

4. Regulatory framework of KERC

KPTCL must account for KERC's regulatory framework concerning InvITs. Currently, tariffs for all assets are set collectively, which may complicate the inclusion of RTM assets in an InvIT. Engagement with KERC to review or amend applicable regulations may be required to ensure smooth operation and revenue generation from InvIT-managed assets. Regulatory clarity and compliance are critical to avoiding legal or financial challenges.

5. Operational considerations

KPTCL should carefully assess the operational impact of setting up an InvIT. Drawing on the experiences of PGCIL and Sterlite Power, which retained roles as Project Managers post-InvIT, KPTCL may adopt a similar approach. As the sponsor, KPTCL would appoint a trustee in coordination with the investment manager (IM). The cost of establishing an InvIT, typically ranging from INR 20 to 30 Crores for a trust valued at INR 4,000 to 5,000 Crores, must be factored into financial planning. Additionally, the operational transition to an InvIT, including any changes to asset management practices, must be evaluated to mitigate potential disruptions.

In conclusion, while monetizing KPTCL's transmission assets via an InvIT presents significant opportunities, a thorough evaluation of these key factors is necessary to maximize value and ensure a smooth transition. By addressing these considerations, KPTCL can enhance financial stability, improve operational efficiency, and unlock considerable value from its existing assets.



6.1.4: Value potential

KPTCL has the potential to unlock an estimated INR 20,000 - 25,000 Crores in value from its transmission assets through an InvIT structure. By monetizing 20% of its INR 17,000 Crores worth of transmission assets, KPTCL can raise approximately INR 4,000 to 5,000 Crores upfront. These funds will provide the capital needed for expanding the transmission network, repaying debt, and investing in strategic infrastructure projects. The 30% - 35% monetization premium over the book value highlights the significant value potential of the InvIT model.

The pass-through status of InvITs, under Section 10(23FC) and Section 10(23FD) of the Income Tax Act, 1961, exempts them from corporate taxation. This allows income generated from assets to be distributed to investors without tax at the trust level, maximizing cash flows available for distribution. This tax efficiency makes InvITs attractive to institutional investors such as pension funds, mutual funds, and insurance companies, who seek stable returns of around 8%. The reliable cash flows from transmission assets enhance overall valuation, contributing to the INR 20,000 - 25,000 Crores value potential.

In addition to raising capital, the InvIT structure will lower KPTCL's cost of capital from the current 9% - 9.5% to approximately 6% - 6.5%, as seen in PGCIL's experience with its InvIT. This reduction in financing costs will free up funds for operational improvements and infrastructure investments, enabling KPTCL to meet Karnataka's growing power transmission needs more efficiently. The figure below details out the monetization potential from KPTCL InvIT.

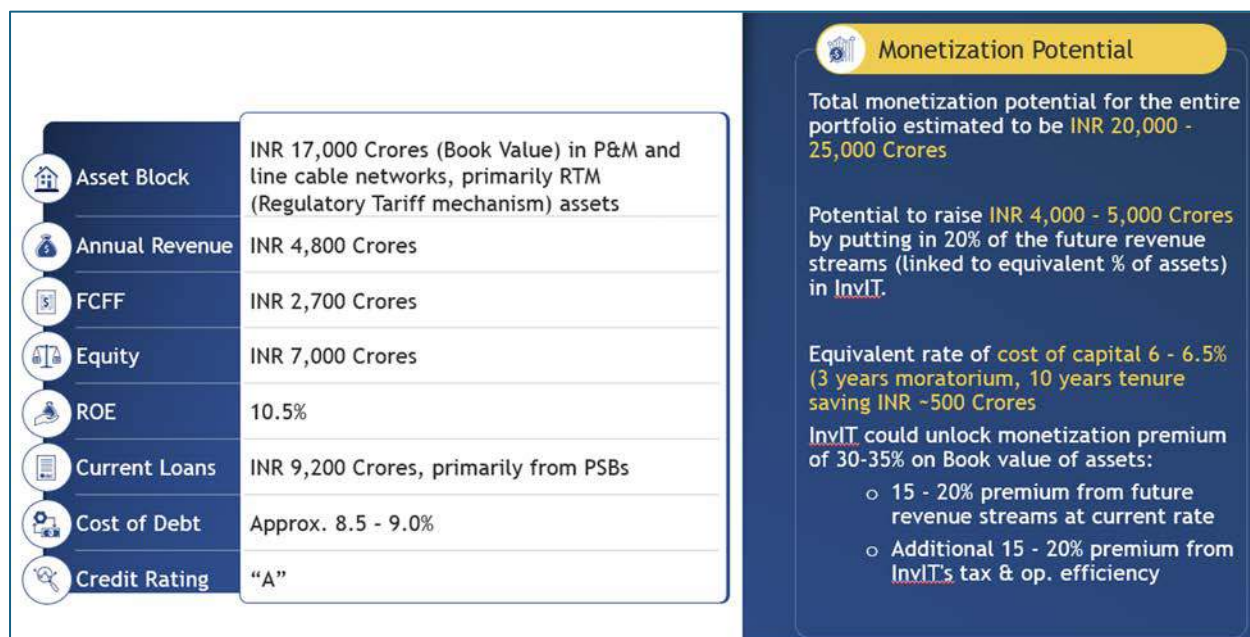


Figure 6.1.4: Monetization potential for KPTCL InvIT

6.1.5: Status of the recommendation

The following key milestones have been achieved in the implementation of the recommendation:

- The recommendation was discussed with in principle alignment amongst key officials from the Energy Department, the Finance Department and KPTCL under the joint Chairmanship of the Additional Chief Secretary to Government (Finance) and the Additional Chief Secretary to Government (Energy).
- The implementation roadmap is being drafted by KPTCL's technical and financial teams in consultation with the Finance Department, Energy Department, and experts from PGInvIT. The roadmap focuses on asset evaluation, technical implementation aspects, and other critical considerations necessary for the successful execution of the recommendation.



6.1.6: Next steps

The following next steps have been identified:

- **Alignment with Ministry Guidelines:** KPTCL shall review the latest guidelines issued by the Ministry of Power on asset monetization. The InvIT structure will be aligned with these guidelines to ensure compliance with current regulations.
- **Engagement with KERC:** KPTCL shall submit a formal request to the Karnataka Electricity Regulatory Commission (KERC) for a meeting to introduce the InvIT concept and to secure in principle approval by discussing key considerations, including ensuring stable tariff visibility for the assets under the InvIT.
- **Asset Identification and Evaluation:** KPTCL shall begin the process of identifying an initial set of transmission assets for monetization, which includes:
 - Segregating loan and equity components of the shortlisted assets.
 - Conducting a comprehensive assessment to ensure assets are free from pending litigation.
 - Evaluating assets through detailed analysis to assess suitability for inclusion in the InvIT.
- **Valuation and Loan Restructuring:** An independent financial valuer shall be appointed to assess the valuation of the identified assets under the InvIT structure. The valuer will also explore opportunities for loan restructuring to maximize tax benefits.
- **Revenue Flow Stability:** Escrow mechanisms shall be established with ESCOMs to ensure stable and predictable revenue flows for the assets included in the InvIT.

KPTCL shall finalize a detailed implementation roadmap for these actions to ensure timely and efficient execution.

Further, KPTCL will also explore leveraging PGInvIT, a pre-existing InvIT structure, as an alternative to setting up a new KPTCL-specific InvIT. With the right valuation, this approach could potentially expedite the monetization process and eliminate the need for creating a new SPV.



6.2: PPP for satellite township development

6.2.1: Context and background

BMRDA has planned 5 strategically located integrated township in the Greater Bengaluru Metropolitan region spanning over 50,000 acres in total, namely – Bidadi, Nandagudi, Solur, Ramanagaram and Satnur townships. The figure below maps out the 5 townships planned.

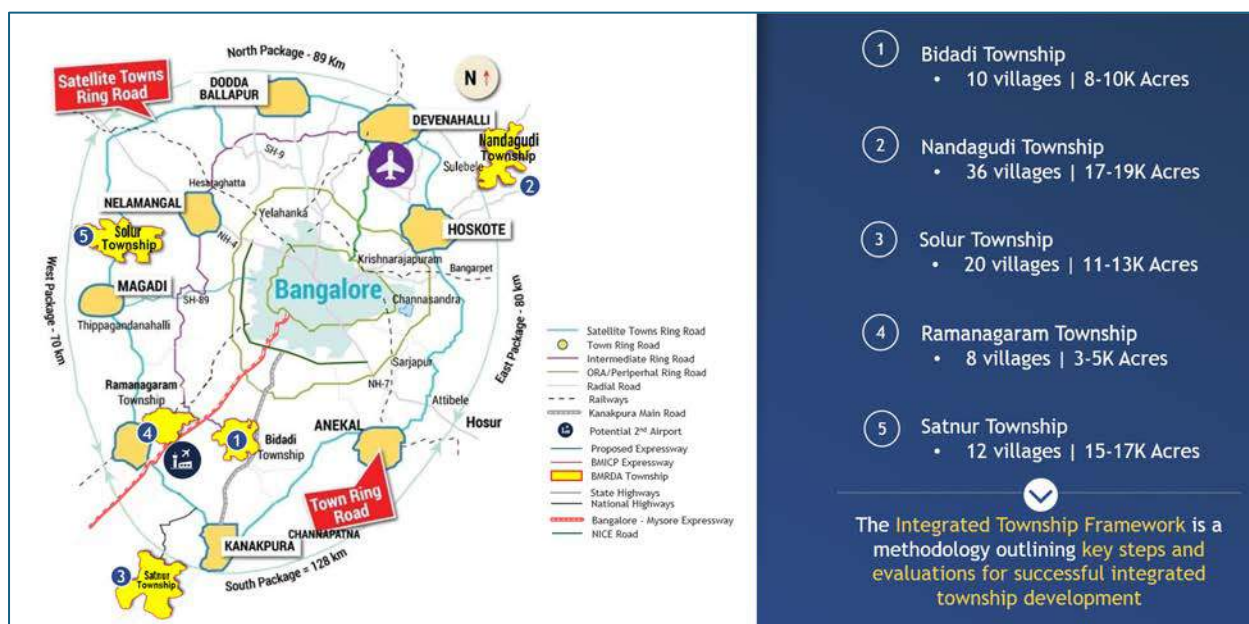


Figure 6.2.1: Satellite integrated townships planned by BMRDA

To ensure the successful development of these townships, it will be beneficial for the Government to adopt an Integrated Township Framework that ensures high quality development in a timely manner with minimal fiscal burden to the state. The Framework comprises of 5 elements: (1) Land consolidation, (2) Urban planning guidelines, (3) Project development model (incl. PPP), (4) Investor / Developer onboarding, and (5) Project implementation.



The first township to be developed is in Bidadi, covering an extensive area of approximately 8,000 to 10,000 acres across 10 villages. This area includes 2,100 acres of Government-owned land, 6,300 acres of privately owned land, with the remainder consisting of water bodies. **The recommendations below have been designed taking the Bidadi township as an example. These recommendations can similarly be applied to other townships as well.**

6.2.2: Recommendation

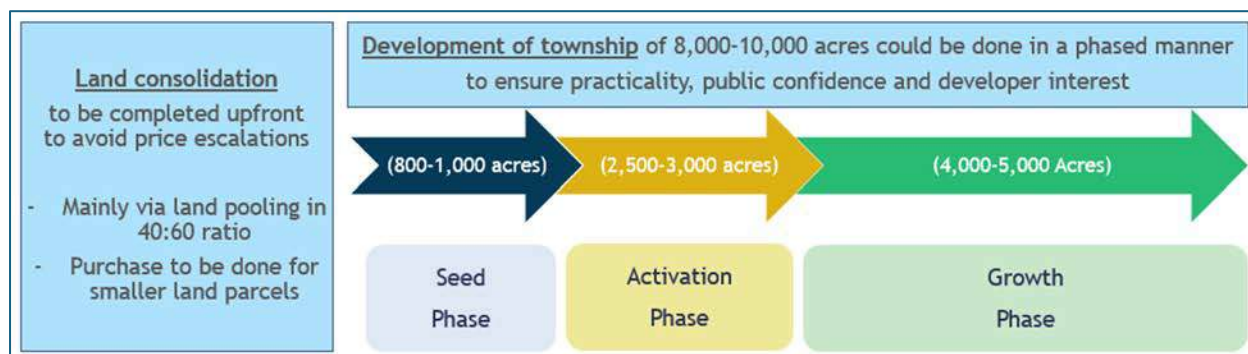


Figure 6.2.2: Recommendation for phased development of township

It is recommended to develop the Bidadi Township in three phases, namely the **Seed Phase**, **Activation Phase** and **Growth Phase**, leveraging **Public-Private Partnerships**. To mitigate potential price escalations, it is recommended that land consolidation for the 6,300 acres of privately owned land be completed upfront, through a combination of land pooling for large parcels and land acquisition for smaller parcels. Under the land pooling model, 40% of the allottable developed land will be returned to the original landowners.

1. The **Seed Phase**, covering 800-1,000 acres of owned land, is designed to establish a strong foundation with substantial Government involvement over an estimated 3-4 year timeline. In this phase, the Government will undertake the master development of trunk infrastructure and plan the required connectivity to the Seed Phase land. It is then recommended to set up a Public-Private Partnership (PPP) through the formation of a Special Purpose Vehicle (SPV) to drive layout and property development. By contributing the master-developed land as equity, the Government will secure a **10-15% equity stake** in the SPV. This stake will allow the Government to foster public confidence, attract developer interest, and facilitate the regulatory approvals necessary for development.
2. The **Activation Phase**, spanning 2,500-3,000 acres, maintains Government oversight in master development, but subsequent development stages, i.e., layout and property development, are handed over to the private developer. The Government transfers the



master-developed land to the developer on a 99-year long lease. The developer also takes over the responsibility to return the developed land to the pooled landowners. This approach minimizes Government cost outlay while ensuring quality development through private sector efficiency. The timeline for this phase is estimated to be 5-7 years.

3. The **Growth Phase**, spanning 4,000-5,000 acres, entrusts the developer with full responsibility for development, including master, layout and property development. The developer establishes a joint development model with the landowners and returns 40% of the allottable land or equivalent revenue share after development. With proven demand and heightened developer interest, Government involvement could be decreased. The timeline for this phase is estimated to be 8-10 years.

This phased development approach ensures a gradual and controlled transition from Government-led initial stages to a predominantly private sector-driven model, leveraging private sector efficiency while maintaining stability and strategic urban planning by the Government.

The recommended approach could lead to **one-time savings of INR 6,000 – 6,500 Crores** by reducing the cost outlay for land consolidation using land pooling model, as well as driving minimal spend on development, just enough to ensure adherence of master plan.

6.2.3: Integrated Township Framework

As the State plans to develop integrated townships, it is recommended to adopt the integrated township framework to ensure high quality development in a timely and cost-effective manner.



Figure 6.2.3: Methodology for integrated township development



The integrated township framework defines five essential steps for the planning and execution of integrated townships:

1. Land Consolidation Model

- Ensure timely acquisition of land through land acquisition or land pooling models, securing all necessary approvals.
- This step is vital to establish a solid foundation for the project, minimizing the risk of delays due to legal or bureaucratic land-related challenges.

2. Urban Planning Guidelines

- Establish comprehensive guidelines for land use and primary infrastructure planning.
- Develop concept master plans that draw on insights from both global and Indian benchmarks to promote efficient, modern, and sustainable urban planning.

3. Project Development Model

- Evaluate the advantages and disadvantages of various project development models to select the most suitable approach.
- Conduct detailed project viability assessments with financial models to confirm the economic feasibility and sustainability of the project.

4. Investor / Developer Onboarding

- Conduct targeted outreach to onboard anchor tenants and attract significant investors.
- Implement a transparent and efficient tendering process to encourage competitive bids, ensuring that the most qualified and committed developers are selected.

5. Project Implementation

- Execute land development according to planned timelines and phased schedules.
- Ensure adherence to the master plan and guidelines established in earlier stages, with an emphasis on maintaining quality and efficiency throughout the development.

The **Land Consolidation** and **Project Development** models are the most critical components of this framework and are explored in further detail in the following sections. Subsequent sub-sections will examine various models of land consolidation and project development, analyzing their respective advantages and disadvantages.



Land consolidation model

The land consolidation process for infrastructure and township development projects can be categorized into three key types.

Model 1: Land acquisition model

The Land Acquisition Model involves acquiring land at 2-4x the guidance value as per the Karnataka Town and Country Planning Act (KTCP).

Model 2: Land pooling model

The land pooling model offers two distinct options for landowners:

- **Option 1:** 40 : 60 land return ratio, where 40% of the developed land is returned to the landowners in line with the Karnataka Town and Country Planning Act. Appendix 10.1 explains the 40% land return ratio in detail
- **Option 2:** In this option, landowners receive a 40% land value equivalent revenue share from the developer post-development

Under the land pooling model, smallholding landowners can obtain a fair value for their land through revenue sharing. This model offers a better alternative to owning very small land parcels, which may not be as valuable or useful as assets.

Additional Compensation to Landowners:

- Landowners are provided with an annual compensation of INR 50,000 to 70,000 per acre, aligning with the average farmer income in Karnataka of approximately INR 70,000 per acre, until the land is returned, or the revenue share is initiated
- The Floor Space Index (FSI) on returned land is enhanced, with residential FSI increasing from 0.75-2 to 3-4 and commercial FSI from 1-2 to 4-5

Model 3: Joint development model

The Joint Development Model enables farmers to sell land directly to developers under pre-defined terms, offering options for revenue sharing or the return of a portion of the developed land. This approach provides landowners with flexibility to negotiate terms that align with their preferences—whether they prioritize a share of future revenues or a portion of the developed property.

However, this model presents challenges, particularly in ensuring fair terms regarding revenue shares and the quality of developed land returned. To address these, the Government must



establish clear, transparent guidelines on land pooling and revenue-sharing to protect the interests of all parties and foster equitable outcomes.

In practice, land consolidation often employs a combination of models. For example, a Government led land consolidation recommendation may involve outright acquisition from smallholders who prefer immediate compensation, alongside land pooling arrangements with larger landholders. This hybrid model allows for financial flexibility while offering tailored options to meet diverse landowner needs.

The figure below summarizes the three land consolidation models, and the degree of Government control over land in each of them.

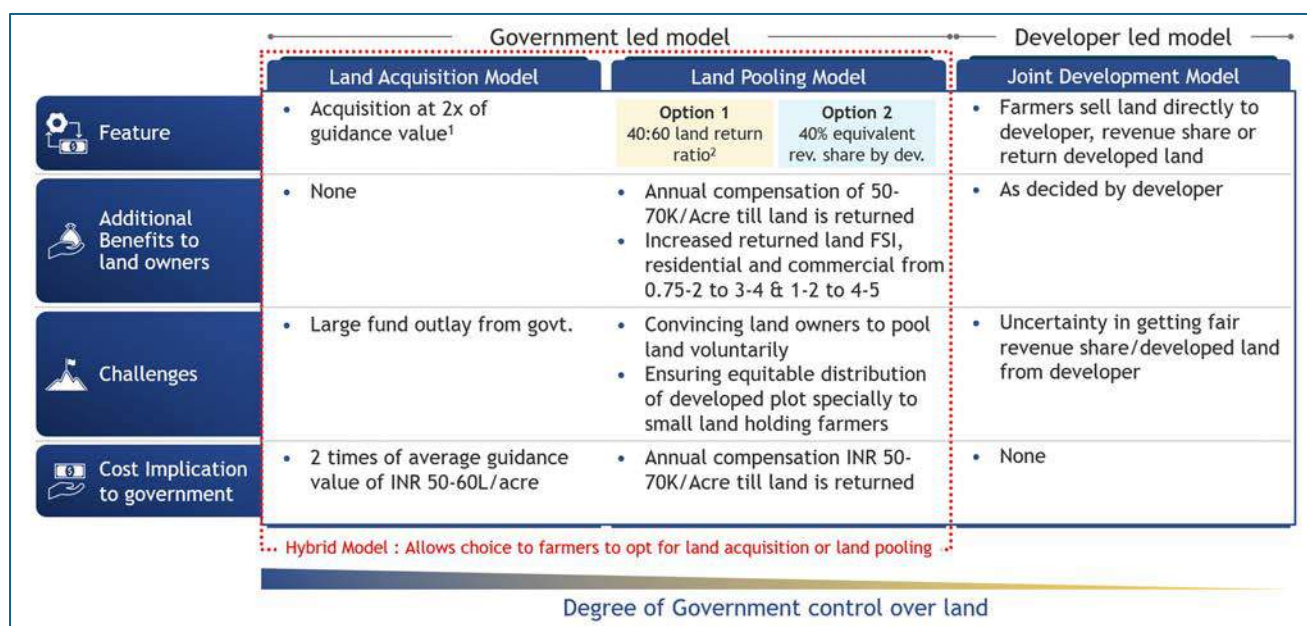


Figure 6.2.4: Types of land consolidation models

Detailed benchmarks of the land consolidation model are placed in Appendix 10.2.

Project development model

The land development process is divided into three stages – master development, layout development and property development.

- **Master development (500-1,000 acres):** This initial phase involves establishing critical infrastructure across a substantial area, typically between 500 to 1,000 acres. It ensures comprehensive connectivity through the construction of main arterial roads and the provision of essential utilities such as power substations and water supply systems. This stage lays the foundational groundwork necessary for all subsequent development phases.



- **Layout Development (<100 acres):** The second phase focuses on the development of smaller sections within the master development area, generally under 100 acres. It involves the strategic connection and installation of utility networks (water, electricity), the construction of sub-arterial roads, drainage systems, and the development of community facilities such as parks and public spaces
- **Property Development:** The final phase entails the construction of residential and commercial buildings on the prepared plots. This includes the development of housing, office spaces, retail outlets, educational institutions, and healthcare facilities, thereby transforming the area into a fully operational and integrated township

The above land development can be undertaken by the Government or the developer in different development modes. There are three proposed land development models: fully public, Public Private Partnership (PPP) and fully private.

In the fully Public (EPC Led) model, the State directly manages development through an EPC contract, maintaining complete ownership and control. However, this approach encounters high execution risks, with challenges in adhering to timelines and controlling costs, impacting project efficiency and quality.

The PPP Joint Venture model represents a collaborative approach, where the Government contributes land as equity, and a private developer funds the development costs. This partnership ensures shared responsibilities, aligning interests between public and private stakeholders, high returns to the Government and effective risk management.

Lastly, the fully private model involves selling or leasing land directly to private developers, who then undertake long-term property development driven by market demands. This model offers minimal Government control and promotes large-scale, investment-driven growth in residential and commercial infrastructure.

The figure below lays out the potential options for land development.

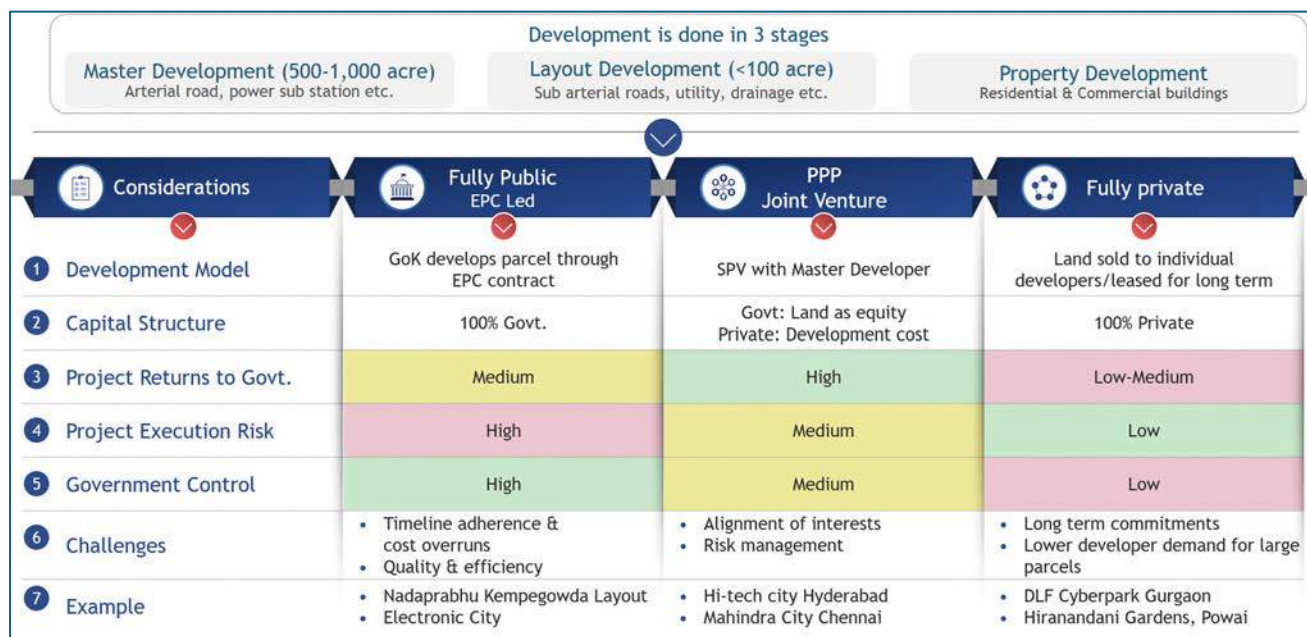


Figure 6.2.5: Comparison of 3 key modes for land development

Phases of development

Developing an integrated township spanning around 10,000 acres is a complex and extensive undertaking potentially accomplished in multiple phases. To ensure public confidence and maintain developer interest, the township development could be divided into three main phases. The figure below lays out the phased model for development under the Integrated Township Framework.

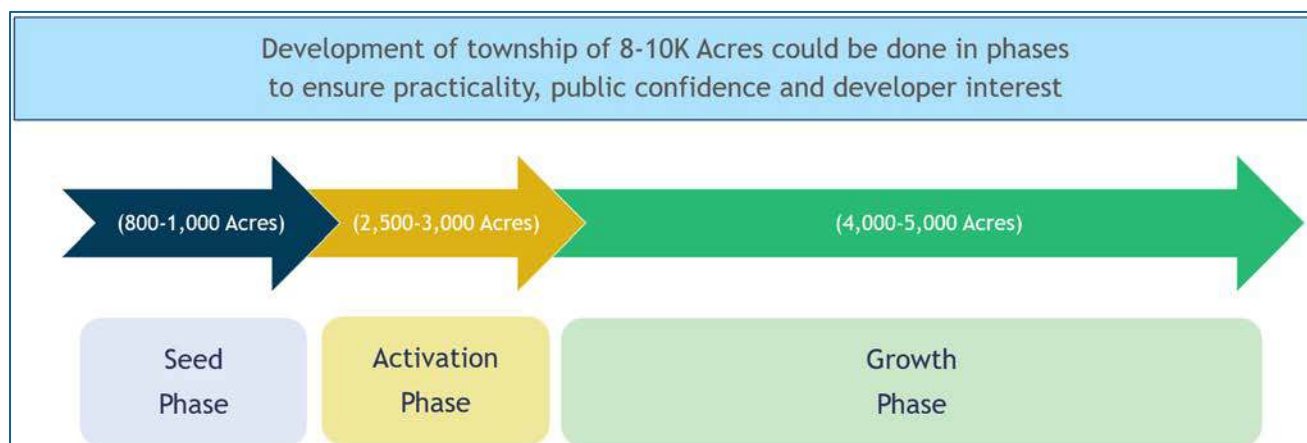


Figure 6.2.6: Phased development model under Integrated Township Framework



1. **Seed Phase (800-1,000 acres)**

In the Seed Phase, the Government could be involved in end-to-end development by consolidating land and participating in EPC (Engineering, Procurement, and Construction) or through an SPV (Special Purpose Vehicle). This phase is crucial for building public confidence and attracting developer interest.

2. **Activation Phase (2,500-3,000 acres)**

The Activation Phase could involve the Government maintaining oversight of land consolidation and basic EPC, while private developers take on additional development stages. This phase is proposed to leverage private sector efficiency while maintaining a degree of Government control.

3. **Growth Phase (5,000 acres)**

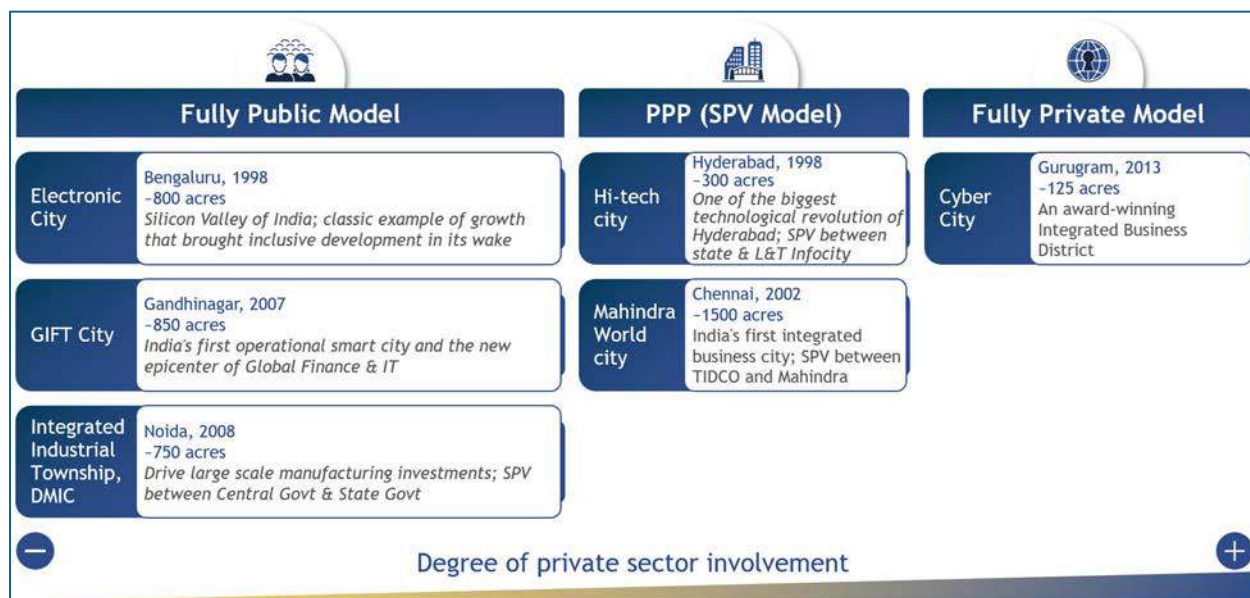
In the Growth Phase, private developers could assume full responsibility. With foundational infrastructure already in place and proven demand, developers would focus on constructing residential, commercial, educational, and healthcare facilities.

The phased manner of development has multiple benefits:

- **Demand responsiveness:** Developing the project in manageable phases enhances on-demand responsiveness and optimal resource allocation, ensuring adjustments can be made based on market feedback while adhering to the master plan
- **Cost Effectiveness:** Partnering with private developers for land consolidation and development reduces upfront Government costs and spreads investment over time
- **Quality Development:** The strategy of the Government focusing on essential infrastructure (arterial roads, power substations) early on, while developers handle property development, results in an optimal mix, delivering best in class infrastructure
- **Efficiency & timelines:** Relying on developers for phased growth ensures efficient and timely development, preventing delays and cost overrun

6.2.4: Key learnings from benchmarks

Examining the successes and failures of past integrated township/ cluster projects is crucial when embarking on new developments. Understanding the key success factors and reasons behind these failures provides valuable insights that can guide future projects. The figure below lays down the different examples and the development models utilized by them.



Successful township/ cluster projects

Hi-Tech city spans approximately over 270 acres and was developed in two phases:

- Phase 1 (1998): 158 acres developed by L&T Infocity at a project cost of INR 725 Crores
- Phase 2 (2008): 110 acres developed by Raheja at a project cost of INR 500 Crores

- Special Purpose Vehicle (SPV): Collaboration between State Government and master developers
- Government Equity: 11% equity in the form of land

- Andhra Pradesh Industrial Infrastructure Corporation (APIIC) with 11% shareholding provides land and clearances
- Master Developer holds 89% shareholding, providing capital and overseeing the development
- Industrial investors contribute through lease payments and annual maintenance charges

- Plug & Play Infrastructure
- Availability of ready-to-use infrastructure in Cyber Tower and Cyber Gateway



- Attractive incentives for investors, such as reimbursements, power subsidies, and customized incentives for major players

Economic Impact

- Significant GDP growth and IT & IT exports from Hyderabad
- Major tenants include global giants like Microsoft, Google, Wipro, and Accenture
- IT investments account for over 70% of total investments in Hyderabad

Outcomes

- Led to a 26% increase in residential rentals
- Significant reduction in unemployment and boost in IT exports
- Government's strategic vision remained consistent across political changes, emphasizing infrastructure's role in economic development

The figure below summarizes the phased development model at Hi-Tech City alongside the SPV structure.

Phase 1 - 1998		Phase 2 - 2008	
			
Land Area	158 acres	Land Area	110 acres
Dev model	SPV between state govt & master developer	Dev model	SPV between state govt & master developer
Project Cost	725 Cr	Project Cost	500 Cr
Master Developer	L&T Infocity	Master Developer	Raheja
Govt equity (as land)	11%	Govt equity (as land)	11%

Figure 6.2.8: Hi-Tech City, Hyderabad's phased development

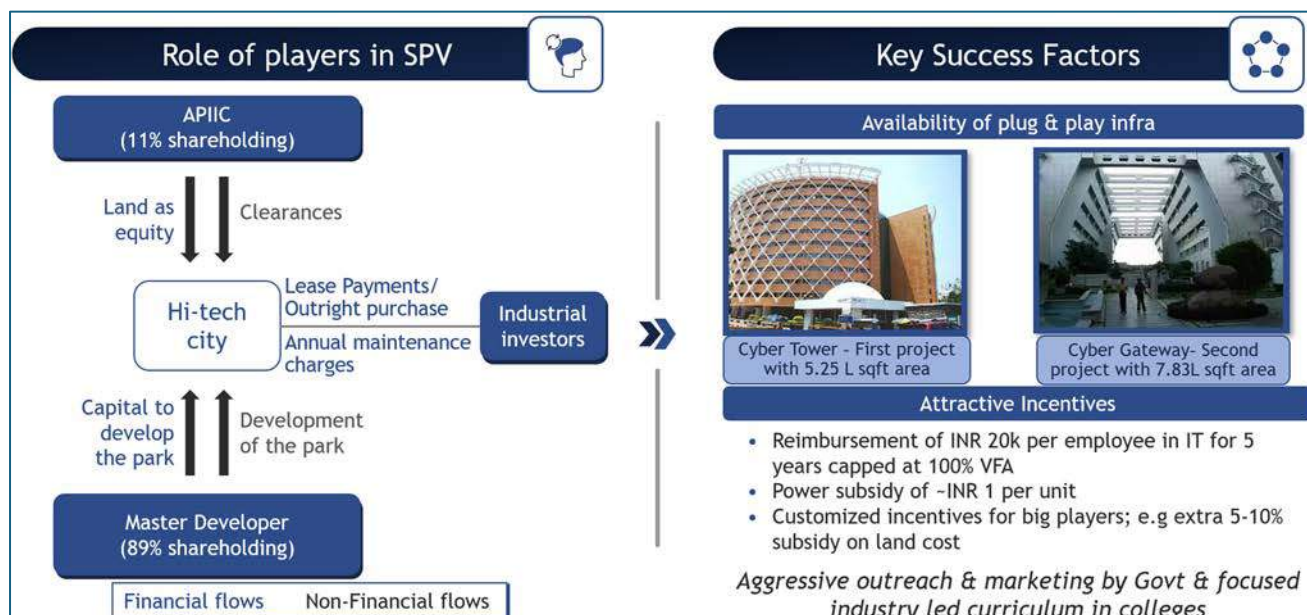


Figure 6.2.9: Hi-Tech City, Hyderabad's SPV model

2. Mahindra World City, Chennai

Mahindra World City spans approximately over 1,500 acres in Chennai.

Development Model

- It operates under a PPP model with significant Government involvement
- Government Equity: 11% in Chennai, represented by senior IAS officers on the board

Role of Players in SPV

- SPV for Development and O&M: TIDCO provides land as equity and clearances in Chennai
- Mahindra Lifespace: Manages development and operational activities

Key Success Factors

- High Quality Infrastructure: Industrial and social infrastructure, including BMW's India factory, IT offices, commercial centers, and world-class residential facilities
- Brand Strength and Sales Strategy: Mahindra's strong brand and partnership with State Government. Proactive strategies to address external constraints (labor, power, logistics)
- Operational Model:
 - o Ensures balanced risk and reward sharing through Government involvement
 - o Government directors assist in major issues like land acquisition and approvals

Incentives and Economic Impact



- Customized incentives to attract major investors
- Aggressive outreach and marketing by the Government
- Significant contributions to local economy and infrastructure development

The figure below summarizes the Mahindra World City project and its key drivers of success.

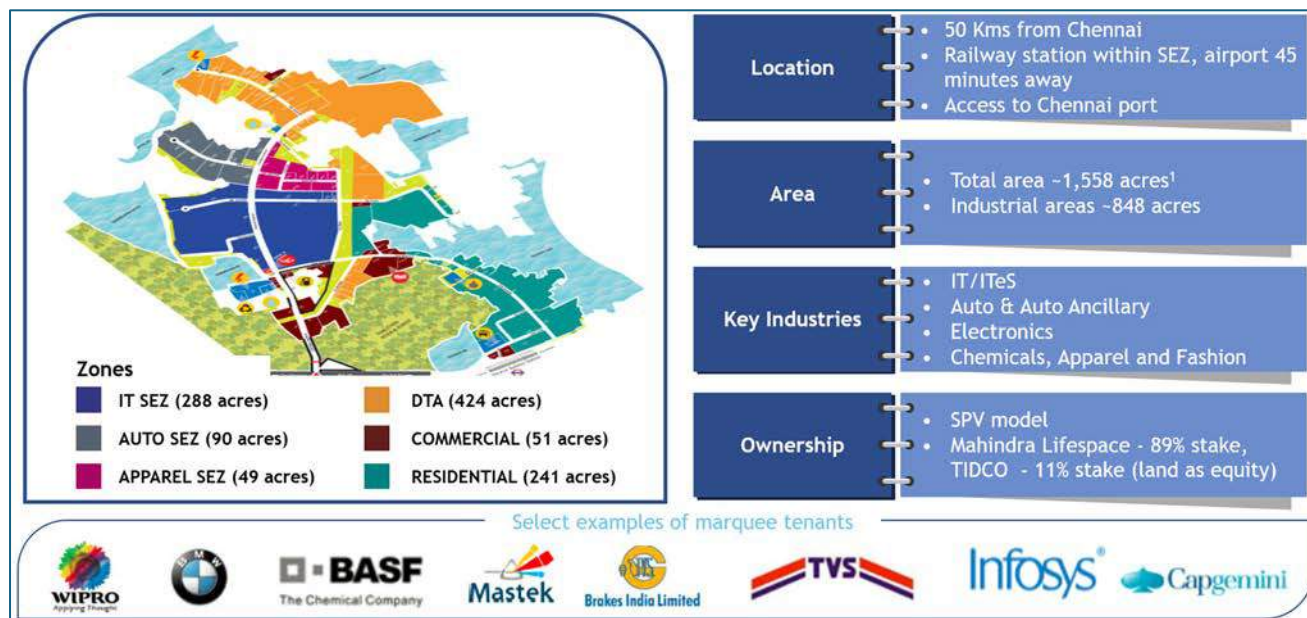


Figure 6.2.10: Mahindra World City, Chennai



Figure 6.2.11: Mahindra World City, Chennai's key success factors



Failed township/ cluster projects

1. Aamby Valley City, Maharashtra

- Location: Aamby Valley, Maharashtra
- Area: 10,000 acres
- Cause of failure
 - Financial troubles: The Sahara Group's legal and financial issues, including a major confrontation with SEBI (Securities and Exchange Board of India) led to court order to return INR 24,000 Crores to investors and direct auctioning of Aamby Valley to recover INR 14,00 Crores
 - **Regulatory Challenges:** Legal battles and regulatory issues further complicated the development process
 - **Market Dynamics:** The high-end real estate market downturn reduced demand for the luxury properties offered at Aamby Valley

2. Lavasa Township, Maharashtra

- Location: Pune, Maharashtra
- Area: 25,000 acres
- Cause of failure
 - Regulatory Challenges: Project faced several legal and regulatory hurdles due to environmental concerns. The Ministry of Environment and Forests (MoEF) raised concerns, leading to prolonged delays and halts in construction
 - Financial mismanagement: Financial irregularities and over leveraging resulted in insufficient funds to complete constructions
 - Delayed construction: Persistent delays in construction resulted in loss of investor and buyer confidence

3. Jaypee Sports City

- Location: Greater Noida, Uttar Pradesh
- Area: 5,000 acres
- Cause of failure
 - Developer Bankruptcy: Jaypee group struggled financially with debts and instability leading to stalled construction and incomplete amenities
 - Market Dynamics: Economic downturns and shifts in market demand affected the viability of the project, reducing investor interest and sales

The key takeaways from the above-mentioned examples are:



- **Important to obtain all necessary environmental and legal clearances** early to avoid delays and legal challenges. Conduct environmental impact study in advance to project commissioning
- **Critical to engage with local communities fairly and transparently**, offering adequate compensation and maintaining open communication channels
- **Essential to implement robust financial oversight** to prevent mismanagement, ensure transparency, and secure adequate funding
- **Vital to engage best-in-class developers and master planners** with strong brand for high-quality execution
- **Necessary to conduct thorough market research** to understand demand and adapt to economic changes in the subsequent phases
- **Essential to ensure ready to use/plug & play infrastructure** to reduce setup and occupancy time post development
- **Imperative to offer appealing incentives** such as tax rebates, power subsidies, and customized incentives for major players/investors

6.2.5: Proposed development plan for Bidadi township

Bidadi Township Phase 1 spans 8,000 to 10,000 acres across 10 villages, with 2,100 acres of existing Government land and 6,300 acres of private land.

Its strategic location offers several advantages, including proximity to the Bidadi industrial belt, excellent road connectivity, abundant water resources due to nearby reservoirs and the Cauvery River, and the recent identification of a new airport in the south of Bengaluru.

These factors make Bidadi Township the most promising upcoming integrated township in the region. The figure below depicts and illustrative map of the Bidadi integrated township alongside a village-wise area allocation.

It is recommended to develop the Bidadi Township in three phases, namely the Seed Phase, Activation Phase and Growth Phase, leveraging Public-Private Partnerships. To mitigate potential price escalations, **it is recommended that land consolidation for the 6,300 acres of privately owned land be completed upfront, through a combination of land pooling for large parcels and land acquisition for smaller parcels.** Under the land pooling model, 40% of the allottable developed land will be returned to the original landowners.

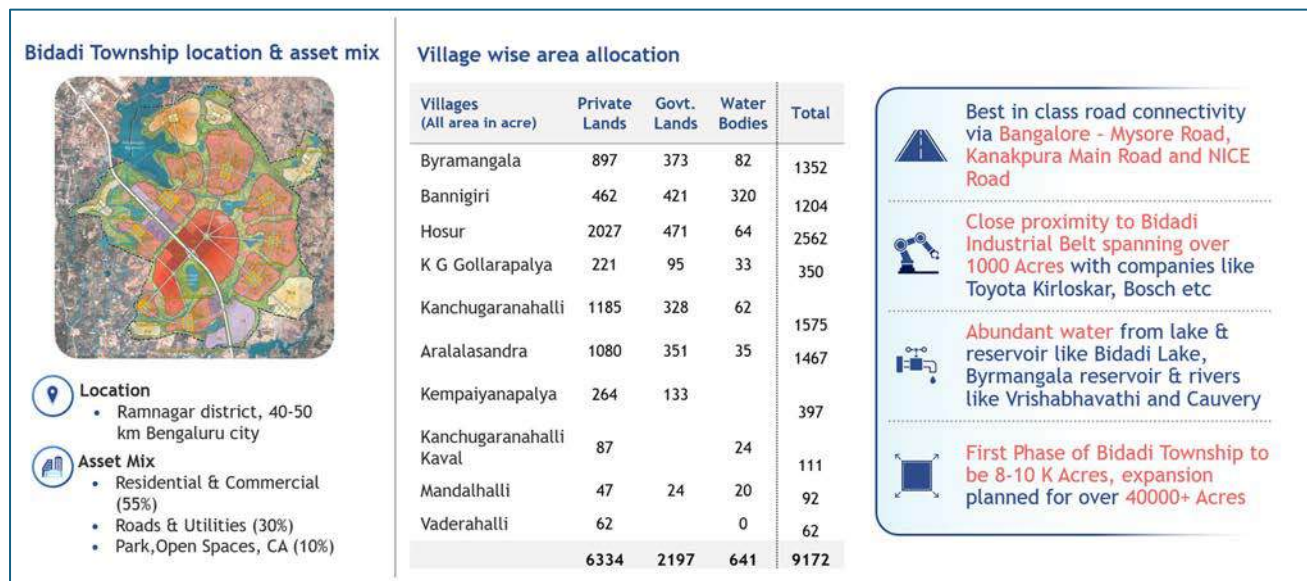


Figure 6.2.12: Overview of Bidadi integrated township

The proposed development of the Bidadi township can be planned in three strategic phases to ensure sustainable and efficient growth.

1. The **Seed Phase**, covering 800-1,000 acres of owned land, is designed to establish a strong foundation with substantial Government involvement over an estimated 3-4 year timeline. In this phase, the Government will undertake the master development of trunk infrastructure and plan the required connectivity to the Seed Phase land. It is then recommended to set up a Public-Private Partnership (PPP) through the formation of a Special Purpose Vehicle (SPV) to drive layout and property development, as detailed in Appendix 10.3. By contributing the master-developed land as equity, the Government will secure a **10-15% equity stake** in the SPV. This stake will allow the Government to foster public confidence, attract developer interest, and facilitate the regulatory approvals necessary for development.
2. The **Activation Phase**, spanning 2,500-3,000 acres, maintains Government oversight in master development, but subsequent development stages, i.e., layout and property development, are handed over to the private developer. The Government transfers the master-developed land to the developer on a 99-year long lease. The developer also takes over the responsibility to return the developed land to the pooled landowners. This approach minimizes Government cost outlay while ensuring quality development through private sector efficiency. The timeline for this phase is estimated to be 5-7 years.
3. The **Growth Phase**, spanning 4,000-5,000 acres, entrusts the developer with full responsibility for development, including master, layout and property development. The



developer establishes a joint development model with the landowners and returns 40% of the allottable land or equivalent revenue share after development. With proven demand and heightened developer interest, Government involvement could be decreased. The timeline for this phase is estimated to be 8-10 years.

Through this phased approach, the project strategically balances Government oversight with private sector efficiency, creating a model for successful and sustainable township development.

The figure below details the phase-wise project development plan and estimated costs to the Government.

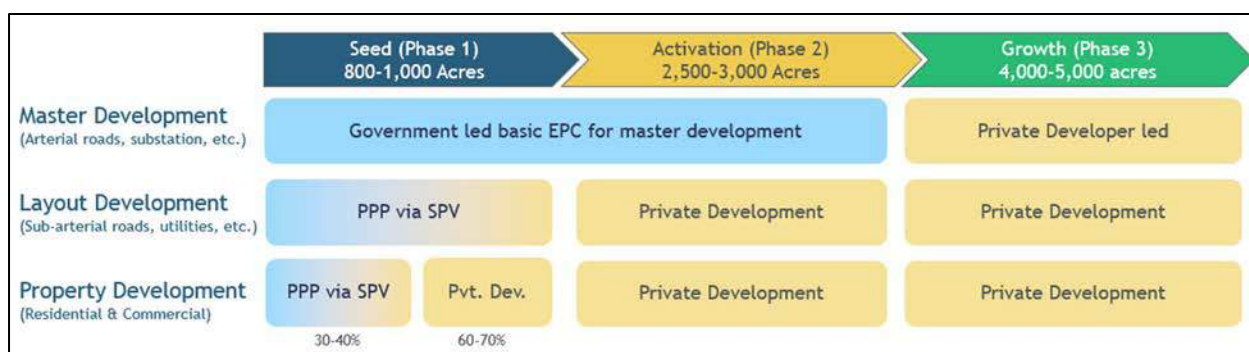


Figure 6.2.13: Potential development plan for Bidadi Integrated Township

6.2.6: Value potential

Implementing the integrated township framework to develop the Bidadi region is estimated to drive savings of INR 6,000 – 6,500 Crores to the State across the three phases of development. The table below compares the phased development model and the conventional development model.

	Phased development	Conventional development
Overview	Development undertaken in 3 phases – seed (800-1,000 acres), activation (2,500-3,000 acres) and growth (4,000-5,000 acres) phases	Land acquisition & Master development of 8,500+ acres undertaken in one phase



	Phased development	Conventional development
Market Demand Risk	Phased development ensures alignment with market needs and regional demand	Developing the entire land parcel at once may lead to excess supply and slow market absorption
Land Consolidation (incl. Land pooling)	Cost outlay for land acquisition to Government: INR 900-1,000 Crores, given Land pooling will reduce the cost burden	- Government led land acquisition of 6,300 acres of private land - Cost outlay for land acquisition to Government: INR 6,000 Crores
Land Development	- Seed Phase: Government led master development, subsequent development by SPV - Activation Phase: Government led master development, subsequent development by private developer - Growth Phase: Private player led development - Cost outlay for master development to Government: INR 700-900 Crores	- Government led master development of entire parcel - Bulk allotment to private player after master development - Cost outlay for master development to Government INR 1,700-INR 2,500 Crores
Total Cost Outlay	INR 1,500-2,000 Crores	INR 7,500-8,500 Crores

Table 6.2.1: Phased development model vs conventional development model



6.2.7: Status of the recommendation

- Integrated township development framework presented to the Finance Department and BMRDA officials. In principle alignment received for implementation of the framework to develop Bidadi township from Finance Department
- Draft Cabinet note with detailed integrated township framework and its implementation for Bidadi submitted to BMRDA team
- Draft cabinet note updated by the BMRDA team and has been put up on file for the approval of Urban Development Department and concurrence from Finance Department

6.2.8: Next steps

The key next steps for the successful implementation of the Bidadi Integrated Township development project include:

1. Secure Cabinet approval for the implementation of the integrated township framework at Bidadi
2. **Master Planning of 8,500 acres:** Issue a global tender to attract top-tier master planners with proven expertise in developing integrated townships worldwide, prioritizing affordable housing and sustainable development practices
3. **Identify the initial 800-1,000-acre seed parcel:** Based on current Government land availability, contiguity of land, connectivity, attractiveness, and ease of acquisition/pooling, identify the seed phase area for development
4. **Initiate land consolidation scheme:** Assess the amount of land to be acquired or pooled and understand the on-ground demands and concerns of landowners. Develop a phased land acquisition / pooling plan



6.3: State-guided development of lands with Revenue Department



6.3: State-guided development of lands with Revenue Department

6.3.1: Context and background

As a part of the revenue enhancement strategy, the Government of Karnataka can explore strategic land monetization opportunities to improve revenue streams of the State while ensuring compliance with the Karnataka Land Revenue Act. This recommendation seeks to monetize idle Government land in alignment with the State's socio-economic development goals, unlocking value from land under the control of the Revenue Department.

A pilot study was underway in Kolar District to test and refine the approach. The Kolar pilot aims to establish a scalable and adaptable framework for land monetization across the State. The framework balances revenue generation with sustainable, community-centered development, drawing from successful land use strategies in other States. Key priorities include utilizing land for social infrastructure, agriculture, and public facilities, ensuring that monetization efforts contribute to broader societal benefits.

An initial assessment has identified 4.08 Lakh acres of idle land across 35,000 parcels, with 1.7 Lakh acres directly under the Revenue Department (in Kolar). Further on ground validation has revealed discrepancies in the data indicating the actual amount of unencumbered land to be lower than initial estimates underscoring the need for rigorous ground truthing before planning for monetization.

6.3.2: Recommendation

The land monetization in Kolar District was started as a pilot study to build framework to repurpose idle Government land managed by the Revenue Department, with dual objectives of generating significant revenue and advancing sustainable development. The recommendation established a framework to categorize and prioritize land parcels by size, location, and potential use, in compliance with the Karnataka Land Revenue Act.

Strategic Land Categorization and Utilization

Land parcels, defined as contiguous plots with clear ownership and potential for development, were categorized based on their suitability for various types of projects:



- **Large parcels (500+ acres)** were prioritized for integrated townships, multi-modal logistics hubs, and social infrastructure aligned with district development goals.
- **Medium parcels (200–500 acres)** were allocated for warehousing, logistics, and industrial dormitories, aligning with the district’s industrial demand.
- **Smaller parcels (100–200 acres)** were designated for community-centric infrastructure, such as affordable housing, sports facilities, and educational institutions, thus supporting both economic growth and social needs.

Sustainable Management of Grazing Lands

The recommendation also included a focus on sustainable grazing land management. Given the district’s cattle population of 2.3 to 2.5 lakh, only 10,000 to 20,000 acres of the available 60,000 acres were deemed necessary to meet fodder demands. The remaining grazing land was proposed for renewable energy projects, such as solar and wind farms under the PM-KUSUM scheme, balancing cattle grazing needs with economic development goals and promoting environmental sustainability alongside revenue generation.

This structured approach ensures that land monetization efforts not only generate revenue but also contribute to sustainable development and socio-economic growth in Kolar District.

6.3.3: Description of recommendation

The Kolar district land monetization recommendation focuses on unlocking the potential of idle Government land through a strategic framework that aligns with local development needs and regulatory compliance. By adopting a data-driven approach to land categorization and allocation, the recommendation seeks to repurpose land for productive uses that balance revenue generation with sustainability and community benefit.

The figure below demonstrates the idle land mapped in the Kolar region by the Bhoomi Monitoring Cell.

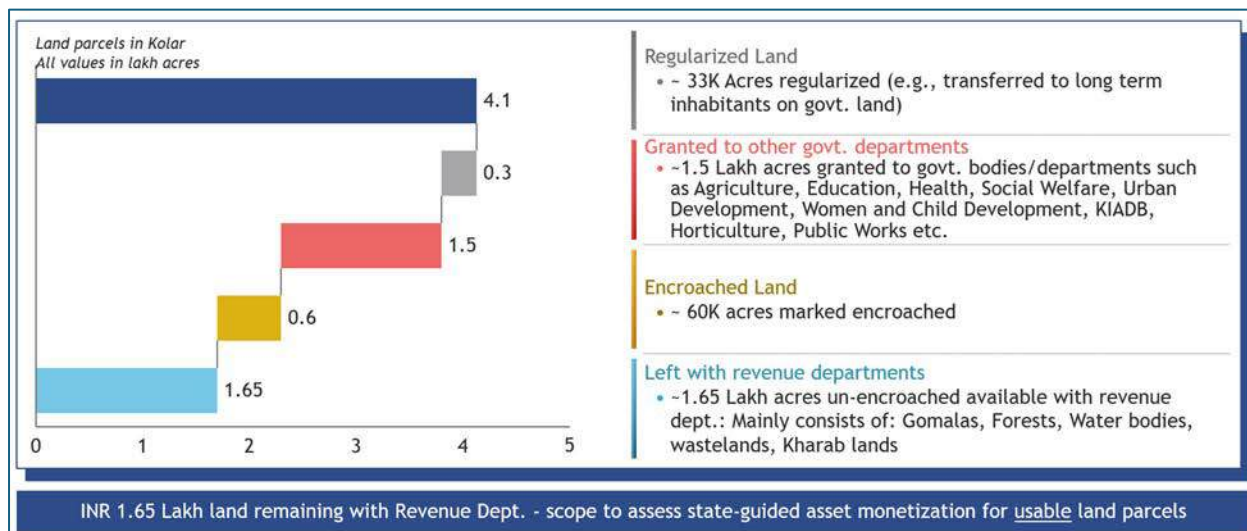


Figure 6.3.1: Idle lands mapped in Kolar region

State benchmarks

Several Indian States have successfully implemented land monetization strategies, offering valuable insights for Karnataka's initiative.

Rajasthan has utilized idle lands for renewable energy development under the Rajasthan Renewable Energy Policy 2023. Through joint ventures (JVs) where the Government holds a 50% equity stake, the State has established renewable energy parks on wastelands, transforming unused land into productive assets. Additionally, Rajasthan promotes industrial land use through RIICO (Rajasthan State Industrial Development and Investment Corporation Limited), driving regional development by offering land to industrial investors.

Gujarat, under its Industrial Policy 2020, permits the development of industrial parks on Government land, with lease rates set at 6% of market value per annum for up to 50 years. This model has facilitated economic growth while making Government land more accessible for industrial use.

Tamil Nadu has implemented the KAVIADP (Kalaigarin All Villages Integrated Agriculture Development Program), which focuses on converting barren lands into productive agricultural fields. Backed by INR 227 Crores in funding, the program includes recommendations like micro-irrigation and solar pumps to improve livelihoods by making idle lands agriculturally viable for landless and poor farmers.



These models provide valuable benchmarks for Karnataka's land monetization efforts, demonstrating how idle lands can be repurposed to achieve socio-economic and environmental goals.



Figure 6.3.2: Monetization practices across Indian States

Drawing on these state benchmarks, the following recommendations have been proposed for the categorization and monetization of various idle land parcels under the Karnataka Revenue Department.

Land categorization and Utilization

The recommendation targets 1.65 Lakh acres of unencumbered land, comprising grazing lands, forests, water bodies, and wastelands. These land parcels are categorized based on size and proximity to urban centers.

Large land parcels (over 500 acres) are earmarked for public infrastructure projects, township development, and logistics hubs, while medium-sized parcels (200-500 acres) will be allocated for warehousing and logistics support. Smaller parcels (100-200 acres) will focus on community infrastructure, including affordable housing, education, and agriculture-related projects. This strategic categorization ensures that land use meets both economic and social objectives, fostering regional growth while generating revenue for the State.

The figure below details the extent of idle lands in Kolar District.



Figure 6.3.3: Idle lands categorization in Kolar (BMC Data)

Addressing data discrepancies

A key challenge in the effective implementation of the framework is the need for accurate data on unencumbered land. Incorporating rigorous data-validation and ground-truthing from local Government officials to ensure data accuracy before planning any monetization is essential. Using verified data, the recommendation mitigates risks associated with overestimation and ensures that only validated parcels are considered for monetization.

Sustainable grazing land management

One of the key strengths of the recommendation is its strategic approach to grazing lands. With 60,000 acres of grazing land available in Kolar, only 10,000 to 20,000 acres are required to support the district's 2.3–2.5 Lakh cattle population.

This allows for the sustainable repurposing of the remaining land for renewable energy projects, such as solar and wind farms, while ensuring the region's agricultural needs are met. This balance between development and sustainability is critical to the recommendation's long-term success.

The figure below details the land requirement estimate to sustain livestock rearing in Kolar. The livestock population and their fodder requirements are estimated basis population data from the 20th Livestock Census and fodder estimates from Indian Council for Agricultural Research (ICAR). The Guidance Value for agricultural lands in Kolar ranges between INR 100 – 200 per square feet.



Multiple land uses, including industrial, residential, and commercial, are possible. It is essential to assess the socio-economic benefits and the needs of local communities on a case-by-case basis. The figure below outlines various options for land monetization, tailored to meet these diverse needs.





The proposed monetization framework defines suggested land usage basis the land parcel size and location while being cognizant of the needs of the local communities.

	Near Urban	Semi Urban	Rural
>500 acres	- Integrated townships - Industrial parks - Multi-modal logistics park	- Solar farms - Wind farms - Industrial parks - Multi-modal logistics park	- Solar farms - Wind farms - Agro industrial farms - Food and spice parks
200-500 acres	- Warehouses - Logistics park - Industrial Dormitories	- Educational Institutes - Warehouses - Logistics park	- Hospitality and Resorts - Solar farms - Wind farms - Agroforestry Projects
100-200 acres	- Affordable housing - Sports complex - Industrial Dormitories	- Educational institutes - Hospitality and Resorts - Smaller Industrial Parks - Logistics Park	- Solar farms (PM-KUSUM FLS) - Educational Institutions - Agricultural Markets - Mandis

Figure 6.3.6: Potential framework for idle land monetization basis land parcel size

Select land parcels identified in Kolar District and their potential monetization strategy is illustrated in figures 6.4.7 to figure 6.4.9.

	Land Parcel	Size (acres)	Location	Potential Usage
1	Mulubagalu, Kasaba (Land survey - 54)	420	Semi urban area <5km from Mulbagal town	Industrial park
2	Arahalli, Kolar (Land survey - 21)	202	Urban area, 5 km from Kolar city, located close to state highway	Integrated township
3	Robertsonpet, Bangarapet (Land survey - 22)	96	Semi urban area, located close to highway	Resorts & educational institutes

Figure 6.3.7: Illustrative land parcels in Kolar with potential land monetization options

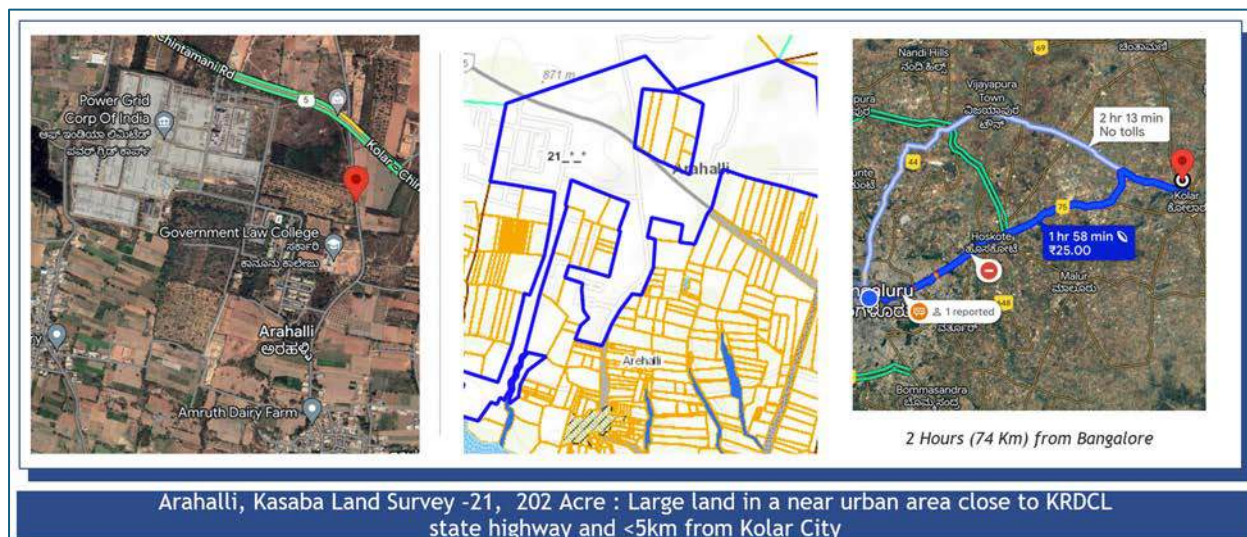


Figure 6.3.8: Arahalli, Kasaba Land Survey - 21

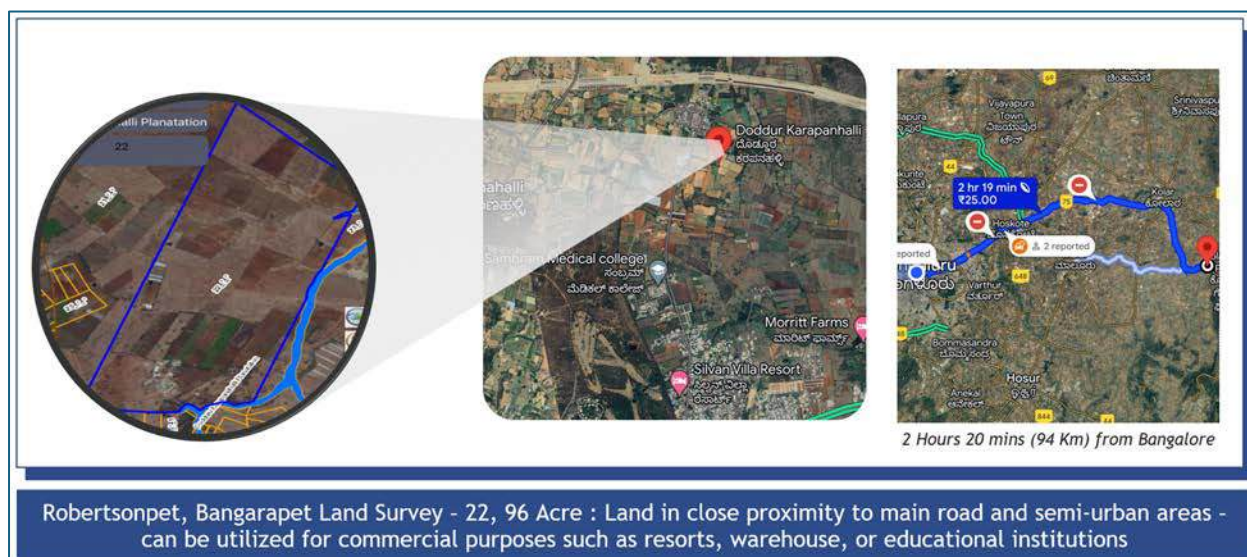


Figure 6.3.9: Robertsonpet, Bangarapet Land Survey - 22

Replicability and broader application

While Kolar serves as the pilot for the land monetization framework, the approach is designed for scalability across Karnataka.

The methods for land assessment, categorization, and allocation can be applied in other districts, ensuring that Karnataka can unlock the latent value of its idle Government lands in a systematic



and sustainable manner. This ensures that the recommendation has both immediate and long-term value.

6.3.4: Value potential

The Kolar district land monetization pilot presents significant revenue potential, with estimates indicating that monetizing 5% to 8% of grazing lands and 10% to 15% of wastelands could generate INR 3,500 to 4,000 Crores, at a conservative level considering there might be discrepancies in the Bhoomi Monitoring Cell's data. This projection is based on the average guidance value of INR 50 Lakh to 1 Crores per acre. The revenue will be derived from repurposing idle Government lands for development projects such as social infrastructure, renewable energy, and industrial parks, ensuring both financial returns and socio-economic growth.

In addition to immediate revenue generation, the recommendation supports long-term development through projects like affordable housing, educational institutions, and renewable energy farms, aligning with Karnataka's sustainability objectives.

This structured approach maximizes land use, attracting investment, creating jobs, and enhancing local communities.

The framework has the potential to be replicated across other 31 districts, unlocking further value from Karnataka's idle lands. This recommendation represents a balanced approach to land monetization, integrating financial gains with sustainable, community-focused development.

6.3.5: Status of the recommendation

In principle alignment has been received from Finance Department on the idle land monetization framework and pilot analysis in Kolar district.

6.3.6: Next steps

On ground validation of land parcel data needs to be conducted jointly by the Bhoomi Monitoring Cell (BMC) and local Government officials.

The identified un-encroached idle lands need to be integrated into the framework for development and monetization, ensuring alignment with societal development goals and compliance with the Karnataka Land Revenue Act (KLRA).



6.4: State-guided urbanization of Civic Amenity sites

6.4.1: Context and background

These LPAs oversee 1,900 Civic Amenity (CA) sites, distributed across 1,250 layouts, covering approximately 700 acres. The estimated value of these CA sites is INR 4,700 Crores, based on the land guidance value. Assuming a conservative allotment rate of 50-70% and a premium of 10-20% over the guidance value, the potential monetizable value ranges from INR 2,500 to 3,500 Crores. Presently, only 10-15 sites are utilized, highlighting the necessity for strategic planning and implementation to realize the full potential of these assets for community development and revenue generation.

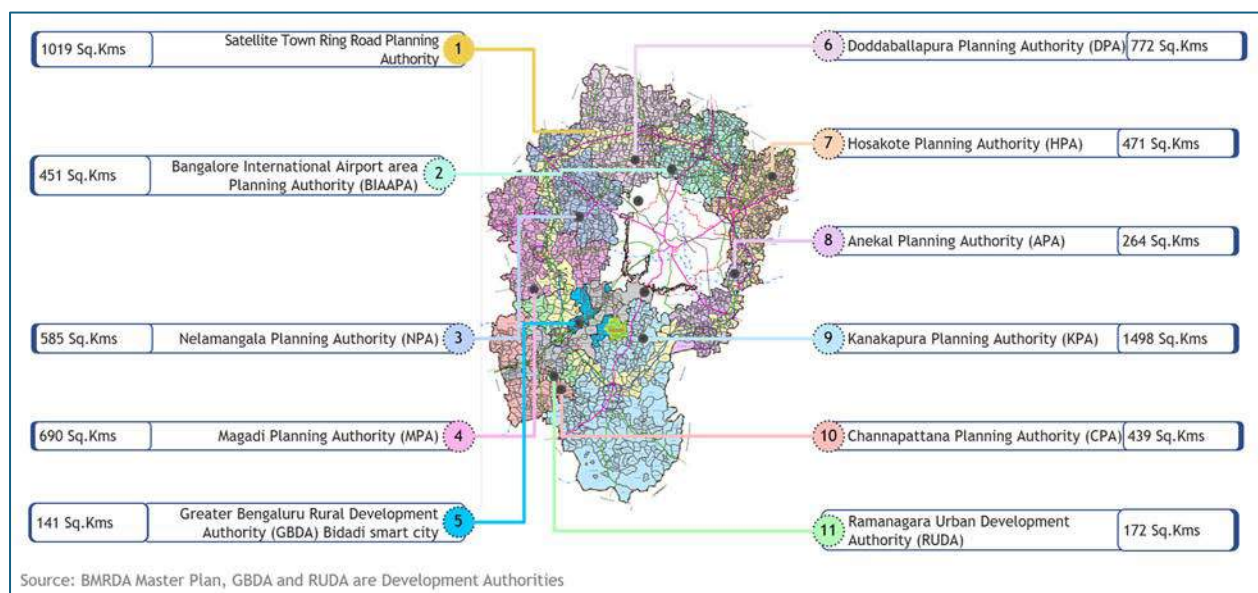


Figure 6.4.1: Local Planning Authorities under BMRDA

An analysis of the 1,900 CA sites reveals that approximately 60% of these sites are less than 0.25 acres (10,890 square feet) in area. In contrast, only 15% of the sites are more than 0.5 acres, yet these larger sites collectively cover nearly 350 acres, representing 50% of the total area by acreage.



The details of the extent of sites are captured in figure 6.5.2 and 6.5.3.

Acre	<0.25	0.25-0.5	0.5-1	1-3	3+	Total
BIAPPA	146	86	28	8	3	271
HPA	137	47	14	2	0	200
CPA	10	0	0	0	0	10
KPA	115	39	11	4	0	169
RU DA	48	15	1	1	0	65
MPA	131	67	31	19	0	248
APA	329	184	75	14	2	604
NPA	52	28	22	7	0	109
STR RPA	29	23	24	9	2	87
DPA	39	7	0	0	0	46
GBDA	29	7	3	2	0	41
Total	1065	503	209	66	7	1850
% By Acre	21%	30%	25%	21%	4%	
% By Number	58%	27%	11%	4%	1%	

Figure 6.4.2: Extent of CA sites across Local Planning Authorities

This distribution indicates significant potential for monetization and optimization of CA site usage based on factors such as area, location, road width, and other relevant parameters. The larger sites, collectively covering nearly 350 acres, indicate a substantial potential for optimized use and monetization. By understanding the distribution and characteristics of these sites, BMRDA can strategically plan to unlock their full potential.



Authority	No. of layouts	No. of CA sites	Site per layout	Total area of CA sites (acres)	Avg area/site (acres)
BIAPPA	182	271	1.49	95	0.35
HPA	143	200	1.40	46	0.23
CPA	10	10	1.00	3	0.31
KPA	120	169	1.41	43	0.26
RUDA	54	65	1.20	9	0.15
MPA	148	248	1.68	92	0.37
APA	404	604	1.50	185	0.31
NPA	60	109	1.82	44	0.41
STRRPA	50	87	1.74	125	1.44
DPA	42	46	1.10	34	0.75
GBDA	31	41	1.32	11	0.26
	1244	1850	1.49	687	0.37

Note: CA Sites- 10-15 allotted, some have temporary structures and encroachments
Note: 1 Acre= 40 Gunta

Figure 6.4.3: Extent of CA sites across Local Planning Authorities

Current process deployed by BMRDA for CA site allotment

The process for allotting Civic Amenity (CA) sites by the BMRDA is governed by the Karnataka Planning Authorities (Allotment of Civic Amenity Sites) Rules, 2016. This framework establishes clear guidelines for the allocation and use of CA sites. Figure 6.5.4 shows the allowed utilization of Civic Amenities as defined in the rules.



Figure 6.4.4: Allowed utilization of Civic Amenities

Eligibility and Prioritization:

- Allotments are prioritized for Central or State Government Departments, Statutory Bodies, and Local Authorities under Rule 2(c)(1)-(a), (b), (c), (d).
- Subsequently, allotments can be made to institutions registered under the Karnataka Societies Registration Act 1960, the Karnataka Co-operative Societies Act, 1959, or trusts created wholly for any charitable purpose, including educational, religious, or cultural organizations.

Additional Provisions:

- Institutions applying for CA sites must register with the authority, paying a specified registration fee based on the site size. Central or State Government Departments, Local Authorities, and Statutory Bodies are exempt from the registration fee.
- Allotment is allowed only for Central or State Government Departments, Statutory Bodies, Local Authorities, and other Non-Profit Institutions.
- The authority shall not sell or otherwise dispose of any area reserved for Civic Amenities.
- In cases where multiple applicants are vying for a single CA site, the method of drawl is employed to determine the allocation.
- CA sites are allotted on a lease basis for up to 30 years at an annuity constant lease rate.



6.4.2: Recommendation

The following 8 potential amendments can be considered in the Karnataka Planning Authorities (Allotment of Civic amenity sites) Rules, 2016.

The amendments have been categorized based on their alignment with BDA's (Bangalore Development Authority) current practices. Amendments that are consistent with BDA's existing policies have been marked in green. Those marked in yellow represent amendments over and above BDA's ongoing activities and will require separate modifications.

	BMRDA	BDA	Potential Chnages
Permitted players	Government, Non-profit only	Government, Non-profit	Government, Non-profit
		+ Private Organizations	+ Private Organizations
Allotment Process	Applications are invited; allotment on FCFS basis, drawal of lots if multiple institutions apply	Applications called in via publication in newspaper, final allotment decided by CASAC committee	E-tendering process, with H1 based selection of all prequalified bidders
Lease Rates	Fixed – Act does not mention price escalation due to inflation (dependent on contract terms)	Fixed – Act does not mention price escalation due to inflation (dependent on contract terms)	Lease Rates to be escalated at in sync with increase in inflation or guidance value annually (approx. 5-7% every year)
New Amenities	Health & Education Facility, Shops, Post Office, Banks, Convention Centers, Gymnasium, Library, Bus Station, Police & Fire	BMRDA + Entertainment centers, parking, Hotels and Service Apartments, Office buildings	Add new amenities: Multiplexes, Hotels, Co-living/working spaces, and EV charging stations; specify the meaning



	BMRDA	BDA	Potential Chnages
	Station, and other utilities/amenities		of broader terms like Market
Bundling of Sites	Allotment of Individual Sites	Allotment of Individual Sites	Allow bundling of sites within a layout, allowing private players the flexibility to participate in determining the usage of the CA sites provided they are within the required civic amenity guidelines for that layout
Right of first Refusal	No right of First Refusal as of now	No right of First Refusal as of now	Right of First Refusal to the lessee after the expiration of a 30-year lease on land parcels
Payment Structure	1. Lumpsum or:	1. Lumpsum	Option 1: Lump Sum Value for 30-year lease
	2. Paid in 5 annual installment	2. Annuity Lease Payments	Option 2: 5-10-bullet payments in the first 10 years; NPV around 110% of lump sum
			Option 3: 30-year annuity escalating



	BMRDA	BDA	Potential Chnages
			in sync with guidance value; NPV ~120% of lump sum
Allotment Process	The CA sites are first allotted to Central or State Government Department, Statutory body & Local Authority under Rule 2 (c)(1) -(a),(b),(c),(d) in the respective order and then to registered Institutions (Societies and Cooperatives) – takes around 3-4 months in the process	The CA sites are first allotted to Central or State Government Department, Statutory body & Local Authority and then to registered Institutions (Societies and Cooperatives) along with Private Organizations	Streamline the process by opening applications simultaneously for all players such as Government bodies, non-profit organizations and private organizations to reduce the time taken for allotment, while keeping the pecking order intact, to ensure that the Government bodies get the first preference

Table 6.4.1: Eight potential amendments in the Karnataka Planning Authorities Rules, 2016

6.4.3: Description of recommendation

Benchmarks from other States

To enhance the monetization and utilization of Civic Amenity (CA) sites, benchmarks from the Bangalore Development Authority (BDA), Pune Municipal Corporation (PMC), and Brihanmumbai Municipal Corporation (BMC) were analyzed. These benchmarks provide insights into effective CA site management, focusing on privatization, lease rate calculations, and specification of amenity sites.



1. Allowance of Privatization:

A common aspect across these benchmarks is the allowance of privatization. BDA has successfully monetized over 1400 CA sites through a structured process involving privatization, with lease terms typically including a 30-year lease with either a lump sum amount or annuity. CA sites can be allotted to private organizations providing public services such as education and healthcare.

PMC (Pune Municipal Corporation) has adopted a public-private partnership (PPP) model for its amenity spaces, mandated as a percentage of layouts, subdivisions, or group housing schemes. This policy enables development without municipal financial investment. The disposal of municipal property is permitted under Section 79 of the Maharashtra Municipal Corporation (MMC) Act, which mandates that properties cannot be leased or sold at less than the current market value. Properties are leased for 30 years, ensuring the intended public purpose is maintained. BMC in Mumbai also uses privatization strategies for CA sites, leasing them to private entities under specific guidelines, ensuring that the sites serve their intended public purposes while reducing the financial burden on the municipal corporation.

2. Lease Rate Calculations:

Lease rate calculations are another important aspect. BDA's Finance Department sets the lease rate by choosing between a lump sum or annuity, along with the initial deposit required. PMC uses the annual ready reckoner rate to calculate market value for leasing properties, ensuring transparency and fairness.

3. Specification of Civic Amenity Sites:

The specification of amenity sites is clearly outlined in these benchmarks. BDA includes uses such as entertainment centers, parking, hotels and service apartments, and office buildings, ensuring that the sites serve community needs effectively. Additionally, other amenities like co-living/working spaces and EV charging stations can be considered for inclusion in line with recent trends.

4. Allotment Process:

BDA has effectively monetized over 1400 CA sites through a systematic process:

- Upfront CA site Utilization Determination: The Town Planning Authority (TPA) decides the purpose of CA sites during the layout planning phase.
- Site Information Collection: The CA Site Committee sends a letter to the engineer for detailed site information, such as area, number, and location.
- Lease Rate Determination: The Finance Department sets the lease rate, choosing between a lump sum or annuity, along with the initial deposit required.



- Notification and Application: The TPA releases a notification in the newspaper to announce site availability. Interested applicants can register by paying a fee in Canara Bank or raise any issues with the BDAs.
- CA Site Committee: The CA Site Committee allocates the site based on merit, considering a 5-year audit report, credentials, and cooperative act registration.

Benchmarking practices followed by BDA, PMC, and BMC indicate scope for potential considerations for BMRDA to enhance its process for the allotment and monetization of CA sites, ensuring transparency, efficiency, and alignment with current urban development needs.

Potential Changes to be considered for Allotment of Civic Amenity Sites Rules

Based on the analysis of CA sites and benchmarking with the Bangalore Development Authority (BDA), there are eight potential changes in the current BMRDA rules that can be explored.

These suggestions also incorporate best practices from Local Planning and Development Authorities in other States. These changes include whether they are "in line with BDA" or "over and above BDA" current BDA practices, to highlight the extent of modification.

Figure 6.5.5 summarizes the potential changes that can be explored.

	Private Players	Amendment in Karnataka Planning Authorities (Allotment of Civic amenity sites) Rules, 2016, 2 (1) (c) (1) allowing allotment to private players similar to BDA : "allotment of Civic Amenity sites not only to Government and Local bodies, but also to private organizations doing yeoman service to the public"
	E-Tendering	Implement E-tendering process for leasing civic amenity sites. H1 based selection of all prequalified bidders vs. current Draw/Lottery system - Bidding Parameter : Delta over the defined floor price
	Bundling multiple layouts	Allow bundling at a multi-layout level, allowing private players the flexibility to participate in determining the usage of the CA sites provided they are within civic amenity basket
	Escalation of Lease Rates	Lease Rates to be escalated at in sync with increase in guidance value annually
	Revision of lease rates	Option 1: Lump Sum Value upfront for 30-year lease Option 2: 10-bullet payments in the first 10 years; NPV around 110% of lump sum Option 3: 30-year annuity escalating in sync with guidance rates; NPV around 120% of lump sum value
	New Amenities	Include modern utilities like multiplexes, hotels, co-working spaces, and EV charging stations ensures the Act remains relevant & promotes innovation
	Right of First Refusal	Add clause to grant the Right of First Refusal to the lessee after the expiration of a 30-year lease on land parcels
	Allotment Process	Streamline the process by opening applications simultaneously for all players such as govt. bodies, non-profit organizations and private organizations to reduce the time taken for allotment, while keeping the pecking order intact, to ensure that the govt. bodies get the first preference

Figure 6.4.5: 8 potential changes for the Allotment of Civic Amenity Sites Rules



1. Scope to permit private players in addition to Government and non-profit bodies for allotment of civic amenity sites (In line with BDA)

BDA currently allows private organizations along with Government and non-profits to participate in the allotment of CA sites. This practice is also followed in Pune & Mumbai.

Allowing private players could potentially help in faster monetization of the idle CA site assets, while also allowing a wider set of players to access the CA sites. However, it is important to ensure that the allotment process follows the pecking order, allowing the first right of refusal to Government entities to apply for the CA site. Additionally, it is also important to ensure that the private player is developing as per the guidelines for the given CA sites in line with the intended civic use.

An amendment can be considered in the Karnataka Planning Authorities (Allotment of Civic Amenity Sites) Rules, 2016, 2 (1) (c) (1) to allow allotment to private players similar to BDA.

2. Potential to implement E-tendering for leasing civic amenity sites rather than the current lottery (drawl of lots) system (Over and above BDA)

Implementing an e-tendering process for leasing civic amenity sites can be considered to replace the current draw/lottery system. The e-tendering process could use H1-based selection of all prequalified bidders, with the bidding parameter being the incremental value quoted over the defined floor price. E-tendering could significantly increase transparency and efficiency in the allotment process.

This method aligns with the public-private partnership (PPP) model adopted by PMC, which has successfully streamlined their allotment process. By adopting E-tendering, BMRDA can ensure a more competitive and fair selection process, enhancing trust and accountability.

In BDA, the allotment process is currently determined by the CA Site Allotment Committee (CASAC) based on specific technical parameters. However, the final authority for allotment rests with the BDA - hence making this potential change over and above BDA Act.

3. Allowing bundling of civic amenity sites for faster allotment and better monetization can be considered (Over and above BDA)

Allowing bundling within a layout could be considered to increase the cumulative land parcel size for the bidders. An example is a bundle of 3 CA sites in a layout, wherein one could be used to setup a school, and the other 2 could be used for parking, or for playground, or any other relevant use.



By allowing bundling, BMRDA can provide flexibility and attract larger, more impactful development projects. Additionally, bundling is particularly effective for BMRDA as there are many small, dispersed land parcels that would be tougher to monetize individually. Bundling can streamline the development process and ensure cohesive planning, leading to better utilization and monetization of CA sites. BDA currently allots individual sites, and not bundles. Hence this point is over and above the current BDA Act.

4. Annual escalation of lease rates for civic amenity sites to reflect market value (Over and above BDA)

Escalating lease rates annually in sync with increases in the guidance value can be considered to ensure that lease amounts remain aligned with current market values. Currently, fixed lease rates without accounting for inflation are being used (unless specified in the contract).

By implementing annual escalation of lease rates, BMRDA can maintain the real value of lease payments over time, ensuring fair and up-to-date revenue generation. This approach is similar to Pune Municipal Corporation's use of the annual ready reckoner rate to calculate market values for leasing properties, which ensures transparency and fairness in lease agreements. Regularly adjusting lease rates to reflect market conditions helps to avoid revenue losses and keeps the rates competitive.

BDA currently has fixed lease rates without any escalation clause (unless specified in the contract) - hence this point is over and above the current BDA Act.

5. Scope to introduce flexible payment structures for leasing civic amenity sites (In line with BDA)

Flexible lease payment options could be considered to attract a wider range of developers and institutions. The options include:

- Lump sum value for a 30-year lease.
- 5-10 bullet payments in the first 10 years (NPV around 110% of lump sum).
- 30-year annuity escalating at 7% per year (NPV around 120% of lump sum).

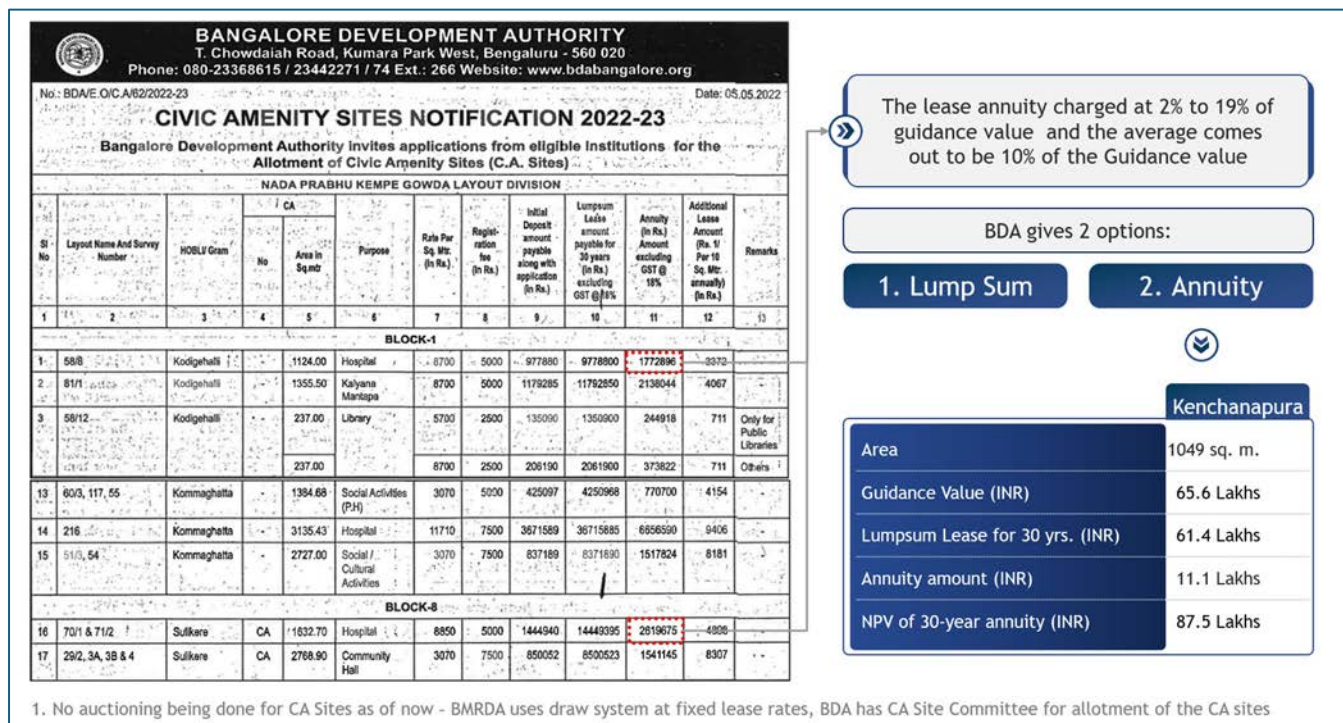


Figure 6.4.6: Lease payment models

BDA currently offers lump sum or annuity lease payments for 30 years, as seen in figure 6.5.6. By providing more flexible payment structures, BMRDA can cater to different financial capacities of potential lessees, making it more attractive for a variety of developers, including small local players. Taking money upfront as a lump sum has the benefit of eliminating uncertainty around future payments and provides immediate funds that can be utilized for other purposes with better ROI. Furthermore, the lump sum value should be calculated in a way that it is not below the guidance value of the property plus a market premium.

6. Scope to add more amenities to the permissible usage (largely in line with BDA; few modern amenities)

Adding new amenities such as multiplexes, hotels, co-living/working spaces, and EV charging stations, along with specifying the meaning of broader terms like "market," can be considered.

BDA already includes a comprehensive list of acceptable uses for CA sites, such as entertainment centers, parking, hotels and service apartments, and office buildings – as depicted in Figure 6.5.7.

 Common to all permissible zones	 Min. road width	 Minimum. Size of plot in sq.m	 Acres
High school with playground, Integrated Residential School	18	5000	1.24
Star hotels (above 3 star) Anywhere within conurbation.	15	4000	0.99
College & higher educational institutions	18	2500	0.62
Cinema, game centres, Multiplex, convention centres.	18	2000	0.49
Middle school	15	2000	0.49
Star hotels (up to 3 star within I ring)	12	2000	0.49
Star hotels (up to 3 star) in II and III ring	15	2000	0.49
Kalyana Mantaps	18	1000	0.25
Social clubs and amenities	12	1000	0.25
Multi storey car parking	12	1000	0.25
Community hall	12	1000	0.25
Petrol pumps/Fuel stations	18	500	0.12
Hotels and lodges	12	500	0.12
Service Apartments	18	500	0.12
LPG storages	12	500	0.12
Places of congregation	12	500	0.12
Conference hall	15	500	0.12
Office buildings (C3 and above)	12	300	0.07
Public libraries	12	300	0.07
Nursing homes/polyclinics	12	300	0.07
Nursery school		300	0.07
Sub offices of utilities up to 50 sq.m			
Police stations and post offices			
Places of worship, Dharmashala, hostels			
Broadcasting and Transmission stations			
Spastic Rehabilitation centers, Orphanages, Govt dispensaries			
Burial grounds, crematorium under special circumstances			
Government buildings, auditoriums, cultural complexes,			
Healthcare and Hospital			
Airport and ancillary uses			

7. Potential consideration to grant right of first refusal to lessees (Over and above BDA)

8. Scope to streamline the allotment process for civic amenity sites to reduce delays (Over and above BDA)

Streamlining the process by accepting applications from all eligible entities at the same time increases efficiency and transparency, minimizing delays – while the pecking order will still be maintained while prioritizing the allotment.



Currently, the BDA offers CA sites in a sequential manner to Government and local bodies first, followed by Central or State Government Departments, Statutory Bodies, Local Authorities, and then to Non-profit Institutions and Private organizations but not simultaneously - hence this point is over and above the current BDA Act.

By adopting best practices from BDA and other benchmarks, BMRDA can enhance the monetization and utilization of its Civic Amenity (CA) sites. Implementing changes such as allowing private players, introducing E-tendering, escalating lease rates in line with inflation, and adding new amenities will ensure transparency, efficiency, and alignment with current urban development needs.

6.4.4: Value potential

The Local planning authorities under BMRDA manage around 1,900 Civic Amenity (CA) sites, distributed across 1,250 layouts, covering approximately 700 acres. The estimated value of these CA sites is INR 4,700 Crores, based on the guidance value.

Assuming a conservative allotment rate of 50-70% and a premium of 10-20% over the guidance value, the potential monetizable value ranges from INR 2,500 to 3,500 Crores.

Presently, only 10-15 sites are utilized, highlighting the necessity for strategic planning and implementation to realize the full potential of these assets for community development and revenue generation.

6.4.5: Status of the recommendation

The new allotment rules have been drafted in line with the BDA CA Site rules. The file has been put up by BMRDA to the Urban Development Department by incorporating the amendments.

6.4.6: Next steps

The following next steps need to be undertaken to implement the revised CA site monetization rules effectively:

- Undertake complete mapping of CA sites alongside identification of 300 – 400 premium bundles to facilitate monetization under the proposed rules.



6.5: PPP for affordable housing projects





6.5: PPP for affordable housing projects

6.5.1: Context and background

Under the “1 Lakh Multi-Storied Bengaluru Housing Scheme,” the Rajiv Gandhi Housing Corporation (RGHC) has undertaken the construction of 45,124 one-bedroom housing units for the Economically Weaker Sections (EWS). Of these, 4,073 units have been completed, and an additional 4,567 units are in the final stages of construction, with completion expected by the end of 2024. However, the development of the remaining 36,484 units is stalled at various stages of progress. Specifically, 28,686 units are at the foundation, plinth, or various floor levels of construction, while 7,798 units are yet to commence.

The cost of constructing each unit ranges between INR 10.2 Lakhs to INR 13.2 Lakhs, inclusive of amenities e.g., water, electricity, stilt parking, lift, diesel generator, sewage treatment plant, compound walls, gate and one shop for every 100 dwelling units. Beneficiaries are expected to finance INR 6.7 Lakhs to INR 10.5 Lakhs per unit after accounting for State subsidies (INR 1.2 Lakhs – 2.0 Lakhs per unit) and the central Government’s Pradhan Mantri Awas Yojana (Urban) subsidy (INR 1.5 Lakhs per unit).

The demand for these housing units is evident, with 57,156 applications received through the RGHC’s online portal. However, only 12,153 beneficiaries have secured units by paying the initial deposit of INR 50,000. Notably, only seven units have been registered, with full payments received from the beneficiaries.

One of the key challenges identified is the beneficiaries' inability to finance their share of the cost of construction averaging at INR 9.4 Lakhs per unit. This lack of funds has resulted in incomplete affordable housing projects to the tune of 41,051 units.

The figure below highlights the status of the project pipeline for houses planned under the “1 Lakh Multi-Storied Bengaluru Housing Scheme” and cost of construction per unit.

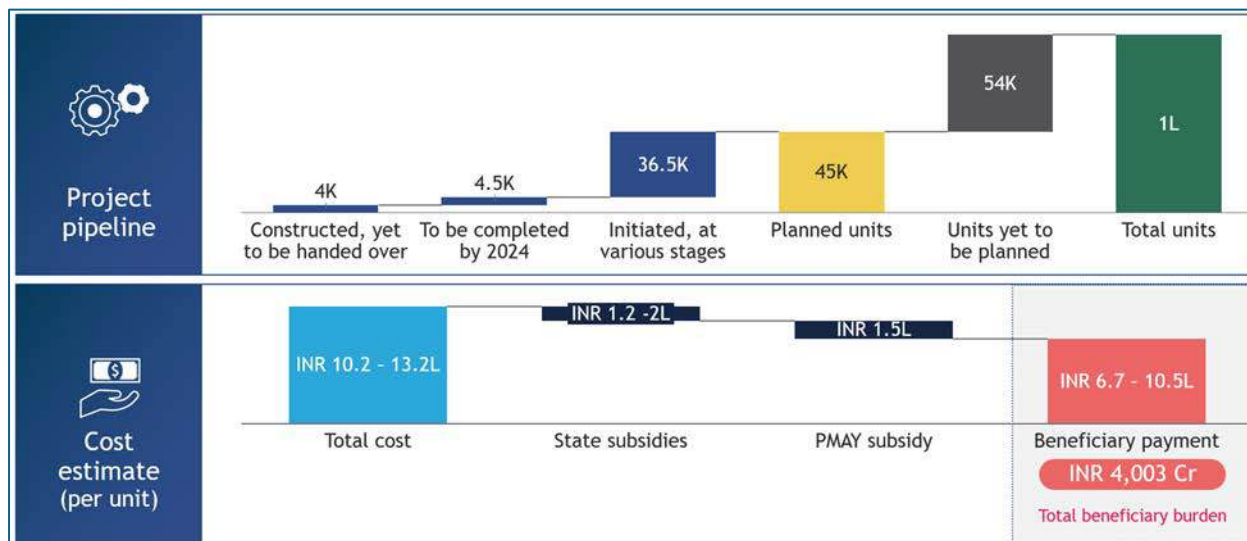


Figure 6.5.1: Project pipeline under the “1 Lakh Multi-Storied Bengaluru Housing Scheme”

One of the key challenges identified is the beneficiaries' inability to finance their share of the cost due to limited personal funds and the high cost of borrowing from financial institutions. This financing constraint is a significant barrier to the successful and on time implementation of the scheme resulting in a large share of the project pipeline stalled under construction.

6.5.2: Recommendation

PPP (Public Private Partnership)-based joint development model can enhance access to affordable housing across Karnataka by cross-subsidizing beneficiary's share of funds.

Under this model, developers will be allocated additional land beyond what is required for the construction of affordable housing units. This additional land parcel will be provided to the developer with commercialization rights within pre-specified guidelines and asset classes. Revenue generated from commercialization of the additional land will help the developer cover the cost of construction and handover the constructed Affordable Housing units to RGHC. RGHC retains authority over allocation and beneficiary management, ensuring targeted delivery.



6.5.3: Description of recommendation

The ongoing affordable housing projects facilitated by RGHC are executed through a turnkey model, wherein RGHC remits full payment to developers upon project completion. Project funding is sourced primarily from beneficiary contributions, complemented by State subsidies and the PMAY (Urban) scheme.

PPP (Public Private Partnership)-based joint development model to enhance access to affordable housing across Karnataka by cross-subsidizing beneficiary's share of construction costs is evaluated. Under this model, developers will be allocated additional land beyond what is required for the construction of affordable housing units. This additional land parcel will be provided to the developer on a freehold basis with commercialization rights within pre-specified guidelines and asset classes. Revenue generated from commercialization of the additional land will help the developer cover the cost of construction and handover the constructed Affordable Housing units to RGHC. While RGHC retains authority over beneficiary identification, unit allocation, payment collection and handover procedures.

The figure below lays out the key design elements of the PPP model.

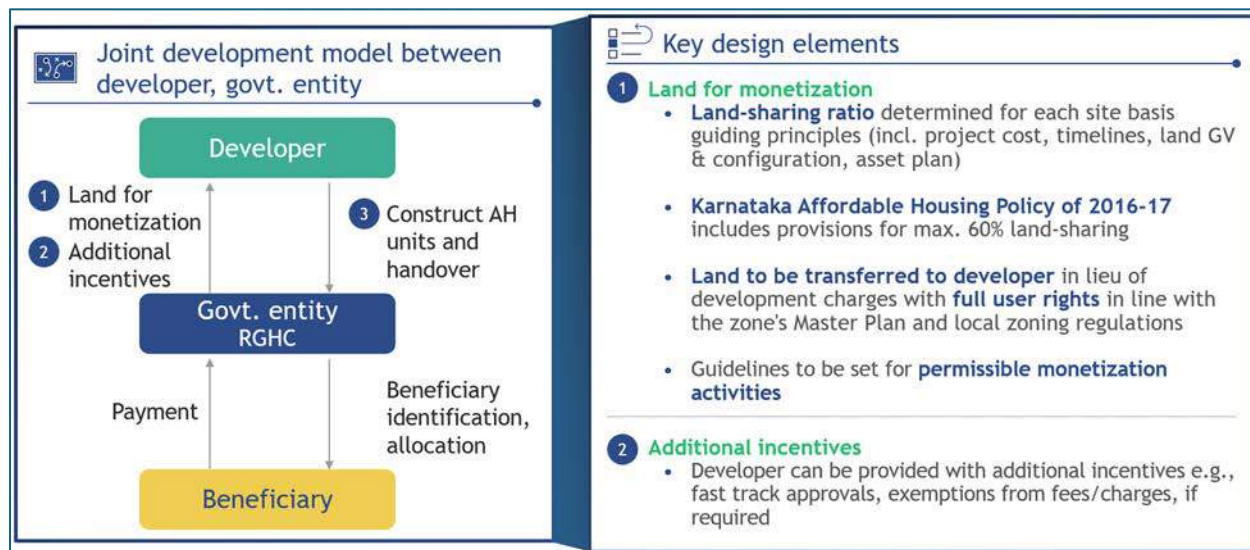


Figure 6.5.2: PPP-based joint development model for Affordable Housing

Benchmarks on implementation of PPPs for Affordable Housing

PPP-based joint development model for affordable housing has been implemented by multiple States. In Gujarat, 37,000+ houses have been constructed under PPP model by 2019. The State

The incentives provided to the developer vary across States with 30 – 50% of land provided on free-hold basis to developer depending on population and guidance value. Further exemptions from land use conversion charges, building plan approval fee, external development charges, municipal charges have also been provided alongside fast-track approvals (i.e., approvals in less than 30 days).

The figure below summarizes the benchmark of PPP-based joint development model across States.

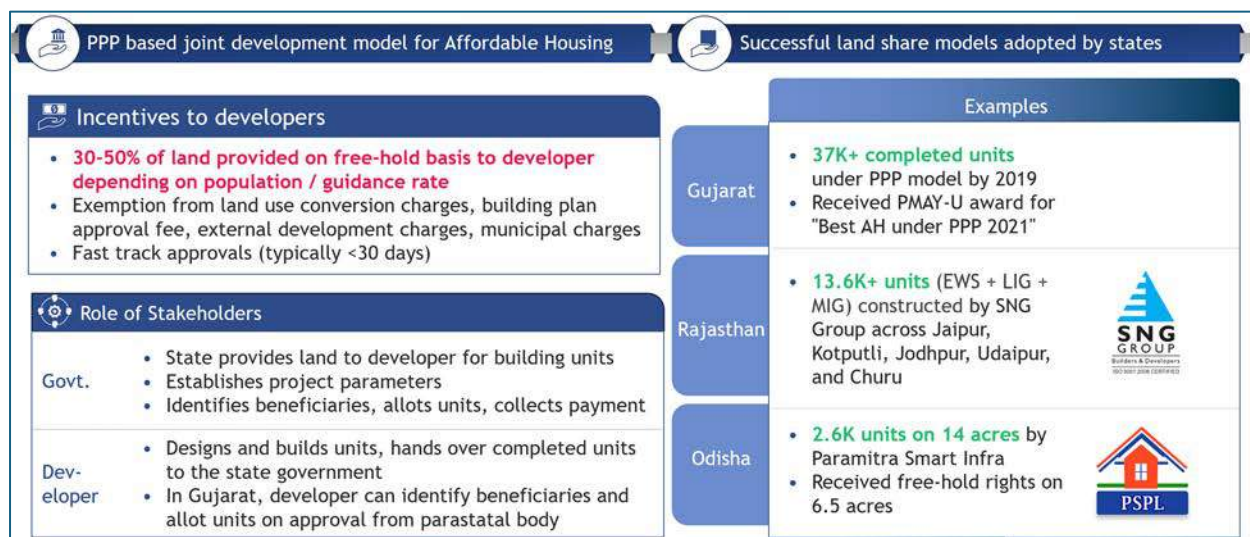


Figure 6.5.3: Benchmarks for PPP-based joint development

Implications for PPP-based joint development model in Karnataka

The Land Sharing Ratio is a critical parameter for the PPP-based joint development model. It is the proportion of land allotted to developers relative to the total project site. The ratio should be determined on a case-by-case basis subject to several guiding parameters, including project cost, implementation schedule, land guidance values, zoning regulations, and asset configuration plans.



As per the Karnataka Affordable Housing Policy (KAHP) of 2016, a maximum of 60% of the land share can be allocated to developers. The developer obtains full user rights to monetize the land share in alignment with the Master Plan of the Zone and local zoning regulations.

The Land Sharing Ratio (up to a 60% maximum ceiling) should be evaluated based on the following criteria:

- Land Guidance Value (GV)
- Developer Incentives:
 - Maximum permissible Floor Area Ratio (FAR): The maximum permissible FAR on the developer's share
 - Transferrable Development Rights: The maximum amount of FAR transferrable from the Affordable Housing share to the developer's share

Illustrative calculations to estimate the Land Sharing ratio have been provided later in the section. The following guidelines for permissible monetization activities on the developer's free-hold basis land can be considered:

- Residential Projects: Middle Income Group (MIG) and High-Income Group (HIG-B) residential buildings, including high-rise construction
- Civic Amenities: Health care, educational facilities, parking, fuel stations, and Government buildings
- Commercial Assets: Office spaces, retail outlets, hospitality projects, recreational centers, and tech hubs

To enhance the attractiveness of the PPP based joint development model, the following additional incentives can be considered for the developer:

- Transfer of Developer Rights
 - Unutilized FAR: Transfer of unutilized FAR from the Affordable Housing land to the developer's allocated area
 - Enhanced FAR Provisions: Increased FAR in alignment with the proposed P-FAR policy by BBMP (Bruhat Bengaluru Mahanagar Palike)
- Stamp Duty Reduction
- Waivers on Building Plan Approval Fees
- Exemptions from External Development Charges imposed by Urban Local Bodies



- Expedited Approvals: Streamlined clearance processes, potentially through a single-window system for fast-track approvals

This PPP framework establishes a balanced approach to stimulate affordable housing development while ensuring that project economics are favorable for private developers and beneficial to the State's affordable housing goals. The draft PPP policy is attached in the Appendix 10.4 for reference.

Implementation of PPP for identified sites

The ongoing affordable housing projects facilitated by RGHC are executed in a turnkey model, wherein RGHC remits full payment to developers upon project completion. Project funding is expected to be sourced primarily from beneficiary contributions, complemented by State subsidies and the PMAY (Urban) scheme.

The feasibility of a Public-Private Partnership (PPP) model can be explored as a mechanism to cross-subsidize the beneficiary's funding requirements.

The following three sites are being considered for implementing the PPP-based joint development model

1. Muddayanapalya (18 acres, 1 BHK EWS housing)
2. Hunasemarenahalli (5 acres, 2 BHK housing stock)
3. Hulimangala (4.9 acres, 2 BHK housing stock)

Muddayanapalya

An 18-acre land parcel at Muddayanapalya site, located under the Magadi Planning Authority (MPA) jurisdiction in South-West Bengaluru, has been proposed for a PPP-based joint development model to build a stock of EWS housing units.

The Department of Stamp and Registration, Government of Karnataka, has set the Guidance Value of this land at INR 6.1 Crores per acre. As permitted by the Karnataka Affordable Housing Policy, a maximum of 60% land share can be provided to the developer for monetization amounting to 10.8 acres and valued at INR 66 Crores.

This creates financing headroom to construct 601 EWS housing units on the remaining 7.2 acres (40%) of land with cost of INR 10.9 Lakhs / unit – accounting for the beneficiary share (INR 9.4 Lakhs of beneficiary contribution and INR 1.5 Lakhs of average State subsidy).



The land parcel has been tendered to Ramalingam Construction Company Limited (RCCL) and Adhrust Construction for execution under a turnkey model for EWS housing unit construction. Prior to commencing the PPP project on this land, the following steps need to be ensured:

1. Required land for PPP-based joint development needs to be descoped from the contractor
2. Civil construction feasibility needs to be assessed to address local challenges that may impose construction constraints (e.g., blasting constraints owing to temple)
3. Fresh tenders for PPP-based joint development model needs to be issued with Right of First Refusal (RoFR) to the current contractor.

Hunasemarenahalli

The 5-acre vacant land parcel at Hunasemarenahalli, located in the jurisdiction of the Jala Sub-Registrar Office under the Bengaluru International Airport Area Planning Authority (BIAPA), has received approval from SLECAH³³ for a PPP-based joint development model to build a stock of 2 BHK housing units.

The Department of Stamp and Registration, Government of Karnataka, has set the Guidance Value of this land at INR 8.9 Crores per acre. Under this assumption, the developer can receive a 60% land share for monetization, creating a financing mechanism to subsidize the construction of 171 2 BHK housing units on the remaining 2.0 acres (40%) with construction cost of INR 15.6 Lakhs / unit.

Small encroachments in the form of temporary shelters were observed during the site visit. It is essential to clear these encroachments before commencing on ground operations.

The estimated sale value for these units is assumed to be INR 4,100 per sq ft basis secondary research. At a built-up area of 78.75 sq m (847 sq ft) per unit the total market valuation of the housing stock would be approximately INR 59 Crores for the 171 units.

The revenue from the monetized 2 BHK housing stock can potentially facilitate the construction of 546 EWS units by covering the beneficiary contribution and the State subsidy, at INR 10.9 lakh per unit – amounting to INR 59 Crores.

Hullimangala

The 4.9-acre vacant land parcel at Hullimangala, located in the jurisdiction of the Jigani Sub-Registrar Office under the Bangalore Development Authority (BDA) near Electronics City Phase



1, has been proposed for a PPP-based joint development model to build a stock of 2 BHK housing units.

The Department of Stamp and Registration, Government of Karnataka, has set the Guidance Value of this land at INR 5.7 Crores per acre. As permitted by the Karnataka Affordable Housing Policy, a maximum of 60% land share can be provided to the developer for monetization amounting to 2.9 acres and valued at INR 17 Crores. This creates financing headroom to construct 107 2 BHK housing units on the remaining 2.0 acres (40%) of land with construction cost of INR 15.6 Lakhs / unit.

The estimated sale value for these units is assumed to be INR 5,000 per sq ft basis secondary research. At a built-up area of 78.75 sq m (847 sq ft) per unit the total market valuation of the housing stock would be approximately INR 45 Crores for the 107 units.

The revenue from the monetized 2 BHK housing stock can potentially facilitate the construction of 416 EWS units by covering both the beneficiary contribution and the State subsidy, at INR 10.9 lakh per unit – amounting to INR 45 Crores.

In summary, across the 3 identified land parcels, PPP-based joint development model can create financial headroom to cross-subsidize construction of 1,563 EWS housing units amounting to INR 150 – 200 Crores of beneficiary and State burden.

The table below summarizes the calculation for PPP-based joint development model on the three sites.



		Muddayanapalya	Hunasemarenahalli	Hulimangala
Land for PPP	Acres	18.0	5.0	4.9
Proposed # houses	No.	6,669 1 BHK on 58 acres	448 2 BHK	618 2 BHK
Guidance value	INR Cr / acre	6.1	8.9	5.7
PPP share estimate	%	60% (max. land share per KAHP ¹⁴)	60% (max. land share per KAHP ¹⁴)	60% (max. land share per KAHP ¹⁴)
Land in developer share	acre	10.8	3.0	2.9
Value of land in developer share	INR Cr	66	27	17
Unit cost to be cross-subsidized	INR L / unit	10.9	15.6	15.6
# units cross-subsidized	No.	601 1 BHK units	171 2 BHK units	107 2 BHK units
Land in RGHC share	acre	7.2	2.0	2.0
Utilized FAR on RGHC land	#	1.08 ¹⁵	1.67 ¹⁶	1.06 ¹⁶
FAR basis original turnkey contract	#	3.83 ¹⁵ (For RCCL package)	1.74 ¹⁵	2.45 ¹⁵

Table 6.5.1: PPP-based joint development model

¹⁴ Karnataka Affordable Housing Policy, 2016

¹⁵ Built-up Area of 1 BHK EWS unit assumed to be 52.5 sq m

¹⁶ Built-up Area of 2 BHK housing unit assumed to be 78.8 sq m



6.5.4: Value potential

Across the 3 identified land parcels, PPP-based joint development model can create financial headroom to cross-subsidize construction of 1,563 EWS housing units amounting to INR 150 – 200 Crores of beneficiary and State burden.

6.5.5: Status of the recommendation

The detailed status update of the recommendation is as follows:

- In principle alignment and go ahead between Finance Department and Housing Department has been completed.
- Preliminary analysis on the proposed three sites and draft PPP policy has been submitted to RGHC, Finance Department, and Department of Housing for final review.
- In principle go-ahead has been received from Department of Housing to implement PPP-based joint development model at the Muddayanapalya site on priority.
- Two potential options are being evaluated for RGHC to raise fresh PPP tenders for the sites:
 - o Option 1: Viability Gap Funding (VGF) can be the bidding parameter. This will maximize the number of EWS units that the developer can construct and hand over in the permissible 60 – 40 land share ratio and basis permissible FSI.
 - o Option 2: Number of EWS units constructed can be the bidding parameter. This will not have any additional implications on the State however number of EWS units shall not achieve full FSI

6.5.6: Next steps

The next steps of the recommendation are as follows:

- To implement the PPP-based joint development model, the required land should be descoped from the current turnkey contractors at Muddayanapalya across packages 9A and 9B
- Civil construction feasibility assessment should be conducted to address local challenges that may constrain construction (e.g., blasting constraints owing to temple)
- Cabinet approval needs to be processed, and fresh tenders need to be raised for PPP-based joint development at the site with Right of First Refusal (RoFR) to the current contractor



6.6: State-guided development of Wayside amenities



6.6.1: Context and background

6.6.2: Recommendation

This recommendation presents a stepwise framework to strategically identify optimal location for WSAs, offer a tiered range of amenities for passenger and commercial traffic and identify optimal opportunities to consolidate and utilize land.

6.6.3: Description of recommendation

The key objectives of developing WSAs by the PWD in the State are as follows:

- Provide services to highway users at every 40-60 km on average.
- Develop different types of service area models to meet the needs of all highway users based on demographics and traffic composition.
- Implement clearly defined guidelines for WSA location, design, development etc.
- Create a viable business model leading to substantial revenue.
- Encourage strong participation from the private sector in developing and operating Wayside Amenities.

A framework has been defined which could be used to set up Wayside Amenities on National Highways. There are 3 key parts of the framework which are as follows-

- Step 1: Selecting locations & outlining design norms for Wayside Amenities
- Step 2: Defining service area formats and mapping the formats to locations
- Step 3: Identifying the development model for each Wayside amenity site(s)



Step 1: Location and Design Norms

Location

To ensure optimal placement and efficiency of Wayside Amenities, the following principles of allocation could be considered:

- Wayside Amenities shall be setup only on State roadways with traffic greater than 2000 vehicles (either trucks or cars and buses) per day.
- WSA shall be established every 40-60 km according to Natural Halting Points (details in Appendix 10.5) of traffic for different types of amenities. For divided carriageways, this norm applies separately in each direction
- Clusters of potential locations basis natural halting points could be formed in the cases where potential locations are situated in 10-15 km zone. Such clusters can be replaced with a single Wayside amenity location since such a location will serve the purpose of entire cluster. Basis minimum and maximum spacing of passenger and commercial traffic, Wayside amenity's locations can be decided.
- The authority could encourage private landowners to develop Wayside Amenities on their own, due to the limited availability of land along established roads.
- Wayside Amenities should not be situated near toll plazas. They must be at least 1 km away or as specified by the Government access permission guidelines. However, small facilities like toilets and kiosks selling packed items, tea, and coffee may be allowed on private land outside the Right of Way (ROW) near toll plazas.
- The land area for developing Wayside Amenities should ideally be at least around 1-2 hectare with adequate frontage for easy traffic access. However, smaller plots may be permitted by the Government in land-scarce areas.
- WSAs must be at least 5 km outside municipality limits to avoid urban congestion.

Priority could be given to location near scenic, historic, or tourist spots.



Design Norms

To ensure consistent and high-quality development of Wayside Amenities, the following design principles could be adopted:

- **Open Area and Parking Requirements**

- The construction of WSA should be planned to ensure adequate open space for vehicle parking and movement, as well as landscaping. At least 60% of the land must remain open.

- **Area Coverage**

- The maximum covered area could be 40% of the site or as mandated by local byelaws, whichever is lower. This includes any future development on the site. (Potential Service Area Format wise minimum area requirement for amenities detailed in Appendix 10.6)
- Minimum of two food outlets and adequate washroom facilities (separate for ladies and gents) could be mandated.

- **Mandatory Facilities**

- Provision for drinking water and first aid to be mandatory.
- Each Wayside amenity could include a dedicated area for promoting local artisans, such as a kiosk, stall, or covered zone, with a minimum size of 1,000 square feet or 1% of the total area of the Wayside amenity, whichever is larger.
- Facility for the persons with disabilities could be provided in Way Side Amenity in accordance with 'SUGAMYA BHARAT ABHIYAN' of Ministry of Social Justice & Empowerment.

- **Green Principles**

Adherence to 'Green Principles' could be encouraged wherever possible in the development of WSAs. These principles include:

- Extensive horticulture and plantations, along with adequate sewage treatment.
- Recycling of water for landscaping and horticulture purposes.
- Utilizing natural materials, such as dry stone cladding, for exteriors.
- Implementing bio-methanation for the treatment of kitchen bio waste and generation of cooking gas.
- Incorporating rainwater harvesting systems.



- Installing single- or double-glazed windows with matched U-Factor for increased energy efficiency.
- Ensuring adequate ventilation and natural daylight in rooms.

Step 2: Service area formats

Service area formats to be defined keeping in mind the requirements of State roadway users. Different formats should cater to passenger traffic (cars and buses) as well as commercial traffic (trucks). These formats should provide vehicle centric services and people centric services. Benchmarks of WSA in UK, USA, Australia, Germany and South Africa detailed in Appendix 10.7.

Wayside Amenities by PWD could be categorized into three types:

1. Type 1: Comprehensive facility for car, bus and truck users
2. Type 2: Facility for only car and bus passengers
3. Type 3: Facility for only truck drivers and helpers

The list of services and description of each model are:

Type 1: Comprehensive facility for car, bus and truck users

This type of facility will have 5 sections, namely a section for truck drivers, a section for car/bus passengers, a fuel station, a village haat and an area for future expansion. Below is the list of services for each section:

- **Truck Drivers**
 - Dhaba with kiosk
 - Dormitory with recreation facilities
 - Truck parking facilities
 - Smoking Zone
 - Toilets for truck users including bathing facilities
 - Personal care services like laundry, salon etc.
- **Bus and car passengers**
 - Bus / Car parking
 - Large concourse
 - Branded restaurants for food and beverages
 - Internet facilities
 - Small Meeting and conferencing facilities



- Child Care Facilities
- Miscellaneous items Kiosks / ATM & First Aid Center / Market
- Rest rooms for short stay
- Landscaping & children play area
- Smoking Zone
- Toilet Blocks with Toilet for differently abled persons
- **Fuel station and services**
 - Fuel Station for Car & Two wheelers separately / Truck users separately
 - Minor Workshop (Vulcanizing / PUC/ Repairing & Services)
 - ATM
 - Restroom (Toilets)
 - CNG Stations, Biofuel, charging facilities for battery operated vehicles
- **Village Haat/ Gram Bazaar**
- **Area for future expansion**

The following figure depicts the master prototype of a comprehensive facility.



Figure 6.6.1: Master prototype for type 1



Type 2: Facility for only car and bus passengers

This type of facility will be smaller in range and scale compared to type 1, since it will not cater to truck drivers. Accordingly, it will have only 4 sections - section for bus and car passengers, a fuel station, a village haat and an area for future expansion. Below is the list of services for each section:

- **Bus and car passengers**
 - Bus / car parking
 - Large concourse
 - Branded restaurants for food and beverages
 - Internet facilities
 - Small Meeting and conferencing facilities
 - Child Care Facilities
 - Miscellaneous items Kiosks / ATM & First Aid Center / Market
 - Rest rooms for short stay
 - Landscaping & children play area
 - Smoking Zone
 - Toilet Blocks with Toilet for differently abled persons
- **Fuel station and services**
 - Fuel Station for Car & Two wheelers separately
 - Minor Workshop (Vulcanizing / PUC/ Repairing & Services)
 - ATM
 - Restroom (Toilets)
 - CNG stations, biofuel, charging facilities for battery operated vehicles
- **Village Haat / Gram Bazaar**
- **Area for future expansion**

The following figure depicts the master prototype of a facility focused on car and bus passengers:



Figure 6.6.2: Master prototype for type 2

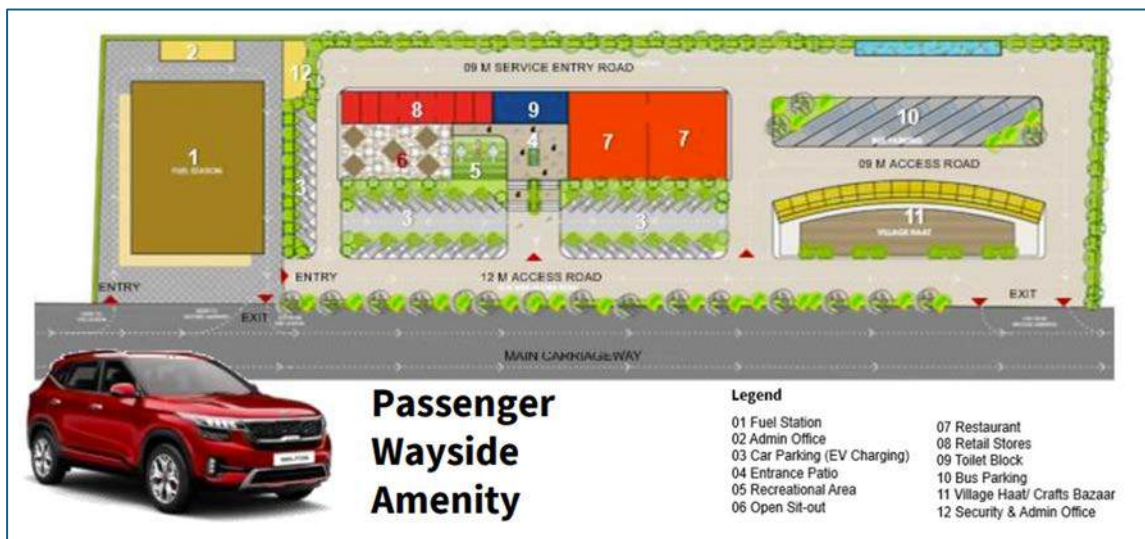


Figure 6.6.3: Indicative layout plans for type 2 unconstructed sites

Type 3: Facility for only truck drivers and helpers

This type of facility will be smaller in range and scale compared to type 1 since it will cater to only truck drivers. It will have only 3 sections - section for truck users, a fuel station and an area for future expansion. Below is the list of services for each section.



- **Truck Drivers**

- Dhaba with kiosk
- Dormitory with recreation facilities
- Truck parking facilities
- Smoking Zone
- Toilets for truck users including bathing facilities
- Personal care services like laundry, salon etc.

- **Fuel station and services**

- Fuel Station for Car & two wheelers separately / truck users separately
- Minor Workshop (Vulcanizing / PUC/ Repairing & Services)
- ATM
- Restroom (Toilets)
- CNG Stations, Biofuel, charging facilities for battery operated vehicles

- **Area for future expansion**

The following figure depicts the master prototype of a facility focused on truck users.



Figure 6.6.4: Master prototype for type 3

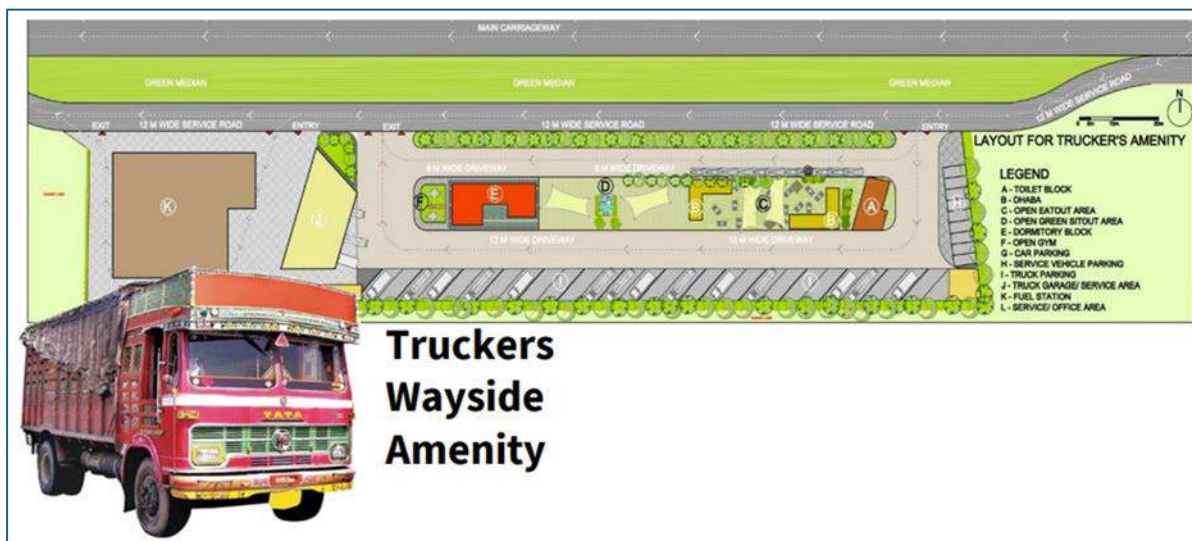


Figure 6.6.5: Indicative layout plans for type 3 unconstructed sites

The type of amenities to be developed on private land will be determined by the private party, while amenities on Government land will be predetermined by the authority based on traffic volume assessments.

Choice of service area model for a location on roadway will depend upon traffic volume and traffic mix (passenger traffic vs commercial traffic). The permissible and mandatory facility at the different types of amenities is outlined in Appendix 10.8

Step 3: WSA land consolidation and development model

Model 1: Government owned land and bidding (standalone / bundled sites)

Government-owned land is leased for WSA development through a competitive bidding process as follows:

A. Standalone sites

The bidding process for standalone sites is as follows:

1. Invitation for Bids:

- The Government issues an open invitation for bids, announcing the availability of specific sites for WSA development.
- The invitation includes detailed information about the site, including location, size, and expected facilities.



- The land/site will be awarded on a competitive basis to the party that quotes the highest annual lease or revenue share amount. The authority will evaluate the potential revenue (according to revenue driver tree in Appendix 10.9) for each Wayside Amenity site based on land cost, footfall, traffic type, and nearby competitive facilities. Depending on the location of the Wayside Amenity, the rental and a certain percentage of the revenue share will be determined on a case-by-case basis. Bids may be invited using one of the following options:
 1. The highest quoted annual rental as the bidding parameter (for smaller parcels of land less than 2 hectares)
 2. Predefined fixed annual rental value, with the bidding parameter being the proportion of the highest quoted revenue share.
 3. The highest quoted annual rental as the bidding parameter, with a predefined proportion of the revenue share.

2. Eligibility Criteria:

- Bidders must meet specific financial and technical criteria, such as a minimum net worth and prior experience in hospitality or infrastructure development.
- The eligibility criteria could be outlined in detail in the Request for Proposal (RFP) document.

3. Submission of Bids:

- Interested parties submit their bids by the specified deadline.
- Bids must include all required documentation, such as financial Statements, technical proposals, and any other information specified in the RFP.

4. Bid Evaluation:

- Bids are evaluated based on predefined criteria, including the proposed revenue share or lease rental, the bidder's financial and technical capacity, and their experience in similar projects.
- The evaluation process is conducted by a designated committee within PWD to ensure transparency and fairness.

5. Selection of Successful Bidders:

- The highest evaluated bids are selected for the award of development rights.



- If the revenue share & lease rent quoted by the highest bidder is lower than the revenue potential assessed by the Authority but higher than 5% of the land cost, the Authority may still award the lease to the highest bidder.
- Successful bidders are notified and required to enter into a formal agreement with the Government.

6. **Agreement and Lease Terms:**

- Successful bidders sign a lease/revenue share agreement detailing the terms and conditions of the lease.
- Revenue share/Lease periods for constructed WSAs could be 15 years, extendable by another 15 years (15+15 ROFR - Right of First Refusal) and for unconstructed sites, the lease period could be 30 years, extendable by another 30 years (30+30 ROFR).
- The annual increase in the lease amount for a Wayside Amenity awarded through competitive bidding could be based on inflation indices, calculated as 70% of the annual increase in the Wholesale Price Index (WPI) plus 30% of the annual increase in the Consumer Price Index (CPI).
- After the lease period expires, the facility could be handed over to the Highway Authority, which can lease it out again on a competitive basis. However, if the existing developer's bid is within 10% of the highest bid, the existing developer may be awarded the site again, provided they are willing to match the highest bid.

7. **Development and Compliance:**

- Successful bidders are responsible for funding, designing, constructing, and operating the WSAs according to specified guidelines.
- Bidders must adhere to the design norms and operational guidelines throughout the concession period.

B. Bundled sites

Competitive bidding could be done for bundle of sites (combination of profit making and loss-making sites) by authority. The guiding principles for bundling are:



1. Operational efficiency

- **Geographical proximity**- Closer the bundled sites, higher will be the efficiency of concessionaire in construction (supply chain of raw materials) and operations.
- **Economies of scale**- There will be higher efficiency in operating multiple Wayside Amenities because of shared resources. Also, the similar type of service area model (cars or trucks) will develop expertise.

2. Mitigating Demand risk - Sites located on State roadways having negative correlation or zero correlation of traffic growth to be bundled together to reduce demand risk. This means that due to any future event, if there is a significant drop in traffic on a highway then it will be compensated by increase in traffic on another highway which is the alternate route connecting same Origin-Destination (OD) pairs. Thus, overall footfall and revenue streams of the concessionaire will be protected due to bundling of such sites. Also, the revenue streams of Wayside Amenities might differ from the ones based on financial projections. Some sites might have lower profit, and others might have higher profit than expected. Thus, bundling of sites can average out the risk for the concessionaire.

3. Capital expenditure requirement- Only 2-4 sites should be bundled together otherwise the capital expenditure of bundle will be high. This will reduce the number of small and medium sized players bidding for the project.

4. Land availability with PWD- Bundling of sites to be applicable only when PWD acquires land for all sites in a bundle. Sites where concessionaire must acquire land will not be bundled. This is because acquiring large land parcels (~1 Ha) at multiple sites along highways will be challenging for a single concessionaire. Bundling such sites will reduce the likelihood of successful bidding.

Model 2: Private land and allocation

Private landowners are invited to develop WSAs through an invitation process as follows:

1. The Highway Authority invites Expressions of Interest (EOI) from private landowners to develop Wayside Amenities (WSAs). No access permission fee will be charged for WSAs on private land.



2. Sites will be selected through an application process, and if multiple private parties meet the criteria, proposals for premium payments to the Highway Authority will be invited. The site will be awarded based on the highest revenue offer.
3. Selected private landowners must construct and maintain WSAs according to provided prototypes, ensuring consistent branding and facilities, with the Highway Authority supplying branding, logos, and signage for co-branding purposes.

Benefits to the Government

- **Cost Avoidance:** The Government avoids the costs associated with land acquisition since private landowners provide the land for WSA development in Model 2.
- **Standardized Infrastructure:** The implementation of WSA results in consistent and high-quality infrastructure that significantly enhances the highway user experience.
- **Revenue Generation:** The Government benefits from revenue shares/lease rentals provided by private landowners or developers ensuring a steady source of income.
- **Improved Services:** The development of WSA leads to enhanced amenities and services for travelers, which supports the overall goals of infrastructure development.
- **Environmental Benefits:** WSA are designed in compliance with green principles, promoting environmental sustainability.
- **Economic Opportunities:** The establishment of WSA supports local artisans and small businesses by providing dedicated retail spaces, fostering economic growth and community development

Roles and responsibilities

Authority: The potential roles & responsibility of authority are:

- Facilitate access permission for Wayside Amenities on a lease or co-branding basis without charging fees and provides design and branding guidelines for amenities not constructed by the Authority.
- Verify the developer's layout plans submitted for approval.
- Install and bear the cost of signage at three locations within 2 km of the amenity and ensure barricading for 10km on both sides of site to ensure no competition to private owner providing land.
- Provide support in obtaining clearances for fuel stations and EV charging, but the responsibility lies with the developer.
- Monitor the development and operation of Wayside Amenities and act against any encroachments as per relevant laws.



Private party and developer: The potential roles & responsibility of private party/developer are:

- Arrange funds for creating Wayside Amenities.
- Handle design, construction, operation, and maintenance.
- Obtain all necessary statutory approvals, including for fuel stations and EV charging with support from authority.
- Obtain all approvals/NOCs within 6 months, the lease period starts post 6 months on the “lease date”.
- Complete construction within one year from the award date or 6 months from lease date whichever is earlier.
- Obtain clearances for services like food courts, restaurants etc. They cannot charge for drinking water, toilets, or washrooms.
- Maintain and operate amenities with high service and hygiene standards and display confirmation/compliance of same within the WSA.
- Refrain from encroaching upon any part of Right of Way.

6.6.4: Value potential

Karnataka’s State highway network spans 27,814 kms. With new Wayside Amenities at every 100 km, around 250 facilities are required translating to 50-60 sites developed annually over 4–5 years. Assuming 25% of the land taken up for the Wayside Amenities is Government-owned, with land appreciation of 2-3X post development (INR 30-50 Lakhs per acre) and an average amenity size of 2 hectares (5 acres), the value potential amounts to **INR 200 – 400 Crores** as a total **one-time unlock** across 4-5 years.

6.6.5: Status of the recommendation

The detailed concept on Wayside Amenities has been submitted to PWD Secretary and Finance Department officials.

6.6.6: Next steps

In principle approval from Finance Department needs to be processed to implement the proposed monetization framework.

Section 7: Innovative financing



7.0: Innovative Financing

Identifying new and cost-effective sources of capital is critical for driving the State's economic development and enhancing financial resilience. Innovative financing mechanisms can support the State and parastatal bodies to access diverse funding sources for large-scale infrastructure projects as well as other capital requirements.

By adopting innovative financing strategies, the State can reduce reliance on traditional funding sources, alleviate fiscal pressure on the Department, and ensure more efficient capital allocation.

This section presents five recommendations for innovative financing methodologies including:

 Innovative financing	Inter Corporate Deposits	INR 150 – 200 Crores p.a.	
	State owned NBFC (Non-Banking Financial Company)	INR 1,000 – 1,250 Crores p.a.	
	Interest subvention for affordable housing	INR 2,500 – 3,000 Crores	
	Blended finance	INR 200 – 250 Crores p.a.	
	Green finance	INR 75 – 100 Crores p.a.	

 Recurring every year
  One-time value unlock

Table 7.0: Recommendations for innovative financing



7.1: Inter Corporate Deposits



7.1: Inter Corporate Deposits

7.1.1: Context and background

Loss-making Public Sector Undertakings (PSUs) in Karnataka face elevated borrowing costs from the market due to their weak financial performance and poor balance sheets. For instance, the Bangalore Electricity Supply Company (BESCOM) secures debt at a weighted average interest rate of 9.31% across both short-term and long-term borrowings. The highest interest rate loan sourced by BESCOM is from the Renewable Energy Corporation (REC) at 11.25%.

These high borrowing costs hinder the ability of such PSUs to invest adequately in critical infrastructure, thereby exacerbating their financial difficulties and perpetuating a cycle of underperformance and fiscal strain.

On the other hand, few other State undertakings with surplus funds are placing their excess reserves in bank deposits, which yield relatively moderate interest rates in the range of 7.7% to 7.9%.

This underutilization of surplus funds represents an opportunity that could be realized through more strategic deployment of resources, such as lending to other PSUs.

7.1.2: Recommendation

Inter-Corporate Deposits (ICDs), as permitted under the provisions laid down under the Companies Act, 2013, Chapter XII, Section 186 titled “Loan and investment by Company” paragraphs 1 through 13 offers a mechanism for the State PSUs to lend and borrow funds amongst themselves.

For PSUs with surplus funds, ICDs present a strategic opportunity to achieve higher returns by deploying surplus capital at competitive interest rates, thereby improving returns compared to traditional bank deposits. Simultaneously, borrowing entities benefit from accessing funds at interest rates lower than those typically offered by commercial banks or other financial institutions.

7.1.3: Description of recommendation

The recommendation fosters financial stability and resilience across Karnataka's PSUs, creating a mutually beneficial financial ecosystem that enhances the State's overall economic development. By utilizing ICDs, both lenders and borrowers can secure more favorable interest rates than those



available through conventional market instruments, thereby promoting more efficient financial intermediation within Karnataka's public sector.

Eligibility for lenders as per Companies Act, 2013:

The following are the eligibility criteria for companies to be able to lend via Inter Corporate Deposits:

- A company without any defaults in the repayment of any deposits or in payment of interest – as per Section 186 (8) of Companies Act, 2013.
- Further, prior approval of the public financial institution (where any term loan is subsisting) is required if:
 - Lender's aggregate total of investments, loans, guarantee or security so far provided and proposed to be made to other corporates exceeds the limit mentioned in the terms of transaction.
 - Lender has defaulted on loan repayments or interest payments to the public financial institution – as per Section 186 (5) of Companies Act, 2013.

Terms of transaction per Companies Act, 2013:

A company can provide Inter Corporate Deposits at a maximum loan amount that is greater of the following two limits L1 and L2:

- L1: 60% of its paid-up capital + free reserves + securities premium account.
- L2: 100% of its free reserves + securities premium account.
- Above limit can be exceeded if authorized by a special resolution passed in the company's general meeting – as per Section 186 (2) of Companies Act, 2013.

Interest Rate norms per Companies Act, 2013:

Loans must have an interest rate that is at least as high as the current yield of the Government security closest to the loan's term. As of 2nd July 2024, Government of India's 10-year bond yield is 7% – as per Section 186 (7) of Companies Act, 2013.

Number of Investment Layers per Companies Act, 2013:

A company must make investments through no more than two layers of investment companies – as per Section 186 (1) of Companies Act, 2013.

Exemptions: Any loan made by the following companies are exempt from the above rules:



- Company established with the objective of and engaged in the business of financing industrial enterprises (or) of providing infrastructural facilities.
- Government company engaged in defense production.
- If the Government company obtains approval from the relevant Government authority (State/ Department) before making any loan.
- Banking / insurance / housing finance company.
- NBFC – as per Section 186 (11) of Companies Act, 2013.

7.1.4: Value potential

The value potential for the lender is derived from the rate differential between the offered ICD rate and prevailing Fixed Deposit rate. For the borrower, the value potential is based on the difference between their average borrowing cost and the ICD interest rate.

To facilitate the operationalization of ICDs among Karnataka's PSUs, a comprehensive evaluation of 25 entities was conducted, assessing both their financial and administrative prudence. From this assessment, 11 commercially viable undertakings with strong profitability and significant cash reserves were shortlisted as potential lenders.

The table below demonstrates the reserves and surplus available with the 11 shortlisted lenders and the minimum funds that could be deposited in ICDs.

S. No.	Lender	Reserves and surplus ¹⁷ INR Crores	Min. amount to be put in ICD INR Crores
1	KSMCL	4,012	2,006
2	KREDL	600	300
3	KSBCL	670	335
4	HGML	850	425

¹⁷ Per details presented on term deposits in review meetings on financial condition and management of 21 profitable PSUs under the chairmanship of Secretary to Government (Fiscal Reforms), Finance Department



S. No.	Lender	Reserves and surplus ¹⁷ INR Crores	Min. amount to be put in ICD INR Crores
5	KSIIDC	350	175
6	KSDL	1,400	700
7	KRIDL	2,532	1,266
8	KSIC	233	117
9	KSSIDC	560	280
10	MSIL	242	121
11	KUIDFC	1,322	661
	Total	12,771	6,385

Table 7.1.1: Reserves and surplus with 11 shortlisted lenders

An illustrative value estimation is provided below.

The Karnataka State Minerals Corporation Limited (KSMCL) currently holds INR 4,012 Crores in reserves and surplus, distributed across various term deposits at 7.9% annual interest rate. KSMCL would be authorized to lend a minimum of INR 2,006 Crores of these reserves through inter-corporate deposits to fellow PSUs.

Borrowers currently secure loans from the market at a high interest rate. For example, BESCOM's loan book's weighted average interest rate is 9.3%.

By facilitating an inter-corporate transaction between the two at an assumed interest rate of 8.7%, KSMCL would realize an additional interest benefit of 0.8%, resulting in an annual gain of INR 16 Crores. Simultaneously, BESCOM would benefit from an interest saving of 0.6%, yielding savings of INR 12 Crores annually.

This would generate a combined financial benefit of INR 28 Crores per annum for the system from 1 transaction.

9 commercial undertakings were identified as potential borrowers, having demonstrated a need for funds coupled with a strong repayment capability. These undertakings include 5 electricity



supply companies and 4 road transport corporations, which require financing to sustain and expand their operations. The following organizations are eligible for borrowing from Inter Corporate Deposits:

- Bangalore Electricity Supply Company (BESCOM)
- Hubli Electricity Supply Company (HESCOM)
- Gulbarga Electricity Supply Company (GESCOM)
- Mangalore Electricity Supply Company (MESCOM)
- Chamundeshwari Electricity Supply Corporation (CESC)
- Karnataka State Road Transport Corporation (KSRTC)
- North Western Karnataka Road Transport Corporation (NWKRTC)
- Bengaluru Metropolitan Transport Corporation (BMTTC)
- Kalyana Karnataka Road Transport Corporation (KKRTC)

Lenders, currently earning 7.9% on fixed deposits, stand to gain up to 1% additional benefit by participating in ICD transactions at a rate of 8.9%. This translates into an annual financial gain of INR 67 Crores. For borrowers, who typically secure loans at an interest rate of 10.3%, the ICDs offer upto 1.3% reduction in borrowing costs, resulting in an annual saving of INR 83 Crores.

In total, this recommendation is estimated to generate total benefit of INR 150 – 200 Crores per year across borrowers and lenders thus making it overall beneficial for Karnataka's PSUs.

7.1.5: Status of the recommendation

Discussions were held with potential borrowers and lenders under the Chairmanship of the Secretary to Government (Fiscal Reforms). Following this, targeted one-on-one meetings were conducted with high-potential borrowers and lenders to outline the concept, highlight its benefits, and address any specific queries.

In line with the provisions of the Companies Act, 2013, a draft investment circular was prepared to provide a structured framework for the 11 potential lenders and 9 potential borrowers to engage in inter-corporate transactions. The key tenets of the draft circular are designed to ensure transparency, compliance, and financial prudence, thereby fostering a mutually beneficial ecosystem of capital flow among the State's PSUs.

- All concerned entities with reserves and surplus exceeding INR 100 Crores shall be required to invest no less than 50% of their total reserves and surplus in Inter-Corporate Deposits (ICDs)



as a mandatory compliance measure. In circumstances where adherence to the directive is deemed infeasible, the respective entities must submit a formal justification, duly approved by the Board of Directors.

- The lending corporation shall ensure that the interest rate for the inter corporate transactions is at least 50 bps higher than the weighted average annual term deposit rate of interest as on sanction date for the lending organization. In cases where the offered interest rate is lower, the corporation may lend if it is justified.
- The borrowing corporation shall provide full disclosure on the intended usage of proceeds. The proceeds shall be utilized in the following order of priority: 1) capital expenditure, 2) operations and maintenance. Further, ICD lending may be avoided to the extent possible for company liabilities like PF, salaries, and pensions.
- The borrowing corporation shall maintain an updated borrower profile including its financial position, existing and past long/ short term debt, outstanding liabilities, and cash positions.
- The repayment shall be facilitated via an escrow account to operationalize an automatic clearance house mechanism by pooling in a share of collected revenue into the escrow account. The borrower shall ensure that at least 50% of the remittance is credited in the escrow account at least 15 days prior to the due date.
- In case of default by the borrower, the cost of funds for the transaction shall increase as follows:
 - By 50 bps over and above the agreed upon rate of interest in case of 15 days of default
 - By 100 bps over and above the agreed upon rate of interest in case of 30 days of default
 - In case of further defaults beyond 30 days, the Finance Department shall intervene and remit the outstanding funds from the upcoming subsidy of the borrowing entity, or departmental Department heads, as applicable.
- Standardized operational procedures shall be implemented:
 - All transactions shall be formalized through legally binding agreements between lending and borrowing corporations.
 - The agreement shall be vetted by legal and financial experts from both parties and reviewed timely on a case-by-case basis.
 - The betted proposals shall be submitted to the respective boards for approval and further processing.



The detailed investment circular and cabinet note for inter corporate deposits is attached in Appendix 10.10 for reference. The below table provides the status update across high priority ICD transactions.

Lender	Potential transaction	Status update
KREDL	Borrower: GESCOM INR 240 Crores for 1 year at 8.9%	In principle board approval received to undertake ICD
KSBCCL	To be finalized in December 2024 post maturity of Fixed Deposit	In principle board approval received to undertake ICD
KSMCL	Borrower: BMTC INR 100 Crores for 1 year at 9% to 9.1%	KSMCL board ratification underway

Table 7.1.2: Status update of high priority ICD transactions

7.1.6: Next steps

The detailed next steps for the recommendation is as follows:

- For KREDL, the in principle board approval has been received. The borrowers and the lenders need to finalize the terms of transaction, formulate a legally binding agreement and initiate the fund transfer
- For KSBCCL, the in principle board approval has been received. KSBCCL needs to identify the appropriate borrower for its funds and process ICD transaction upon maturity of the ongoing Fixed Deposit in December 2024
- For KSMCL, the board ratification for the shortlisted transaction with BMTC needs to be processed

Further, in order to formalize ICD across all shortlisted Karnataka PSUs, the draft investment circular needs to be processed for Cabinet approval. Post approval, compliance to the investment circular needs to be monitored in order to enable more transactions.



7.2: State-owned NBFC



7.2: State-owned NBFC

7.2.1: Context and background

Since 2022-23, Karnataka's expenditure has grown in tandem with the State's GDP, at a 12 – 13% CAGR. However, State receipts have increased at a relatively slower pace of approximately 7%. This imbalance has contributed to a widening fiscal deficit in recent years.

While the 2024-25 Budget estimates place the fiscal deficit at 2.95% of GSDP and outstanding liabilities at 23%, both of which remain within the limits prescribed by the Karnataka Fiscal Responsibility Act (fiscal deficit: 3%, outstanding liabilities: 25%), it is imperative for the State to explore avenues for raising capital to support infrastructure projects. This must be done with a strategic focus on minimizing the impact of additional borrowings on the State's outstanding liabilities, ensuring sustainable fiscal management in the long term.

7.2.2: Recommendation

The State can leverage multiple financing instruments to raise capital for large-scale infrastructure projects. Establishing a dedicated institution would streamline the infrastructure financing process and enhance efficiency. In this regard, the creation of a State-owned Non-Banking Financial Company (NBFC) can serve as a strategic vehicle to facilitate and optimize off-Budget borrowings.

The proposed NBFC could be utilized to:

1. Enable parastatal bodies (e.g., ESCOMs, RTCs, urban local bodies) to borrow on more favorable terms compared to prevailing market rates
2. Expand access to diverse capital sources, including Inter-Corporate Deposits, public debt, international market instruments (e.g., masala bonds), and green bonds, among others
3. Finance critical infrastructure projects without contributing to an increase in the State's official debt stock

This approach would ensure that the State maintains fiscal discipline while still enabling the necessary investment in infrastructure development.



7.2.3: Description of recommendation

Benchmarks from other States

Several Indian States have established State-owned NBFCs to mobilize capital for infrastructure development. Tamil Nadu and Gujarat have been at the forefront of successfully implementing this model, raising substantial funds to support infrastructure projects across various sectors. A detailed account of the key recommendations undertaken by the Government of Tamil Nadu to mobilize capital via a State-owned NBFC is provided.

Tamil Nadu

In Tamil Nadu, three State-owned NBFCs, registered with the Reserve Bank of India (RBI), operate under various departments to mobilize off-budget capital. The Tamil Nadu Power Finance Corporation (TNPFC), the Tamil Nadu Transport Development Finance Corporation (TDFC), and the Tamil Nadu Urban Finance and Infrastructure Development Corporation (TUFIDCO) are pivotal institutions in raising funds for critical infrastructure development across different sectors.

Tamil Nadu Power Finance Corporation (TNPFC)

The Tamil Nadu Power Finance Corporation (TNPFC), with a credit rating of BBB-, is 99.9% owned by the Government of Tamil Nadu. TNPFC has raised a cumulative capital of INR 40,067 Crores, exclusively financing power sector projects under the Tamil Nadu Generation and Distribution Corporation (TANGEDCO). These projects include the construction and upgradation of power plants, enhancement of transmission infrastructure, and the development of renewable energy recommendations.

TNPFC generated a total income of INR 4,781 Crores, with a Profit After Tax (PAT) of INR 1,017 Crores, reflecting a 21% profit margin in FY2023-24. The NBFC has raised substantial capital through institutional deposits amounting to INR 29,438 Crores. These deposits have a tenure of 1 to 5 years, with interest rates ranging from 7.5% to 8%.

Investment duration (months)	Interest rate p.a. for institutional deposits
12	7.50%
24	7.60%
36	7.75%
48	8.00%

Table 7.2.1: TNPFC's interest rates for institutional deposits

Investment duration (months)	Interest rate p.a.	Interest rate p.a.
	General category depositors	Senior citizen depositors
12	8.10%	8.25%
24	8.25%	8.40%
36	8.30%	8.50%
48	8.10%	8.25%
60	8.10%	8.25%

TNPFC also facilitates operationalization of Inter Corporate Deposits with tenure ranging from 15 days to 2 years and interest rate varying from 3.5% to 7.6%.

Inter Corporate Deposits' Tenure	Interest rate p.a.
15 – 90 days	3.5%
91 – 180 days	4.0%
181 days – 1 year	4.5%
1 year	7.5%
2 years	7.6%

Table 7.2.3: TNPFC's interest rates for Inter Corporate Deposits



Tamil Nadu Transport Development Finance Corporation (TDFC)

The Tamil Nadu Transport Development Finance Corporation (TDFC) is a BBB+ rated NBFC with a majority shareholding of 97.5% by the Government of Tamil Nadu and 2.5% by State transport utilities. TDFC plays a pivotal role in financing the State's road transportation infrastructure projects, including the Chennai Peripheral Ring Road, Chennai Industrial Corridor, Sivakasi Outer Ring Road, and the Chennai Sea Bridge, among others.

TDFC has raised cumulative capital of INR 7,999 Crores generating a total income of INR 1,173 Crores and recording a Profit After Tax (PAT) of INR 36 Crores, reflecting a 3% profit margin. To raise funds, TDFC has utilized several instruments, including public deposits amounting to INR 4,000 Crores, working capital loans of INR 2,000 Crores, and long-term cash credit facilities of INR 1,300 Crores. The cost of borrowing for public deposits ranges between 7.60% and 8.62%, with tenures varying from 2 to 5 years.

Tamil Nadu Urban Finance and Infrastructure Development Corporation (TUFIDCO)

The Tamil Nadu Urban Finance and Infrastructure Development Corporation (TUFIDCO), also rated BBB+, is primarily owned by the Government of Tamil Nadu (96.9%), with 3.1% shareholding by Urban Local Bodies (ULBs).

TUFIDCO is tasked with financing key urban infrastructure projects in the State, including the development of parks (such as the Singara Chennai 2.0 initiative), water and sanitation infrastructure (e.g., the Urban Flagship Development Program), road infrastructure (e.g., Chennai-Kanyakumari Industrial Corridor and the Comprehensive Road Infrastructure Development Program), as well as transportation projects such as the construction of a multi-modal bus terminal.

TUFIDCO has raised a cumulative capital of INR 433 Crores, with total income of INR 43.6 Crores and a Profit After Tax (PAT) of INR 10.2 Crores, reflecting a profit margin of 23%. The corporation raises funds primarily through retail public debt via fixed deposits, offering tenures of 2 to 5 years and an interest rate of approximately 8.85%.

The figure below summarizes the NBFC's set up by Tamil Nadu to finance its infrastructure development goals.



	 TNPFC TN Power Fin. Corp.	 TDFC TN Transport Dev. Fin. Corp.	 TUFIDCO TN Urban Fin. & Infra. Dev. Corp.
Shareholding	99.9% GoTN	97.5% GoTN 2.5% State Transport Utilities	96.9% GoTN 3.1% Urban Local Bodies
Cum. Capital Raised (INR Cr)	44,224	7,999	433
NBFC rating	BBB-	BBB+	BBB+
Total Income (INR Cr)	4,781	1,173	43.6
PAT (INR Cr, %)	1,017 (21%)	36 (3%)	10.2 (23%)
Key borrowing instruments	Retail public deposits via FDs	- FDs (4K Cr) - WC loans (2K Cr) - Long term cash credit (1.3K Cr)	Retail public deposits via FDs
Terms for borrowed funds	- Tenure: 1-5 years - Interest: 7.5 - 8.51%	- Tenure: 2-5 years - Interest: 7.6 - 8.62%	- Tenure: 2 - 5 years - Interest: 8.85%
Funded projects	Exclusively funds TANGEDCO projects: - Construction & upgradation of power plants - Enhancing transmission - Renewable Energy projects	Road infra. Examples include: - Chennai PRR - Chennai industrial corridor - Sivakasi ORR - Chennai sea bridge	Urban infra. Examples: - Parks: Singara Chennai 2.0 - Urban Flagship Dev program (water supply & sanitation) Road infra. Examples: - CRIDP road plan - Chennai-Kanyakumari industrial corridor Multi modal bus terminal

Figure 7.2.1: State-owned NBFCs in Tamil Nadu

Gujarat

Gujarat has set up an independent NBFC under the Companies Act, 2013 to facilitate Inter Corporate Deposits. The Gujarat State Financial Services (GSFS) raised INR 49,500 Crores of deposits and generated INR 3,500 Crores in revenue and a PAT of 483 Crores (14%) in FY2022-23.

GSFS borrows from State PSUs through two key products. First, the liquid deposit scheme. It is designed to provide high liquidity to investors with a tenure of 15 days to 1 year and an interest rate of 5.75%. Second, the inter corporate deposits product provides a higher interest rate of 6.5% to 7.5% and an offered tenure ranging from 90 days to 3 years. Premature withdrawal of funds incurs a 50-bps penalty.

GSFS offers loans against ICDs up to 85% of the principal amount with an interest rate of 100 bps higher than the borrowing rate.

The NBFC streamlines the inter corporate transactions in Gujarat under Finance Department. Improved oversight helps manage cross-PSU lending and optimize fund allocation. An independent entity also helps manage NPA (Non Performing Assets) risks effectively.

Advantages and key considerations for State-owned NBFC vs Inter Corporate Deposits

A State-owned NBFC offers a diversified product portfolio for lenders, providing flexibility with both short-term and long-term investment options, along with the added advantage of callable deposits. Establishing an independent entity with domain expertise will enhance the focus on



prudent financial management and ensure a professional approach. Currently, many Public Sector Undertakings (PSUs) lack the in-house capabilities to effectively manage decision-making, particularly in areas such as Inter Corporate Deposits (ICDs).

The State-owned NBFC will not only diversify the State's funding sources but also offer the opportunity to de-risk the investment portfolio, effectively managing Non-Performing Asset (NPA) risks. However, a key consideration in operationalizing the NBFC will be the establishment of robust governance frameworks to safeguard the deployment of funds. In addition, the NBFC will need to secure a deposit-taking license and obtain requisite approvals from the Reserve Bank of India (RBI) to ensure regulatory compliance and operational integrity.

The figure below summarizes the advantages of setting up a State-owned NBFC and key considerations versus Inter Corporate Deposits.

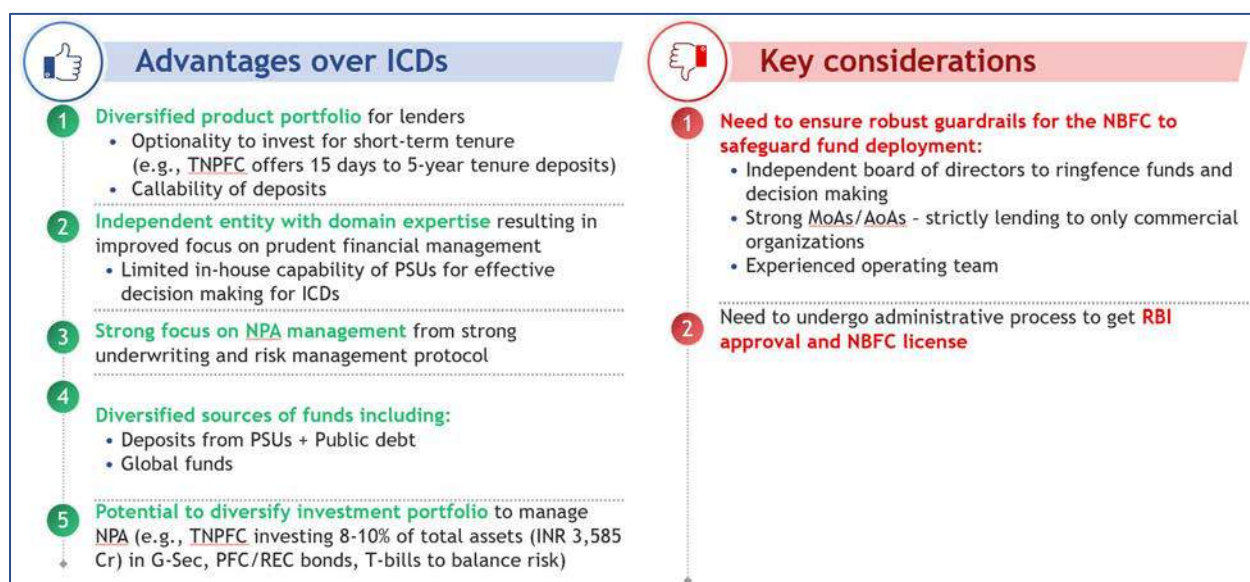


Figure 7.2.2: Advantages and key considerations for State-owned NBFC versus ICD

Potential considerations for operationalization of a State-owned NBFC in Karnataka

To operationalize a State-owned Non-Banking Financial Company (NBFC) model to finance power sector projects in Karnataka, it is critical to address four key dimensions.

1. Optimal shareholding structure

The State must retain a majority shareholding in the NBFC, with minority stakes allotted to relevant parastatal bodies or Public Sector Undertakings (PSUs). The board of directors should be composed exclusively of senior Government officials from relevant departments and two private



sector industry experts to ensure that the usage of the NBFC's proceeds is ring-fenced for intended purposes. For an NBFC structured to finance power sector projects in Karnataka, the board may include the following members:

1. Additional Chief Secretary to Government, Finance Department
2. Additional Chief Secretary to Government, Energy Department
3. Secretary to Government (Fiscal Reforms)
4. Secretary to Government (Budget and Resources)
5. Secretary to Government, Transport Department

Consideration could also be given to partial privatization of the NBFC, with the State retaining majority control. This approach could enhance accountability and allow the NBFC to operate with greater professionalism and efficiency.

2. Sources of funds

The NBFC could raise capital through four primary avenues: inter-corporate deposits, public debt, green bonds, and international financing instruments e.g., masala bonds, external commercial borrowings, among others.

A phased approach to accessing these funds is recommended. Initially, the NBFC should operationalize inter-corporate deposits and stabilize its operations. Subsequently, it could scale up to public deposits and other funding sources once a deposit-taking license is secured from the Reserve Bank of India (RBI).

3. Operations and risk management

Ensuring the NBFC's stand-alone profitability is crucial for maintaining its credit rating, which in turn will allow it to source funds at competitive interest rates. The NBFC should implement a minimum mark-up on borrowed funds to ensure operational sustainability while passing maximum benefits to borrowers. Strong risk management frameworks must be established to mitigate the risk of non-performing assets (NPAs) on the NBFC's balance sheet. Moreover, the success of the NBFC will rely on a professionally qualified team with the requisite domain expertise to oversee operations effectively.

4. Registration of the entity

The NBFC should initially be registered in Karnataka to commence operations. Following the stabilization of operations, consideration could be given to establishing a subsidiary office in GIFT City, which would enhance access to international funding sources. Several institutions, including



the Power Finance Corporation (PFC), Renewable Energy Corporation (REC), and ONGC Videsh, have established subsidiaries in GIFT City to facilitate the raising of international capital.

The benefits of setting up a subsidiary in the GIFT city to the borrower include:

- 100% direct tax benefit on business income for 10 years
- GST exemptions for transactions with offshore entities

Additionally, the benefits to offshore lenders and to the borrowers include:

- No Indian withholding tax liability
- Lower compliance costs owing to simplified regulations

Potential options to operationalize State-owned NBFC

To operationalize a State-owned NBFC in Karnataka, two strategic options are available for consideration:

1. Repurposing existing parastatal bodies to function as an NBFC by amending their Articles / Memorandum of Association (AoA and MoA)

This option entails amending the Articles of Association (AoA) and Memorandum of Association (MoA) of operational parastatal bodies, thereby enabling them to function as an NBFC. From an administrative standpoint, this approach is less complex and may offer an expedited route to operationalization. Karnataka State Financial Corporation (KSFC) can be a potentially relevant Public Sector Undertaking (PSU) that could be considered for repurposing include:

However, repurposing these operational entities will necessitate obtaining legal counsel to ensure proper amendments to the AoA and MoA. Additionally, the existing workforce may require significant upskilling to build domain expertise relevant to NBFC operations. Furthermore, it will be essential to revise the accounting protocols to clearly delineate between fund utilization for existing PSU operations and those related to NBFC activities.

2. Establishing a new organization under the Finance Department

Setting up a new NBFC under the administrative control of the Finance Department would provide enhanced oversight and ensure that the organization maintains a singular focus on effective lending practices. This would result in stronger governance, seamless coordination with relevant State departments, and the ability to effectively manage the NBFC's loan portfolio and



credit rating. Additionally, the singular priority of managing NBFC operations would simplify day-to-day functions and improve operational efficiency.

However, the creation of a new entity would require the establishment of fresh governance structures, adherence to new compliance protocols, and the formulation of an appropriate organizational framework. It would also necessitate the recruitment of professionals with the requisite domain expertise to ensure the entity's successful operation and sustainability.

Weighing the above pros and cons, the preferred option would be to set up a new NBFC housed under the Finance Department. The figure below summarizes the potential options for State-owned NBFC in Karnataka.

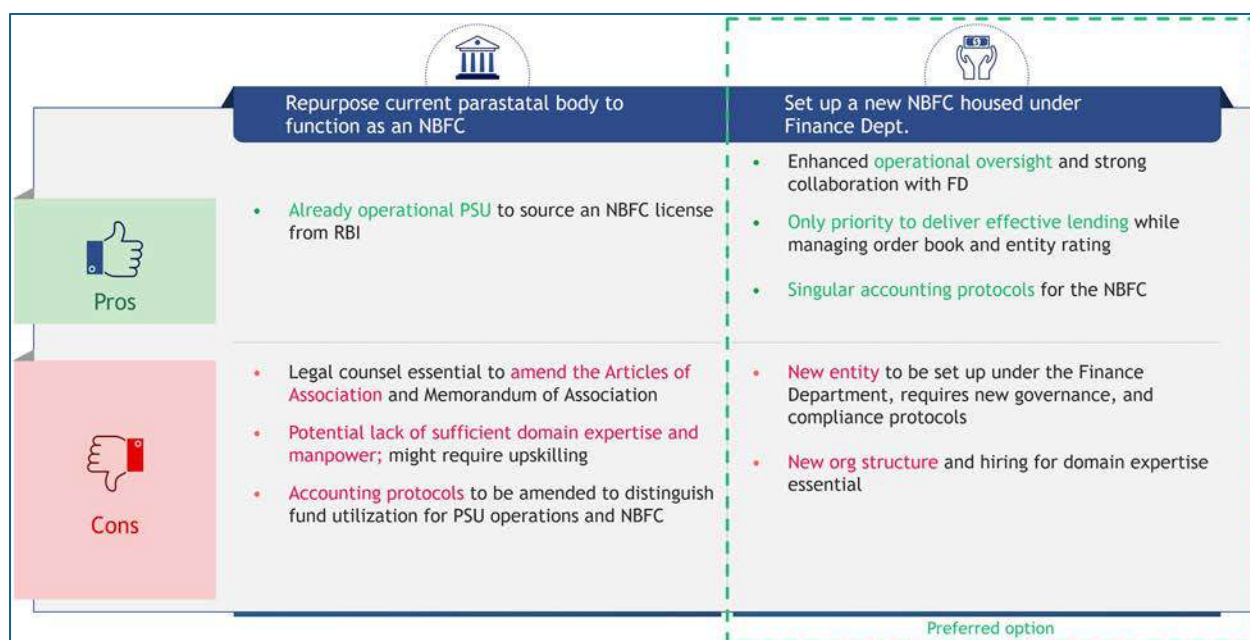


Figure 7.2.3: Two potential options to operationalize State-owned NBFC

7.2.4: Value potential

If the State-owned NBFC raises funds at an interest rate ranging from 7.5% to 8%, compared to the current borrowing cost for Electricity Supply Companies (ESCOMs) which stands between 9% and 11%, the State can achieve an interest rate differential of 200 to 250 basis points.

With a loan book of INR 50,000 Crores, this will translate into annual savings of INR 1,000 to 1,250 Crores. The State-owned NBFC has the potential minimize the financial burden on the State for financing power infrastructure projects.



7.2.5: Status of the recommendation

The following are the key milestones completed in the implementation of the recommendation:

- The concept was presented to the relevant officials of the Finance Department, Government of Karnataka
- The recommendation was discussed with key officials from the Energy Department including Additional Chief Secretary to Government (Energy Department), officials from ESCOMs, and others
- Official study tour was conducted to Tamil Nadu to study the Tamil Nadu NBFCs including Tamil Nadu Power Finance Corporation
- An initial conversation was facilitated between Secretary to Government (Budget and Resources) and RBI officials to discuss the recommendation and evaluate feasibility of setting up a new State-owned NBFC and the procurement of a deposit-taking NBFC license

7.2.6: Next steps

The detailed next steps for the recommendation is as follows:

1. Setting up of Stated-owned NBFC in Karnataka in phase 2 to be evaluated after stabilization of Inter Corporate Deposits amongst PSUs
2. Cabinet approval to be secured for setting up the NBFC with alignment to set up a new and independent entity
3. Deposit taking NBFC license to be procured by applying with the Reserve Bank of India
4. Articles of Association and Memorandum of Association for the new organization to be established
5. Board of Directors to be set up including senior State Government officials from relevant Departments and private sector industry experts. Industry professionals to be hired to operate the company
6. Risk management guardrails to be established to maintain stand-alone profitability
7. Entity to be registered in Karnataka and commence the formal procedure to set up subsidiary in GIFT City in order to source international funds
8. Capital to be raised from public debt and other additional sources to build an order book for the NBFC



7.3: Interest-subvention for affordable housing



7.3: Interest-subvention for affordable housing

7.3.1: Context and background

Under the “1 Lakh Multi-Storied Bengaluru Housing Scheme,” the Rajiv Gandhi Housing Corporation (RGHC) has undertaken the construction of 45,124 one-bedroom housing units for the Economically Weaker Sections (EWS). Of these, 4,073 units have been completed, and an additional 4,567 units are in the final stages of construction, with completion anticipated by the end of 2024. However, the development of the remaining 36,484 units is stalled at various stages of progress. Specifically, 28,686 units are at the foundation, plinth, or various floor levels of construction, while 7,798 units have yet to commence.

The cost of constructing each unit ranges between INR 10.2 Lakhs to INR 13.2 Lakhs, inclusive of amenities e.g., water, electricity, stilt parking, lift, diesel generator, sewage treatment plant, compound walls, gate and one shop for every 100 dwelling units. Beneficiaries are expected to finance INR 6.7 Lakhs to INR 10.5 Lakhs per unit after accounting for State subsidies (INR 1.2 Lakhs – 2.0 Lakhs per unit) and the central Government’s Pradhan Mantri Awas Yojana (Urban) subsidy (INR 1.5 Lakhs per unit).

The demand for these housing units is evident, with 57,156 applications received through the RGHC’s online portal. However, only 12,153 beneficiaries have secured units by paying the initial deposit of INR 50,000. Notably, only seven units have been registered, with full payments received from the beneficiaries.

One of the key challenges identified is the beneficiaries' inability to finance their share of the cost due to limited personal funds and the high cost of borrowing from financial institutions, including public sector banks, housing finance companies, and NBFCs (Non-Banking Financial Company) owing to poor or non-existent CIBIL scores. As of October 2024, only four loans have been sanctioned by nationalized banks at an interest rate of 10.5%, and 46 loans by private sector banks at an interest rate of 11%.

Below figure highlights the status of the project pipeline for houses planned under the “1 Lakh Multi-Storied Bengaluru Housing Scheme” and cost of construction per unit.

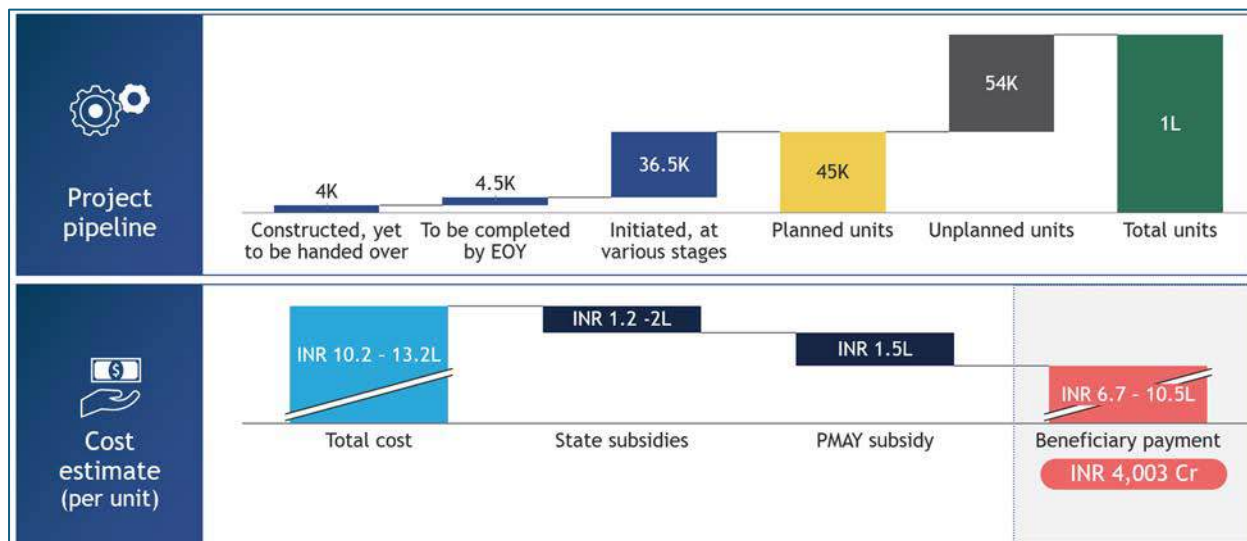


Figure 7.3.1: Project pipeline under the “1 Lakh Multi-Storied Bengaluru Housing Scheme”

A Focus Group Discussion with beneficiaries conducted under the Chairmanship of MD, RGHC revealed that the current EMI burden is challenging to manage monthly, underscoring the need for a reduction in interest rates to improve affordability and financial relief for borrowers. The below figure summarizes the challenges faced by beneficiaries to finance their share of payment.



Figure 7.3.2: Status quo and key reservations from beneficiaries



7.3.2: Recommendation

The proposed interest subvention scheme aims to reduce the effective interest rate for beneficiaries, thereby alleviating the financial burden associated with housing loans. Under this scheme, the Government will cover 3% of the total interest charged on the loan for the first 10 years of the loan tenure, effectively lowering the EMI payments for beneficiaries. This recommendation is designed to make housing loans more affordable and accessible to the Economically Weaker Sections, facilitating greater participation in the housing program.

The subvention scheme is intended to be implemented in a phased manner. In the first phase, it will be piloted for the affordable housing units planned under the “1 Lakh Multi-Storied Bengaluru Housing Scheme.” Based on the learnings and outcomes from this phase, the scheme will be expanded in Phase-2 to cover all housing units under the scheme across the State. This phased approach will allow for refinement of the scheme’s design and ensure its effective implementation Statewide, contributing to the broader goal of housing affordability and inclusion.

7.3.3: Description of recommendation

The total financial burden on beneficiaries for housing units planned under the Rajiv Gandhi Housing Corporation (RGHC) is estimated to be INR 4,003 Crores. The limited capacity of beneficiaries to finance their share has been a key factor contributing to the slow progress in the construction of housing units. The table below lays down the beneficiary burden for affordable housing.

Category	# houses	Unit cost per DU INR L	Subsidy per DU INR L	Ben. share per DU INR L	Ben. burden INR Crores
SC / ST	3,640	10.2	3.5	6.7	226
	14,410	13.2	3.5	9.7	1,326
General	8,513	10.2	2.7	7.5	596
	18,561	13.2	2.7	10.5	1,856
	45,124				4,003

Table 7.3.1: Beneficiary burden for affordable housing



To address this challenge, an interest subvention is proposed for all beneficiaries availing loans under the “1 Lakh Multi-Storied Bengaluru Housing Project.” Under the proposed subvention scheme, the State will cover 3% of the total interest rate offered by the lender for the first 10 years of the loan tenure. This 3% subvention reduces the beneficiary’s EMI burden by INR 1,174–2,218 per month, effectively lowering the minimum monthly payment to a minimum INR 7,866. Additionally, to encourage early adoption of the scheme and create awareness, the first 5,000 beneficiaries will be eligible for an additional subvention of 50 basis points.

Three potential options exist to structure the subvention scheme.

1. **Upfront credit of the present value of total subvention.** This method is operationally simplistic but overlooks the importance of encouraging financial discipline amongst beneficiaries.
2. **Payment by the governing body to the lender on confirmation of beneficiary payment.** Here, the governing body pays subvention to the financier upon each confirmed beneficiary payment. This incentivizes timely payments from beneficiaries and helps the governing body manage cashflows while reducing the default likelihood. However, this method is operationally tedious with high level of interaction between the financier and the governing body.
3. **Payment by the governing body to the beneficiary on confirmation of beneficiary payment.** This method not only incentivizes beneficiaries to make timely payments but also ties the subvention benefits directly to timely repayment while minimizing the interaction between the financier and the governing body. This option is the preferred option for the interest subvention scheme.

This approach will assist RGHC in managing cash flows effectively. However, it is essential to ensure stringent oversight of beneficiary repayments on a month-to-month basis to validate repayments and manage the monthly subvention disbursements accurately. Robust monitoring mechanisms will be crucial for the successful execution of this scheme.

The figure below lays out the potential options for operationalization of the subvention scheme.



	 1 Credit Linked Subsidy Scheme in PMAY	 2 NABARD Interest Subvention Scheme	 3 Govt. of Karnataka MSME Interest Subvention Scheme
Methodology	Present Value of the total subvention credited upfront into the beneficiary's loan account	Governing body pays subvention to financier in monthly installments on confirmation of beneficiary payment of EMI	Governing body reimburses subvention amount to beneficiary after beneficiary payment
Pros	Streamlined process with single transaction making it operationally efficient	Incentivizes timely payments by tying the subvention benefits to repayment - Helps the governing body manage cash flows - Reduces default likelihood by reducing beneficiary's cash flow requirement, promotes financial discipline	Incentivizes timely payments by tying the subvention benefits to repayment - Helps the governing body manage cash flows Minimizes direct interaction of the state with financier
Cons	Overlooks importance of encouraging financial discipline in beneficiaries	Operationally tedious for the governing body to validate beneficiary payment and manage monthly disbursements	
			Preferred model for implementation

Figure 7.3.3: Three potential models to operationalize subvention

It is proposed that the recommendation should be implemented in a phased manner with pilots to be initiated for Affordable Housing projects in and around Bengaluru. Based on the learnings and outcomes from this phase, the scheme may be expanded in Phase-2 to cover all housing units across the State.

This phased approach will allow for refinement of the scheme's design and ensure its effective implementation Statewide, contributing to the broader goal of housing affordability and inclusion.

7.3.4: Value potential

The current rate of interest offered to beneficiaries is around 11%. The proposed scheme's value potential has been analyzed for multiple scenarios where the State provides subvention ranging from 2% to 8% to beneficiaries currently sourcing loans at 11%. The beneficiary is expected to provide INR 50,000 capital upfront as a token to lock in the unit. After the 1.5 Lakhs subsidy under PMAY (Urban) and the State subsidy (INR 1.2 Lakhs – 2 Lakhs), the loan secured by the beneficiary is for INR 8.9 Lakhs principal for a tenure of 15 years. The total EMI to be paid to the lender on this loan amounts to INR 10,084 per month.



The table below lays out the scenarios of interest subvention varying from 2% to 8% and calculates the beneficiary's minimum EMI requirement alongside the State's range of EMI subvention.

It also lays down the State's annual and total expenditure over the 10-year subvention period for 45,124 beneficiaries and the Net Present Value (NPV) of the State's expenditure.

Subvention	Beneficiary EMI min.	Subvention EMI	State's annual expenditure	State's total expenditure	State expenditure NPV
% p.a.	INR p.m.	INR p.m.	INR Cr p.a.	INR Crores	INR Crores
2%	8,605	783 – 1,479	42 – 80	645	410
3%	7,866	1,174 – 2,218	64 – 120	968	615
4%	7,127	1,565 – 2,957	85 – 160	1,291	820
5%	6,387	1,957 – 3,697	106 – 200	1,614	1,026
6%	5,648	2,348 – 4,436	127 – 240	1,936	1,231
7%	4,909	2,739 – 5,175	148 – 280	2,259	1,436
8%	4,169	3,130 – 5,915	170 – 320	2,582	1,641

Table 7.3.2: Interest subvention scheme scenarios

As an illustrative, an interest subvention of 3% for the 45,124 beneficiaries under the “1 Lakh Multi-Storied Bengaluru Housing Project” over a 10-year loan tenure is projected to cost the State INR 968 Crores over 10 years resulting in a net present value (NPV) cost to the State of INR 615 Crores.

This subvention will reduce the monthly financial burden on beneficiaries by INR 1,174 – 2,218 per month with the beneficiary having to pay a minimum amount of INR 7,866 per month.

Assuming 10% of the beneficiaries can finance their share of the payment under the status quo, the State would incur a cost of approximately INR 3,600 Crores to cover the payments of the remaining beneficiaries.



A 3% subvention can be considered for the beneficiaries. By implementing the scheme, the State is expected to save between INR 2,500 and 3,000 Crores. This approach reduces the financial burden on the State Budget while ensuring all beneficiaries can finance their housing loans.

7.3.5: Status of recommendation

Recommendation designed in alignment with the MD, RGHC, and team. Multiple Focused Group Discussions conducted with beneficiaries to ground truth the recommendation.

Series of meetings conducted with Principal Secretary to Government (Housing Department) to receive in principle alignment for the subvention scheme.

In principle approval received from the Finance Department to implement the scheme with an interest subvention of 3%.

Cabinet note is being put up on file by MD, RGHC to the Principal Secretary to Government, Department of Housing, for final review and comments.

7.3.6: Next steps

Department of Housing may formally present the proposal to the Finance Department for concurrence. Finance and Housing Departments to deliberate and finalize the appropriate subvention interest rate to be offered to beneficiaries.

Post concurrence, subvention scheme may be presented in the Cabinet for final approval.

Implementation to be initiated for houses in and around Bengaluru. Recommendation may be scaled to all the beneficiaries across the State in subsequent phase by incorporating learnings from this phase.



7.4: Blended finance

7.4.1: Context and background

1. Disaggregated Demand

- ## 2. Inherent Below-Market Rate Returns

- ### 3. Unattractive Risk-Return Profile

- Projects with an unattractive risk-return profile often lack dedicated Government funding and have not yet achieved commercial viability, particularly when involving nascent or unproven technologies.
- Such projects may benefit from financing instruments like guarantees or equity funding, especially for startups and early-stage innovators.



- Examples include green hydrogen supply chains and biomass/biofuel plants. Innovative financing solutions, such as carbon credits, payment guarantees, and concessional debt through a blended finance facility, can help mitigate risk and improve commercial attractiveness.

For these types of projects, innovative financing tools—such as carbon credits, payment guarantees, and concessional debt through a blended finance facility—can help address risk and enhance their commercial appeal.

Each archetype highlights different funding requirements and pose specific challenges basis the characteristics of the projects. The figure below summarizes these three archetypes.

Archetype	1 Disaggregated demand	2 Inherent below-market rate returns	3 Unattractive risk-return profile
Description	- Dedicated govt. funding programs available - Commercial viability is established, but projects are at a small-scale; limited incentive to catalyze behavioral shift	- Returns lower than “market rate capital” due to - long gestation or - uncertain revenue streams	- Lack of dedicated government funding programs - Commercial viability not established - Nascent/unproven technologies
Approach	- Assist in project preparation - Support intermediaries that can aggregate demand in accessing government/DFI funding	Provide financing via instruments such as PES, carbon credits and concessional debt	Provide financing via instruments such as guarantees or equity funding to startups/innovators
Examples	- EV charging stations and related infrastructure - Solar rooftop	- Coastal protection initiatives - Forest restoration and densification	- Green hydrogen supply chain - Biomass/biofuel plants

Figure 7.4.1: Three archetypes of projects and their financing challenges

7.4.2: Recommendation

It is recommended to establish a Blended Finance Facility as a strategic, long-term initiative aimed at mobilizing public, private, and philanthropic capital to support sustainable development. This facility would not only provide essential funding but also offer critical project implementation support, enhancing execution and maximizing impact. Blended finance effectively mitigates investment risks by deploying public or philanthropic capital to absorb certain project risks, making these projects more attractive to private investors.

A model example is the Government of Goa’s Blended Finance Facility, developed under the Environment Department’s Climate Change Cell as a Special Purpose Vehicle (SPV). Registered as an Alternate Investment Fund (AIF) in GIFT City, an International Finance Center, the facility benefits from tax exemptions and is positioned to attract international contributions. Goa’s



facility aims to pool INR 25,000–30,000 Crores by 2030 at a blended cost of 6-7%, with a robust project pipeline that includes electric vehicle infrastructure, compressed biogas (CBG) initiatives, inland waterways, solar energy solutions, biomass and biofuel plants, green hydrogen supply chain development, forest densification, and coastal protection and agroforestry projects.

For Karnataka's facility, potential intermediaries could include SIDBI, NABARD, NaBFID, Energy Efficiency Services Limited (EESL), Tata Cleantech Capital, Macquarie, and Energy Supply Companies (ESCOs) empaneled by the Bureau of Energy Efficiency (BEE). Through this blended finance approach, Karnataka could attract substantial capital to advance its sustainability initiatives, ensuring both financial viability and significant environmental impact.

7.4.3: Description of recommendation

Blended finance is a strategic approach designed to mobilize capital from diverse sources, including public, private, and philanthropic funds, to support sustainable development projects. Public sector involvement often includes Governments, Development Finance Institutions (DFIs), and Multilateral Development Banks (MDBs), while private sector involvement includes commercial investors and financial institutions. Major benefits of a blended finance facility include:

- Reduced cost of borrowings (degree of concessionality varies with the market barriers and risk profile of an investment)
- Leverage to source concessional loans and onboard more players to increase the fund pool

The structure of blended finance typically involves concessional finance (e.g., grants, low-interest loans, guarantees, and first-loss capital) from public entities to reduce risks for private investors. This risk mitigation makes investments more attractive to commercial investors who might otherwise avoid high-risk projects.

Blended finance helps in de-risking investments by using public or philanthropic capital to absorb some of the risks, thereby making projects more attractive to private investors. This can involve various mechanisms such as:

- **Technical assistance:** Providing capacity-building support to enable underserved segments and regions to unlock commercial capital
- **Reducing cost of capital:** Mitigating risk and lowering capital costs by leveraging commercial, concessional, and philanthropic capital along with long-term financing
- **Focused investments:** Scaling up high-potential mitigation and adaptation solutions while leveraging Government programs
- **Demand generation:** Creating an enabling environment for local demand by addressing specific financing gaps in the region



- **Uncertainty reduction:** Lowering high initial costs in large projects through advisory and preparatory services to facilitate private investment
- **Full suite of solutions:** Combining and financing basic infrastructure and service delivery with climate action to provide comprehensive solutions

Benchmarks

The Government of Goa is setting up a blended finance facility under the Environment Department's Climate Change Cell as a Special Purpose Vehicle (SPV). The facility is to be registered as an Alternate Investment Fund (AIF), registered in GIFT City, International Finance Center, to seek tax exemptions and facilitate international contributions.

The upstream contributions and investments include USD 100 Million from the Government of Goa as a mix of grants and interest-free loans, and a concessional debt from the World Bank amounting to USD 200 Million.

A high-level working group including NABARD, SIDBI, PFC, World Bank, and climate finance experts are expected to meet during the AIF formation process to determine key investment mandates. Following are the expected decision points from the high-level working group:

- Due diligence process and appraisal formats
- Payment security and recovery mechanisms
- Blending guidelines (what kind of blending for what kind of project)
- Review of existing pipeline and proposals
- Modus operandi for NABARD, SIDBI, PFC, and other investments – terms of loan, interest rates, repayment tenures, etc.
- Fund management and governance structures

The facility targets to pool funds across multiple sources to the tune of INR 25,000 – 30,000 Crores by 2030 at a blended cost of 6% - 7%. The project pipeline to utilize this funding pool includes the following projects:

- EV and related infra, CBG
- Inland waterway infra
- Solar energy solutions
- Biomass / biofuel plants
- Green hydrogen supply chain



- Forest densification and restoration
- Coastal protection and agroforestry

The potential intermediaries include SIDBI, NABARD, NaBFID, EESL (Energy Efficiency Services Limited), Tata Cleantech capital, Macquarie, Bureau of Energy Efficiency (BEE) empaneled Energy Supply Companies (ESCOs).

The figure below summarizes the blended finance facility vision of the State Government of Goa.

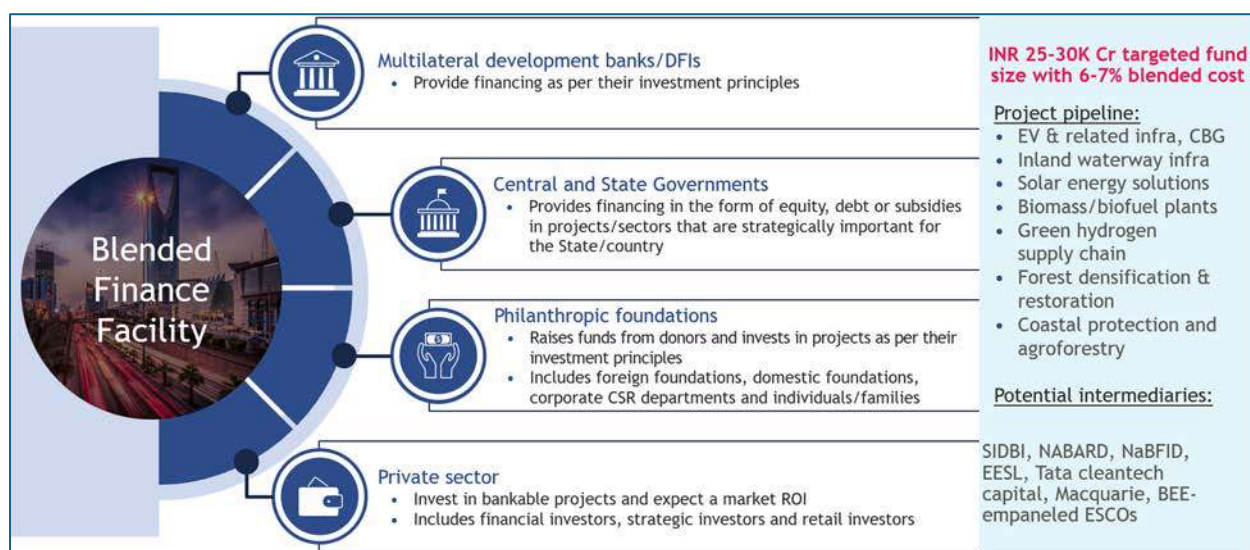


Figure 7.4.2: Blended finance facility in Goa

Blended Finance Facility could also be considered for other sectors such as affordable housing

Another example includes a blended finance facility to deliver affordable housing projects. For instance, the San Francisco Housing Accelerator Fund (SFHAF) has raised debt and grants from multiple sources to fund housing projects across the State.

The types of projects financed include rehabilitation projects, cooperative living, housing to reduce homelessness, mixed-income housing, pre-development loans, among others.

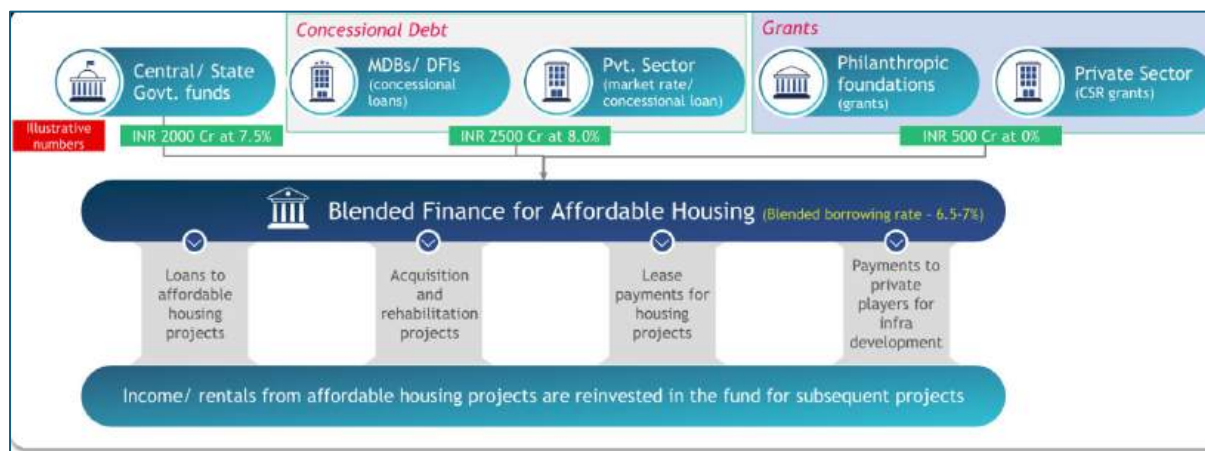


Figure 7.4.3: Blended Finance in Affordable Housing

The figure below summarizes the multiple investors leveraged by the SFHAF and the types of projects undertaken.



Figure 7.4.4: San Francisco Housing Accelerator Fund

6 key considerations for Karnataka

1. Legal Operating Structure

The legal operating structure of the facility ensures compliance with regulatory requirements and provides a framework for governance and day-to-day operations.



- **SPV creation:** The facility is housed within a Special Purpose Vehicle (SPV) under a designated Government Department. This structure enables focused management and operational efficiency
- **AIF registration:** The facility is set up via the Alternative Investment Fund (AIF) route, registered in an International Finance Center to seek tax exemptions and facilitate international collaboration. An AIF is a pooled investment vehicle that invests in diverse assets to seek higher returns or lower costs

2. Financial Instruments

The facility employs a variety of financial instruments to address market failures and investment barriers

- **Concessional Debt:**
 - Direct lending: Loans provided at below-market interest rates to improve projects' financial viability
 - Refinancing: Replacing existing loans with new ones offering better terms to reduce costs or extend repayment periods
 - Local currency: Loans provided in the local currency to avoid exchange rate risks for borrowers. The facility covers hedging costs by allocating concessional funds to purchase currency hedges, which protect both the borrowers and lenders from exchange rate volatility. This ensures that projects remain financially viable and attractive to private investors, as the risks associated with currency fluctuations are effectively managed
 - Performance-linked or results-based financing: Financing linked to achieving specific pre-defined performance indicators or outcomes
- **Equity:**
 - Blended equity: A combination of concessional (below-market rate) and commercial (market rate) equity to reduce overall investment costs and risks
 - Convertible instruments: Financial instruments that can be converted from debt to equity under predefined conditions
- **Guarantees or Risk Sharing:**
 - Performance or Partial Risk Guarantees: Guarantees covering a portion of the risk associated with a project, encouraging investment by mitigating potential losses
- **Technical Assistance:** Advisory services and capacity building to improve skills and knowledge base for project implementation



3. Four Potential ways to Structure Blended Finance Facility

- House in Existing Government Institution:** The facility is housed within an existing State Government institution (e.g., GEDA, GSIDC). Example: Climate Change Fund of Gujarat. Requires internal capabilities, offers moderate flexibility, and has low financing costs
- Form a Separate Government Company:** A new company is registered by the Government of Goa for the facility, with full Government ownership. Example: Australia's Clean Energy Finance Corporation. Time-consuming setup, moderate flexibility, and higher financing costs
- Create a dedicated SPV:** A Special Purpose Vehicle (SPV) allows crossholding by the Government and intermediaries. Example: Tamil Nadu Green Climate Company. Feasible, high flexibility, and moderate financing costs
- Outsource to 3rd Party Facility Manager:** Managed by third-party professionals or consultants. Example: SAMRIDH healthcare blended finance facility by IPE Global. Depends on finding the right manager, high flexibility, and higher financing costs.

The figure below lays out the 4 potential ways to structure the blended finance facility.

	A	B	C	D
	House in existing govt. institution	Form a separate govt. company	Create a dedicated SPV	Outsource to 3rd party Facility Manager
Description	The Facility will be housed in or be a subsidiary of an existing state government institution (e.g., GEDA, GSIDC)	A company to be registered by the Govt. of Goa for housing the Facility, full ownership with the govt.	A dedicated SPV to be formed that can allow cross-holding by the govt. as well as the intermediaries	The Facility will be managed by 3rd party asset management professionals or consultants
Example (if any)	Climate Change Fund of Gujarat, established by the Climate Change Department, Govt. of Gujarat	Australia's Clean Energy Finance Corporation	Tamil Nadu Green Climate Company established by the Govt. of Tamil Nadu for implementing its climate change missions	SAMRIDH healthcare blended finance facility, managed by the development consulting group IPE Global
Feasibility	 Would need internal capabilities within the government institution	 Could be time consuming	 Feasible, given TN has already done it	 Subject to finding the right manager
Flexibility				
Cost of Financing				

Figure 7.4.5: Four potential ways to structure the blended finance facility

4. Intermediaries and Partners

Intermediaries and partners are crucial for the successful operation of the facility as they provide sectoral expertise, financial capabilities, and operational efficiency.



Potential intermediaries include the National Bank for Agriculture and Rural Development (NABARD), Small Industries Development Bank of India (SIDBI), Power Finance Corporation (PFC), NaBFID, the World Bank, and other accredited financial institutions and asset managers.

5. Sources of financing

The facility mobilizes capital from various sources to ensure sufficient funding for sustainable projects. Private sector contributions include financial investors, strategic investors, and retail investors. Philanthropic foundations provide donor funds based on specific investment principles.

Government contributions come from both central and State levels, offering equity, debt, and subsidies. Additionally, multilateral development banks and development finance institutions (DFIs) provide financing aligned with their investment principles. This diverse funding base enables the facility to effectively support large-scale sustainable projects.

6. Operating Model

The operating model defines the roles and responsibilities of various stakeholders in managing and deploying funds.

The operational flow of the facility begins with sourcing projects from various entities, including Government bodies, the private sector, Multilateral Development Banks (MDBs), Development Finance Institutions (DFIs), philanthropic foundations, and intermediaries.

The Origination Team takes charge of this initial stage by independently generating leads and reviewing projects, performing initial risk assessments to identify viable options. Projects that pass this preliminary review move on to the due diligence phase, where the Technical, Risk, and Regulatory teams conduct detailed evaluations. The Technical Team assesses the feasibility, the Risk Team identifies and mitigates potential risks, and the Regulatory Team ensures compliance with relevant regulations.

7.4.4: Value potential

If the facility raises INR 10,000–15,000 Crores at a blended rate of 6-7%, similar to the Goa Blended Finance Facility's target of INR 25,000–30,000 Crores, it could conservatively generate a recurring annual value potential of INR 300–500 Crores, based on an interest rate differential of 2-3% for such projects.

7.4.5: Status of the recommendation

The Revenue Department is in conversations with the World Bank to set up a Blended Finance Facility



7.4.6: Next steps

The following next steps need to be considered for the implementation of the recommendation:

- Finance Department and Revenue Department may undertake detailed discussions with the World Bank team to jointly define the scope and coverage of the Blended Finance Facility along with deliberations on the six key considerations
- Government of Karnataka to shortlist and finalize high priority projects which require assistance and can be financed by the Blended Finance facility
- Cabinet approval may be processed to initiate setting up of the facility
- Facility to be operationalized with support from the World Bank team, State Government officials, and industry experts. Funder outreach to be initiated to identify potential partners for blending



7.5: Green finance



7.5: Green finance

7.5.1: Context and background

There is an urgent need for robust climate action worldwide, with India facing particularly high vulnerability to climate change. Ranked among the top ten countries on the Global Climate Risk Index, India is also one of the three largest global greenhouse gas (GHG) emitters, with emissions having increased by 5% since 2016. Over 75% of Indian districts are hotspots for extreme climate events, leaving 97.5 million people exposed to severe floods, and another 140 million and 42.5 million affected by droughts and cyclones, respectively. The economic impact is equally severe, with India incurring climate-related losses of approximately USD 69 billion (INR 580,305 crore) in 2019 alone¹⁸.

In response to the critical need for climate action, global green financing efforts have intensified, with various innovative instruments emerging to support sustainable development. Key financing tools include green bonds, sustainability-linked bonds, climate-focused philanthropic capital, and blended finance (as detailed in Section 7.4). These instruments are structured to address the specific funding needs and risk profiles of climate projects, making it easier for governments and organizations to secure capital for impactful projects.

Globally, several players are active in this green finance space. Institutions like the World Bank, International Finance Corporation (IFC), Green Climate Fund (GCF), and Global Environment Facility (GEF) lead major funding initiatives. Private sector entities such as BlackRock, HSBC, and Goldman Sachs are also actively participating, with innovative offerings in green bonds and sustainable investment funds. Additionally, philanthropic organizations like the Rockefeller Foundation, MacArthur Foundation, and Bezos Earth Fund have significantly expanded their climate-focused capital contributions, addressing both adaptation and mitigation challenges. Together, these players are channeling substantial financial resources into climate initiatives, helping to catalyze scalable, long-term solutions in vulnerable regions like India.

7.5.2: Recommendation

It is recommended that Karnataka actively pursue green finance instruments to secure capital at concessional rates for climate and sustainability-focused projects. Green finance enables the mobilization of funding for specific sustainability goals while reducing risks for investors by blending public, private, and philanthropic capital. Leveraging a variety of innovative financing

¹⁸ Climate Resilience Index, 2021 and RBI data



instruments can help Karnataka address its climate challenges effectively. Key recommended instruments include:

	On-budget		Off-budget		
	Green bonds				
	Sovereign Green Bonds	Municipal Corp. & other Public Agencies-	Private Players	Sustainability-linked Bonds	Climate Focused Funds
Issuing Entity Examples	Government of India	Pimpri Chinchwad, Indore, Ghaziabad, Vadodara and Ahmedabad Municipal Corporations, PFC, REC	Adani Green, Renew, GreenCo, Continuum, Hero, JSW	Ultratech, JSW, Adani	CIFF, NABFCC by NABARD, GCF, CTF, Bezos Earth Fund
Usage of Funds	- For Central Schemes (like PM KUSUM, National Green Mission) - Equity stake in some state projects (Metros)	Solar Projects, Sewage treatment, water supply and Urban Infrastructure	refinance existing debt and fund renewable energy projects, including wind and solar power plants	Reducing GHG emissions, Carbon emissions, improving energy efficiency, Corporate Reputation	Hydro, Solar and Wind Projects, coastal habitats, sustainable Agriculture, Rainwater Harvesting
Rate of interest	7.1-7.4%	Muni Corp: ~8.1-8.25%, PSU: 2-5% +Transaction costs (1-2%)+ Hedging costs (2-3%)	~3-6% +Transaction costs(1-2%)+ Hedging costs (2-3%)	3-6% + Transaction costs(1-2%)+ Hedging costs (2-3%)	Loans, Equity and Grants
Tenure	5-10 Years	~3-10 years	7-15 years	7-10 years	~5-20 years
Currency	INR	Muni Corp: INR, PSUs: USD, Euro, INR, Yen	USD, Euro, INR, Yen	USD	USD, Euro, INR, Yen

Figure 7.5.1: Multiple financing options available for the State to explore

1. Sovereign Green Bonds: The Government of India issues INR-denominated sovereign green bonds to finance central schemes like PM KUSUM and the National Green Mission, with interest rates ranging from 7.1% to 7.4% over 5 to 10-year tenures. These bonds provide a cost-effective financing option, typically priced 5-10 basis points below State Development Loans (SDLs). Although there is currently no precedent for states to directly raise funds through these bonds, Karnataka could initiate discussions with the Reserve Bank of India (RBI) to explore the feasibility of on-budget sovereign green bonds targeting an interest rate below 7.5%.

2. Municipal Green Bonds: Several municipal corporations in India, including those in Pimpri Chinchwad, Indore, Ghaziabad, Vadodara, and Ahmedabad, have successfully issued green bonds to finance solar projects, sewage treatment, water supply, and urban infrastructure. These bonds, typically raised at interest rates between 8.1% and 8.25% over a 3-10 year tenure, offer an off-budget financing mechanism, enabling states to remain within Fiscal Responsibility and Budget Management (FRBM) limits. State corporations and municipal bodies in Karnataka can consider raising such bonds, though their credit ratings would need to be assessed to ensure competitive borrowing costs.

3. Green Bonds from Public Sector Undertakings (PSUs): Public Sector Undertakings (PSUs) such as the Power Finance Corporation (PFC) and Renewable Energy Corporation (REC) have raised



green bonds in multiple currencies, including USD, INR, JPY, and EUR. These bonds are typically issued with interest rates between 2% and 5%, with additional transaction fees (1-2%) and hedging costs (2-3%). Leveraging PSUs to raise multi-currency green bonds could help Karnataka fund renewable energy and other sustainability projects, benefiting from competitive rates through international financial institutions.

4. Green Bonds from Private Players: Private entities such as Adani Green, ReNew, GreenCo, Continuum, Hero, and JSW have issued green bonds to refinance debt and finance renewable energy projects, particularly in wind and solar power. These bonds generally carry interest rates of 3% to 6% over tenures of 7-15 years and are often denominated in USD, EUR, INR, and JPY. While these rates may appear lower, transaction costs (1-2%) and hedging costs (2-3%) increase the effective cost. Karnataka's private sector could tap into similar bonds through partnerships with global financial institutions such as IFC, AIIB, KfW, and Japanese banks (e.g., SMBC, MUFG, Mizuho), with appropriate hedging mechanisms in place.

5. Sustainability-Linked Bonds (SLBs): SLBs are tied to sustainability performance targets (SPTs) and key performance indicators (KPIs) rather than being earmarked strictly for green projects. The final cost of SLBs depends on achieving specific outcomes like emission reductions or energy efficiency improvements. Major corporations such as Ultratech, JSW, and Adani have issued SLBs at interest rates of 3% to 6%, with additional costs for transactions (1-2%) and hedging (2-3%). Karnataka could utilize SLBs to refinance existing projects, tying financing costs to the achievement of carbon reduction targets, making them an attractive option for energy efficiency and emissions-reduction initiatives.

6. Climate-Focused Funds: Several global climate-focused funds, including the Children's Investment Fund Foundation (CIFF), Green Climate Fund (GCF), Bezos Earth Fund, and Clean Technology Fund (CTF), provide concessional funding in the form of loans, equity, and grants. These funds target specific projects, such as hydro, solar, and wind energy, as well as coastal protection, sustainable agriculture, and rainwater harvesting. Karnataka could explore these funds to access low-cost capital for climate resilience projects, addressing both environmental and socio-economic vulnerabilities in the state.

7. Blended Finance Facility: Inspired by the Goa Blended Finance Facility, Karnataka could establish a similar facility under a Special Purpose Vehicle (SPV) registered as an Alternate Investment Fund (AIF) in GIFT City, an International Finance Center. This facility would target a blended cost of 6-7% and aim to pool INR 25,000–30,000 Crores by 2030. It could support projects in electric vehicle infrastructure, inland waterway development, solar energy solutions,



biomass/biofuel plants, green hydrogen supply chains, forest restoration, and coastal protection. By blending public, private, and philanthropic capital, this facility would de-risk investments and attract private sector participation, thereby leveraging concessional funding to advance Karnataka's climate goals.

In addition, Karnataka could consider establishing a dedicated institution similar to the Tamil Nadu Green Climate Company (TNGCC). Launched in 2022, TNGCC is a Section 8 not-for-profit company created by the Government of Tamil Nadu to make the state climate resilient. TNGCC focuses on climate risk assessment, sectoral priorities like sustainable transport and waste management, financing model development, and local and global partnerships. It operates independently with its own governance structure, led by a board and a Project Management Unit (PMU) with sectoral expertise. A similar institution in Karnataka could facilitate climate financing, support project implementation, and drive grassroots climate action across the state.

A dedicated institution like TNGCC would allow Karnataka to issue shares, bonds, and other financial instruments, raising capital from private investors, international funds, and through public-private partnerships (PPP). This structure would also enable Karnataka to establish partnerships and subsidiaries, ensuring scalability and replicability of successful models.

Key Mandates of TNGCC

- Assess Tamil Nadu's climate risks and vulnerabilities to develop a comprehensive pathway for a resilient and climate-smart State.
- Identify sectoral priorities such as energy transition, sustainable transport, waste management, agriculture, and more.
- Conceptualize and develop financing models for climate projects.
- Forge local, national, and global partnerships to implement effective climate actions.
- Collaborate with communities to enhance climate literacy and promote grassroots climate action.

Governance Structure

The Tamil Nadu Government holds 51% equity in TNGCC¹⁹, while the remaining 49% is held by agencies and parastatal bodies such as the Tamil Nadu Pollution Control Board (TNPCB). The company was established with an initial authorized capital of INR 5 crores from its shareholders. The governance structure is as follows:

¹⁹ At the time of inception

With the volume of green projects in the state, there is potential to raise INR 15,000–20,000 Crores at an interest rate advantage of approximately 2%, potentially generating a recurring annual value of **INR 300–400 Crores p.a.**

The recommendation and the concept were discussed with the officials from the Finance Department with pending in principle approval. Official study tour was conducted to Tamil Nadu under the Chairmanship of Secretary to Government (Fiscal Reforms) to understand the operations of the Tamil Nadu Green Climate Company.

To conceptualize and operationalize the Karnataka Green Climate and Sustainability Company (KGCSC), a time-based stepwise approach can be considered as outlined below.

This approach begins with a detailed scoping, including provisions for launching it as a company. The establishment of this company can be placed under the Forest, Ecology, and Environment (FEE) Department.

Timeline	Key activities
0-2 months	Feasibility Assessment and Scoping Exercise: Conduct a feasibility study of Karnataka Green Climate and Sustainability Company (KGCSC) and scope out the exercise. Engage with legal experts to understand the registration process under the Companies Act, 2013.
	Action Plan and Stakeholder Engagement: Form a planning committee. Identify and engage stakeholders and shareholding partners. Develop a transition timeline.
2-4 months	Drafting of Mandate, Charter, and Roadmap: Draft the company charter and mandate. Conduct a needs assessment. Develop a time-based roadmap for the transition.



Timeline	Key activities
	Institutional Setup Finalization: Design the organizational structure (organogram) and establish the Project Management Unit (PMU).
4-6 months	Finalization and Operationalization: Finalize the institutional setup and begin operationalization. Establish necessary legal and operational frameworks.
	Team Onboarding Strategy: Develop a recruitment strategy. Identify functions to manage internally vs. externally. Begin the recruitment process.
6-8 months	Partner Onboarding and Implementation: Identify and onboard operational partners. Establish formal agreements with partners. Implement the transition plan and begin operations under the new company model.

Table 7.5.1: Next steps for establishing the KGCSC

Section 8: Revenue Enhancement



8.0: Revenue Enhancement

Independent revenue generation is essential for creating financial headroom for the State. The potential to enhance revenue generation has been assessed not only within budget-supported Departments but also extended to various parastatal bodies.

Strengthening the revenue-generating capacity of these entities is crucial to reducing their reliance on the State Budget, thereby enabling them to deliver high-quality services to citizens in a more efficient and sustainable manner.

Three recommendations have been identified for revenue enhancement:

	Recommendation	Value potential	
 Revenue enhancement	BBMP: Premium FAR (Floor Area Ratio)	INR 1,500 – 1,800 Crores p.a.	
	BBMP: Advertising fee	INR 400 – 550 Crores p.a.	
	Insurance empanelment for specialty Government hospitals	INR 40 – 60 Crores p.a.	
	Non-tax revenue enhancement: Mining, irrigation and additional revenue streams	INR 1,100 – 1,500 Crores p.a.	
 Recurring every year		 One-time value unlock	

Figure 8.0: Recommendations for revenue enhancement



8.1: Premium Floor Area Ratio (FAR)



8.1: Premium Floor Area Ratio (FAR)

8.1.1: Context and background

The BBMP (Bruhat Bengaluru Mahanagara Palike) currently implements a policy of base Floor Area Ratio (FAR) combined with Transferable Development Rights (TDR) in its jurisdiction.

The existing policy divides the BBMP jurisdiction into four zones and determines the maximum permissible total FAR for development. It provides guidelines on the free base FAR available to developers and the maximum TDR that can be utilized beyond the base FAR.

The figure below lays out the current FAR guidelines under the BBMP jurisdiction.

Planning Zone	Free base FAR	Permitted TDR	Max. permitted total FAR
Residential - Zone A (within Outer Ring Road)	1.50 - 1.80	0 - 0.90	1.50 - 2.70
Residential - Zone B (outside Outer Ring Road)	1.50 - 2.00	0 - 1.20	1.50 - 3.20
SDZ (e.g., Kumbalgodu, Cheemasandra, Kodathi, Dommasandra)	2.25	0.5 - 1.25	2.75 - 3.50
Non - Sustainable Development Zone	2.00	0.4 - 1.2	2.40 - 3.20

Currently, BBMP does not charge any premium on increase in FAR, TDR transactions do not earn a direct revenue to BBMP

Figure 8.1.1: Current FAR guidelines under the BBMP jurisdiction

However, the BBMP does not derive direct revenues from this policy as TDR transactions do not contribute directly to the BBMP's revenues. To facilitate State-guided urbanization and create additional revenue streams for the authority, the BBMP has introduced a new draft Premium Floor Area Ratio (P-FAR) policy.

BBMP's proposed draft P-FAR policy

The draft P-FAR policy introduces a provision allowing for P-FAR beyond the base FAR and TDR by remitting a premium charge to the BBMP at 30% of the guidance value of the land. The policy permits an additional P-FAR of 20% to 40% over the free base FAR (as defined by the Master Plan) contingent upon meeting a minimum TDR requirement.



As an illustrative, for a land parcel with an access road width between 12 and 18 meters, the base FAR is set within a range of 1.5 to 2.0. Under the proposed premiumization policy, an additional FAR of up to 30% can be achieved through P-FAR, allowing a maximum increase of 0.6 FAR. Additionally, a minimum increment of 10% (equivalent to 0.2 FAR) is permissible through TDR. Consequently, the total permissible FAR under this policy reaches a maximum enhancement of 40%, resulting in a maximum permissible total FAR of 2.3 to 2.8.

The figure below presents the proposed P-FAR policy by BBMP alongside actual maximum permissible FAR basis road width.

As a % of base FAR				Actuals				
Road width (m)	Max. additional FAR via P-FAR	Min. additional FAR via TDR	Max. permissible additional FAR	Road width (m)	Base FAR range	Max. additional FAR via P-FAR	Min. additional FAR via TDR	Max. permissible total FAR
9-12	20%	-	20%	9 - 12	1.50 - 1.80	0.36	-	1.86 - 2.16
12-18	30%	10%	40%	12 - 18	1.50 - 2.00	0.60	0.20	2.30 - 2.80
18+	40%	20%	60%	18+	1.80 - 2.25	0.90	0.45	3.15 - 3.60

Proposed premiumization for additional FAR via P-FAR policy to be priced at **30% of land Guidance Value**

Figure 8.1.2: Proposed draft P-FAR policy under the BBMP jurisdiction

Consider a property situated on an access road with a width of 9 to 12 meters, located in Zone B within the BBMP jurisdiction, with a plot size of 10,000 sq ft.

Under current regulations, the base FAR permitted is 1.8. In the absence of the draft P-FAR policy, a developer would be allowed a built-up area of 18,000 sq ft. With an assumed floor area of 5,000 sq ft per floor, this allows the construction of a G+2 building.

Under the draft P-FAR policy, an additional FAR of 0.36 (20%) is available through P-FAR, while TDR-based FAR increases are not applicable in this case. This increases the total permissible FAR for the site to 2.16. Accordingly, the allowable built-up area rises to 21,600 sq ft, enabling the construction of a G+3 structure—effectively adding one additional floor.



With the proposed premiumization model based on 30% of the land guidance value, the developer would be required to purchase this additional P-FAR at a cost of INR 1.6 Crores, assuming a land guidance value of INR 15,000 per sq ft.

The figure below provides a detailed breakdown of these calculations.

Illustrative: For a property with 9-12m access road in zone B w 10K sq.ft. plot size, proposed P-FAR policy allows building an additional floor		
Particulars	Value	Unit
Base FAR	1.8	
• Addnl. FAR via P-FAR	0.36 (20%)	
• Addnl. FAR via TDR	- (0%)	
Max. permissible FAR	2.16 (1.8+0.36+0)	
Total Built Up Area	21,600 (2.16 X 10K)	sq.ft.
Max. floor equivalence	G + 3 (21,600/5,000)	# floors
Built Up Area w/o P-FAR	18,000 (1.8 X 10K)	sq.ft.
Max. floor equivalence w/o P-FAR	G + 2 (18,000/5,000)	# floors
P-FAR prem. model	4,500 (@30% GV)	INR / sq. ft.
P-FAR purchase cost to dev. (Applied on addnl. FAR via P-FAR)	1.6	INR Cr
Assumptions: 50% coverage i.e., 5,000 sq ft BUA, land Guidance Value: 15,000 INR/sq ft		

Figure 8.1.3: Illustrative calculations basis draft Premium FAR policy

8.1.2: Recommendation

The Bruhat Bengaluru Mahanagara Palike (BBMP) has introduced a draft Premium Floor Area Ratio (P-FAR) policy, designed to enhance urban development and generate new revenue streams through a premium charge for additional FAR over the base and Transferable Development Rights (TDR).

Benchmarking against cities like Chennai, Mumbai, Pune, and Ahmedabad reveals strategic opportunities to enhance the draft policy, including increasing the maximum permissible FAR, customizing premium rates based on land use and road width, and redesigning the minimum TDR requirements.

These adjustments could unlock an additional annual revenue of approximately INR 1,800 Crores per annum, positioning BBMP to capture a total potential of INR 2,900 Crores per annum.



Implementing these improvements, supported by rigorous compliance protocols can drive sustainable urban growth while maximizing revenue.

8.1.3: Description of recommendation

Potential option #1: Increase total permissible FAR

Under the draft premiumization policy within BBMP jurisdiction, the maximum total permissible FAR ranges from 1.86 to 3.6, contingent upon access road width. Benchmarking against other metropolitan areas suggests a feasible opportunity to raise the maximum permissible FAR beyond 3.6.

Any consideration of increased FAR, however, must include a proportional enhancement of utilities and civic amenities to alleviate potential congestion. Furthermore, special provisions could be considered for specific regions to exceed the policy's maximum permissible FAR, capitalizing on high urbanization potential in those areas.

Benchmarks from P-FAR policies of other Urban Local Bodies

The P-FAR policies of 4 metros namely Chennai, Pune, Mumbai, and Ahmedabad are benchmarked to draw insights for the draft P-FAR policy proposed by BBMP.

Metro benchmark #1: Chennai

Chennai's P-FAR policy is nuanced based on road width and land usage (residential, commercial, metro-corridor). Larger max. permissible FAR is allocated for wider roads and commercial / metro-corridor zones.

The free base FAR remains constant across road widths and varies with land usage. The maximum P-FAR is determined as a percentage of the base FAR according to land parcel's road width and usage. Chennai also permits a higher permissible TDR (2.25 – 2.75), making it one of the metropolitan areas with highest max. total permissible FAR (4.65 – 6.95). The figure below summarizes the P-FAR policy for Chennai and compares the same to BBMP's draft policy.



Usage	Road -width(m)	Base FAR	Max. premium FAR	TDR	Max. permissible total FAR
Residential	9-12	2	0.4		4.65 - 5.15
	12-18	2	0.6		4.85 - 5.35
	18+	2	0.8		5.05 - 5.55
Metro corridor	9-12	2.5	0.5		5.25 - 5.75
	12-18	2.5	0.75	2.25 - 2.75	5.50 - 6.00
	18+	2.5	1		5.75 - 6.25
Commercial	9-12	3	0.6		5.85 - 6.35
	12-18	3	0.9		6.15 - 6.65
	18+	3	1.2		6.45 - 6.95

Chennai:

- Chennai P-FAR policy varies with road width and land usage - special category for metro corridors
- Base FAR remains constant across road width, only varies by usage
- Max. P-FAR determined as a % of base FAR (20-40%) basis road width
- Chennai allows for a higher TDR range v/s other metros, resulting in an overall higher max. permissible FAR

Figure 8.1.4: Benchmark of P-FAR policies: Chennai

Metro benchmark #2: Mumbai

Mumbai's P-FAR policy allows for a maximum permissible total FAR ranging from 2.00 to 3.00, subject to access road width. The maximum P-FAR ranges from 0.50 to 0.84. Mumbai also implements special base FARs for regions with high urbanization potential (e.g., Bandra Kurla Complex: 5, Nariman Point: 3.5). The city authorities generate an estimated revenue of approximately INR 958 Crores per annum from the P-FAR policy.

Metro benchmark #3: Pune

Pune's P-FAR policy, like Mumbai, varies based on road width. The maximum permissible total FAR ranges from 1.50 to 3.00, with a maximum P-FAR of 0.30 for road widths above 9 meters and no P-FAR for road widths less than 9 meters. Pune mandates a maximum TDR to increase the utilization of P-FAR for development.

Metro benchmark #4: Ahmedabad

Ahmedabad customizes its P-FAR based on usage and zone, with TDR permitted only for special purposes. The maximum permissible FAR ranges from 1.0 to 4.0, with P-FAR ranging from 0 to 3.4, subject to road width. The city authorities generate an estimated revenue of approximately INR 1,200 Crores per annum from the P-FAR policy.



The figure below summarizes the P-FAR policies across Mumbai, Pune, and Ahmedabad.

Benchmark #2: Pune				
Road width (m)	Base FAR range	Max. Premium-FAR	Max. TDR	Max. permissible total FAR
<9	1.50	-	-	1.50
9 - 12	2.00	0.30	0 - 0.30	2.00 - 2.60
12 - 18	2.00			2.00 - 2.60
18 - 30	2.00		0 - 0.50	2.00 - 2.80
30+ (residential)	2.00		0 - 0.70	2.00 - 3.00
Benchmark #3 : Mumbai				
Road width (m)	Base FAR range	Max. Premium-FAR	TDR	Max. permissible total FAR
9 - 12		0.50	0.17 - 0.50	2.00
12 - 18		0.50 - 0.62	0.45 - 0.70	2.20 - 2.40
18 - 30	1.0 - 1.33	0.50 - 0.73	0.64 - 0.90	2.40 - 2.70
30+		0.50 - 0.84	0.83 - 1.00	2.50 - 3.00
Benchmark #4 : Ahmedabad				
Category	Max base FAR	Premium-FAR	TDR	Max. permissible total FAR
Residential	0.6-1.8	0-3.4		1.6-4.0
Commercial	1.25-1.8	0.6-2.75		2.4-4.0
Industrial Zone	1-1.8	0-0.8		1.0-2.0

Pune:

- Pune's policy varies with road width; P-FAR: 20 - 40% of base
- Max. TDR mandated to avail additional FAR
- Max. per. FAR for 9 - 12 m road width a relevant benchmark for BBMP

Mumbai:

- Varies with road width, zones; flat base FAR model
- Special base FAR rates for high-urbanization pot. regions (e.g., Bandra Kurla Complex: 5, Nariman Point: 3.5)
- Revenue earned from P-FAR: ~958 Cr PA

Ahmedabad:

- Highly customized basis usage, zone; TDR only permitted for special purpose
- Revenue earned from P-FAR: ~1,200 Cr PA

Figure 8.1.5: Benchmark of P-FAR policies: Pune, Mumbai, and Ahmedabad

Potential option #1: Increase total permissible FAR

The BBMP draft policy has the potential to increase the total permissible FAR by approximately 20-40 percentage points (of base permissible FAR) to align with benchmark metros. This adjustment can be nuanced based on access road width and land usage.

- Residential Land: The maximum permissible FAR can be increased to 40% - 80% from the current proposed 20% - 60% of the base permissible FAR, drawing from benchmarks set by Chennai and Pune
- Commercial Land: The maximum permissible FAR can be raised to 60% - 90% from the current proposed 20% - 60% of the base permissible FAR, using Chennai as a reference point

It is imperative to scale utilities and civic amenities proportionally to mitigate congestion. Special provisions should also be considered for specific regions to exceed the policy's maximum permissible FAR, capitalizing on high urbanization potential in those areas.

The figure below summarizes the proposed edits to the BBMP's draft P-FAR policy basis metro benchmarks.



Max. permissible FAR (absolute, as a % of base permissible FAR) Proposed → Potential options			
Road width (m)	Residential	Commercial	Benchmarks for reference
9 - 12	2.16 → 2.52 (20% → 40%)	2.16 → 2.88 (20% → 60%)	- Max permissible FAR for residential 9 - 12 m : Pune : 2.6, Chennai : 5.15 (2 base FAR + 0.4 P-FAR + 2.75 P-FAR) 12 - 18 m : Chennai: 5.35 (2 base FAR + 0.6 P-FAR + 2.75 TDR) 18+ m : Chennai: 5.55 (2 base FAR + 0.8 P-FAR + 2.75 TDR) - Max permissible FAR for commercial 9 - 12 m : Chennai : 6.35 (3 base FAR + 0.6 P-FAR + 2.75 TDR) 12 - 18 m : Chennai : 6.65 (3 base FAR + 0.9 P-FAR + 2.75 TDR) 18+ m : Chennai : 6.95 (3 base FAR + 1.2 P-FAR + 2.75 TDR)
12 - 18	2.80 → 3.20 (40% → 60%)	2.80 → 3.50 (40% → 75%)	
18+	3.60 → 4.05 (60% → 80%)	3.6 → 4.28 (60% → 90%)	
Essential to scale utilities and civic amenities to minimize congestion prior to P-FAR increment			

Figure 8.1.6: Proposed edits to the BBMP's draft P-FAR policy

Potential option #2: Customize P-FAR premium rates based on usage

The BBMP has proposed a flat premiumization rate of 30% based on the land guidance value. This uniform approach simplifies the calculation but places Bengaluru's premiumization on the lower side compared to other municipalities.

Benchmarks from P-FAR policies of other Urban Local Bodies

Various municipalities have adopted different P-FAR premiumization models to determine the additional charges.

Mumbai's premiumization model varies according to land usage. Industrial and residential land are charged 40% and 50% premium respectively while commercial land premium is as high as 80%. This nuanced approach reflects Mumbai's strategic differentiation based on land utilization, aiming to maximize revenue from commercial properties.

Ahmedabad operates on a similar principle as BBMP; however, it imposes a higher premium rate of 40% of the land guidance value.

Chennai's model is unique as it considers the access road width to the land parcel, with premium rates ranging from 20% to 40% of the guidance value. Additionally, Chennai is proposing higher

The image below covers the summary of premiumization models from other metros.

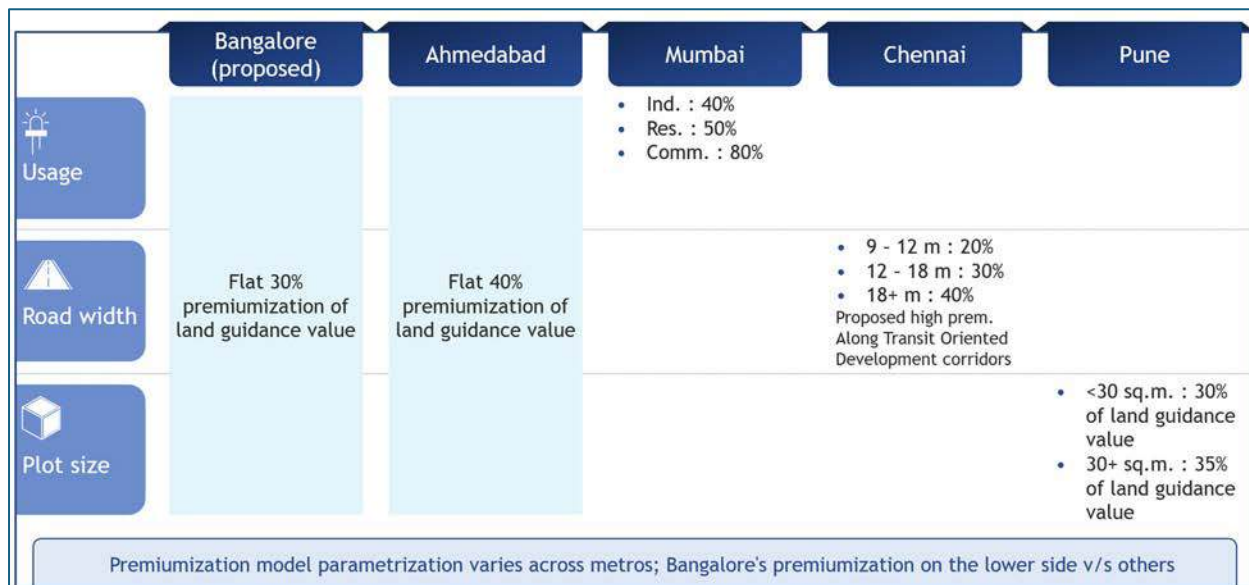


Figure 8.1.7: Benchmark of premiumization models from other metros

The figure below summarizes the proposed edits to the BBMP's draft P-FAR policy's premiumization model.



 Potential to increase P-FAR premiumization basis benchmarks and developer economics			 Premiumization to be implemented in a ladder manner basis additional FAR leveraged		
Road-width (m)	Avg. res. prem. (% of GV)	Avg. comm. prem. (% of GV)	Road-width (m)	Max. perm. FAR used	Residential prem. (% of GV)
9 - 12	35%	45%	9 - 12	0 - 20%	30%
				20 - 40%	40%
			12 - 18	0 - 30%	40%
				30 - 60%	50%
			18+	0 - 40%	50%
				40 - 80%	60%
12 - 18	45%	55%			
			Road-width (m)	Max. perm. FAR used	Commercial prem. (% of GV)
			9 - 12	0 - 30%	40%
				30 - 60%	50%
			12 - 18	0 - 37%	50%
				37 - 75%	60%
18+	55%	65%	18+	0 - 45%	60%
				45 - 90%	70%

Figure 8.1.8: Proposed edits to the BBMP's draft P-FAR policy's premiumization model

Potential option #3: Rationalize minimum TDR contributions

The BBMP draft policy mandates a minimum TDR and maximum P-FAR purchase. Since BBMP earns direct revenue from the sale of P-FAR but not from issuing TDR, this model limits potential revenue from the P-FAR policy.

Benchmark metros do not mandate a minimum TDR requirement. Conversely, Pune imposes a maximum permissible TDR.

Rationalizing the minimum TDR requirements can serve as a more effective model for BBMP to maximize earnings.

8.1.4: Value potential

The draft policy is projected to generate an annual revenue of approximately INR 1,100 Crores for BBMP. Additionally, three proposed improvements to the policy could yield an extra revenue of around INR 1,500 – 1,800 Crores, bringing the total potential revenue to approximately INR 2,600 – 2,900 Crores.

In summary, increasing total permissible FAR to benchmark metros could realize an additional revenue of approximately INR 800 – 900 Crores. Adopting a customized premiumization model, which accounts for land usage and access road width could contribute an additional INR 350 –



450 Crores. Finally, rationalizing the minimum TDR requirement, in line with benchmark models, could further add approximately INR 350 – 450 Crores of revenue.

To capture the full potential of the P-FAR policy, it is crucial to implement enforcement protocols through a stringent SOP. This will ensure compliance and optimize revenue collection while maintaining urban development standards. Ensuring that essential civic amenities, such as water supply and sanitation, are scaled proportionately with the increased FAR is vital to minimizing congestion and maintaining the quality of urban life.

The figure below summarizes the additional value potential from the BBMP's draft P-FAR policy.

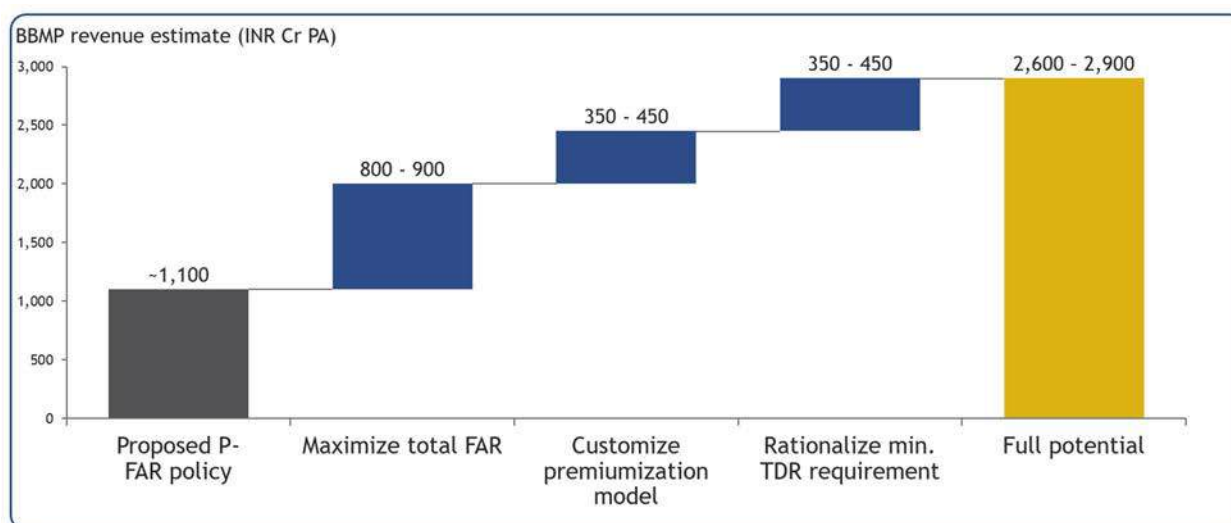


Figure 8.1.9: Additional value potential from BBMP's draft P-FAR policy

8.1.5: Status of the recommendation

The potential options to capture additional value potential were presented to the BBMP Special Commissioner, Revenue.

Further, the concept notes detailing the potential options were shared with the BBMP team from the office of Deputy Secretary III (Finance Department).

8.1.6: Next steps

Draft P-FAR policy under the review of the Urban Development Department for final approval.



8.2: Advertising fee



8.2: Advertising fee

8.2.1: Context and background

The draft byelaws for advertising fees by the Bruhat Bengaluru Mahanagara Palike (BBMP) propose reintroducing commercial advertisements through an auction-based system. The byelaws outline fee structures for four key advertising categories: large-format advertisements, advertisements on public amenities, vehicular advertisements, and self-advertisements.

This recommendation reviews the draft advertising byelaws to identify considerations by benchmarking against practices from other metropolitan areas and Urban Local Bodies. The objective is to enhance the value delivered to BBMP while maintaining control over advertisements within its jurisdiction.

8.2.2: Recommendation

The draft BBMP advertising fee byelaws propose an auction-based framework for advertisements across four categories: large-format, public amenities, vehicular, and signage. Aiming to enhance revenue potential, these byelaws set minimum reserve prices based on guidance values and establish guidelines for advertising rights.

Comparisons with policies set by Municipal Corporation of Delhi (MCD) reveal opportunities for BBMP to optimize rates, especially for high-demand areas, digital ads, and vehicle ads. Key considerations include revising minimum reserve prices for auctions, differential pricing for LED / LCD advertisements, clarifying auction and interest rate guidelines, revisions to vehicular and signage rates, and conducting thorough legal reviews.

These considerations could unlock an estimated INR 700-1,000 Crores of annual additional revenue for BBMP.

8.2.3: Description of recommendation

The draft advertising fee byelaws provide guidelines for advertisements across four key categories. The figure below details the considered 4 categories.

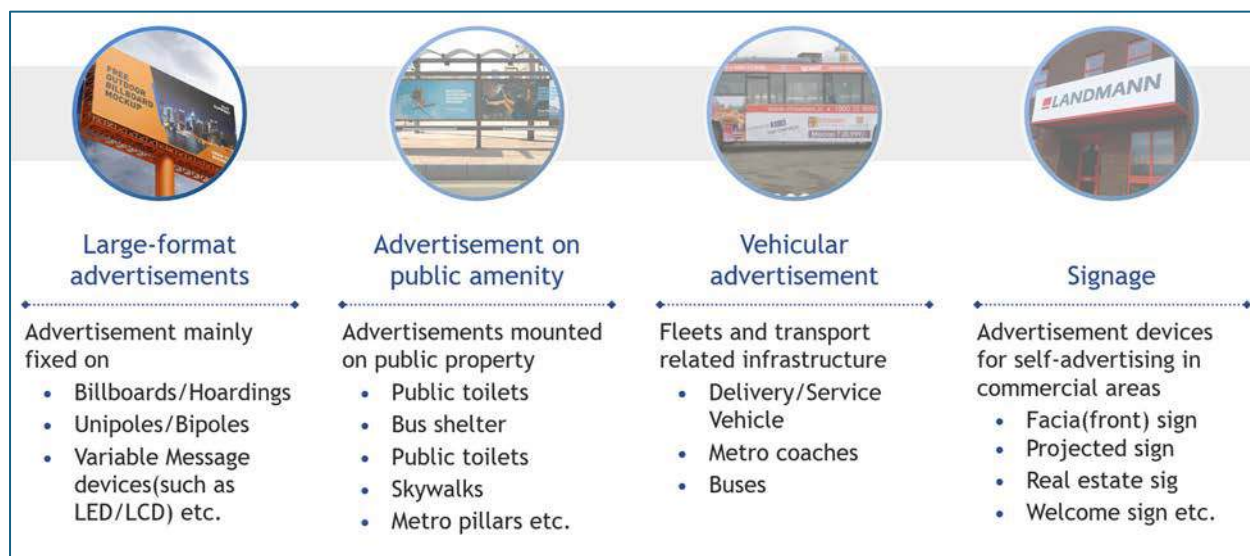


Figure 8.2.1: Four key categories for the draft advertising fee byelaws

Category #1: Large format advertisement

Large format advertisements include advertisements mounted on billboards/ hoardings, unipoles/ bipoles, and variable message devices such as LED/ LCD screens. These are expected to contribute most of the advertisement fee. The byelaws outline an auction-based process, which includes the following steps:

- **Registration of Agency:** Agencies will register through a zero-contact, single-window system by paying a registration fee of INR 5 lakh, valid for three years
- **Division of Bengaluru:** BBMP will divide Bengaluru into suitable stretches of roads, circles, and areas
- **Minimum Base Price:** The base price will be defined according to the width of the road and the guidance value of the area, as specified in the tables below

Road/ Circle/ Area	Maximum area (sq ft)	Remarks
Right of Way (RoW) <60ft	Only self-advertising	-
RoW 60-80ft	800	Per 100m, max length on one side of road is 40sqft
RoW 80-100 ft	1,000	
RoW 100- 200ft	1,100	
RoW >200ft	1,200	



Road/ Circle/ Area	Maximum area (sq ft)	Remarks
Circle	3,000	Per 1L sq ft, maximum length is 60 sq ft
Other commercial/ industrial areas	3,000	Per 1L sq ft, maximum length is 30sq ft

Table 8.2.1: Maximum permissible area for advertisement basis Right of Way

Guidance Value Range (sq ft)	INR/ sq ft/ month
<3,000	40
3,000 - 5,000	50
5,000 - 10,000	60
10,000 - 20,000	70
20,000 - 50,000	80
50,000 - 1,00,000	90
1,00,000 - 2,00,000	100
>2,00,000	110

Table 8.2.2: Base rates according to guidance value

- **Auctions:** The right to advertise in these stretches will be given to licensed agencies following open auctions as per the Karnataka Transparency in Public Procurements (KTPP) Act, 1999
- **Responsibilities of Auction Winners:** Auction winners will be responsible for obtaining NOCs/ agreements with landowners and other State/Government entities on the auctioned stretch of land. They must also submit an advertisement plan certified by a qualified engineer
- **Security Deposit:** Auction winners will be liable to pay an interest-free security deposit equivalent to five months of the winning monthly payable amount. Clear outlines on the schedule of payment of the security deposit, fee, penalties, and repercussions are defined

Category #2: Advertisements on public amenities

This category includes advertisements on public amenities such as public toilets, bus shelters, skywalks, metro pillars, etc. Currently, advertisements on public amenities are under public-



private partnerships (PPP). These entities have been paying BBMP only ground rent and no advertisement fee due to unclear guidelines in their current contracts.

The draft byelaws allow the existing contracts to remain valid if an advertisement fee structure is already mentioned in contract. Otherwise, the minimum reserve price of that area or the nearest area applies. Further, advertisements displayed on land owned by Government entities that are visible to the public will be subject to advertisement fees payable to BBMP, as outlined in the auction process described in the byelaws.

Category #3: Vehicular advertisements

This category pertains to advertisements on delivery vehicles, metro coaches, buses, and other private vehicles.

- Private Vehicles: Advertisements on private vehicles will be permitted after written approval by the Chief Commissioner of BBMP
- Public Vehicles: Advertisements on the outside surface of public vehicles like BMTC buses and metro coaches will have to pay advertisement fees to BBMP
- Rates: The rates are defined either as INR 500 - 750/ month or INR 50 - 75/ sq ft depending on the type of vehicle

Category #4: Signage and self-advertisements

Signage or self-advertisement includes fascia signs, projected signs, welcome signs, real estate signs, etc.

- Exemptions: Self-advertisements are exempt from advertisement fees if they are within the permissible size defined by the byelaws and are not illuminated or sky signs
- Exceeding Maximum Limit: If these advertisements exceed the maximum limit, the full advertisement fee of INR 25/ sq ft becomes payable on entire area of advertisement

The draft byelaws also detail general outlines on the erection, exhibition, fixation, and retention of advertisements. Further, the byelaws also cover the content of displays, maximum sizes for different types of displays as specified in the schedule of byelaws, the formation of an advertisement regulatory committee, the method of appeal, etc.



Potential considerations for the draft byelaws

The image below details the potential considerations for the draft advertising fee byelaws across 5 key elements.

	Revision of rates/sqft	- Revision of base rates determining minimum reserve price for auctions to 3x - Addition of clause to factor in annual revision of rates basis inflation /market factors
	Differential rates LED/LCD	- Incorporation of differently charged rates for digital advertisement at atleast 1.5-2x normal rates - Permission can be given case by case basis or inclusion in auction separately at higher multiple rate of base value
	Auction & Interest guidelines	- Pre-determined term of tender up to 3+2 years to make it contestation proof by agency during re-auction - Adopt lower interest of 12% or objective rates like prime lending rates of SBI, to lower penalty burden and improve collections
	Revision of Vehicular & Signage	- Upward revision of vehicular & signage rates in line with other corporations - Direct impact on public on and lower revenue generation potential, can be deprioritized
	Legal Vetting	Comprehensive legal vetting by experienced lawyers/legal consultancy of byelaws, contract documents, E-tenders etc. is essential to make it litigation proof

Figure 8.2.2: Potential considerations for the draft byelaws

Consideration #1: Revision of rates

The draft byelaws define the minimum reserve price for auctions as outlined in Tables 7.2.1 and 7.2.2. A comparison with the Municipal Corporation of Delhi (MCD), which successfully collected approximately INR 280 Crores in 2023 and is projected to collect INR 300 Crores this year, indicates that BBMP's rates are significantly lower for a 100-meter stretch of road with similar guidance values.

The table below provides a comparison of minimum reserve prices between Bengaluru and Delhi.

Parameters	Bengaluru (draft byelaw)	Delhi (Outdoor Policy 2017)
Auction Methodology	Area Level in jurisdiction of BBMP	Cluster of Advertisement Level on Municipal Corporation property



Parameters	Bengaluru (draft byelaw)	Delhi (Outdoor Policy 2017)
Unit of auction (example)	Koramangala - 4th block - 100 feet road to 8th block	Cluster No 10, Dwarka More to Opposite Delhi Jal Board Dispensary, 5 unipoles (single side 18 sqm), Najafgarh Zone
Guidance Value (INR/ sq ft)	15,000	12,000
Minimum Reserve Price- MRP (INR / sq ft/ month)	70	446
Income/ 100m at MRP (INR/ month)	77,000	4,31,711

Table 8.2.3: Minimum Reserve Price comparison in Bengaluru and Delhi

Under the draft byelaws of BBMP, auctions are conducted at the area level within BBMP's jurisdiction, while in Delhi, auctions are held by advertisement clusters on municipal properties.

Delhi's Minimum Reserve Price (MRP) is INR 446 per sq ft per month vs Bengaluru's MRP of INR 70 per sq ft per month. Further, the bids come in at 3 – 4 times the MRP, Delhi earns a significantly higher income of INR 4,31,711 per 100m as against BBMP's projected INR 77,000 per 100m

Bidding Multiplier: Further, if the auction rates in Delhi for some regions as shown in table below are compared, the bid price ranges from 1 to 4 times above the minimum reserve price.



Zone	Cluster Number & Name	Number of sites / details of display	Minimum Reserve Price (MRP)	Base price INR/ sq ft/ month	Average post bid price INR/ sq ft/ month	Final bid price: MRP
South	Hybrid Cluster No.05, SDMC South Zone	02 unipoles + 01 PT (unipole 30 Sqm. & 18 Sqm. Single sides)	4,32,113	515	1704	3.3
Central	Cluster No. 6 DND To Rajghat FTC- DND To Rajghat Central Zone	06 unipoles (Single Side- 30 Sqm each)	7,86,809	406	1526	3.7
Najafgarh	Cluster No. 11, Sai Baba Mandir to Lal Bahadur Shastri Teaching Institute / Kair Village Road Najafgarh Zone	04 Unipoles (Single side each) 18 Sqm each	3,45,369	446	1824	4.1
West	Cluster No.5, unipole Cluster starting from Dwarka Road to DabriMorh, FTC-Dwarka to Janakpuri West Zone.	04 unipole (18 square meters area each, single face)	2,91,793	377	419	1.1

Table 8.2.4: Illustrative of minimum reserve price and bid price in Delhi



Analysis of unit economics of advertising agencies further emphasizes the scope to increase the advertising fees.

For every INR 100 in revenue earned by the advertising agency, INR 10 - 15 is allocated to maintenance, SG&A (Selling, General & Administrative), and other costs, while INR 20 is allocated to depreciation, leaving the agency with INR 60 - 70 in net earnings. In Delhi, the advertisement fee constitutes INR 15 - 20 in low-demand regions and as high as INR 40 - 60 in high-demand regions. However, in Bengaluru, the current charges are only INR 2 - 5 of the total revenues of the agency.

However, it is worthwhile to mention that the policy in Delhi, where the rates are significantly higher, is more restrictive. Advertisements are only permitted on Municipal Corporation of Delhi (MCD) owned land or land of other Government entities that share revenue with MCD. This supply constraint in Delhi might be a cause of the premium prices on advertisement media.

In summary, the BBMP's current strategy of charging a low minimum reserve price and taking a smaller share of advertisement agency revenue, despite the potential for bids to be 5 - 10 times higher, risks generating suboptimal revenue. To maximize revenue potential, BBMP could consider increasing the advertisement fee by 2 - 3 times, particularly in regions with higher demand. This revision could result in a potential value unlock of INR 700-1,000 Crores.

Consideration #2: Differential rates for digital advertisements

The draft byelaws do not prescribe different rates for digital advertisements. In other corporations, and even in earlier BBMP byelaws, digital advertisements are charged 1.5 - 2 times the normal rates.

It is essential to separately charge a premium on digital advertisements on a case-by-case basis post auction to achieve higher revenue generation.

Consideration #3: Auction and interest guidelines

The draft byelaws currently specify the term of the license for agencies as three years but do not clearly define the auction tenure. Additionally, there is no mention of price escalation or reauction guidelines. To ensure the byelaws are litigation-proof, it is essential to define these elements clearly.

For example, in Delhi, the agency is permitted to advertise for a 3 + 2-year tenure. At the end of the initial three years, the agency and the corporation can mutually extend the contract for another two years based on the agency's interest and past performance. After the five-year term,



without extensions from MCD, the agency must transfer the rights to the advertisement structure to MCD. New auctions require the agency to bear the cost of constructing the advertisement structure and operate under a Build, Operate & Transfer model. In reaction of existing advertisement structures, the new winning agency shall operate under a Maintenance and Operate model and will not incur construction charges, with exceptions at MCD's discretion.

Incorporating guidelines on the tenure of auctioned property, post-auction procedures, and annual fee hikes will make the byelaws more comprehensive and robust.

Interest rates: The draft byelaws demand that the advertisement fee is payable one month from the date of assignment of advertising rights and must be paid monthly. Any delay in payment will attract an 18% interest rate. This rate is higher than market rates and could be challenging to enforce. MCD has adopted a 12% interest rate for delayed payments. Since 18% is considerably high, there is scope to revise the rate downward and adopt more objective benchmarks such as the prime lending rate of the State Bank of India. In summary, the following options can be considered to improve the auction process, tenure, and interest rate:

Auction process & tenure

- Adopting a 3 + 2-year model, with a three-year term and a possible two-year extension based on performance
- Introducing a structured fee escalation mechanism in line with inflation
- Developing procedures for the conclusion of the auction tenure, including the transfer of advertisement rights back to BBMP or the initiation of new auctions
- Defining reaction process, differentiating between Build, Operate & Transfer for new constructions and Maintenance and Operate for existing structures

Interest Rates

- Revising the interest rate for delayed payments from 18% to 12% or linking the interest rate to an objective benchmark, such as the prime lending rate of the State Bank of India

Consideration #4: Revision of rates for vehicular / signage advertisement

Benchmarked rates across various corporations for vehicular advertisement charges and signage, shown in tables below, indicate that BBMP's draft byelaws set significantly lower rates.



Parameters	Bengaluru	Delhi	Ahmedabad	Hyderabad
Vehicles	Buses, metro Coaches, delivery Vehicle, taxi, auto	Buses, cabs, autos, metro	Cycle rickshaw, auto, tempo, 4- wheeler lite & heavy	Auto, cabs, taxi, buses
Rates/ month	• INR 50/ sq ft or 500/bus • INR 50/ sq ft or 750/coach • INR 75/ sq ft or Rs750/ delivery vehicle • INR 50/sq ft or INR 500/ taxi or auto	• INR 2,100/ month/ bus & 50% revenue share with corporation • INR 2,500-3,000/ month/ cab • INR 500-600/ month/ auto	• INR 8K/ cycle rickshaw for 1 zone to INR 30K for all zones • INR 20K/ auto for 1 zone to INR 70K for all • INR 30 - 50K/ 4-wheeler for 1 zone to INR 1-2L for all	• INR 2,250 for auto • INR 4,500 for cab/taxi • INR 6,000 for buses

Table 8.2.5: Advertisement fee rates for signage

Parameters	Bengaluru	Delhi	Ahmedabad
Rates	• INR 25/ sq ft if more than permissible limit	• INR 100 - 400/sq ft depending on zone and if more than permissible limit	• INR 50 - 200/ sq ft for all (one facia sign free)

Table 8.2.6: Advertisement fee rates for signage



There is potential to revise these rates upwards. However, increasing the advertisement fee on private vehicles and signage may directly impact the public with lower revenue potential for the BBMP. Therefore, these revisions could be deprioritized.

Consideration #5: Comprehensive legal vetting of the byelaws

The draft byelaws have been drafted in a detailed and robust manner, addressing auctions, mechanisms, rules, and other key aspects. However, there may be ambiguity within the byelaws that could potentially lead to litigation. To mitigate this risk and ensure the byelaws are contestation-proof, the BBMP could consider conducting a thorough legal vetting of these byelaws, as well as the auction and contract documents, by an experienced lawyer or law consulting firm.

8.2.4: Value potential

Revising BBMP's advertising rates across Bangalore's 10,200 km road network could generate INR 700 – 1,000 Crores annually. With 4,000 hoardings covering 40% of the network, each at 800–1,000 sq. ft., current revenue amounts to INR 300 – 350 Crores. A 2–3X revision of base rates would add an additional **INR 400 – 550 Crores annually**.

8.2.5: Status of the recommendation

The potential considerations to capture additional value potential were presented to the BBMP Special Commissioner, Revenue.

Further, the concept notes detailing the potential options were shared with the BBMP team from the office of Deputy Secretary III (Finance Department).

The draft advertising fee policy has been notified and comments received.

8.2.6: Next steps

The policy is under the review of the BBMP. A finalized version will be put up to the Urban Development Department for review and approval.



8.3: Insurance empanelment for specialty Government

8.3.1: Context and background

The figure below details the specialized institutes and Government medical colleges and research institutes across the State.

Specialized institute	Government medical college & research institute		
Sri Jayadeva Institute Of Cardiovascular Sciences & Research, Bangalore	Bangalore Medical College & Research Institute, Bangalore	Koppal Institute Of Medical Sciences, Koppal	Shri Atal Bihari Vajpayee Medical College & Research Institute (SABVMCRI), Bangalore Specialization in Orthopedics/ Neurology and OBGY
Kidwai Memorial Institute Of Oncology, Bangalore	Belgaum Institute Of Medical Sciences, Belgaum	Mandya Institute Of Medical Sciences, Mandya	
Indira Gandhi Institute Of Child Health, Bangalore	Bidar Institute Of Medical Sciences, Bidar	Mysore Medical College & Research Institute, Mysore	
Karnataka Institute Of Endocrinology & Research, Bangalore	Shri Atal Bihari Vajpayee Medical College & Research Institute, Bangalore	Raichur Institute Of Medical Sciences, Raichur	Sri Jayadeva Institute Of Cardiovascular Sciences & Research, Bangalore
Institute Of Nephro Urology, Bangalore	Chamrajnagar Institute Of Medical Sciences, Chamrajnagar	Shivamogga Institute Of Medical Sciences, Shivamogga	Specialization in Cardiology
Raichur Institute Of Medical Sciences & Super-speciality Hospital, Raichur-Opec Raichur	Gadag Institute Of Medical Sciences, Gadag	Vijaynagar Institute Of Medical Sciences, Bellary	Kidwai Memorial Institute Of Oncology, Bangalore
Sds Tuberculosis & Rajiv Gandhi Institute Of Chest Diseases	Gulbarga Institute Of Medical Sciences, Kalburgi	Chikkamagaluru Institute Of Medical Sciences, Chikkamagaluru	Specialization in Cancer
Bangalore Medical College And Research Institute Super Speciality Hospital (Pradhana Mantri Swasthya Suraksha Yojana Hospital)	Hassan Institute Of Medical Sciences, Hassan	Chikkabatalpura Institute Of Medical Sciences, Chikkabatalpura	Institute Of Gastroenterology & Organ Transplant, Bangalore Specialization in Organ transplant and gastroenterology
Dharwad Institute Of Mental Health & Neurosciences, Dharwad	Karnataka Institute Of Medical Sciences, Hubli	Yadgiri Institute Of Medical Sciences, Yadgiri	
Institute Of Gastroenterology & Organ Transplant, Bangalore	Karwar Institute Of Medical Sciences, Karwar	Haveri Institute Of Medical Sciences, Haveri	
	Kodagu Institute Of Medical Sciences, Kodagu	Chitradurga Medical College & Research Institute, Chitradurga	

Figure 8.3.1: Specialized institutes and Government medical colleges in Karnataka



8.3.2: Recommendation

The recommendation focuses on the insurance empanelment of high-yield medical procedures within Government hospitals to generate additional revenue. By empaneling 2-5% of hospital beds for private insurance at rates higher than standard Government charges and above AB-Ark rates (Ayushman Bharat Arogya Karnataka), the recommendation aims to boost the financial capacity of these institutions. This additional revenue will support a cross-subsidy model, enabling Government hospitals to continue offering affordable and timely care to underprivileged patients while maintaining financial sustainability.

Government hospitals in Karnataka have specific high-demand medical procedures in which they specialize however, there are some vacant beds which can be leveraged for private insurance coverage.

This recommendation seeks to bridge this gap by designating a small portion of beds as private/special rooms for insured patients. By setting competitive rates—higher than for underprivileged patients but lower than private hospital rates—Government hospitals can serve these insured patients and leverage the additional revenue to support underprivileged care.

The figure below illustrates the potential value of private insurance empanelment at Government hospitals. The right-hand side shows how private insurers like Manipal Cigna offer coverage rates 3-4 times higher than standard Government or AB-Ark rates. For instance, a total knee replacement costs INR 22,710 in Government hospitals, but Manipal Cigna covers it at INR 1,22,000—around 4.4 times higher. This enables Government hospitals to attract insured patients, generating additional revenue while offering a more affordable alternative to private hospital rates.

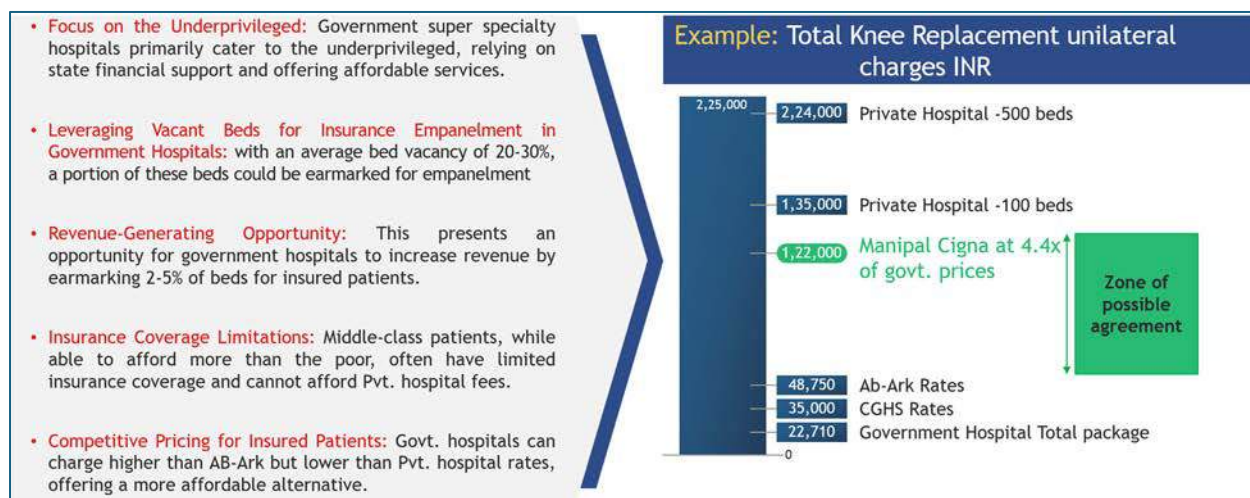


Figure 8.3.2: Illustrative: Potential value of private insurance empanelment



8.3.3: Description of recommendation

Karnataka's Government healthcare network, including 22 medical colleges and research institutes and 10 specialized hospitals, delivers high-quality, advanced care across fields like cardiology, oncology, orthopedics, and organ transplants. While primarily serving underprivileged populations, these institutions also have the capacity to cater to insured middle-income patients.

This recommendation seeks to leverage this untapped potential by empaneling select high-yield medical procedures for private insurance coverage, reserving 2% to 5% of beds at rates higher than standard Government charges (and AB-Ark rates) but below corporate hospital prices. This approach aims to create a cross-subsidy model, where funds from insured patients support affordable care for underprivileged populations, thereby enhancing the financial sustainability of Government hospitals.

Rationale for Empaneling High-Yield Medical Procedures

Empaneling high-yield procedures for private insurance aligns with multiple strategic objectives:

1. **Focus on the underprivileged:** Government super-specialty hospitals remain committed to serving underprivileged populations, and empanelment ensures financial sustainability without compromising this mission.
2. **Capturing middle-income demand:** Many insured middle-income patients prefer private hospitals, as Government hospitals are often not empaneled with insurers. Empanelment allows Government hospitals to attract this demographic by providing quality, affordable options.
3. **Revenue diversification:** Empaneling high-yield procedures allows hospitals to diversify revenue streams, reducing dependency on State funds and supporting a sustainable cross-subsidy model for underprivileged care.
4. **Insurance coverage limitations:** Middle-income patients with limited insurance coverage may struggle to afford private hospital rates. Government hospitals can bridge this gap by offering a more affordable alternative through empaneled services.
5. **Competitive pricing for insured patients:** Government hospitals can set rates for insured patients higher than those for underprivileged patients but lower than corporate hospitals, making quality care more accessible while supporting financial health.

By focusing on these objectives, Government hospitals can leverage their strengths to attract insured patients, generate additional revenue, and continue to offer affordable services to vulnerable populations.



Procedure Examples and Revenue Potential

The recommendation targets high-demand procedures with strong revenue potential. Manipal Cigna, currently the leading private insurer for Karnataka, has agreed to cover select procedures at substantially higher rates than Government prices. The examples are listed in the Figure 8.3.3 and also listed below:

- **Total knee replacement (unilateral):** A total knee replacement is priced at INR 22,710 in Government hospitals, while private hospitals charge approximately 10 times this amount, around INR 2,25,000. A private insurer has offered a rate of INR 1,22,000 for empaneled specialty Karnataka Government hospitals, which is about 5-6 times the standard Government rate.
- **Hip replacement (bilateral):** Priced at INR 38,400 in Government hospitals, while private hospital rates charge 6x of that amount, reaching up to INR 2,35,510. A private insurer has offered a rate of INR 2,03,000 for empaneled specialty Karnataka Government hospitals, which is about 5.3 times the existing Government rates.
- **Tonsillectomy:** Priced at INR 3,390 in Government hospitals, while Manipal Cigna offers coverage at up to 7.1x of the rates, around INR 24,000 for empaneled specialty Karnataka Government hospitals.
- **Temporary pacemaker implantation:** Priced at INR 4,100 in Government hospitals, while Manipal Cigna offers coverage at approximately 3.7x of the rates, around INR 15,000 for empaneled specialty Karnataka Government hospitals.

In addition to these high-demand procedures, Manipal Cigna has provided a standardized rate sheet covering over 100 procedures, offering rates that are 3-4x higher than AB-Ark prices. These selected procedures and standardized rates offer competitive pricing for insured patients while providing a sustainable revenue source for Government hospitals. The figure below summarizes the comparative rates for select procedures.

Figure 8.3.3: Rate comparison for select procedures

Sri Jayadeva Institute of Cardiovascular Sciences exemplifies the potential success of this recommendation. The institute is the largest heart care center in Southeast Asia and has been recognized for both clinical excellence and strong financial performance. Key achievements include:

- The institution's model demonstrates that Government hospitals can successfully implement insurance partnerships to enhance financial sustainability without compromising their core mission.

To initiate empanelment, hospitals have been recommended to initiate with Manipal Cigna, Karnataka's leading private insurer for this recommendation. The process requires the following steps:

1. **ROHINI ID Creation:** A ROHINI ID, managed by the Registry of Hospitals in Network of Insurance (ROHINI), is essential for insurance empanelment. This process typically takes about two weeks and includes the following steps.



- **Visit the ROHINI portal:** Go to rohini.iib.gov.in and search for the hospital name under the registration tab. If the hospital is not listed, send details and address to rohini@iib.gov.in
- **Submit required details:** Enter PAN number, registration certificate, address, and bank details
- **TPA approval:** Await approval from the Third-Party Administrator (TPA), selecting Mediassist for Manipal Cigna
- **Payment processing:** TPA processes a payment of approximately INR 6,000
- **Access information:** Receive a login ID and password for ROHINI access

The figure below details the steps for registration on the ROHINI portal.

Rohini (Registry of Hospitals in Network of Insurance):

1. Visit <https://rohini.iib.gov.in/>.
2. In the registration tab, search for your hospital name. If not listed, email details and address to rohini@iib.gov.in.
3. Add required details like PAN number, registration certificate, address, and bank details.
4. Await TPA (Third Party Admin) approval; select Mediassist for Manipal Cigna.
5. TPA verifies and processes the payment of approximately INR 6,000.
6. Receive login ID and password for access.

(2 weeks process)

Figure 8.3.4: Steps to register with the ROHINI portal

2. **Insurance empanelment with Manipal Cigna:** After obtaining the ROHINI ID, hospitals can proceed with the Manipal Cigna empanelment process, which involves:
 - **Document preparation:** Gather required documents, including the hospital's registration certificate and PAN card
 - **Submission of annexure documents:** Collect specific documents provided by Manipal Cigna, covering bed occupancy, hospital capacity, and procedural details



- **Complete hospital information form:** Prepare details about hospital facilities, including the number of beds and occupancy
- **Rate utilization and negotiation:** Use the standardized rates provided by Manipal Cigna, with options to negotiate premiums for specialized procedures if applicable
- **Master Service Agreement (MoU):** Complete and sign the MoU on INR 500 stamp paper
- **Final document submission:** Send scanned copies to Manipal Cigna and mail hard copies to their Mumbai office via speed post
- **Training and TPA setup:** After approval, a TPA representative will be stationed at the hospital for one year to manage insurance processes, ensuring smooth claims handling

The figure below summarizes the empanelment process with Manipal Cigna.



Figure 8.3.5: Empanelment process with Manipal Cigna

For hospitals planning to empanel with additional private insurers, the procedure and documentation are similar, involving ROHINI ID creation, document preparation, and TPA engagement.

This phased approach with Manipal Cigna sets the foundation for broader insurance partnerships, enabling hospitals to expand their patient base and revenue streams sustainably.

It is recommended that Government hospitals empanel their high-yield procedures and allocate 2% to 5% of beds for insured patients at rates 3-4 times higher than standard Government rates, offering substantial revenue potential. Implementing this across all 32 prioritized hospitals and research institutions could generate INR 40-60 Crores per annum, which could be used to cross-subsidize services for underprivileged patients.

Focusing on the prioritized medical institutions in Karnataka reveals a strong revenue foundation. The annual revenue figures for these hospitals are as follows:

- **Kidwai Memorial Institute of Oncology:** INR 76 Crores
- **Karnataka Institute of Medical Sciences, Hubballi:** INR 57 Crores
- **Victoria Hospital:** INR 13 Crores
- **Sri Atal Bihari Vajpayee Medical College & Research:** INR 12 Crores
- **BMCRI Super Specialty PMSSY Hospital:** INR 6 Crores
- **Minto Ophthalmic Hospital:** INR 3 Crores

This additional revenue will strengthen the financial capacity of Government hospitals, allowing them to reinvest in resources, enhance patient care, and sustain a cross-subsidy model that benefits underprivileged patients, while also expanding access for insured middle-income patients.



8.3.5: Status of the recommendation

- Manipal Cigna, the leading Government hospital insurer in Karnataka has established standardized, competitive rates for the prioritized medical colleges, offering rates 3-4 times higher than standard Government rates to support the empanelment process
- Three of the five prioritized hospitals are in the final stages of the empanelment process:
 - o **SABVMCRI:** All documentation has been completed, hard copies have been couriered, and all formalities are finalized. The welcome email has been received, marking the completion of the empanelment process. Additionally, SABVMCRI has received an invitation from Galaxy Health to explore further insurance empanelment opportunities for their medical procedures.
 - o **KMCRI Hubli:** Documentation is complete, and hard copies have been dispatched. Formalities are finalized, with the welcome email expected by mid-November.
 - o **IGOT:** All documentation is complete, with only the hard copies pending courier dispatch to complete the process.
- In principle approval has been obtained from the Principal Secretary, Directorate of Medical Education (DME), to expedite the empanelment recommendation across all Government institutions
- Meeting conducted with 10+ Government institutions in and around Bengaluru to introduce the concept of empanelment and outline the necessary steps. Manipal Cigna's point of contact is actively assisting these institutions in advancing the empanelment process
- Manipal Cigna has allocated INR 25 Lakhs to promote the medical procedures offered by empaneled Government hospitals, enhancing visibility and outreach to potential insured patients

8.3.6: Next steps

- All prioritized Government medical hospitals to initiate the insurance empanelment process with Manipal Cigna at Government medical hospitals, starting with a limited number of beds and gradually expanding to 2% to 5% of total beds over time. This phased approach will ensure that general ward services remain unaffected while expanding insurance coverage



- Appoint a nodal officer at each Government medical hospital to oversee the insurance empanelment process and negotiate rates in line with the institution's specialized procedures and capabilities
- Station a Third-Party Administrator (TPA) representative in each hospital for a period of one year to streamline insurance claim processing and ensure operational efficiency
- Utilize Manipal Cigna's allocated Department of INR 25 Lakhs to support promotional activities, enhancing visibility for medical institutions through targeted marketing efforts
- Schedule a meeting with the Honorable Minister, Directorate of Medical Education to present the insurance empanelment recommendation and seek in principle approval to accelerate the rollout across Government medical hospitals



8.4: Mining, irrigation and innovative revenue streams



8.4: Mining, irrigation and innovative revenue streams

8.4.1: Context and background

Total non-tax revenues of the State are expected to contribute INR 13,499 Crores⁹ in 2024-25, constituting 5% of the State's total receipts. The key driver of the non-tax revenues is primarily mining and metallurgical industries (INR 9,000 Crores⁹). Other elements include revenue from police (INR 611 Crores⁹), administrative services including judiciary penalties and court fees (INR 515 Crores⁹), dividends and profits (INR 477 Crores⁹), forestry and wildlife (INR 241 Crores⁹). Two key drivers have been studied in further detail: revenues from mining, revenues from irrigation (including major, medium and minor).

Karnataka's mining and metallurgical sectors contribute INR 9,000 Crores⁹, representing 0.32% of the GSDP. In comparison, Telangana, generates 0.40% of its GSDP – a higher contribution of GSDP and generates INR 6,588 Crores⁹ from mining and metallurgy.

While the above categories are important contributors to the State's non-tax revenues, irrigation represents a significant revenue source for States such as Maharashtra and Gujarat, contributing INR 4,130 Crores⁹ and INR 2,459 Crores⁹ respectively, underscoring its importance as a key revenue-generating category in other States while contributing only INR 38 Crores in Karnataka.

Additionally, there is scope to increase revenue from various assets and state-guided operations including metro stations, parking spaces, F&B joints, among others.

8.4.2: Recommendation

It is recommended that the State undertake improvements across three key categories including mining, irrigation, and innovative revenue streams.

Across the mining value chain, the State can potentially take four key steps to improve revenues:

1. Private participation in the prospecting and exploration stage can be increased
2. Royalty rates for four minor minerals: ordinary stone, murum, sand, and granite can be rationalized
3. Pilferage from Work Executing Departments can be minimized by improving collections of Average Periodic Price (APP) and District Mineral Foundations (DMF) when Mineral Dispatch Permits (MDPs) is not provided by leveraging Integrated Lease Management System (ILMS) and weighbridges for real-time monitoring



The figure below summarizes the key challenges faced by the State across the value chain.

	Prospecting & Exploration	Auction & Leasing	Operations/Revenues		
Key Issues	Currently no private participation in prospecting & exploration stage	7,000 applications for minor minerals and 12 blocks of major minerals non-operational owing to legislative/clearance issues	Royalty rates of minor minerals pending for revision in 2023 (last revised in 2020)	Minor minerals extraction not being captured in ILMS real-time leading to pilferages	Illegal mining from non-licensed locations and quarrying beyond lease boundaries led to an estimated loss of 23,000 Cr (annually) to state in pilferages

Figure 8.4.1: Key issues identified across the mining value chain

In order to resolve the identified issues, the State can implement the following initiatives:

1. Increase private participation to ensure healthy block pipeline and higher interest of investor

The Central Government has permitted private sector participation in exploration under the MMDR (Mines and Minerals Development Regulation) Act amended by the Center in 2021. 13 private agencies accredited by QCI-NABET (National Accreditation Board for Education and Training) can participate in exploration in the minerals sector. Further, multiple states including Jharkhand, Odisha, and Gujarat have encouraged private participation at different levels:

1. **Jharkhand** has encouraged private participation in policy and offered incentives on a case-by-case basis
2. **Odisha** has announced intent in policy to allow private participation in exploration and usage of state funds only in highly uncertain areas
3. **Gujarat** has encouraged participation of private players in policy, especially lignite

Currently, Karnataka does not offer any private participation in prospecting and exploration stage. The State can create a robust framework to improve private participation with:

- Focus on composite leases (prospecting license cum mining lease)
- Incentives for exploration companies to engage in higher risk areas by linking fees structure to revenue generation

2. Increase revenues from minor minerals by revising royalty rates in line with benchmark States

The royalty rates for major minerals are regulated by the Government of India with limited potential for optimization. However, it is observed that the royalty rates on minor minerals is lower in Karnataka compared to States like Maharashtra and Rajasthan. Further, Karnataka's royalty rates were last revised in June 2020.



Mineral	FY22-23 collection INR Crores	Royalty rates: Karnataka INR / MT	Royalty rates: Rajasthan INR / MT	Royalty rates: Maharashtra INR / MT
Ordinary Stone	2,430	70	80	33
Murum	37	40	25	130
Sand	22	80	90	130
Granite	15	200	235	-
Total	2,504			

Table 8.4.1: Royalty rate comparison

Based on the comparison shown in the figure above, the Government of Karnataka can evaluate revision of royalty rates for minor minerals. It will be pertinent to also benchmark the rates with neighboring states.

3. Enable real time capture of minor minerals in Integrated Lease Management System (ILMS) to minimize pilferages

Of the INR 2,571 Crores¹ collected by the Department of Mines and Geology in minor mineral revenues, as per 2022-23 accounts, INR 1,007 Crores was collected from leaseholders / applicants directly. This includes Royalty of INR 70 / MT, Average Periodic Price (APP) – 40% of Royalty Rates for non-patta and District Mineral Foundations (DMF) – 30% for patta and 10% for non-patta.

Of the total 2,571 Crores¹, the Works Executing Departments (WED) contributed INR 1,564 Crores. This fee is deducted by the WED with INR 70 / MT as Royalty Rates when Mineral Dispatch Permit is not provided by the supplier. However, the Works Executing Departments do not deduct the APP and DMF fees.

Mandating the WEDs to collect APP and DMF from suppliers without the Mineral Dispatch Permit can unlock additional revenues for the Department of Mines and Geology. Setting up weighbridges at quarries with Integrated Lease Management Systems (ILMS) can improve real-time monitoring to avoid further pilferage. The figure below summarizes the pilferage challenges with minor minerals.

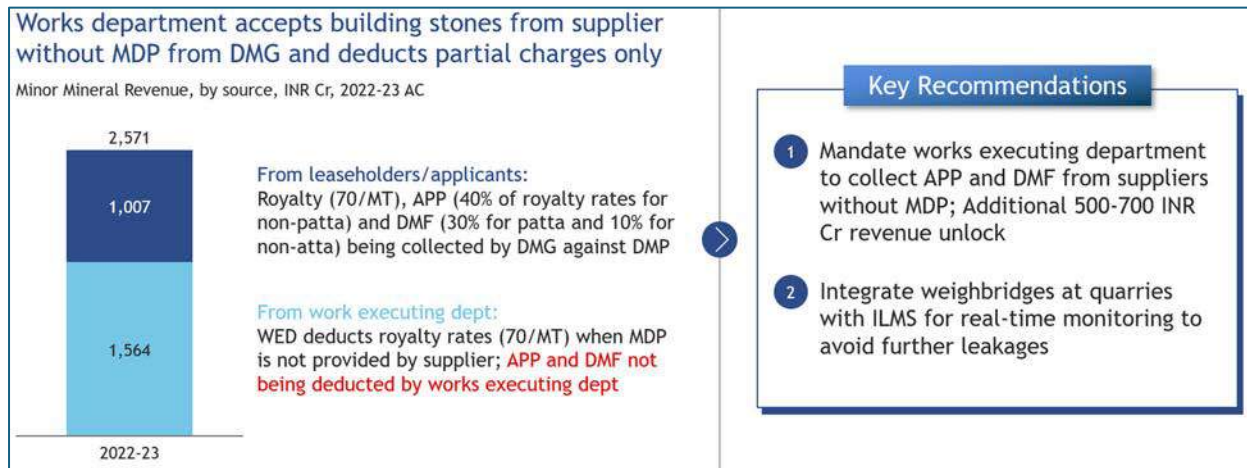
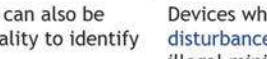


Figure 8.4.2: Pilferage challenges with revenue collection from minor minerals

4. Technological interventions to minimize pilferage owing to illegal mining from non-licensed locations and beyond lease boundaries

Three technological interventions have been identified to minimize pilferages owing to illegal mining from non-licensed locations and beyond lease boundaries.

1. **Advanced satellite imaging:** With innovations in technology, players have created more robust satellite imaging solutions which can be used to monitor illegal mining.
2. **Air quality monitoring near mines through drones:** Apart from imaging, drones could be leveraged to monitor air quality to identify illegal mining areas. Internationally, this technique has been implemented in Peru where a personalized hybrid drone carries a payload of air quality sensors. The drone is also embedded with IoT (Internet of Things) static module that measures air pollutants such as CO₂, VOCs, particulate matter, H₂S, among others.
3. **Acoustic monitoring:** Lastly, devices which monitor anthropogenic disturbances can be used to identify areas of illegal mining.

Advanced Satellite Imaging	Monitor Air Quality near mines through drones	Acoustic Monitoring
With innovation in tech, players have created more robust satellite imaging solutions which can be used to monitor illegal mining Example: Pixxel's hyperspectral imaging 	Apart from imaging, drones can also be leveraged to monitor air quality to identify illegal mining area Example: Monitoring air quality from illegal mining areas in Peru • A personalized hybrid drone that carries a payload of air quality sensors such as CO₂, VOCs, particulate matter, H₂S, etc. • The drone is embedded with a low-cost IoT static module that measures the same air pollutants. • Data is processed to create air pollution maps to identify areas of interest	Devices which monitors anthropogenic disturbances to identify the areas for illegal mining Example: OAD Research Group's AudioMoth 

These recommendations will help generate an additional value unlock of INR 400 – 500 Crores p.a. Further, the State is also in the process of expediting applications to operationalize more mine blocks.

Potential exists to standardize the process of revenue collection efficiency from Nigamas. A comparison of the water demand and collection from the Nigamas reflects a gap across agriculture and industries collection. In FY22, agriculture water demand amounted to INR 105 Crores while collection was around INR 1 Crores. In industries, the water demand amounted to INR 151 Crores while collection was only around INR 95 Crores. Multiple fragmented bodies for collections have resulted in low accountability and inefficient process.

Unlocking State Budget Potential

Lack of standardized process for tariffs collection; Overall efficiency of collection ~40% at Nigamas

Water Demand & Collection for Nigamas
In INR Cr, FY22

Category	Demand (INR Cr)	Collection (INR Cr)	Collection Efficiency (%)
Agriculture	105	1	-1%
Industries	151	95	-60%
Total	256	96	-40%

Legend: Demand (Green), Collection (Red), Collection Efficiency (Blue Circle)

Lower water tariff rates vs. peers; water tariff rates last revised in 2002

Usage	Demand	KN	MH	GJ
Agriculture (INR per Acre)				
Sugarcane	~40%	400	750 - 2250	120
Cotton		60	320 - 970	
Pulses		60	240 - 720	
Industrial (INR per KL)	~60%	30-70	13	27

Multiple fragmented bodies for collections leading to low accountability and inefficient processes

To improve revenue collection from irrigation, it is critical to improve collection efficiency, especially for agricultural water consumption. Secondly, a rate revision for agricultural water tariffs can provide a boost to irrigation revenues. These recommendations can help unlock an additional INR 150 – 200 Crores p.a. in revenue.

To further boost non-tax revenues, Karnataka can explore 4 additional revenue streams.

1. **Auctioning naming rights for public assets** such as metro stations, flyovers, and parks, offers a quick-win opportunity to generate revenue while attracting corporate sponsorships. Delhi Metro has successfully implemented this model by auctioning naming rights of stations. The revenue potential depends on the size and location of the stations ranging from INR 2.5 – 7 Crores. Karnataka could replicate this approach to generate revenue from corporate sponsorships, depending on asset visibility and corporate interest. The image below demonstrates the naming rights monetized by Delhi.

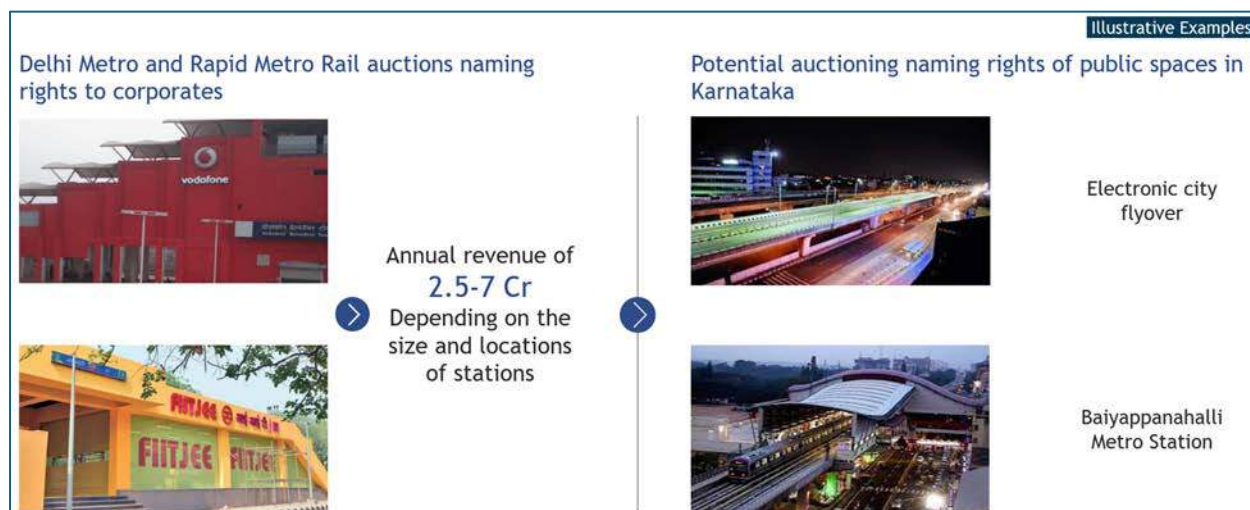


Figure 8.4.5: Naming rights for public spaces auctioned to generate revenues

2. **Permitting 24/7 operations for Food & Beverage (F&B) establishments in select zones**, like airports or major transit hubs could be another revenue stream. This strategy would generate revenue through licensing fees and increase GST collections from higher sales volumes. States such as Tamil Nadu, Kerala, and Maharashtra have adopted this model, stimulating local economies and tax revenues.
3. **Monetizing public spaces** like parks, flyovers, lakes, and other high-traffic areas by charging for parking, renting space to F&B vendors, or hosting private events. For example, in Delhi and Mumbai, metros lease parts of public areas to retailers, generating revenue from diverse sources. Karnataka could see similar success by opening select public spaces for licensed commercial activity. The State of New York earns upwards of INR 300 Crores in revenues from Central Park by licensing F&B vendors, parking fees, among others.
4. **Digital parking management system** could be set up to streamline parking fees and fines collection, both on roadsides and in designated parking areas. In India, several cities are shifting towards digital parking systems to increase efficiency, transparency, and accountability.

8.4.4: Value potential

The overall value potential of improving non-tax revenues across mining, irrigation, and additional revenue streams amounts to INR 1,100 – 1,500 Crores p.a. The figure below details the value potential across each category.

Table 8.4.2: Value potential across non-tax revenue streams

Rationalizing royalty rates basis benchmarks from Rajasthan and Maharashtra across four minor minerals has the potential to improve the State's revenues by INR 200 – 250 Crores. The table below details the mineral-wise revenue from FY22-23 accounts and the incremental potential.

Generated from eOffice by BABSUDRAJAWA FDU SZE (B6-ASST) FINANCE DEPARTMENT SECTION 520260524 PM 8/2025 12:19 PM

Table 8.4.3: Value potential from royalty rate improvement

Recommendation #2: Increase non-tax revenues from irrigation

Recommendation #3: Innovative revenue streams

244



S. No.	Recommendation	Value	Description
1	Naming rights for public spaces	INR 200 – 250 Crores p.a.	- Value estimated for monetization of 30 metro stations, 100 parks, 30 lakes, and 10 flyovers across major cities - Monetization yield amounting to INR 3 – 4 Crores p.a. per asset
2	24/7 F&B zones	INR 100 – 150 Crores p.a.	30% additional GST from increased working hours for 30% restaurants permitted to operate 24/7
3	Monetizing public spaces	INR 150 – 200 Crores p.a.	30 metro stations and 50 parks with monetization potential of INR 5 Crores p.a. and INR 1 Crores p.a. respectively
4	Digital parking management system	INR 100 – 150 Crores p.a.	- Revenue for Bengaluru with 15 Lakh eligible private vehicles and parking fees of INR 15 - Benchmark: San Francisco city collects USD 100 Mn in revenue p.a. from digital parking management
Total		INR 550 – 750 Crores p.a.	

Table 8.4.4: Additional non-tax revenue streams for the State

8.4.5: Status

Initial discussions held with the Finance Department officials on the proposed recommendations.

Section 9: Expenditure Rationalization



9.0: Expenditure Rationalization

Karnataka has potential to improve the efficiency of its expenditure without compromising the quality of service delivery. For example, Karnataka allocates 9%¹ of its revenue expenditure to the Energy Department, significantly higher than Maharashtra at 2%²⁰, Tamil Nadu at 3%⁴, Telangana at 6%⁴, and a national average of 4%².

Additionally, Karnataka dedicates 22%¹ of its total capital expenditure to water and irrigation, as opposed to 13%⁴ in Maharashtra, Telangana, and Gujarat, 5%⁴ in Tamil Nadu, and the national average of 9%².

This section covers potential expenditure rationalization opportunities across four Departments:

 Expenditure rationalization	Water / Irrigation Department expenditure rationalization	INR 600 – 800 Crores p.a.	
	Energy Department: Solarization of irrigation power	INR 900 – 1,000 Crores p.a.	
	Healthcare personnel efficiency and subcenter optimization	INR 150 – 200 Crores p.a.	
	Public Works Department expenditure rationalization	INR 400 – 500 Crores p.a.	

 Recurring every year
  One-time value unlock

Table 9.0: Recommendations for expenditure rationalization

²⁰ Budget documents of Maharashtra, Tamil Nadu, Telangana, and Gujarat



9.1: Water / Irrigation Department



9.1: Water / Irrigation Department

9.1.1: Context and background

In FY24-25, the State of Karnataka allocated a total of around INR 19,000 Crores budget with INR 16,834 Crores towards Major and Medium Irrigation works, and another INR 2,345 Crores towards Minor Irrigation works.

State-wise comparison of key expenditure metrics

Compared to other states like Maharashtra and Tamil Nadu, Karnataka spends significantly higher on irrigation linked expenditure key metrics, as shown in Figure 9.1.1 below. The State spends around INR 2,450 per capita, which is 57% more than Maharashtra and 142% more than Tamil Nadu. Similarly, Karnataka allocates almost INR 13,100 per hectare of agricultural land, which is 36% more than Maharashtra and 37% more than Tamil Nadu.

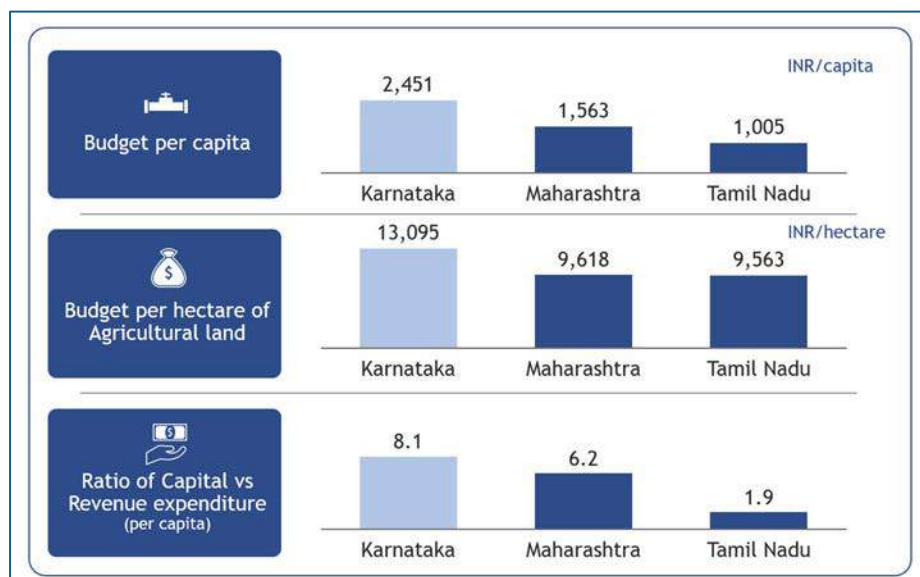


Figure 9.1.1: Comparison of state-wise spend on irrigation works²¹

Karnataka's significantly higher spending compared to Maharashtra and Tamil Nadu raises the need to identify the key issues/ challenges and quantum of works being undertaken by Karnataka. This also reflects the need to assess whether the irrigation projects in Karnataka are delivering adequate returns. This discrepancy suggests potential inefficiencies in capital

²¹ Analysis basis FY23-24 BE figures for Irrigation and flood control budget, not including Water and Sanitation budget



allocation, indicating that Karnataka may not be achieving proportional benefits from its elevated expenditure.

Distribution of the State budget to Nigamas

The Water Resources Department in Karnataka has established four special purpose vehicles under the Companies Act of 1956 to mobilize financial resources for the timely completion of Major and Medium irrigation projects:

- Krishna Bhagya Jala Nigam Limited (**KBJNL**): Formed to expedite work on the Upper Krishna Project (UKP) and has been operational since August 1994.
- Karnataka Neeravari Nigam Limited (**KNNL**): Established to accelerate projects in the Krishna Basin, excluding UKP, and has been functioning since December 1998.
- Cauvery Neeravari Nigam Limited (**CNNL**): Set up to accelerate projects in the Cauvery Basin and has been operational since June 2003.
- Visvesvaraya Jala Nigam Limited (**VJNL**): Created to provide integrated drinking water facilities to drought-prone areas in Chikkaballapura, Kolar, Bangalore Rural, Chitradurga, Chikkamagalur, Hassan, Davanagere, and Tumkur districts, starting in January 2017.

The following Figure 9.1.2. shows the break-up of the FY25 WRD budget:

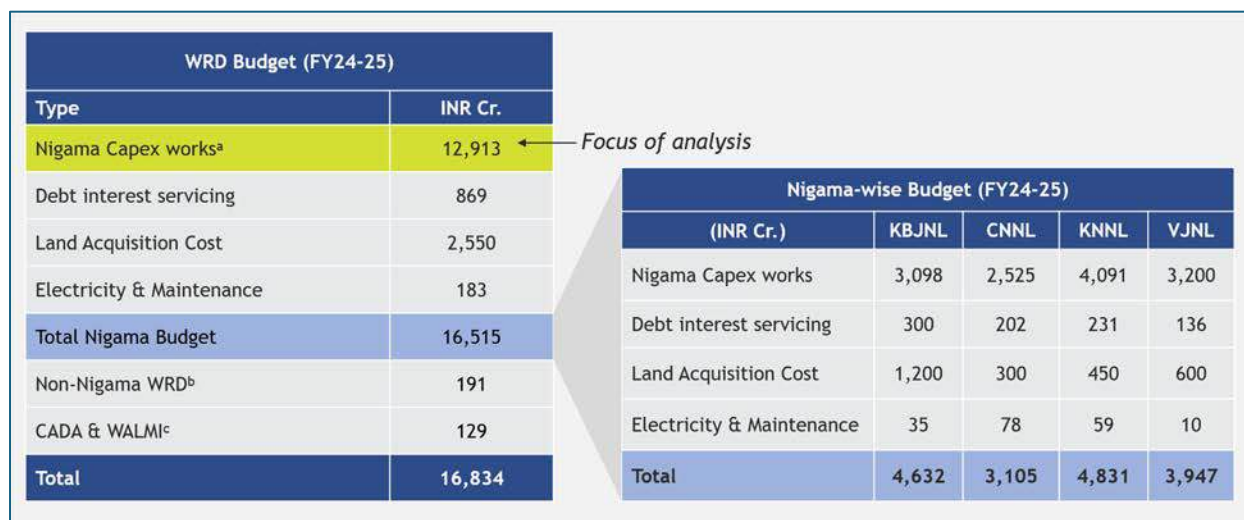


**Figure 9.1.2: Break-up of Karnataka WRD Budget for FY24-25
(Major and Medium Irrigation works)²²**

²² (a) Nigama Capex Works = Capital outlay from Center + State + NABARD/DRIP + KISWRIMP + Debt principal servicing + Guarantee Commission; (b) Non-Nigama WRD = TB Board, WRDO, KERS, CMO, ACIWIRM, etc.; (c) CADA & WALMI, CADA-CSS CADWM

Among the Nigamas, KNNL received the highest allocation for Capex works at INR 4,091 Crores, followed by VJNL (INR 3,200 Crores), KBJNL (INR 3,098 Crores), and CNNL (INR 2,525 Crores). Additionally, 15% of the budget was towards land acquisition costs, 5% towards debt interest servicing (5%), and another INR 200 Crores towards electricity and maintenance.

Given that the INR 12,913 Crores towards Nigama Capex Works is a significant amount, the subsequent chapters will focus on detailed analysis and break-down (Nigama-wise, year-wise, etc.) of this budget and the previous 8-10 years budget expenditure amount incurred in undertaking irrigation projects to shed light on the effectiveness and impact of these investments.

This section examines five key issues that undermine the efficiency and cost-effectiveness of the Water Resources Department (WRD). These issues have been identified as a result of extensive data analysis, benchmarking and engagements with key stakeholders. A major concern is the frequent cost and time overruns, largely due to delays in land acquisition and clearances, as well as insufficient investigation during the DPR stage. Additionally, project timelines are often set without thorough cost-benefit analysis, resulting in inefficient resource allocation. Another issue is the lack of normative cost guidelines, resulting in inconsistencies in specifications and costs in projects across Nigamas. Furthermore, a considerable portion of WRD's budget is allocated to non-irrigation projects—such as creation of community halls and road improvements—which diverts funds from essential irrigation work. Finally, certain items in the Schedule of Rates (SoR) used by WRD are not at par with those of other states, with some items priced higher and key items missing, leading to inconsistencies in cost estimation. This chapter will explore these issues in depth, analyzing their causes and impact with an objective to enhance WRD's project efficiency and resource management. The following figure (Figure 9.1.3) summarizes the 5 key issues.

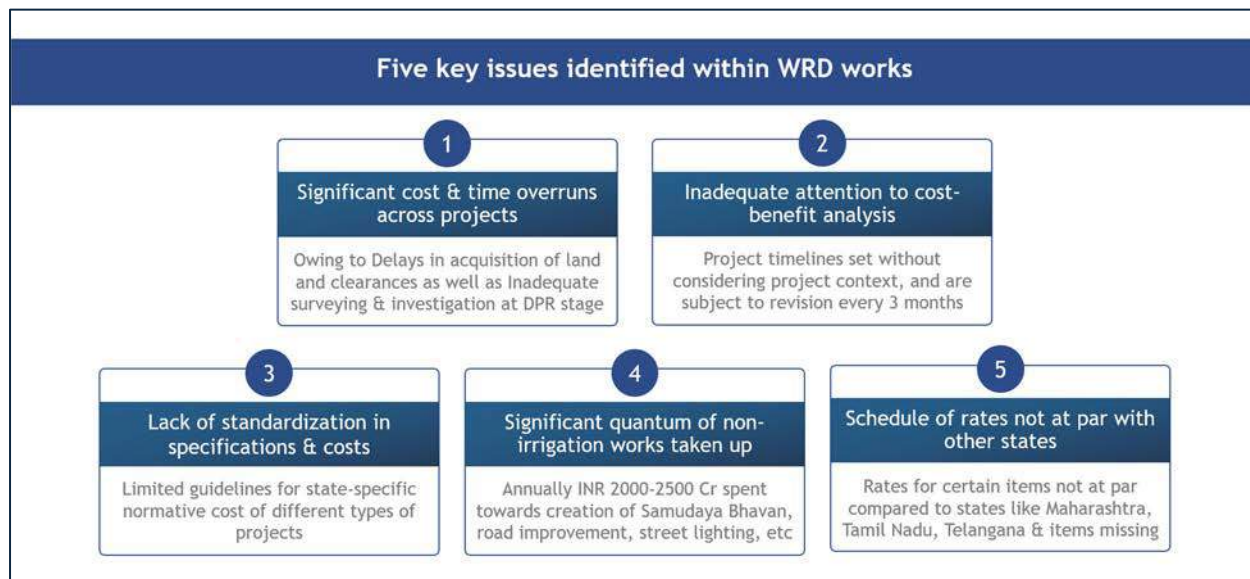


Figure 9.1.3: Five key issues identified within WRD works

9.1.2.1: Significant time & cost overruns

An analysis of Water Resources Department (WRD) projects worth over INR 100 crore, initiated since FY19 and totaling over INR 62,000 crore, highlights significant issues with project completion and delays. Less than 10% of these projects have been completed, while 60% are experiencing delays. Of the 165 projects reviewed, only 4 were completed on time, with an additional 14 projects that were completed post delays. Approximately INR 39,200 Crores worth of projects are currently delayed, which potentially contributes to annual price escalations of 7–10%. The same is presented in Table 9.1.1 below.



Project Completion Analysis for projects >INR 100 Cr only					
Agreement Year	Completed (on time)	Completed (Delayed)	WIP (on track)	WIP (Delayed)	Total Projects
FY19	2	3	0	11	16
FY20	1	6	0	40	47
FY21	0	2	0	7	9
FY22	0	2	2	24	28
FY23	1	1	27	17	46
FY24	0	0	19	0	19
Total	4	14	48	99	165
% Projects	2%	8%	29%	60%	100%
Cost in Cr	1.7k	5.8k	15.7k	39.2k	62.4k

Table 9.1.1: Project Completion Analysis (since FY19, worth > INR 100 Crores)

The data also indicates that at least 60% of the projects are running delayed. VJNL reports the highest rate of delays, with 71% of its projects running behind schedule, followed by CNNL at 56%, KNNL at 55%, and KBJNL at 52%. Over the past five years, these delays could have potentially led to an estimated loss of INR 7,000–10,000 Crores due to time overruns.

In terms of the extent of delay, as shown in Table 9.1.2, 26% of the projects are delayed by over three years, including 12 projects from FY19 that have exceeded a 36-month delay. Additionally, over 50% of VJNL's projects are delayed by more than two years, with KNNL, KBJNL, and CNNL showing delays in 30%, 25%, and 15% of their projects, respectively. These numbers not only showcase project completion delays but also signal potential cost overruns and underlying additional works, affecting overall project efficiency and value for the state.



Delay Analysis for projects >INR 100 Cr only						
Agreement Year	Zero	=<12mos	13-24mos	25-36mos	>36mos	Total Projects
FY19	2	0	0	2	12	16
FY20	1	5	6	6	29	47
FY21	0	1	2	4	2	9
FY22	2	4	18	4	0	28
FY23	28	13	3	2	0	46
FY24	19	0	0	0	0	19
Total	52	23	29	18	43	165
% Projects	32%	14%	18%	11%	26%	100%

Table 9.1.2: Extent of Delay Analysis (since FY19, worth > INR 100 Crore)

To further expand the scope of analysis, the data for all ongoing projects worth more than INR 10 Crores with agreement date on or after FY11 was considered. The same is presented in Table 9.1.3 below. There were almost 40 works out of the 1090 total works where work has not even started yet, and another 18 where work has been stopped, in both cases the interruptions can majorly be attributed to issues with land acquisition or clearances. There are 19 works awarded between FY11-FY15 that have been physically completed but the financial completion is still pending at different stages. Furthermore, there are 240 works awarded between FY11-20 that are still work in progress. Both these observations indicate significant delays in project completion and delivery.

Delay Analysis for ongoing works since FY11 worth >INR 10 Cr							
Agreement year	Physical work completed	WIP	Work not started yet	Work stopped	Rescinded	NA	Grand Total
FY11-FY15	19	21		12	2		54
FY16-FY20	154	219	2	4	4		383
FY21-FY25	202	368	23	2		1	596
NA	1	13	14			29	57
Grand Total	376	621	39	18	6	30	1090

Table 9.1.3: Delay Analysis for ongoing works (since FY11, worth > INR 10 Crore)

Extent of Delay Analysis							
Extent of delay	Physical work completed	WIP	Work not started yet	Work stopped	Rescinded	NA	Grand Total
No delay	25	24	7				56
< 1 year	23	6					29
1-2 years	13	11					24
2-3 years	5	11					16
3-5 years	9	43					52
5-8 years	3	13					16
> 8 years	2	5					7
Subtotal	80	113	7				200
NA	262	376	30	6	6	30	710
Foreclosed	34	132	2	12			180
Grand Total	376	621	39	18	6	30	1090

An analysis was conducted of over 400 projects across Nigamas worth more than INR 10 Crores that were awarded on or after 1st Apr'13. It was reported that 215 projects are now either physically completed or in the O&M stage. Complete data on cost was available for only 170 such projects, out of which the actual cost of works at completion was higher than the approved estimate cost for 36% projects. These overruns amounted to a potential increase of almost INR 1500 Crores across the 170 projects, which was almost 8% of the total approved estimates of these projects.

255



Cost overrun analysis					
Extent of cost overrun	Number of projects	% Projects	Total Approved estimate (INR Cr)	Total Cost overrun (INR Cr)	% Cost overrun
Less than 10%	16	9%	1,817	105	6%
10-25%	29	17%	7,269	1,269	17%
25-50%	13	8%	756	257	34%
50-75%	3	2%	626	437	70%
>75%	1	1%	6	7	114%
Subtotal	62	36%	10,474	2,075	20%
Negative	31	18%	2,835	-612	-22%
None	77	45%	5,028	0	0%
Total	170	100%	18,337	1,463	8%

Table 9.1.5: Cost overrun analysis for completed works (since FY13, worth > INR 10 Crore²³)

9.1.2.1a: Acquisition and clearance delays

Land acquisition continues to be a significant cause of project delays and cost overruns in Karnataka's irrigation infrastructure projects. For instance, in the Yettinahole project, the cost escalated from around INR 16,000 Crores to over INR 25,000 Crores, primarily due to land acquisition and forest clearance issues. Similarly, the Distributary Construction under NRBC (KBJNL) has seen only 15% progress in physical construction over the last 18 months, majorly attributed to land acquisition delays, even though completion was scheduled for September 2024. Another example is the Kudligi Tank Filling Scheme (KNNL), where parts of key components such as pipeline and rising main works are yet to start due to pending forest clearances.

The absence of standardized Conditions Precedent (CPs) in contracts is a contributing factor to project delays. Specifically, not all contracts clearly specify land acquisition obligations within the "Obligations of Authority" section, and even when included, enforcement tends to be weak. Nigamas often proceed with issuing tenders without fully addressing essential land acquisition requirements, often relying on supplementary agreements with contractors to circumvent the obligations in the primary contract. This practice could lead to extended delays, occasionally extending up to two years.

²³ Cost overrun is calculated as the difference between approved estimate data and actual cost of works at completion as provided by the Nigamas. Only projects that are physically completed are considered for the study.



Additionally, insufficient planning related to land acquisition and necessary clearances (especially from forest department) prior to tendering has been identified as a potential cause for delays. Limited emphasis on these requirements in the payment schedules for Detailed Project Report (DPR) consultants may further exacerbate this issue, as they are not prioritized adequately during the planning and approval stages.

9.1.2.1b: Improper surveying, investigation & planning

- DPR qualification criteria is not standardized across Nigamas:** A comparative study of DPR consultant contracts, illustrated in Figure 9.1.4, reveals a lack of standardization in consultant selection criteria across Nigamas. In some cases, excessive weightage is assigned to “Personnel,” while other projects allocate no weightage to critical aspects such as site inspection prior to tender participation. Additionally, criteria such as equipment/software and technical methodology are inconsistently weighted, which may result in DPRs and cost estimates requiring repeated revisions and adjustments during project implementation. These inconsistencies in consultant selection criteria may contribute to inefficiencies and delays in the project lifecycle.

Selection of DPR consultants without stringent and standardized qualification criteria is contributing to creation of sub-par estimates and project plans, significantly affecting the quality of works undertaken by the Nigamas.

Evaluation criteria of a DPR consultant		KBJNL	CNNL	KNNL	VJNL
Project		Lift irrigation	Lift irrigation	Dam rehabilitation	Diversion to reservoir
Year		2024	2024	2024	2024
Financial	Turnover, liquid assets	5	15	10	10
Prev. experience	Past projects		20	30	20
Personnel	Skillset, qualifications	65	15	40	30
Methodology	Workplan, list of activities	20	20	10	15
Equipment / software	Drones, DGPS, design software	10	20	10	25
Site inspection	Site inspection certificate	0	10	0	0
Total		100	100	100	100

Figure 9.1.4: Evaluation criteria of DPR consultant across different projects



- **Project timelines are not set scientifically:** Of the projects studied, it was observed that in most of the cases the stipulated time of completion of the project was set as 12/18/24 months without a robust rationale. Lack of scientific timelines can result in reduced seriousness towards project delivery timelines and limited accountability on the part of the contractor.

9.1.2.2: Inadequate attention to cost-benefit analysis before project approval

An analysis of the Benefit-Cost (BC) ratio for projects undertaken by Karnataka's Nigamas since FY13—covering projects worth over INR 10 Crores in various stages (ongoing, completed, operations and maintenance, tender awarded, etc.)—shows varied returns on investment across the four entities. Out of 413 projects, BC ratio estimates were available for only 18% (75 projects), as shown in Table 9.1.6. Of these, only about 50% projects had a BC ratio more than 1.5. Some studies have suggested that the BC ratio should be more than 1.5 in general projects to be approved and more than 1.0 for projects in tribal areas or drought/flood prone areas.

Benefit-Cost ratio of all projects after FY13					
	CNNL	KBJNL	KNNL	VJNL	Overall
Total projects studied	107	178	125	3	413
BC Ratio estimate provided	16	27	31	1	75
BC Ratio more than 1.5	6	17	11	0	34
Avg BC ratio of 75 projects	1.35	1.54	1.57	1.26	1.51

Table 9.1.6: BC ratio analysis of projects (since FY13, worth > INR 10 Crores)

Furthermore, as indicated in Table 9.1.7, just 20% of these 75 projects finally met their estimated BC ratio targets. The remaining projects either underperformed or lacked a post-completion impact assessment, with only one project exceeding its initial estimates.

Impact analysis of 75 projects where BC ratio was available					
	CNNL	KBJNL	KNNL	VJNL	Overall
More benefit than planned			1		1
Less benefit than planned	3		1	1	5
Same benefit as planned	4	2	9		15
Realized BC ratio not available	9	25	20		54
Grand Total	16	27	31	1	75

Table 9.1.7: Impact analysis of projects where BC ratio was available



These findings underscore a lack of comprehensive analysis prior to project approval and limited accountability measures afterward. This suggests a significant opportunity for the Department to enhance the quality of its expenditure and ensure that projects deliver their expected value.

9.1.2.3: Lack of guidelines around standardization across Nigamas and projects

An analysis of tank filling schemes across Nigamas revealed that the cost of project varies across Nigamas in terms of distribution of costs across various headers. As shown in Figure 9.1.5, project cost per unit water varied up to 4.5x across the projects analyzed with contribution of key items like rising main towards cost varying from 25% to 42% across projects.

Name of the project			Kadur TFS		Yadgir TFS		Balambid TFS		Madunur TFS	
Nigama			VJNL		KB/NL		KNNL		CNNL	
No. of tanks to be filled:			197		35		163		10	
Quantum of water filled in tanks (excl evap.)			1450 Mcft		672 Mcft		711 Mcft		156 Mcft	
##	Section	Item	Rs. Cr.	% Cost	Rs. Cr.	% Cost	Rs. Cr.	% Cost	Rs. Cr.	% Cost
1	Construction	Pumping machinery & pumphouse electrical works	133.4	11.1%	51.6	11.7%	29.7	7.7%	2.6	7.1%
2	Construction	Electrical substation for power to pumping station	55.5	4.6%	7.1	1.6%	2.1	0.6%	2.2	6.1%
3	Construction	Weir	0.0	0.0%	0.0	0.0%	1.0	0.3%	0.2	0.5%
4	Construction	Intake canal (incl crossings, roads, offices)	2.0	0.2%	3.6	0.8%	0.4	0.1%		
5	Construction	Jackwell-cum-pump house	60.4	5.0%	9.6	2.2%	7.0	1.8%	0.7	2.0%
6	Construction	Rising main	362.0	30.1%	184.9	42.0%	96.4	24.9%	12.8	35.2%
7	Construction	Pressure distribution system	128.4	10.7%	0.0	0.0%	144.8	37.5%		
8	Construction	Gravity Main & Gravity Distribution Sys	158.0	13.2%	151.8	34.5%	26.6	6.9%	8.5	23.2%
9	Construction	Delivery Chamber	100.0	8.3%	3.6	0.8%	0.2	0.1%		
10	Construction	Syr O&M	18.8	1.6%	1.8	0.4%	2.9	0.7%	NA	
11	Prelims & QC	Various components of the project	8.2	0.7%	NA		3.1	0.8%	NA	
12	Deposits	Land at 30L per ha	98.0	8.2%	25.0	5.7%	7.4	1.9%	5.3	14.5%
13	Deposits	KPTCL deposits	9.3	0.8%	NA		2.0	0.5%	NA	
14	Others	Contingency cost	25.3	2.1%	NA		9.4	2.4%		
17	Others	Consultant charges	42.2	3.5%	1.0	0.2%	1.5	0.4%	0.4	1.1%
15	Others	Quality audit/inspection charges	NA		NA		0.5	0.4%	0.5	1.5%
16	Others	Vehicles for project	NA		NA		NA		NA	
18	Others	Price escalation & revision	NA		NA		50.4	13.0%	NA	
19	Others	GST	NA		NA		NA		3.3	8.9%
Project Estimate Cost:			1280.0		440.0		386.5		36.5	
Cost per quantum of water (INR Cr/Mcft)			0.9		0.7		0.5		0.2	
			4.5x		3.5x		2.5x		1x	

Figure 9.1.5: Comparison of four different tank filling schemes across different Nigamas

To further strengthen this comparison, a detailed assessment of rising main element of these projects was done. The analysis, as per Figure 9.1.6, indicated that per unit cost varies almost 5x from INR 19,000 per Mcft water per km of the rising main to INR 96,000 per Mcft water per km of the rising main.



Name of the project		Balambid ¹	Mudi ¹	Madenur ²	Kadur ¹
Nigama		KNNL	KNNL	CNNL	VJNL
No. of tanks to be filled	#	160+	66	10	197
Quantum of water filled in tanks	MCft	711	349	156	1450
Total cost of Rising Main	Rs. Cr	96	51	13	362
Total length of rising main	km	22	15.7	8.6	132
Total discharge required	cumecs	4.3	2.1	0.6	4.3
Total pump head	m	158	196	75	Multiple lifts
Total volume of material	cu.m	735	294	115	2323
Cost per km running length	Rs Cr/km	4	3	1	3
Cost per unit pump head	Rs Cr/m head	0.6	0.3	0.2	-
Cost per unit discharge reqd.	Rs Cr/cumecs	23	24	23	84
Cost per unit discharge/km	Rs Cr/cumecs-km	1.0	1.6	2.6	0.6
Cost per unit water/km	Rs L/Mcft-km	0.62	0.93	0.19	0.96
		3.3x	4.9x	1x	5.1x

Figure 9.1.6: Comparison of tank filling schemes across Nigamas: Rising main deep-dive²⁴

In discussions with the Nigamas, it was pointed out that differences in site conditions, pump configuration, year of SoR considered, number of lifts involved (especially in Kadur TFS) could be potential explanations for the apparent inconsistency in estimation of project cost.

It can be concluded therefrom that while inconsistencies exist, in the absence of normative cost guidelines, it can be difficult for the officials to identify if certain project costs are over- or under-estimated without a very detailed and extensive exercise.

9.1.2.4: Significant quantum of non-irrigation works

Over the past two years, the Nigamas have undertaken a substantial amount of non-irrigation works, with a total of INR 5,987 Crores spent across 3,255 projects. The Karnataka Neeravari Nigam Limited (KNNL) has spent the most, completing 2,176 works amounting to INR 4,285 Crores, including projects like constructing school buildings, teacher's quarters, and Anganwadi centers. Overall, between FY20-21 and FY21-22, an average of INR 2,000-2,500 Crores of the Nigamas' capital outlay has been consistently directed toward non-irrigation projects including construction of civic amenities, development of lakes & parks, construction of Samudaya bhavans, etc. which is not part of the direct mandate of the WRD department.

²⁴ This analysis was conducted to study how estimates for similar types of projects vary across Nigamas. Actual cost of execution may be different.

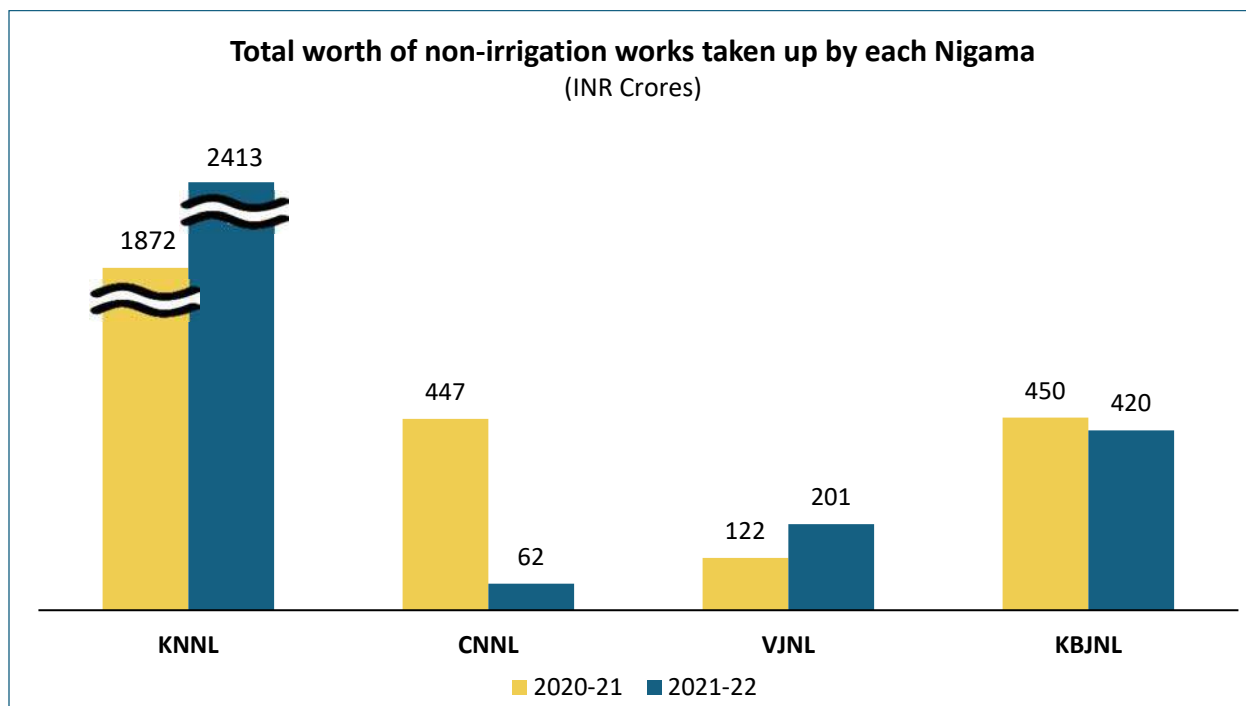


Figure 9.1.7: Non-irrigation works conducted by Nigamas in FY21 & FY22

9.1.2.5: Schedule of Rates not at par with other states

The current Schedule of Rates (SoRs) used by the Water Resources Department (WRD) reflects certain issues when benchmarked against other states such as Maharashtra, Tamil Nadu, and Telangana. These discrepancies are particularly evident in materials like MS pipes, Hume pipes, and sluice valves, where Karnataka's rates are noticeably higher—by up to 15%—compared to the lowest rates observed in neighboring states.

For instance, the cost of MS Pipes in Karnataka stands at INR 214/m, compared to INR 210/m in Telangana and INR 212/m in Tamil Nadu. Similarly, Hume pipes show a significant price gap, with Karnataka quoting INR 730/m compared to INR 660/m in Telangana. This indicates that while some rates are competitive, others are either outdated or inflated, leading to higher project costs.



Line Item	Unit	GoK	Lowest	State
MS Pipe	INR/m	214	210	TS
Hume Pipe	INR/m	730	660	TS
RCC Pipe NP3	INR/m	5400	5050	TN
Sluice valve	INR/each	29500	25400	MH
PVC Sealing strip	INR/m	60	56	TS
PVC Water Stopper	INR/m	270	230	MH
Casing shoe bit	INR/each	12900	11400	TN
Diamond core bit	INR/each	16700	13000	TN
Double tube core barrel	INR/each	17100	16100	TN
Extension rod w/ coupling sleeve	INR/m	5100	2600	TN
Reamer shell	INR/each	6300	6200	TN
TC cross bit	INR/each	10250	10100	TN

Figure 9.1.8: Comparison of certain items in SoRs compared to MH, TN, TS

Moreover, certain newer items that are required in cost estimation of newer projects, such as SCADA valves, metallic volute pumps are not even included in Karnataka's SoR, resulting in inconsistencies in cost projections. According to a DPR consultant, "more than 30% of the items required for cost estimation are missing from the current SoRs." In addition to the higher rates of each item or work compared to other states, the volume of certain items considered in the DPR was also over-estimated.

Key Areas of Concern:

1. Major construction items:

Items like MS Pipes, RCC Pipes, and Hume Pipes are priced higher than in other states. This not only impacts project budgeting but also reduces competitiveness in the bidding process.

2. Labor and hire costs:

While Karnataka's labor rates are generally lower than neighboring states, hire charges for equipment like water tankers (INR 920/hour compared to INR 850/hour in MH) and mobile cranes (INR 1700/hour compared to INR 720/hour in MH) are relatively higher, adding to the overall project cost.

3. Machinery add-ons:



Machinery components such as diamond core bits and casing shoe bits are priced significantly higher than in Telangana, indicating an opportunity for cost optimization.

4. Missing items in SoR:

Important components such as pumps below 1000hp, SCADA valves, and certain metallic volute pumps are not part of the existing SoR, making accurate project estimation challenging.

These gaps in terms of rates of items/works as well as absence of items from the SoR can potentially lead to significant variations in terms of costs across projects at an inter- as well as intra-state level.

9.1.3: Recommendations

In response to the key issues outlined in the report, this section presents five targeted reforms designed to enhance the efficiency and effectiveness of the Water Resources Department's operations. Each proposed reform addresses specific challenges such as cost and time overruns, lack of standardization, and inadequate monitoring. By implementing these reforms, WRD can mitigate delays, improve resource allocation, and ensure better project outcomes. The following sub-sections detail these recommendations, covering essential reforms in DPR quality, land acquisition processes, review mechanisms, cost standardization, and digital project monitoring, aimed at improving spending efficiency and resolving the identified challenges.

9.1.3.1: Improving the quality of DPR creation

This section addresses the need to improve DPR quality by standardizing consultant qualifications across Nigamas and ensuring comprehensive report preparation. By establishing uniform criteria for DPR consultants, focused on credentials like financial performance and experience, WRD can ensure consistency and expertise in project planning. Additionally, enhancing DPRs with advanced technology—such as satellite imagery and GIS—and implementing rigorous review mechanisms will promote accountability, improve accuracy, and optimize project execution. These reforms aim to standardize practices and elevate the quality of DPRs across the sector.

9.1.3.1a: Standardize qualification criteria for DPR consultants across Nigamas

The qualification criteria for DPR consultants varies significantly across Nigamas, which impacts the quality and effectiveness of DPRs and subsequently implementation of projects. To ensure consistency, there is a need to revise these criteria to bring standardization in consultant credentials (financial performance and previous experience), as these factors are crucial for



ensuring a proven track record. An indicative weightage for DPR consultant qualification is presented in Figure 9.1.9.

Evaluation criteria of a DPR consultant		KBJNL	CNNL	KNNL	VJNL	Proposed Weightage
Project		Lift irrigation	Lift irrigation	Dam rehabilitation	Diversion to reservoir	
Year		2024	2024	2024	2024	
Financial	Turnover, liquid assets	5	15	10	10	10
Prev. experience	Past projects		20	30	20	20
Personnel	Skillset, qualifications	65	15	40	30	30
Methodology	Workplan, list of activities	20	20	10	15	15
Equipment / software	Drones, DGPS, design software	10	20	10	25	20
Site inspection	Site inspection certificate	0	10	0	0	5
Total		100	100	100	100	100

Figure 9.1.9: Indicative weightage for qualification of DPR consultant

Additionally, incorporating modern equipment and software like drones, DGPS, and advanced design tools for topographical surveys and groundwater studies can greatly enhance project accuracy. The criteria should also emphasize site inspection, as it is essential for ensuring on-ground feasibility and quality assurance. This revision will standardize the evaluation process, leading to more reliable and technology-driven project planning.

9.1.3.1b: Ensure comprehensiveness of DPRs

To ensure that all required surveys, studies and analyses are done as part of the DPR preparation, the Central Water Commission (CWC) has created guidelines for DPR preparation covering all major themes, including planning, relevant investigations, designs, construction program and manpower planning, BC ratio analysis, estimates of cost and revenues, etc. The same is placed as part of Appendix 10.11: CWC Guidelines for DPR Preparation.

Moreover, the following reforms can also be explored to further increase the quality of DPRs:

- **Ensure use of technology interventions to improve DPR quality**, including:
 - Satellite imagery and remote sensing



- Mobile and aerial LiDAR: This technology uses laser pulses from mobile or aerial platforms to generate high-resolution, three-dimensional maps, providing accurate terrain and structural data
- GIS for topographic surveys: GIS can be used to analyze and visualize spatial data, enabling precise mapping of topological features, crucial for understanding land contours, elevations, and other geographical factors
- Field investigation and material testing technology
- Modeling tools like Irricad, AutoCAD, and Staad Pro for creating designs
- **Rate/score DPR consultants based on work quality and timeliness in past projects:** DPR consultants should be rated and scored basis their past work and extent of errors, cost revisions, additional works, etc. therein. Basis this, DPR consultants shall be issued strong warnings or blacklisted for poor performance and their work shall be monitored closely.
- **Result-oriented payment schedule & deliverables:**
 - All required clearances and land acquisition plan shall be part of payment schedule
 - Project execution related milestones shall be linked to payment terms
 - Financial penalties shall be imposed on the DPR consultant in cases of significant deviations during implementation
- **Robust review mechanism for DPR:** Define the DPR review and approval process involving internal and external stakeholders, equivalent to a peer-review mechanism.
 - Review and approve inception, feasibility, land acquisition, and clearance phases
 - Conduct thorough reviews and approvals of the final DPR and technical schedules
 - Facilitate interaction with district administration and relevant agencies to secure land and clearances before finalizing project alignment

These reforms will enhance DPR quality by promoting accountability, adopting advanced technology, and ensuring thorough project planning and stakeholder engagement.

9.1.3.2: Changes in Obligations of the authority

As illustrated earlier, land acquisition is one of the biggest reasons contributing to delays in project execution, especially in the WRD department, hence consistently leading to significant cost escalations across various projects. The following section highlights the role of Conditions



Precedent adopted in the NHAI projects that can be adopted as best practice by the Nigamas as well.

Case study: Conditions Precedent followed by NHAI

The National Highways Authority of India (NHA) has adopted a structured approach to mitigate such challenges by incorporating robust Conditions Precedent (CPs) in its contracts. These CPs outline specific obligations that should be met before a contractor can proceed with project execution, including securing land and necessary clearances. Upon submission of the performance security by the contractor, NHA ensures that:

1. 90% of the required Right of Way (RoW) is provided within 30 days of the agreement.
2. Environmental clearances are obtained prior to the issuance of the letter of appointment.
3. Approval is granted for railway drawings, ensuring that all structural plans are in place before construction begins.

This approach ensures that all preconditions for project execution are met before tenders are awarded, significantly reducing the likelihood of delays caused by land acquisition or incomplete clearances.

Recommendations for WRD Projects

Drawing from NHA's successful implementation of Conditions Precedent, it is recommended that similar clauses may be standardized across WRD contracts to avoid time and cost overruns as noted below.

1. **Timely Land Acquisition:**
 - 80% of the required land shall be acquired before floating the tender
 - 90% of land acquisition shall be completed before awarding the tender
 - Remaining land shall be acquired within 6 months of awarding the tender
2. **Permits and Clearances in Authority's scope:**
 - Clearances from relevant authorities (Forest, NHA, Revenue, etc.) shall be secured by the Authority before awarding the tender to prevent any future legal or operational roadblocks
3. Additionally, no tender shall be accepted, signed, or finalized **until the Conditions Precedent are met.**



Adopting this approach would align WRD's project management with best practices, minimize delays, and prevent land acquisition from becoming a bottleneck in critical infrastructure projects. Structured contractual obligations would establish a more predictable and efficient land acquisition process, streamlining timelines and lowering project costs.

Sub-section 9.1.3.3: Establishing stronger review mechanisms

Independent review mechanisms are essential to prevent errors, misuse of power, and effects of undue influence. By providing objective oversight, they can ensure accountability and transparency, detecting irregularities early and reducing opportunities for mismanagement. This helps ensure projects are executed with integrity and in the public interest.

Sub-section 9.1.3.3a: Multi-disciplinary Capex Projects Review Committee (CPRC)

One of the key recommendations is the establishment of a Capex Projects Review Committee with a multi-disciplinary representation. By integrating diverse perspectives, the committee will ensure a comprehensive review of projects from inception to execution. This approach will provide a robust framework for decision-making and address potential challenges in real time, thereby reducing delays and cost overruns. Additionally, the committee will be responsible for evaluating technical, financial, and administrative aspects at every stage of the project, ensuring a holistic review process.

Case study: MoRTH's Multi-disciplinary Standing Finance Committee (SFC)

Multi-disciplinary committee for a holistic review:

The Ministry of Road Transport and Highways (MoRTH) has implemented a similar multi-disciplinary **Standing Finance Committee (SFC)**, which reviews projects under four main themes: core project details, financial documents, land acquisition and clearances, and technical documents. The committee comprises officials from the Department of Expenditure, Department of Economic Affairs, NITI Aayog, implementing agency (MoRTH Road Wing, NHAI, NHIDCL) and internal finance division. This integrated review process not only allows for cross-departmental collaboration but also ensures that projects are analyzed from various angles—technical, financial, and administrative—thus minimizing risks and increasing project efficiency.

Contributions of stakeholders in the review process:

Typical questions across projects by		Dept. of Expenditure	Dept. of Econ. Affairs	NITI Aayog	MoRTH -IFD
A Core project details					
1	Compare per lane per Km estimated cost of project w adjacent projects	90%			
2	Packaging strategy - Why have high number of small (20-30 kms) packages?			65%	
3	Details of any competing route and their impact on the proposed highway			40%	
4	Concession model: BOT vs HAM			35%	
B Financial documents					
5	Financial model - O&M Expense, Depreciation, GST, IDC formula, etc.		65%		
6	Project cost component comparison vs normative (w justification as reqd.)			75%	
7	Financial Engg. - Estimates to factor-in salvage value from Utility Shifting				35%
8	Land Acquisition costs - Basis of arriving at the land cost				45%
C LA or clearances					
9	State govt. contribution to Land Acquisition (incl. R&R, Utility Shifting, etc.)	90%			
10	Ensure timely clearances (forest, utility shifting etc.) - per stipulations		75%		
11	LA status - To ensure availability of encumbrance free land			95%	
12	All clearances should have been taken before project award to avoid overruns (cost and time)			95%	
D Technical documents					
13	Details of traffic survey - recency, accuracy during evaluation, 4 vs 6 lane		25%		
14	Adoption of new/alternative material & tech (circular dt.14.12.2020)				75%
Relative frequency distribution of questions asked across sample projects		< 50%	50 - 70%	70 - 80%	> 80%

Recommendations for WRD Projects

- ACS (Finance Dept.)
- Secretary Expenditure (Finance Dept.)
- Principal Secretary/ACS (Water Resources Dept.)
- Principal Secretary/ACS (Rural Development Dept.)



- 2 Private sector experts

These members of the CPRC shall conduct a 360-degree holistic review including but not limited to these four themes:

- **Quality of expenditure:** Cost-benefit analysis for the project basis area of land irrigated, number of beneficiaries, etc.
- **Estimate review:** Comparison with similar or adjacent projects, rate analysis, etc.
- **Status of land acquisition & clearances:** Amount of land required vs acquired, dispute in ownership, etc.
- **Go ahead for floating tenders:** Confirm that Conditions Precedent are met, public opinion is incorporated, etc.

Sub-section 9.1.3.3b: Modifications proposed to the TSC's constitution

Currently, each Nigama has a separate TSC (Technical Scrutiny Committee) with 6-7 members nominated. The TSC are composed of Executive Engineer (Zilla Panchayat), Senior Environmental Engineer, retired Chief Engineers, etc. and external experts. Even after technical scrutiny, there are multiple instances of additional works requirements and faults in the estimates that are observed during project implementation. To make the TSC more independent and effective, certain changes are proposed to the nomination of the TSC and an indicative structure is defined for the same.

- Nigama-wise TSC structure to be dissolved to adopt a common TSC across WRD
- The common TSC to have 12-15 independent members
- Not more than 25% of the members of the TSC should be from the same Nigama
- At least 15% members should be from private sector (e.g., educational institutions, industry, etc.)

The TSC shall assess key aspects, including water availability, design soundness, and climate resilience. Environmental and social impacts, such as displacement and ecosystem effects, should be carefully evaluated, along with the project's economic viability through a cost-benefit analysis. Legal compliance with water-sharing agreements and relevant clearances should be ensured. The TSC should also review command area development plans, water distribution efficiency, and the project's agricultural impact. Farmer involvement and a robust institutional framework for management and monitoring, essential for long-term sustainability and successful project execution, should also be included.



The TSC shall be provided with a standard checklist, created after consultation with the Capex Review Committee to assess each project and in doing so, it shall act as an executive body to the Capex Projects Review Committee. The recommendation of the TSC shall be deemed necessary but not sufficient for the approval of any project and their decisions may be superseded by the CPRC.

Sub-section 9.1.3.3c: Delegation of Financial Powers across Nigamas

While most of the elements in the matrix for Delegation of Financial Powers were consistent across the Nigamas, there are certain changes that can be explored to make them fully consistent. The inconsistencies may involve differences in financial limits, approval levels, consultation requirements, and procedures for tendering, excess approvals, and emergency provisions.

Aligning these across Nigamas would streamline decision-making, enhance accountability, reduce confusion, and ensure that similar officers hold consistent powers, leading to better governance and efficiency. It would also reduce the risk of errors and conflicts in financial and project management.

Examples of inconsistencies observed:

- Power 1.04:** *To accord Technical sanction to detailed estimates of works covered by authorization*
 While KBJNL, VJNL have accorded the Superintending Engineer and equivalents “Full power for works costing up to Rs 10 Lakh”, the same is “..up to Rs 20 Lakh” in KNNL.
- Power 1.06:** *Acceptance of tender for works when competitive tenders are invited and more than one valid tender is received; If the acceptable tender is the lowest*
 KNNL has a more decentralized power matrix, with the MD accorded full rights for tenders up to Rs. 2.5 Crores (where excess is not more than 15% of the sanctioned estimate), compared to only up to Rs. 1 Crores for other Nigamas.

Going forward, it is recommended that any changes to the Delegation of Financial Powers by a Nigamas shall be only after recommendation from the Capex Projects Review Committee and the WRD Secretary.

Sub-section 9.1.3.4: Standardizing costs and specifications across projects and Nigamas

This section addresses two critical steps needed to enhance cost efficiency and standardization in WRD projects: establishing normative cost guidelines and updating the Schedule of Rates (SoR). Current inconsistencies in cost estimation and outdated SoR pricing contribute to inflated



expenses and unpredictable budgeting across Nigamas. By adopting structured cost guidelines, as successfully implemented by NHAI, and ensuring the SoR is aligned with modern project requirements and benchmarks from other states, WRD can improve financial predictability, foster competitiveness in project bidding, and ensure more effective use of public funds in Karnataka's irrigation works.

Sub-section 9.1.3.4a: Introduction of normative costs guidelines

Several areas require urgent standardization to curb cost escalations and bring more predictable financial planning. Key areas that may be prioritized include:

1. **Excavation and Earthworks:** Inaccurate estimates for the volume of earth required for lining and excavation lead to inflated costs, causing wide-ranging discrepancies
2. **Land Acquisition:** Unnecessary acquisition of land, especially when pipes are laid more than 0.2 meters below the surface causing additional costs
3. **Spacing and Laying of Pipes:** Excessive spacing between pipes leading to unnecessary use of materials and inflated costs
4. **Choice and Design of Pipes:** Pipes designed for lower velocity than required, which increases diameter requirements and costs. Furthermore, the use of materials like mild steel (MS) pipes, even when more economical alternatives exist can cause increased costs
5. **Demand Estimation and Water Source Identification:** Projects designed with inflated demand projections or unclear identification of water sources, which results in over-engineering and cost hikes

Case study: Project Cost Analysis tool used by NHAI

The National Highways Authority of India (NHAI) has taken a systematic approach to address similar issues in road and highway projects by employing a customizable cost estimation tool. This tool allows for the input of key project parameters, such as length, structure type, and material requirements, to calculate standardized costs across different regions and project types. By applying these consistent guidelines, NHAI has been able to standardize costs and improve budget predictability across its projects.



Recommendation for WRD: Implement a Cost Standardization Framework for Nigamas

To implement the same, the following actions shall be undertaken:

Develop specific guidelines for calculating project costs based on inputs like material type, pipe diameter, and location. These guidelines should be used consistently across all Nigamas and other evaluating authorities (e.g., Common TSC, Capex Projects Review Committee, etc.) to ensure uniformity in project cost estimations.

Form an action-focused committee to define normative cost guidelines. This committee shall have representation from WRD technical teams, Finance Department as well as DPR consultants and contractors to ensure that the normative costs guidelines are co-created and therefore have wider buy-in from the stakeholders. The committee may be dissolved after its mandate and may be reconvened as and when required for updates to the normative cost guidelines at the request of the Capex Projects Review Committee.

272



Any deviations should be justified with substantial evidence and presented to the Capex Review Committee for approval.

4. Digital Cost Estimation Tools:

The guidelines as created by the Cost Norms Committee may also be converted into a customizable and interactive digital tool to enable parameter-based cost estimations for all projects. This tool would provide a standardized method to calculate estimated costs across regions and project types, helping to eliminate cost discrepancies. It may be used by the Finance Department as well before recommending projects for approval.

By adopting these measures, WRD can potentially reduce the financial inefficiencies plaguing its projects, ensuring that resources are allocated effectively and that cost overruns are minimized. Standardization across Nigamas will not only lead to more predictable project costs but also enhance transparency and accountability in the management of public funds. Additionally, it will help in standardizing the quality of works being done in the State to ensure higher quality of expenditure.

Sub-section 9.1.3.4b: Ensure SoRs are updated and at par

This section addresses the need for updating the Schedule of Rates (SoR) to align with modern project requirements and competitive benchmarks from other states. The current SoR reflects outdated pricing for key materials and lacks certain items essential for contemporary irrigation projects, leading to inconsistencies and inflated costs. By updating the SoR, WRD can ensure that cost estimates are realistic, inclusive of necessary materials, and comparable to other states such as Maharashtra and Tamil Nadu. This section discusses reforms aimed to ensure accurate budgeting, foster competitiveness in project bidding, and ultimately contribute to more efficient use of public funds in the state's irrigation works.

1. Benchmarking and Rate Rationalization:

Conduct a comprehensive benchmarking exercise against other states to bring Karnataka's SoR in line with competitive rates, particularly for high-use items like pipes, valves, and machinery.

2. Inclusion of Missing Items:

Update the SoR to include all relevant items, especially those frequently required for modern infrastructure projects, such as SCADA valves, smaller pumps, and metallic components.

3. Dynamic SoR Update Mechanism:



Establish a periodic review process to update the SoR in real-time, considering inflation, material costs, and technological advancements, ensuring that the rates remain relevant and competitive.

By implementing these changes, the WRD can ensure that its projects are cost-effective, better aligned with industry standards, and capable of attracting more competitive bids.

Sub-section 9.1.3.5: End-to-end digital project monitoring

The frequent delays, cost overruns, and inefficiencies in resource allocation as discussed earlier underscore the importance of increased visibility and stricter monitoring. These issues complicate project timelines, strain budgets, and reduce overall efficiency. By adopting digital monitoring, WRD can ensure real-time visibility and standardized tracking, helping mitigate these recurring challenges and bringing greater control to complex project execution. This shift shall help in tackling inefficiencies and enhancing WRD's capacity to oversee large-scale projects effectively in an increasingly demanding infrastructure environment.

Case study: Project Management Information System tool by NHAI

The Project Management Information System (PMIS) developed by NHAI offers a powerful tool for improving visibility and control over project management processes. Key features of the system include algorithms designed to automatically identify projects requiring intervention, comprehensive dashboards for efficient decision-making, and the ability to generate custom reports, ensuring that users across all levels of the organization have access to relevant information. Additionally, the PMIS provides a single source of truth for project-related details, ensuring data consistency and transparency. For mobile access, the PMIS app supports project tracking on the go, offering customized navigation, task management tools, and the ability to upload photos and check-ins for better visualization at both headquarters and regional offices.

Recommendation for WRD: Digital monitoring for better project execution

The need for such a tool is clear, as it significantly enhances real-time project monitoring and management across different levels of the organization. By centralizing data, automating issue identification, and providing access to key project information in real time, the PMIS ensures that decision-makers can quickly address challenges, allocate resources efficiently, and track the progress of tasks assigned to subordinate officers. The use of digital dashboards and mobile tools



also allows for flexibility, making it easier to manage large-scale projects, avoid delays, and ensure accountability, which are critical to the success of complex infrastructure programs.

With the planned updates in as part of eProcurement Portal 2.0, these features can also be included to ensure real-time end-to-end digital project monitoring and contractor management.

Value potential

Implementing the above reforms will result in better quality of projects being approved, enhanced delivery of the project with limited cost or time overruns, and better citizen outcomes. Just in terms of reduction in overruns, there is scope for the department to save INR 600 – 800 Crores per year from the expenditure towards WRD works. There is scope for the Department to **save INR 600 – 800 Crores every year** from the expenditure towards WRD works, by managing overruns in time and cost, considering 25-30% reduction in spends towards the annual overruns of INR 2,000 – 2,500 Crores each year.

Status of the recommendations & Next steps

The recommendations have been discussed with the WRD Secretary and Nigama officials.



9.2: Energy Department: Solarization of irrigation power



9.2: Energy Department: Solarization of irrigation power

9.2.1: Context and background

The Government of Karnataka currently incurs an annual expenditure of approximately INR 13,000 Crores²⁵ on subsidies for the free power supply to irrigation pump sets. This financial burden is significantly higher than that of other States such as Maharashtra and Tamil Nadu, both in terms of total expenditure and per-acre subsidy costs. Karnataka's per-acre subsidy is approximately INR 4,300⁴, in contrast to Maharashtra's INR 1,400⁴ and slightly above Tamil Nadu's INR 4,000⁴ per acre. This highlights the pressing need for more sustainable and cost-effective energy solutions, particularly in agricultural power consumption.

The figure below compares the cost of subsidy for agricultural power in Karnataka with other States.

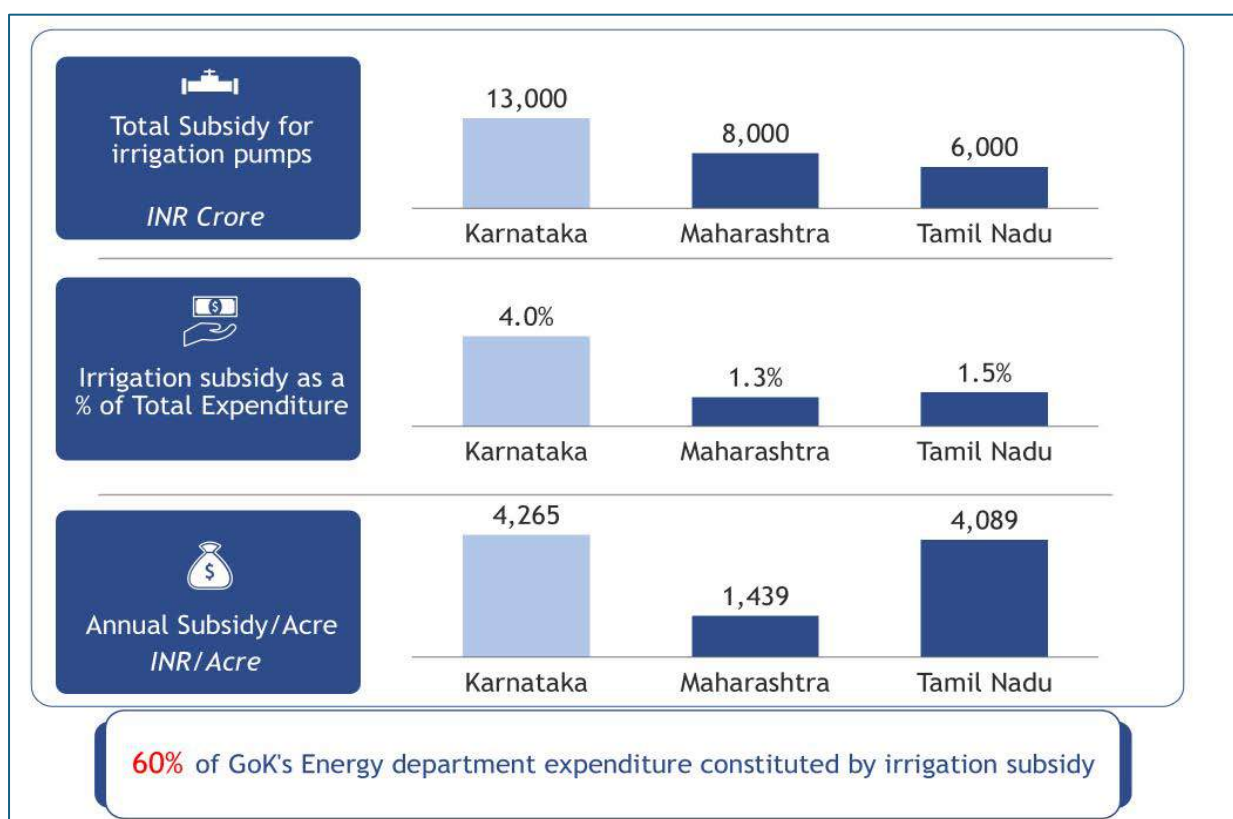


Figure 9.2.1: Comparison of subsidy spend on power for irrigation across states

²⁵ State Budget of Karnataka (FY23-24)



In response to this, Karnataka has aligned its solarization recommendations with the Pradhan Mantri Kisan Urja Suraksha evam Utthaan Mahabhiyan (PM KUSUM) scheme, focusing on PM KUSUM Component C, which involves feeder-level solarization (FLS). This recommendation aims to install solar power plants with capacities ranging from 2 MW to 25 MW, dedicated to powering agricultural feeders and reducing the State's dependency on conventional grid power for irrigation.

While Maharashtra has made significant advancements under its Mukhyamantri Saur Krushi Vahini Yojana, targeting 7,000 MW of solar capacity, Karnataka has tendered a comparatively modest 1,200 MW of capacity to date. To fully solarize its 34 lakh irrigation pumps, Karnataka requires an estimated 12,000-13,000 MW of solar capacity, necessitating a capital investment of approximately INR 55,000 Crores. However, based on a feasibility study by KPTCL, the state's nodal transmission company, Karnataka is currently targeting solarization of 6,000–7,000 MW of capacity.

The solarization efforts thus far have resulted in a tariff of INR 3.17 per unit, significantly lower than the INR 5.69 per unit currently paid for conventional grid power. This presents a potential for up to 40% savings on the State's subsidy expenditure, underscoring the importance of expanding solar power in the agricultural sector to ensure fiscal sustainability and energy security.

9.2.2: Recommendation

To reduce the cost outlay for Karnataka related to irrigation power subsidies, the State Government may consider two innovative financing models under the PM KUSUM Component C (Feeder Level Solarization - FLS) scheme. These models are designed to make the solarization of agricultural feeders more cost-effective while ensuring private sector participation and long-term financial sustainability for the State. For the purposes of this analysis, a target solar capacity mobilization of 7,000 MW is assumed, with numbers adjustable proportionally based on the actual capacity targeted by the State.

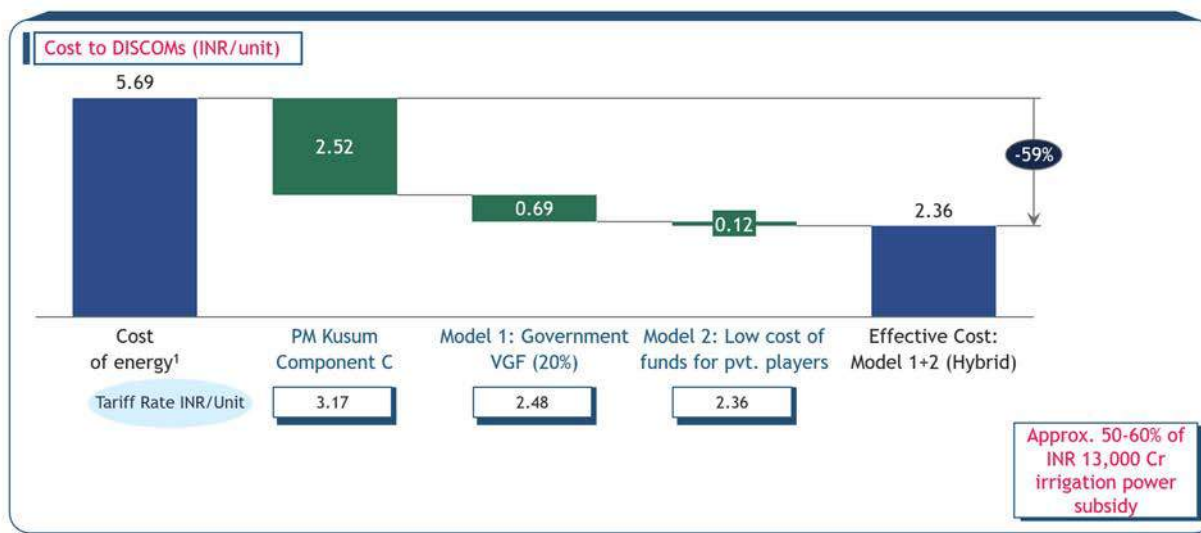


Figure 9.2.2: Potential recommendations to expedite solarization via PM KUSUM C (FLS)

Model 1: Viability Gap Funding (VGF) for Private Developers

This model proposes that the Government of Karnataka provide Viability Gap Funding (VGF) to private developers, covering 20% of the capital expenditure, in addition to the 25% subsidy provided under PM KUSUM Component C (FLS). By offering VGF, the overall project cost for developers would be reduced, enabling the Government to procure solar power at a lower tariff of INR 2.48 per unit, down from the current INR 3.17 per unit.

The tariff reduction could yield annual savings of INR 750–900 Crores for the Government, translating to a total of INR 7,500 - 9,700 Crores in Net Present Value over the next 25 years. The Viability Gap Funding (VGF) required would be INR 1,200 Crores per year for five years to support phased solarization of 100% capacity. Providing VGF upfront would make the initiative more attractive to bidders, thereby accelerating project execution.

Model 2: Low-Cost Loans for Private Developers

This model seeks to reduce the interest burden for private developers by facilitating low-cost loans through financial institutions such as NABARD and IREDA. By lowering the interest rate from the current 10.7% to approximately 9%, the cost of financing solar projects would decrease, allowing the tariff to be reduced from INR 3.17 per unit to INR 3.01 per unit.

Importantly, this approach does not require any additional capital investment from the State Government. However, it still offers potential savings of INR 80 to 140 Crores p.a. and NPV figure ranging between INR 700 Crores to 1,300 Crores for 25 years. By reducing the cost of borrowing,

Hybrid Model: Viability Gap Funding + Low-Cost Loans

These financing models are designed to expedite Karnataka's solarization of agricultural feeders by reducing solar power tariffs and enhancing private sector engagement. Through these strategies, the Government could realize savings of up to 50%-60% (INR 6,500 – 7,000 Crores p.a.) on its irrigation power subsidy while attracting more bidders and accelerating the solarization process.

The PM KUSUM scheme, initiated by the Government of India, aims to promote the adoption of solar energy in the agricultural sector. By reducing farmers' dependency on conventional electricity and diesel, the scheme also aims to reduce the cost outlay for energy subsidies on State Governments. The scheme is structured into four key components, each designed to support farmers while promoting sustainable energy practices.

- **Objective:** To establish small solar power plants ranging from 0.5 MW to 2 MW on barren or fallow land.
- **Ownership:** These plants can be owned by individual farmers, cooperatives, panchayats, Farmer Producer Organizations (FPOs), or private developers.
- **Outcome:** The electricity generated is sold to distribution companies (DISCOMs) at a pre-determined tariff, providing farmers with an additional source of income while enhancing the local energy supply.

- **Objective:** To provide solar-powered irrigation pumps to farmers who are not connected to the electricity grid.

- ### 3. Component C: Individual Pump Solarization (IPS)

- #### 4. Component: Feeder Level Solarization (FLS)

- **Objective:** To solarize entire agricultural feeders, minimizing the dependence on grid power for agricultural consumption.
- **Implementation:** Solar power plants with capacities between 0.5 MW and 25 MW are set up to supply power to entire agricultural feeders. This ensures a dedicated supply of daytime electricity for farmers while reducing transmission and distribution losses for DISCOMs.
- **Outcome:** By solarizing agricultural feeders, the scheme seeks to stabilize electricity supply, reduce the State's dependency on grid power, and significantly lower the subsidy required for irrigation pump sets.

The PM KUSUM scheme is a crucial step toward sustainable energy solutions in agriculture, with the potential to improve both farmer livelihoods and the financial health of State Governments and DISCOMs. The figure below summarizes the components of the PM KUSUM scheme by the Government of India.

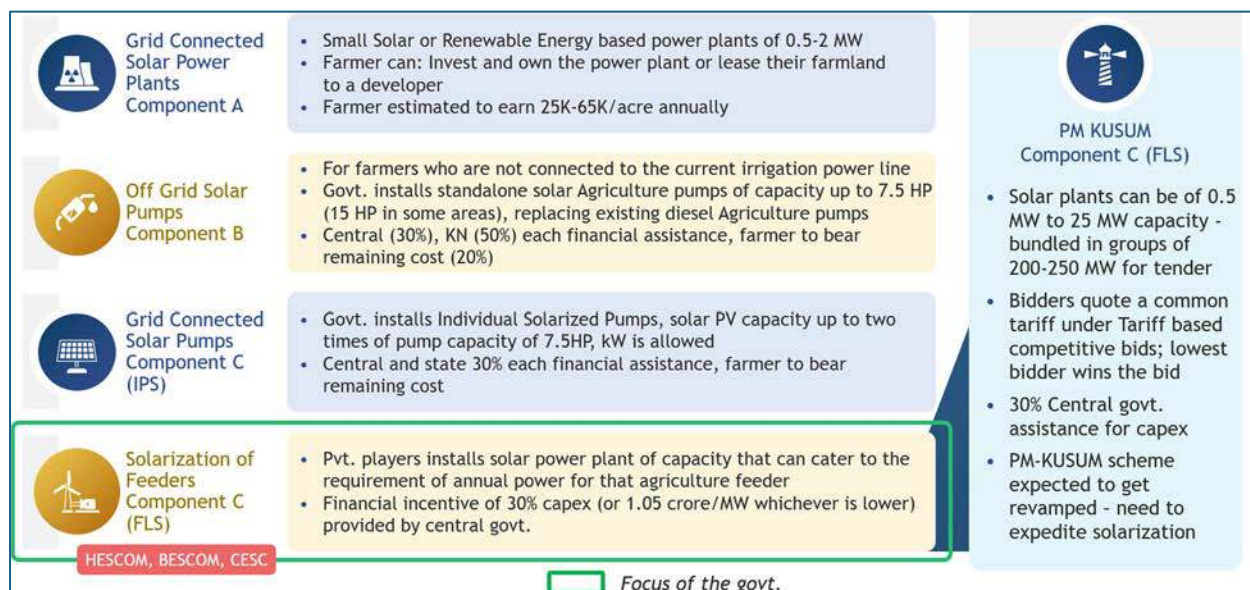


Figure 9.2.3: PM KUSUM scheme launched by Government of India

Benchmark: Learnings from Maharashtra's Implementation of PM-KUSUM

Maharashtra has been a leader in the implementation of the PM KUSUM scheme, particularly through its Mukhyamantri Saur Krishi Vahini Yojana (MSKVY). The State has set a benchmark by focusing on large-scale solarization of agricultural feeders under Component C (Feeder Level Solarization - FLS). Key learnings from Maharashtra's approach include:

1. Centralized Feeder Solarization

Maharashtra's strategy emphasizes the installation of centralized solar power plants within a 5 km radius of agricultural substations. These solar plants, with capacities ranging from 0.5 MW to 25 MW, supply reliable daytime electricity to agricultural feeders, supporting around 700, 5-HP irrigation pumps per plant.

2. Project Bundling and Land Aggregation

Projects are structured based on available land and capacity, with a typical project requiring approximately 600 hectares to support a capacity of 250 MW or more. Maharashtra has set a target to solarize 7,000 MW of irrigation power by 2025, covering 30% of the State's total irrigation needs.

3. Special Purpose Vehicles (SPVs)



SPVs have been created to manage the development, operation, and maintenance of these solar projects. Both private and public lands are used, with land lease rates fixed at INR 1,25,000 per hectare or 6% of the ready reckoner rate, whichever is higher, with a 3% annual escalation.

4. Incentives for Developers

- **Central Financial Assistance (CFA):** Developers receive up to INR 1.05 Crores per MW under the KUSUM-C program, covering a significant portion of the project costs.
- **Social Benefits:** Gram Panchayats in areas where solar projects are installed receive a social benefit grant of INR 5 Lakh per year.
- **Energy Injection Incentives:** Projects injecting energy at the 11 kV bus bar are incentivized with INR 0.25/kWh, while those at the 33 kV bus bar receive INR 0.15/kWh for energy sold to MSEDCL during the first three years, provided PPAs are signed before December 2024.

Maharashtra's achievements and plans

Maharashtra is on track to achieve 30% solarization of its agricultural feeders by the end of 2024, with approximately 7,000 MW of decentralized solar projects expected to be commissioned.

Additionally, the State plans to issue tenders for an additional 4,000-5,000 MW of capacity in the next 12 to 14 months. Leading solar developers, including Nisagra Renewable Energy, Juniper Green Energy, Atnu Solar, Ask Green Energy, Gro-Solar, and EESL, have been awarded contracts under this recommendation. The competitive tariff rates, ranging between INR 3.00 and INR 3.15 per unit, reflect the efficiency and viability of Maharashtra's solarization approach.

Maharashtra's success with the Mukhyamantri Saur Krishi Vahini Yojana showcases the potential of the PM KUSUM scheme, particularly Component C (FLS), to achieve large-scale solarization, reduce reliance on grid electricity, and generate substantial financial savings for the State, all while promoting sustainable agricultural practices.

As-is status of solarization in Karnataka and challenges

Karnataka's solarization efforts under the PM KUSUM scheme are focused on two major components: PM KUSUM B (Off-Grid Solar Pumps) and PM KUSUM C (Feeder Level Solarization - FLS).

The PM KUSUM C (FLS) initiative in Karnataka aims to install solar power plants with capacities ranging from 2 MW to 25 MW to power agricultural feeders. Projects may be bundled to capacities of up to 200-250 MW, with tenders issued through Tariff Based Competitive Bidding (TBCB). Under this component, the Central Government provides a 30% subsidy on capital expenditure (or INR 1.05 Crores per MW, whichever is lower).



The following sections outline the status and challenges of the solarization initiatives in Karnataka, highlighting the steps required to expedite the adoption of solar energy in the State's agricultural sector.

The figure below summarizes the status-quo of solarization recommendation in Karnataka.

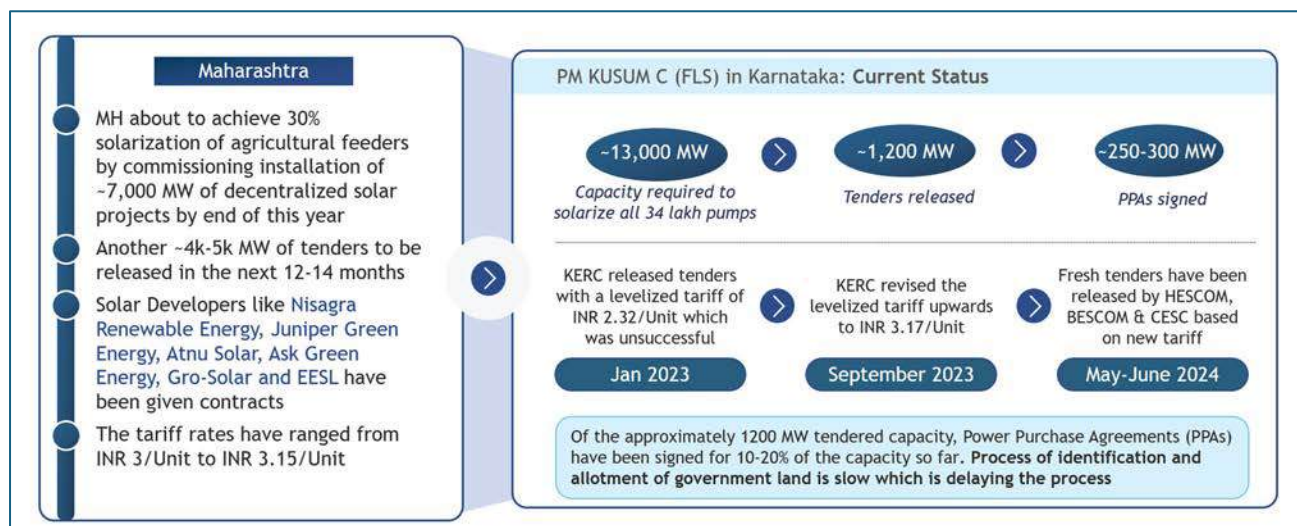


Figure 9.2.4: As-is status of solarization recommendation in Karnataka

- Capacity Requirements and Tenders Released

To achieve the solarization of all 34 Lakh irrigation pumps in Karnataka, the State requires approximately 13,000 MW of solar capacity. However, as of now, the State has tendered only around 1,300 MW of capacity, with Power Purchase Agreements (PPAs) signed for only 10-15% of the tendered projects.

- Challenges and Tariff Adjustments

In January 2023, the Karnataka Electricity Regulatory Commission (KERC) initially released tenders with a levelized tariff of INR 2.32 per unit. However, this tariff failed to generate adequate interest from developers, resulting in limited participation.

In response, KERC revised the levelized tariff upward to INR 3.17 per unit in September 2023 to make the projects more appealing to bidders. Following the tariff revision, fresh tenders were issued by HESCOM, BESCOM, and CESC in May-June 2024.



Key challenges faced by Karnataka

- Slow Progress and Low PPA Signage

Despite the recent upward revision in tariffs, Karnataka's solarization progress has remained slow. Of the 1,300 MW of capacity tendered under the PM KUSUM C (Feeder Level Solarization - FLS) scheme, Power Purchase Agreements (PPAs) have only been signed for 10-20% of the capacity, amounting to approximately 250-300 MW.

- Land Allotment Delays

A significant challenge hindering progress has been the slow pace of land identification and allotment. These delays have created bottlenecks in project initiation and installation, which are essential for the State to achieve its solarization targets.

In comparison, Maharashtra's implementation under the Mukhyamantri Saur Krishi Vahini Yojana serves as a successful model. Maharashtra is on track to commission around 7,000 MW of decentralized solar projects by the end of 2024. This success has been driven by proactive land-use strategies and efficient project execution, enabling the State to solarize a substantial portion of its agricultural feeders. Karnataka must address these challenges to fully leverage the potential of the PM KUSUM scheme and reduce its reliance on conventional energy sources for agricultural purposes.

In Phase 2 of solarization, Karnataka aims to install 2,100 MW of capacity across four ESCOMs—HESCOM, GESCOM, MESCOM, and CESC—with KREDL serving as the nodal implementation agency.

Potential recommendations to reduce the irrigation power subsidy by reducing solarized feeder tariff

Karnataka has a unique opportunity to reduce its electricity subsidy burden through a combination of strategic measures. These include fully utilizing the PM KUSUM C (FLS) scheme, introducing Viability Gap Funding (VGF) to incentivize private sector participation, and accessing low-cost green funding sources.

By implementing these strategies in tandem, Karnataka can significantly lower its electricity procurement costs, benefiting both the State Government and private sector stakeholders. These efforts will not only accelerate solarization but also provide long-term financial sustainability for the State's agricultural energy needs.

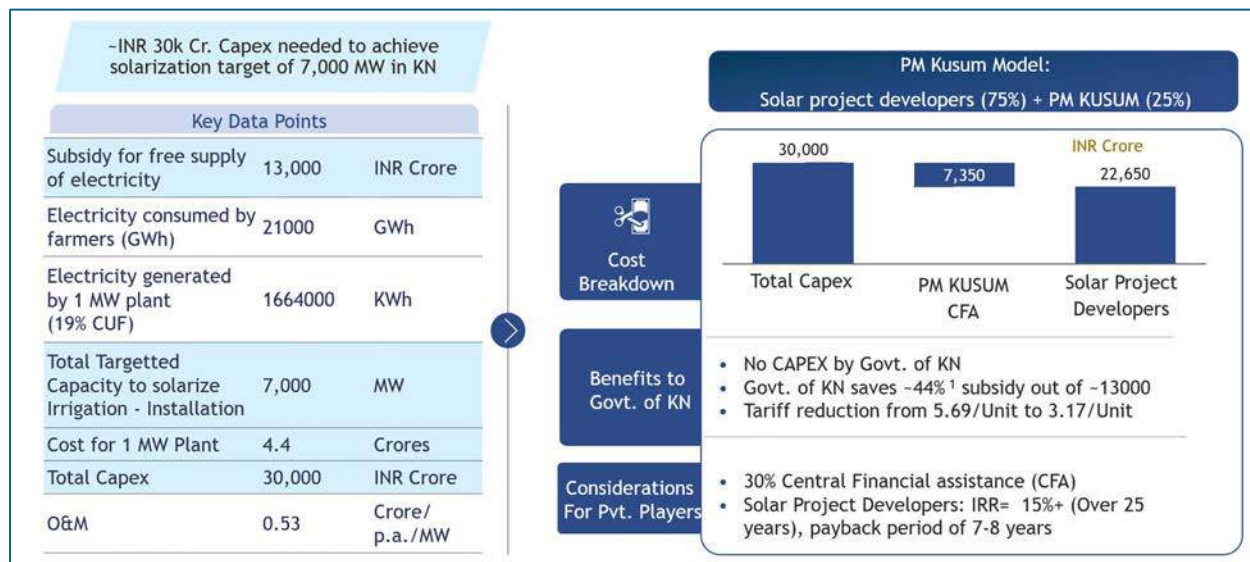


Figure 9.2.5: PM KUSUM C (FLS) model

1. Model 1: Introduction of Viability Gap Funding (VGF) by the Government of Karnataka

The first strategic approach involves the introduction of Viability Gap Funding (VGF) by the Government of Karnataka. Under this recommendation, referred to as **Model 1**, the Government would provide approximately 20% of the capital costs as VGF to incentivize private sector participation in the solarization of agricultural feeders.

This intervention is expected to result in a substantial reduction in tariff rates, lowering them by approximately INR 0.69 per unit. Over a 25-year period, this reduction would generate a net positive NPV for the Government, making it a financially sound and sustainable solution.

- **Structure:** PM KUSUM Component C (FLS) (25%) + Government VGF (20%) + Private Sector (55%).
- **Government investment and savings:** The tariff reduction could yield annual savings of INR 750 - 900 Crores for the Government, translating to a total of INR 7,500 - 9,700 Crores in Net Present Value over the next 25 years. The Viability Gap Funding (VGF) required would be INR 1,200 Crores per year for five years to support phased solarization of 100% capacity. Providing VGF upfront would make the initiative more attractive to bidders, thereby accelerating project execution
- **Benefits:** The VGF would reduce the tariff from the current INR 3.17/ unit under the PM KUSUM C scheme to INR 2.48/ unit. The lower upfront capital requirement and debt reduction



for private players would lead to further cost savings, maintaining their IRR at 15% or more, thereby attracting more bidders.

The figure below details out the model 1 i.e., Government VGF.

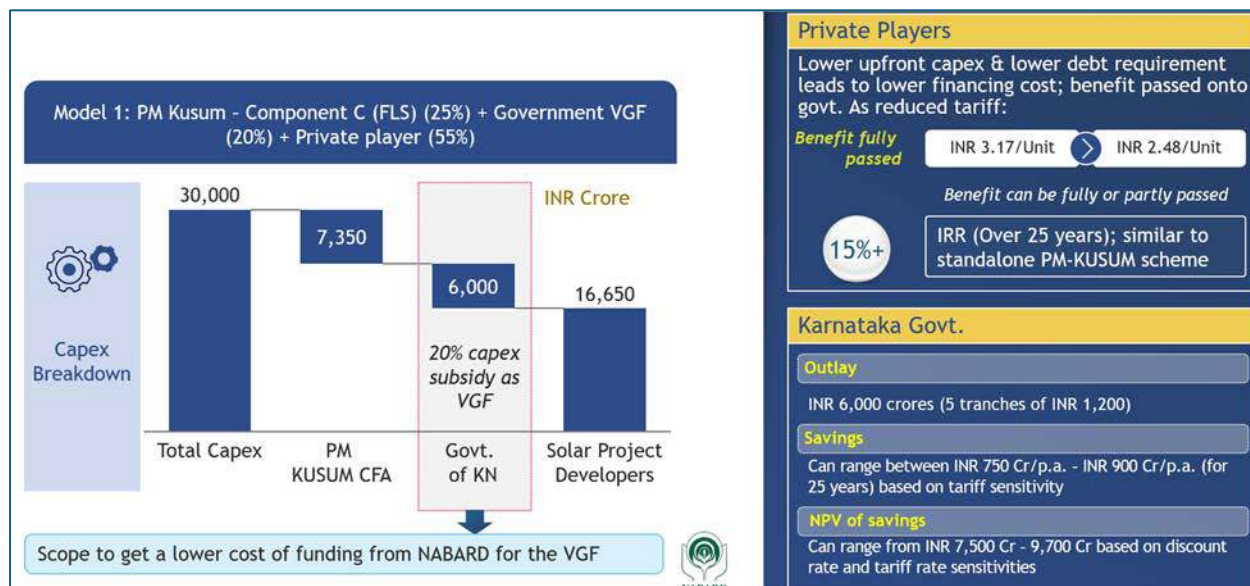


Figure 9.2.6: Model 1: Government VGF

2. Model 2: Accessing low-cost green funding

The second strategic approach focuses on reducing the cost of capital for private developers by securing low-cost green funding from institutions such as NABARD's line of credit and other specialized green finance mechanisms. This approach, referred to as **Model 2**, aims to lower financing costs for solar projects, thereby making them more attractive to private players.

By leveraging these green finance sources, the State can achieve a further reduction in tariffs by approximately INR 0.16 per unit over a 10-year period.

- **Structure:** PM KUSUM Component C (FLS) (25%) + Private Sector (75%) + Low-cost funding (reducing interest rates from ~10.7% to ~9% through entities like NABARD green line of credit etc.)
- **Benefits:** By accessing these low-cost funds, the tariff could be reduced from INR 3.17/unit to INR 3.01/ unit on a standalone basis. This reduction would yield an estimated savings of INR 80 – 140 Crores p.a. and NPV of INR 700 Crores to INR 1,300 Crores over 25 years, based on interest rate sensitivity.

Model 2: PM Kusum - Component C (FLS) + Low-Cost funds to Pvt. players

Capex Breakdown

Category	Value (INR Crore)
Total Capex	30,000
PM KUSUM CFA	7,350
Solar Project Developers	22,650

Cost of Capital for Solar developers reduced from

From	To
-10.7%	-9%

3. Model 3: Hybrid approach

The figure below provides a detailed breakdown of the projected savings from the implementation of this Hybrid Model.

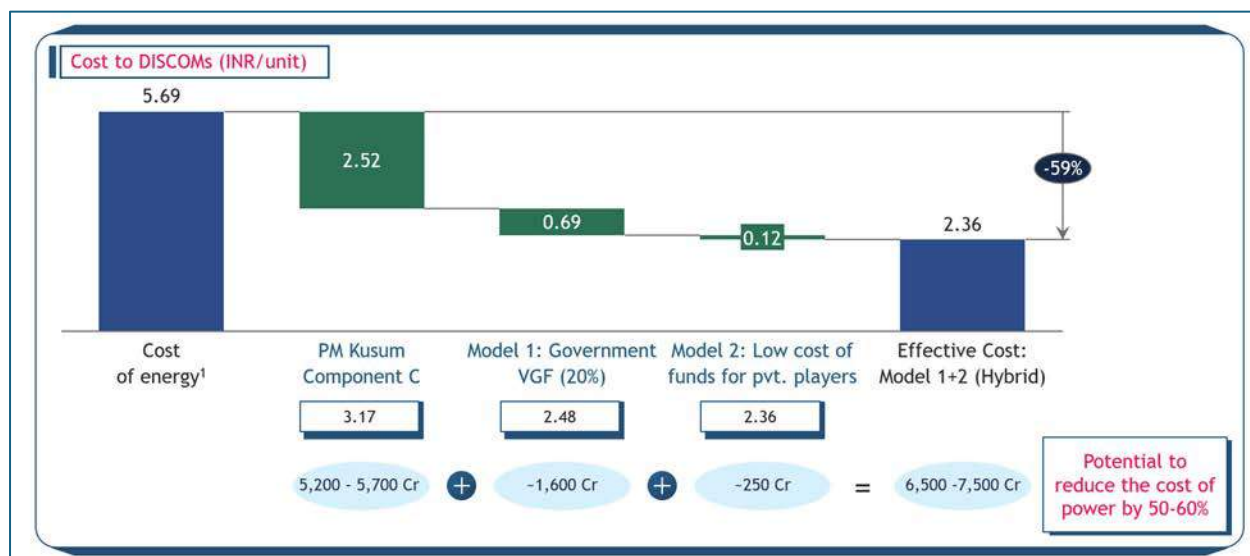


Figure 9.2.8: Hybrid approach

The combined impact of the **Model 1** and **Model 2** strategies has the potential to reduce electricity procurement costs to approximately INR 2.36 per unit. This would result in substantial savings of 50-60% on the irrigation power subsidy, which currently stands at around INR 13,000 Crores annually.

Additionally, the **Tariff Escalation Model** presents a viable alternative. This model offers immediate savings for the Government by starting with a lower initial tariff and gradually increasing it over the duration of the contract. This approach balances the Net Present Value (NPV) for both the Government and private players, ensuring long-term financial viability while maintaining high standards of service delivery. By aligning private sector incentives with long-term project success, the risk of reduced performance is mitigated.

Key Benefits

- **Upfront savings for the Government:** A lower starting tariff allows the Government to achieve significant savings in the early years of the project, providing immediate fiscal relief and reducing the upfront financial burden.
- **Long-term private sector commitment:** By structuring returns for private players to be backloaded, this model encourages private sector stakeholders to maintain high service standards throughout the contract term, as their financial returns increase in later years.
- **Optimized cash flow timing:** The model provides early savings for the Government while deferring higher payments to later years. Despite these adjustments, the NPV for both the

- **Mitigation of service delivery risks:** As private players recover their investments gradually, rather than upfront, the risk of reduced service delivery is minimized. This alignment of financial incentives ensures that private players remain committed to the project's long-term success.

The Tariff Escalation Model strikes an effective balance between immediate cost savings for the Government and long-term financial incentives for private players. However, it is crucial to ensure that the deferred revenue structure remains attractive to private sector participants to secure their continued involvement ensuring the model's success in both delivering cost savings and maintaining high service standards.

The figure below demonstrates the tariff-escalation model and differences in savings for the State.

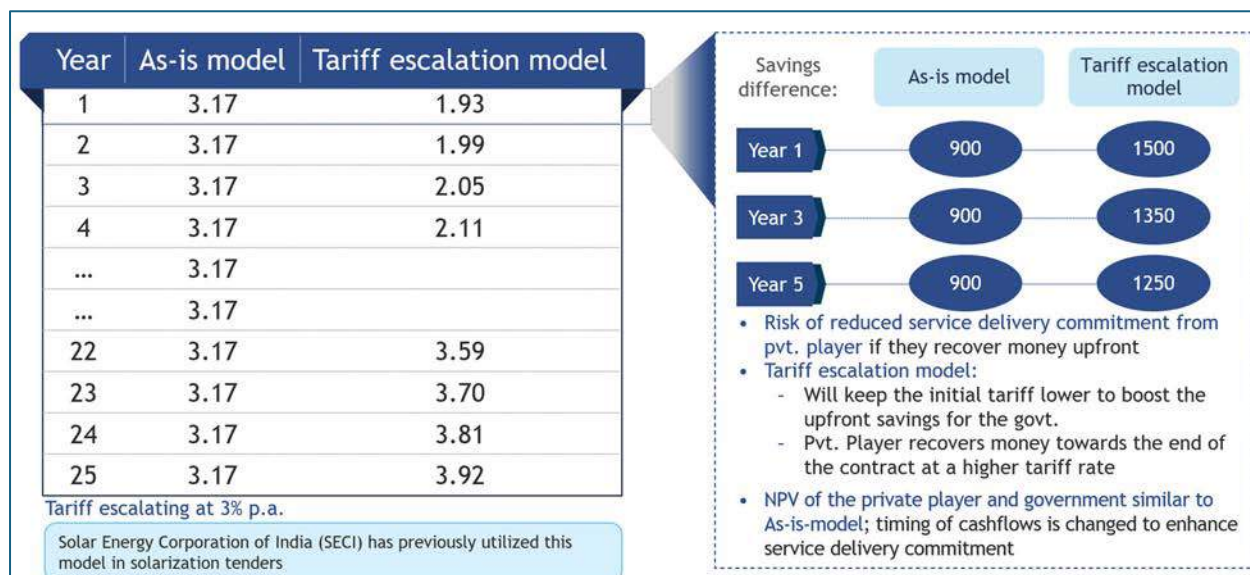


Figure 9.2.9: Tariff escalation model

9.2.4: Value potential

Karnataka could also explore a **tariff escalation model**, which would begin with lower tariffs in the initial years, providing immediate fiscal relief, while ensuring that private developers recover their investments in the later years of the project. These combined interventions are projected to reduce the State's subsidy expenditure by an estimated 50%-60% over the targeted 7,000 MW capacity, resulting in annual savings of approximately INR 900 – 1,000 Crores.

9.2.5: Status of the recommendation

- Go-ahead given in inter-departmental meeting between Finance Dept. and Energy Dept. under the chairmanship of ACS Finance and ACS Energy, along with presence of MD KPTCL, MD KREDL, MDs of ESCOMs, MD KERC

- ### 9.2.6: Next Steps

- NABARD and KREDL are set to finalize the financial product through a G2G (Government-to-Government) meeting, with the formalization of this engagement to follow through the signing of a Memorandum of Understanding (MoU)
- In parallel, alignment with the Karnataka Electricity Regulatory Commission (KERC) will be sought to ensure the financial product complies with regulatory standards and maintains consistency with Karnataka's energy regulations
- Once these steps are completed, the finalized financial product will be incorporated into the tender documents for the upcoming PM KUSUM C (Feeder Level Solarization - FLS) tenders



9.3: Health Department: Subcenter personnel optimization

9.3.1: Context and background

The study, carried out across three districts—Kolar, Haveri, and Koppal—focused on three key areas of optimization: Subcenter Footprint, Workforce Capacity utilization, and Vacancy Management. Population projections, population density, and accessibility within 30 minutes for Outpatient Department (OPD) services were key factors in determining the optimal distribution of subcenters. A detailed workload analysis was conducted for PHCOs, CHOs, and HIOs to assess staffing needs based on actual work hours. The study also explored the potential use of contractual employees under the National Health Mission (NHM) to fill vacancies and reduce costs.

Throughout this process, ensuring uninterrupted service delivery remained the top priority, with an emphasis on maintaining healthcare access. This study provides a model for other districts to follow when requesting additional healthcare staff, ensuring cost-efficient operations while safeguarding the quality of healthcare services.

9.3.2: Recommendation

To address the staffing and infrastructure needs of Karnataka's healthcare subcenters, the following recommendations are proposed with a focus on cost-efficiency while maintaining high-quality service delivery:

1. Subcenter Footprint Optimization

Based on the findings from Kolar, Haveri, and Koppal, it is recommended to optimize the number and location of subcenters to ensure efficient service coverage. Population projections for 2027 indicate a decline in rural population growth in districts such as Kolar and Haveri, where certain subcenters may be consolidated. In contrast, districts like Koppal, where population growth continues, may require additional subcenters. Subcenters will be strategically positioned to ensure no citizen is required to travel more than 30 minutes for basic OPD services. Geo-mapping

2. Workforce Capacity Optimization

- **Maintain 1 PHCO per 5,000 people**, as they are operating efficiently at near-full capacity.
- **Repurpose CHOs**, who are currently operating at 30-35% capacity, by assigning them additional responsibilities, such as data entry, which is presently managed by PHCOs. This redistribution will reduce the workload on PHCOs and improve CHO utilization.
- **Expand HIO responsibilities**, as they are operating at 50-55% capacity. By assigning each HIO to manage four subcenters instead of two, their efficiency can be significantly enhanced without the need for additional headcount.

Currently, there are 1,800 NHM PHCOs and 500 NHM HIOs employed under the National Health Mission (NHM), who incur a lower cost compared to regular staff. It is recommended to continue leveraging these contractual employees to fill remaining vacancies after optimizing the subcenter footprint and workforce capacity. NHM employees have demonstrated equal or higher efficiency than regular employees, while their salaries are significantly lower (INR 14,000 compared to INR 40,000 for regular staff). This approach will reduce the financial burden on the State while maintaining service quality.

By implementing these strategies, the original request for 3,500 PHCOs and 1,000 HIOs has been optimized. Following the rationalization of subcenters, improved workforce utilization, and the use of NHM contractual staff, the final requirement is expected to be reduced to approximately 700-1,000 PHCOs, with no additional HIOs needed.

Unlocking State Budget Potential



	Parameters	Description
A. Footprint Optimization	1. Population	2027 rural population projected based on decreasing growth rate method
	2. Population Density	Geo mapping shall be done on Google maps based on the template shared with H&FW Dept. (Assuming uniform population distribution in taluk and serviceable distance based on population density - maximum 30 minutes to avail OPD)
	3. Time/ Distance to be travelled	
B. Workforce capacity optimization	4. Workload Analysis (Work-time mapping)	PHCOs are operating optimally (90-100% capacity) - The recommendation is to continue with 1 PHCO per 5,000 population CHOs are operating at 30-35% capacity - It could be considered to repurpose the role HIOs are operating at approximately 50% - 55% capacity - The recommendation is to tag HIOs to a larger population as they have the capacity to serve 4 subcenters instead of 2 currently
C. Vacancy management	5. Leverage contractual NHM employees	Contractual employees to be utilized to fill vacancy (INR 14,000 (40% borne by State) vs INR 40,000)

Table 9.3.1: Footprint optimization and workforce capacity optimization parameters

This study serves as an exemplar for guiding other districts in rationalizing their staffing and infrastructure demands before submitting new requests.

9.3.3: Description of recommendation

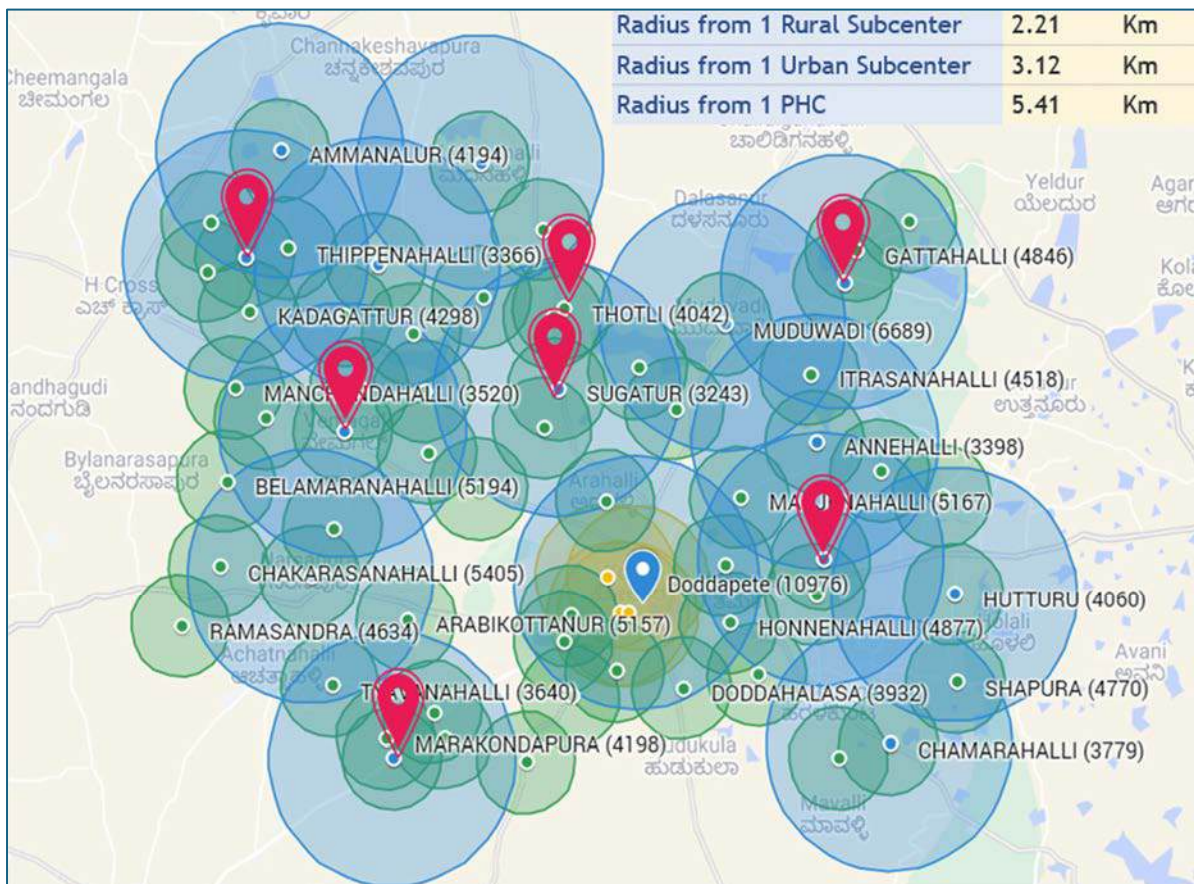
The recommendation to enhance Karnataka's healthcare infrastructure and staffing focuses on three strategic areas: Footprint Optimization, Workforce Capacity Optimization, and Vacancy Management. These strategies are designed to ensure the optimal distribution of subcenters,

A. Footprint Optimization:

- ### Geo mapping & clustering analysis:

For example, in Kolar Taluk, a geo-mapping analysis revealed significant clustering among subcenters. Seven subcenters—Holur, Kembodi, Kyalanur, Sugatur, Thotli, Vemagal, and Vakkaleri—were identified for consolidation, reducing the total number of subcenters in Kolar from 57 to 50 without affecting service delivery.

In the accompanying figure, red markers indicate regions with overlapping subcenters, highlighting potential areas for consolidation. It is recommended that this geo-mapping approach be adopted Statewide to ensure the efficient distribution of healthcare facilities and prevent redundancy.



B. Workforce Capacity Optimization:

A comprehensive time and workload analysis was conducted for the three key roles at the subcenter level—Primary Health Care Officers (PHCOs), Community Health Officers (CHOs), and Health Inspection Officers (HIOs). This assessment, based on interviews and direct observations across multiple subcenters in Kolar, Haveri, and Koppal districts, consistently demonstrated high utilization for PHCOs, significant underutilization of CHOs, and untapped capacity for HIOs. The findings, which inform strategic decisions for workforce optimization, are detailed below:

- **Primary Health Care Officers (PHCOs)**

PHCOs are functioning at near-full capacity, utilizing over 90% of their available time. Their responsibilities include implementing approximately 42 national health programs, with a strong emphasis on antenatal care (ANC), postnatal care (PNC), family planning for eligible couples, and

The second half of their daily routine involves maintaining digital records across several national health platforms such as RCH, U-WIN, ANMOL, HMIS, PMSMA (Pradhan Mantri Surakshit Matritva Abhiyan), and FPMIS (Family Planning Management Information System), alongside physical registers for documentation. This dual system of data entry is time-consuming and could be streamlined by integrating platforms, reducing redundancy and enhancing efficiency. Under current guidelines, a single PHCO is effectively managing a population of approximately 5,000 people.

PHCO (Workload Analysis)						
	Category	Description	Beneficiaries	Time/entry	Total mins/Month	
Field Visits	ANC and PNC care	ANC PNC care for pregnant women and new mothers	5 - 6 births/month	45 - 50 women/month	15 mins	2700
	Eligible Couple	Distribution of OCPs, CCPs, Antra injections (DMPA) and family planning awareness	5 - 6 new couples/month	30 - 40 couples/month	10 mins	1200
	Immunization	Immunization and vaccination of children	5 - 6 births/month (vaccines in intervals of 1 month, 2.5 months, 6 months, 1 year)	50 - 60 kids/month	4 - 5 sessions/month	1200
	Other National Programs	Awareness campaigns on family planning, vaccination initiatives, and camps held at Anganwadi centers and schools	2 camps per week	6 - 8 camps	4 hours	1920
	TOTAL				7020	
	Category	Description	Entries	Time/entry	Total mins/Month	
Record Keeping	Online Portals	1. RCH Portal	Eligible Couple	5 - 8/month	10 - 15 Mins	90
			ANC registration	5 - 8/month	10 - 15 Mins	90
			Child Immunization	50 - 60/month	5 mins	300
			Profile Update	once a year	5 Mins	1
			2. ANMOL (ANM APP)	Similar data as RCH Portal		481
			3. HMIS AT HWC LEVEL	Aggregate monthly Data numbers	once a month	2 Hours
	Physical Registers	4. FPMIS (FAMILY PLANNING MANAGEMENT INFORMATION SYSTEM)	Distribution of OCPs, CCPs, Antra injections (DMPA)	30 - 40/month	15 - 20 mins	525
		5. PMSMA (PRADHANA MANTHRI SURAKSHA MATRUTVA ABHIYANA)	Pregnant Women Examination portal	10 - 15/month	5 - 10 mins	120
		6. U - WIN PORTAL - IMMUNISATION	Child Immunization	5 - 6/month	15 - 20 mins	120
		Maintaining Physical registers of the same data	Similar data entered in the registers for physical inspection			1125
TOTAL				10,413		
Total Time Available		24 days of 8 hours working			11,520	
Capacity Utilization=					90%	

- **Community Health Officers (CHOs)**

The analysis revealed substantial underutilization of CHOs, with only 30-35% of their available capacity being effectively employed. Their primary responsibility is managing non-communicable diseases (NCDs), for which they conduct weekly camps. However, the demand for their services at subcenters is notably low. Interviews with medical officers and other stakeholders indicated that patients generally prefer visiting Primary Health Centers (PHCs) for outpatient services, where MBBS doctors are available for consultation, reducing the workload for CHOs at the subcenter level.

For instance, in Kolar, CHOs attend to only 10-15 outpatient Department (OPD) patients per day, whereas PHCs handle over 200 patients. Most patients visiting subcenters are primarily there to collect previously prescribed medication, limiting the CHO's involvement in direct patient care.



Additionally, CHOs have minimal digital workload, primarily limited to managing the NCD portal and generating Ayushman Bharat Health Account (ABHA) cards. Given this underutilization, it is recommended that CHOs be redeployed to PHCs, where their expertise and time can be better utilized to manage higher patient volumes.

CHO (Workload Analysis)						
	Category	Description	Entries	Time/entry	Total time/Month	
Field Visits	OPD Works	Diagnosis of patients coming to Subcenter	10 - 15/day	3 - 5 mins	1040	
	Tele Consultations	Tele Consultations over the call	5/day	5 mins	500	
	Health Camps	Non communicable Diseases camps	above 30 years - checking BP, diabetes etc.	4 camps/Month	3 hours	720
Record Keeping	CHO Workload Analysis		Description	Entries	Time/entry	Total time/Month
	Online Portals	1. HWC Portal	OPDs and NCDs in a day	10 - 15/day	2 Mins/day	40
		2. NCD App	Details of beneficiaries in NCD app filled	5 - 6/daily	10 mins	1000
		3. e - SANJEEVINI	Tele Consultations	5 - 10/day	5 - 10 mins/day	100
		4. ABHA CARD GENERATION	The Abha Card (Ayushman Bharat Health Account) is a digital health ID	40 - 50/month	5 - 10 mins/ card	320
	Physical Registers	Maintaining Physical registers of the same data	Similar data entered in the registers for physical inspection	10 - 15 mins/day	240	
	Total Time Available		24 days of 8 hours working			11520
Capacity Utilization =					34%	

Figure 9.3.3: Time work analysis of CHOs

- Health Inspection Officers (HIOs)

HIOs are responsible for the management of communicable diseases, focusing on surveillance, identification, and control of diseases such as leprosy, tuberculosis, malaria, and other vector-borne diseases. While much of the groundwork, such as identification and sample collection, is conducted by ASHA workers, HIOs supervise these activities, transport samples to laboratories, and maintain data on national health platforms like IHIP (Integrated Health Information Portal), NIKSHAY (for tuberculosis control), and Sparsha (for leprosy control).



HIO (Workload Analysis) - 10,000						
	Category	Description	Entries	Time/entry	Total time/Month	
Field Visits	Sample Collection	leprosy, larvae surveys, tuberculosis, malaria, and blood smear tests and other vector borne disease	Identification and Sample collection	25 - 30 houses/day 5 - 10 mins	3,500	
	House to House visits	School visits and camps	Awareness regarding communicable diseases and their prevention	3 - 4/Month 3 hours	540	
Record Keeping	HIO Workload Analysis		Description	Entries	Time/entry	Total time/Month
	Online Portals	1. IHIP (Integrated Health Information Portal)	Real-time data gathering and monitoring of disease outbreaks.	20 - 25/day	3-5 mins	1,200
		2. NIKSHAY	Tuberculosis data	Whenever Identified - depends on cases		
		3. LEPROSOSY (SPARSHA)	Leprosy Data			120
	Physical Registers	Maintaining Physical registers of the same data	Similar data entered in the registers for physical inspection		10 - 15 mins/day	240
	Total Time Available		24 days of 8 hours working		11520	
Capacity Utilization=					49%	

Figure 9.3.4: Time work analysis of HIOs

With ASHAs taking on greater responsibilities, including data entry on certain platforms, the workload for HIOs has decreased. The analysis indicates that HIOs currently operate at around 50% capacity, suggesting they could manage up to four subcenters, as opposed to the current two, without impacting service quality. Optimizing their workload distribution could improve efficiency across the district.

The time and workload analysis provides valuable insights into the utilization of key healthcare personnel at the subcenter level. These findings should inform future staffing decisions, ensuring that resources are allocated where they can be most effectively utilized. Further details and time-study data are included in the Appendix 10.12 for reference.

C. Vacancy Management:

Currently, 2,016 Primary Health Care Officers (PHCOs) are sanctioned under the National Health Mission (NHM), of which 1,796 positions are filled. Similarly, 629 Health Inspection Officers (HIOs) are sanctioned, with 496 positions filled. Despite this, these existing NHM personnel were not factored into the present request for an additional 3,500 PHCOs and 1,000 HIOs.

It is important to emphasize that NHM employees possess qualifications and deliver work output on par with their regular counterparts. In fact, in many instances, their efficiency surpasses that of regular employees, largely due to performance-based annual contract renewals, which serve as an incentive for enhanced effort. Additionally, there is a significant salary differential, with regular PHCOs and HIOs earning approximately INR 40,000, compared to INR 14,000 for NHM staff.

Given these factors, NHM employees present a cost-effective and efficient option to address staffing gaps following footprint and workload optimization. Their inclusion in vacancy filling



would not only optimize resource utilization but also ensure continued high-quality service delivery.

Other considerations for optimizing CHO Roles and reducing PHCO burden

To further enhance healthcare service delivery at the subcenter level, three additional strategies have been identified to improve the utilization of Community Health Officers (CHOs), reduce the workload of Public Health Care Officers (PHCOs), and increase overall subcenter efficiency.

1. Potential to Revise CHOs' Scope of Work

Currently, CHOs are significantly underutilized, with only 30-35% of their capacity being engaged. This underutilization is primarily since patients prefer accessing outpatient services (OPDs) at Primary Health Centers (PHCs) where doctors are available, leaving CHOs largely responsible for dispensing previously prescribed medications at subcenters.

To address this inefficiency, CHOs can be reassigned additional responsibilities, such as taking over the data entry duties currently performed by PHCOs. These data entry tasks, which are related to various health portals, consume 30-40% of a PHCO's working hours. By transferring this administrative burden to CHOs, PHCOs can dedicate more time to direct patient care and outreach programs. Moreover, exploring the possibility of transitioning female CHOs into PHCO roles could further balance workloads and enhance service delivery outcomes.

2. Portal Integration to Reduce PHCO Burden

PHCOs are currently required to manage multiple unintegrated health information portals, including U-Win, ANMOL, and the Reproductive and Child Health (RCH) portal. This lack of integration results in significant duplication of data entry across both digital and physical registers.

On average, PHCOs spend an additional 10-15% of their time performing redundant tasks due to the absence of platform integration. By integrating these health portals and implementing a system of unique patient IDs, administrative burdens can be significantly reduced. This will free up PHCOs to focus on their primary duties, such as community outreach, preventive care, and health education. Streamlining these tasks will directly improve operational efficiency at subcenters and enhance service delivery.

3. Retagging Subcenters to nearby PHCs

In some districts, particularly in Koppal, PHCOs are required to travel substantial distances—sometimes over 20 kilometers—to reach their assigned PHCs, despite the availability of closer



PHCs. For example, the Karkihalli subcenter is currently tagged to the Ginigeri PHC, even though more geographically convenient PHC options exist.

This misalignment increases travel time, reducing the time PHCOs can spend on patient care and community outreach. A systematic retagging of subcenters to nearby PHCs would optimize travel efficiency, allowing PHCOs to serve their communities more effectively. This realignment would result in increased patient care time, improved service accessibility, and overall enhancement of healthcare delivery.

The optimization of subcenter infrastructure—through the use of population projections and geo-mapping—along with the repurposing of underutilized workforce roles such as CHOs, and the effective deployment of the cost-efficient NHM workforce for remaining vacancies, will ensure more efficient healthcare service delivery. These strategies should be thoroughly considered by districts before requesting additional staffing, enabling a streamlined allocation of resources, improved healthcare access, and resolution of staffing gaps in a fiscally sustainable manner.

Detailed insights from the visits to Kolar, Haveri, and Koppal Districts

As part of a comprehensive assessment across three districts—Kolar, Haveri, and Koppal—detailed analyses were conducted to evaluate subcenter infrastructure, personnel requirements, and opportunities for optimization. Each district is unique, offering a well-rounded representation of diverse geographic, demographic, and socioeconomic factors, making them ideal for this study. Below are the key findings from each district, outlining strategies to optimize healthcare delivery and resource utilization.

1. Kolar Taluk – footprint optimization and cluster analysis

Kolar, located in the southern region of Karnataka, is a more developed district with a relatively dense population. However, despite its infrastructure, a footprint optimization analysis revealed overcrowding in several subcenter clusters. The focus was on identifying excess subcenters and optimizing the infrastructure without compromising healthcare access.

- Key Findings:
 - Current Subcenters: Kolar currently has 57 subcenters serving a population of 246,777.
 - Optimized Subcenters: Through cluster analysis, it was determined that 7 subcenters can be optimized, reducing the total number of subcenters from 57 to 50. The subcenters identified for optimization are: Holur, Kembodi, Kyalanur, Sugatur, Thotli, Vemagal, and Vakkaleri.



- ## 2. Haveri District (Suvarur Taluk) - Footprint Optimization & personnel adjustments

Haveri, located in central Karnataka, is a district with moderate development, offering an opportunity to optimize healthcare services by reducing infrastructure redundancy. In Suvanur



Taluk, a footprint optimization analysis identified excess subcenters and opportunities to streamline personnel deployment.

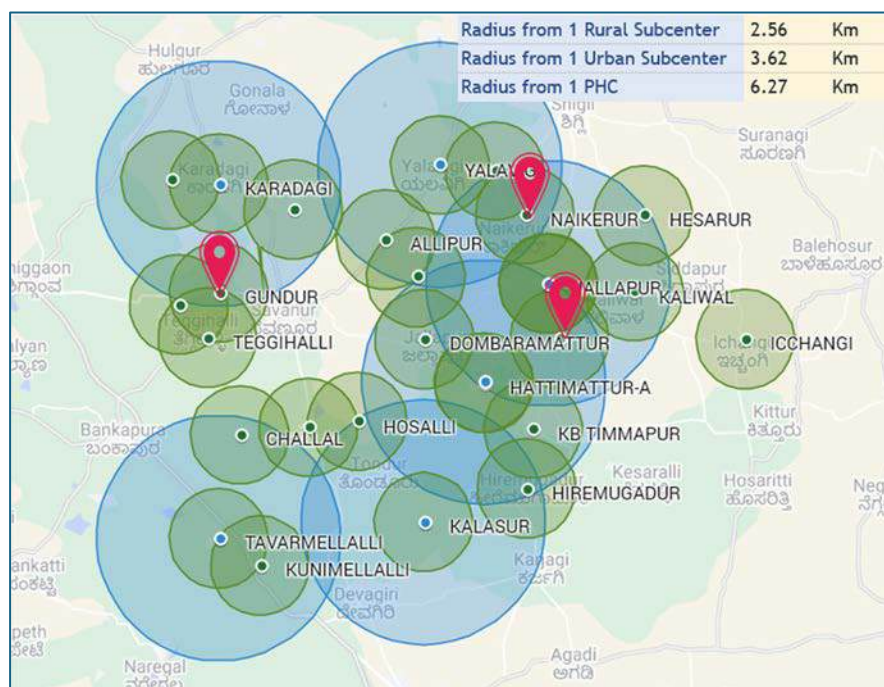


Figure 9.3.6: Geo mapping of subcenters and PHCs in Haveri

- **Key Findings:**
 - Current Subcenters: Suvanur has 29 subcenters.
 - Optimized Subcenters: Three subcenters—Naikerur, Krishnapur, and Gundur—were identified for optimization, reducing the total number of subcenters from 29 to 26.
- **Personnel Analysis and Optimization:**
 - PHCOs: Suvanur has 29 sanctioned PHCO posts, with 15 PHCOs currently deployed. The optimized requirement is 26 PHCOs to align with the optimized subcenter footprint.
 - CHOs: The district has 21 sanctioned CHO posts, with 17 CHOs currently deployed. The analysis suggests reducing the number of CHOs to 14 based on workload assessments.

- ### 3. Koppal District (Koppal Taluk) - Footprint analysis and validated demand

Koppal, located in northern Karnataka, is a relatively backward and underserved district with significant socioeconomic challenges. Despite its underdevelopment, the population size and service demand in Koppal Taluk necessitate an expansion of healthcare infrastructure. The footprint analysis revealed a valid need for additional subcenters and personnel, shifting the focus from optimization to updating posts based on validated demand.

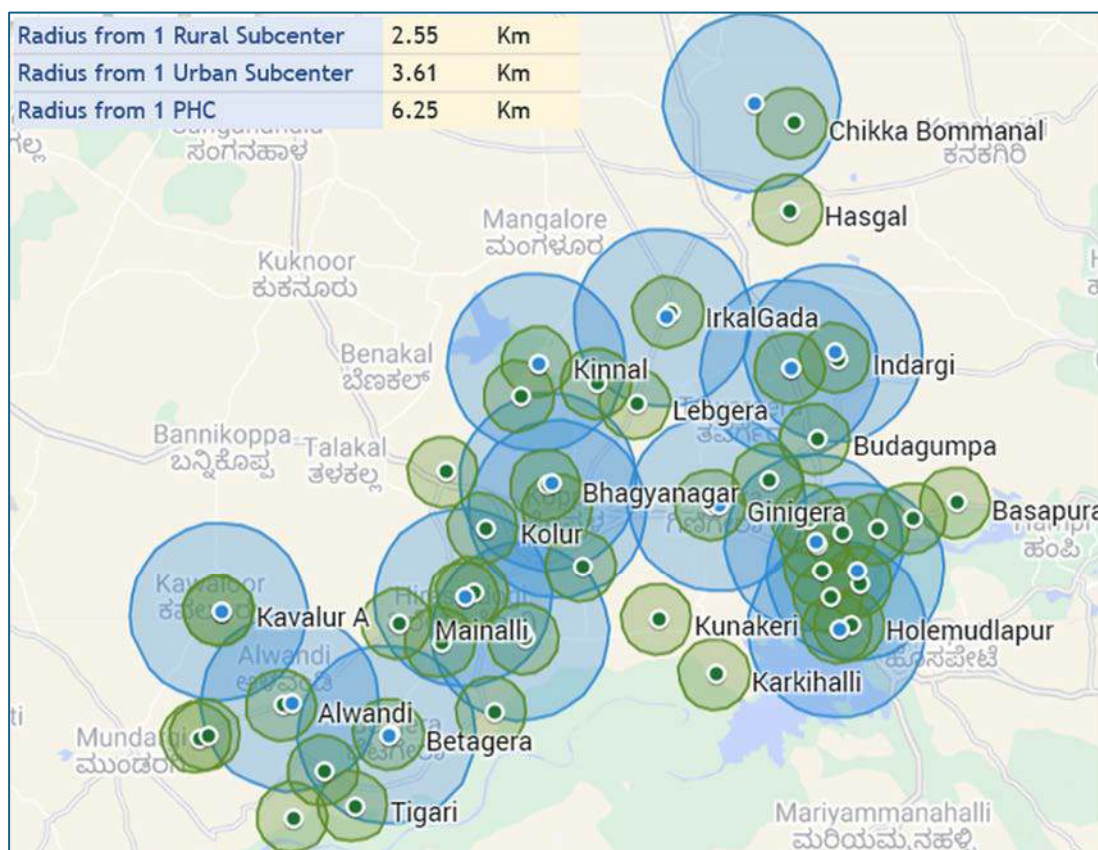


Figure 9.3.7: Geo mapping of subcenters and PHCs in Koppal

- ## Conclusion

In Kolar and Haveri, rationalizing the number of subcenters and streamlining the workforce resulted in substantial cost savings without compromising service quality. In Koppal, while the demand for additional subcenters is justified, optimizing the deployment of personnel still yielded considerable financial savings.



These strategies collectively present a scalable model for efficient, high-quality healthcare delivery across Karnataka, ensuring the optimal utilization of both financial and human resources.

9.3.4: Value potential

The Health Department's initial request for 3,000 to 3,500 Public Health Care Officers (PHCOs) and approximately 1,000 Health Information Officers (HIOs) to staff 9,200 subcenters across Karnataka—an initiative that would require an additional annual allocation of approximately INR 220 crore—has been reviewed. This assessment was guided by three key levers: Footprint Optimization, Capacity Utilization, and leveraging Existing National Health Mission (NHM) Employees.

For PHCOs, the Footprint Optimization analysis revealed that a 10-15% reduction in the number of subcenters is feasible in districts such as Kolar and Haveri, while districts like Koppal will maintain their current subcenter structure. This recalibration reduced the number of PHCOs required to 8,200–8,500. The Capacity Utilization analysis confirmed that PHCOs are already functioning at full capacity, and no further reductions in staffing needs are recommended. Furthermore, by leveraging the 1,800 PHCOs already employed under the NHM, the final vacancy requirement was reduced to between 700 and 1,000 positions.

For HIOs, a similar approach was employed. Through the Footprint Optimization process, the required number of HIOs was revised to approximately 4,100–4,200. Capacity Utilization analysis revealed that HIOs are currently operating at only 50% capacity, indicating the potential for more efficient deployment. With this improved resource allocation, HIOs could manage additional subcenters. By considering the 500 NHM HIOs already in place, the need for additional HIO positions was reduced to zero.

This strategic approach, which focuses on Footprint Optimization, Capacity Utilization, and leveraging Existing NHM Employees, has resulted in a significant reduction in the originally requested workforce, leading to a more efficient and cost-effective allocation of healthcare personnel across Karnataka's subcenters. Even under conservative estimates, this optimization is projected to reduce costs by 40-50%, ensuring sustainable service delivery while maximizing the use of available resources.

The recommendation has an overall potential of saving INR 150 – 200 Crores per annum for the State.



9.3.5: Status of the recommendation

- Pilot study completed in Kolar, Haveri, and Koppal, focusing on footprint optimization and workload analysis for rural subcenters
- Study submitted to the Principal Secretary, Health & Family Welfare Department (H&FWD), Karnataka for review, with recommendations to replicate the optimization framework across the State to streamline and optimize staffing demands.



9.4: Public Works Department



9.4: Public Works Department

9.4.1: Context and background

In FY24, Karnataka allocated approximately INR 9,111 Crores to the Public Works Department (PWD), with a substantial focus on roads and bridges. Of this budget, 90% is directed toward roads and bridges, underscoring the state's prioritization of infrastructure development in these areas. The largest portion, INR 7,218 Crores (79% of the total budget), is allocated to capital expenditure for roads and bridges, while INR 1,032 Crores (11%) is designated for their maintenance and operational costs. The remaining budget covers other PWD functions, including INR 325 Crores for building capital expenditure and INR 276 Crores for building maintenance.

The following Figure 9.4.1 shows break up of the PWD budget basis different Heads of Account.

Focus of analysis			
H/A	Item	Total (Cr)	% Total
5054	Roads & bridges Capex	₹ 7,218	79%
3054	Roads & bridges Revenue Exp	₹ 1,032	11%
4059	Building Capex	₹ 325	4%
2059	Building Revenue Exp	₹ 276	3%
4216	Quarters Capex	₹ 80	1%
2216	Quarters Revenue Exp	₹ 125	1%
3054	Interest Servicing (Roads & bridges Revenue Exp)	₹ 55	1%
Total		₹ 9,111	100%

Figure 9.4.1: PWD Budget break-up FY24²⁶

The execution of the roads and bridges projects is managed by four main implementing entities:

- Karnataka Road Development Corporation Limited (KRDCL)
- Karnataka State Highways Improvement Project (KSHIP)

²⁶ H/A= Head of Accounts; PWD Dept is divided into 4 Divisions: North, Northeast, South, Center



- State Highway Development Project (SHDP), and
- PWD's divisional offices.

This budget layout highlights the state's commitment to advancing road infrastructure as a critical component of the state's development.

9.4.2: Issues observed

This section identifies three critical issues affecting the efficiency and cost-effectiveness of Public Works Department (PWD) projects, as summarized in the Figure 9.4.2 below.

- Significant cost and time overruns,
- Limited standardization across projects, and
- Non-competitive Schedule of Rates (SoR) compared to other states

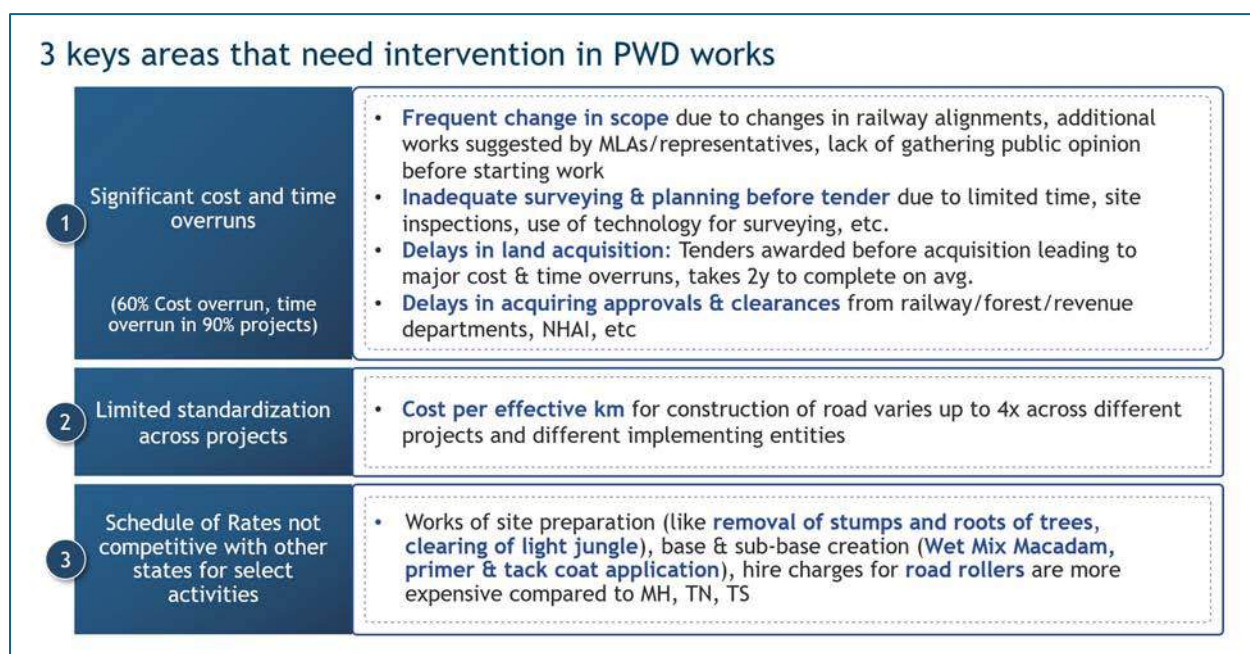


Figure 9.4.2: Key issues identified in PWD works

9.4.2.1: Significant cost & time overruns

Detailed analysis of past works of KRDCL and KSHIP has established that there are significant cost and time overruns in PWD projects. These are primarily due to frequent scope changes, inadequate planning, and delays in land acquisition and approvals. Scope adjustments often result from changes in railway alignments, additional work requested by public representatives,



and insufficient public consultation prior to project initiation. Moreover, limited site inspections, lack of detailed planning, and minimal use of advanced surveying technology contribute to inefficiencies even before tendering. Persistent delays in land acquisition, which can take up to two years, and prolonged approval processes from departments like railway, forest, and revenue further compound these issues, inflating both timelines and costs.

Cost overruns in KRDCL

An analysis of 10 packages as part of the Bangalore surrounding roads project being implemented by KRDCL reveals substantial cost overruns, with an increase of at least 59% in cost across packages as per revisions and forecasts done by KRDCL in July'23. Originally budgeted at INR 2,095 Crores, the revised costs for these projects are now expected to reach INR 3,327 Crores. The main contributors to these cost escalations are construction costs, land acquisition, and price adjustments.

- **Construction costs** alone account for a 38% contribution to cost overrun, driven by scope changes due to revised alignments, additional work requirements, and legal adjustments such as GST revisions.
- **Land acquisition** is expected to contribute to 31% of the cost overrun, majorly due to factors like underestimated requirements, settlement fees payments, and unexpected costs for structure relocation.
- Additionally, **price adjustments** have contributed 17% to the cost increase, resulting from escalations due to delays attributed to administrative approvals.

Furthermore, 9 out of 10 packages are delayed, with the average extent of overrun exceeding 110% of the average contract duration of 24 months. These projects have already experienced an average delay of 34 months, significantly longer than the initial contract period of 30 months, primarily due to land acquisition challenges. This data underscores the need for more accurate cost estimation, improved land acquisition processes, and stricter adherence to project timelines to mitigate cost and time overruns in KRDCL packages.

The below Figure 9.4.3 shows cost overruns in the Bangalore surrounding road works being undertaken by KRDCL:



Package	Approved Project Cost (Cr)	Expected revised cost (Cr)		Contribution to total revision in project cost			
				Construction cost	LAQ	Price Adjustment	Utilities shifting
1	254 Cr	367 Cr	+44%	17%	42%	15%	17%
2A	233 Cr	275 Cr	+18%	27%	-12%	42%	13%
2B	316 Cr	336 Cr	+6%	105%	-192%	108%	24%
2C	69 Cr	156 Cr	+126%	67%	-3%	18%	-1%
2D	97 Cr	215 Cr	+121%	70%	-1%	17%	4%
3A	199 Cr	294 Cr	+47%	28%	46%	19%	4%
3B	194 Cr	312 Cr	+61%	7%	60%	13%	10%
4A	312 Cr	457 Cr	+47%	18%	49%	13%	41%
4B	287 Cr	553 Cr	+93%	25%	62%	11%	-5%
4C	134 Cr	362 Cr	+171%	9%	14%	15%	-2%
Total	2095 Cr	3327 Cr	+59%	38%	31%	17%	7%

Figure 9.4.3: Cost overrun analysis in KRDCL²⁷

Time overruns in KSHIP

Time overruns present a significant challenge in Karnataka State Highways Improvement Projects (KSHIP) I and II, with half of the projects (42 out of 84) experiencing delays exceeding 12 months as depicted in Figure 9.4.4. Although the average expected contract period is 22 months, a large proportion of projects have exceeded this timeline, with delays ranging from under six months to over three years. Only a small fraction of projects were completed before or on time, highlighting systemic issues in timeline management.

²⁷ Bangalore surrounding roads projects revised estimate prepared by KRDCL and submitted to PWD Secy in July'23. Numbers are subject to changes and further revisions. Changes in costs of DPR consultants and PMC consultants were negative for all projects except Package 4C. Package 3B is complete. Other cost heads include: contingency, admin charge, road safety, railway deposits, supervision, etc.

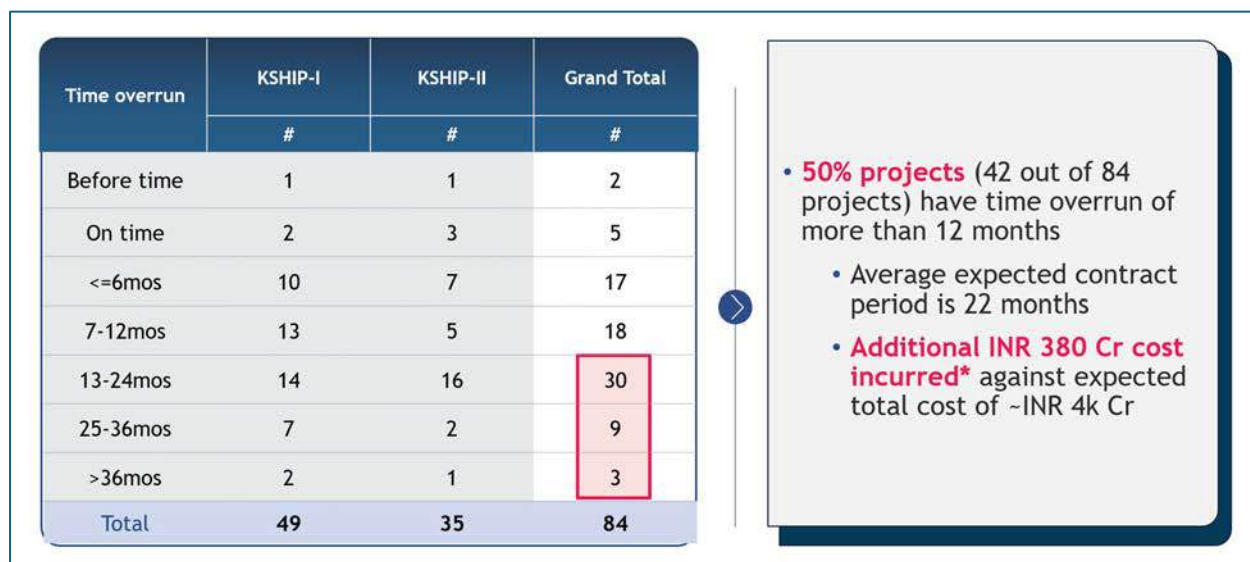


Figure 9.4.4: Time overrun analysis in KSHIP ²⁸

This delay has led to substantial financial consequences, with an additional INR 380 Crores incurred above the initially estimated project cost of approximately INR 4,000 Crores. This is excluding any cost overruns due to land acquisition, utilities shifting, change in scope, etc and primarily reflects the effect of price escalation (in case of HAM projects) and variation (in case of item rate projects). The time and cost overruns in KSHIP projects underscore the need for stronger project planning, monitoring, and risk management to prevent these extensive delays and associated financial impacts.

9.4.2.2: Limited standardization across projects

An analysis of six projects, for which data was shared by the respective agencies, reveals significant cost variations per kilometer in civil works across Karnataka State Highways Improvement Project (KSHIP) and KRDC projects, as shown in the Figure 9.4.5 below.

²⁸ Source: KSHIP website. Only completed works of KSHIP 1 and 2 taken up. Projects that were terminated and handed over to NHAI have been excluded. *Cost overruns includes effect of price escalation in HAM and variation in item rate but excludes cost for LAQ, utilities shifting, change in scope, etc.

Figure 9.4.5: Cost comparison across projects²⁹

While these disparities may be attributed to various factors such as site conditions, use of innovative cost-reduction techniques, differences in lane width, difference in specifications, and varying Schedule of Rates (SoR), it underscores the requirement of normative cost guidelines to identify and address inconsistencies in project cost estimation and specification, allowing for more uniform and efficient financial planning across similar projects.

An analysis of Karnataka's Schedule of Rates (SoR) reveals a 15-30% higher rates for Karnataka for several line items when compared to neighboring states like Tamil Nadu, Telangana, and Maharashtra, as shown in Figure 9.4.6 below. For example, the hourly hire charge for a road roller in Karnataka is INR 1,560, significantly higher than INR 990 in Tamil Nadu and INR 1,750 in Telangana. Similarly, site clearance costs, such as the removal of tree stumps and roots, range

³⁰ Here, partial cost is defined as the sum of cost of earthwork, sub-base, base and pavement components and effective length of the project is the weighted length in kilometers according to number of lanes



from INR 600-3,500 in Karnataka, whereas the rates are substantially lower in Tamil Nadu (INR 100-200) and Telangana (INR 20-80).

Line Item	Unit	Karnataka	Tamil Nadu	Telangana	Maharashtra
Hire charges					
• Road roller	INR/hour	1560	990	1750	-
Site clearance					
• Removal of stumps & roots of trees (girth 300-1800mm)	INR/each	600-3500	100-200	20-80	500-3000
• Clearing of light jungle ¹	INR/100 sqm	745	-	644	-
Base & sub-base creation					
• Wet Mix Macadam (Plant Mix) basis MoRTH 406	INR/m3	2500	-	-	2000
• Primer coat on WMM surface basis MoRTH 502 ²	INR/m2	41	-	-	31
• Applying tack coat on prepared surface with Bituminous Emulsion	INR/m2	14	-	-	13
Road furniture					
• Kilometer stone ³	INR/each	2900	2200	-	-

Figure 9.4.6: Comparison of SoR items with other states³¹

Base and sub-base creation costs, such as for Wet Mix Macadam (WMM) and primer coat application, also show inconsistencies, with Karnataka's rates at INR 2,500 per cubic meter for WMM, compared to INR 2,000 in Maharashtra. Differences are also noted in road furniture costs; for instance, kilometer stone installation is priced at INR 2,900 in Karnataka, in contrast to INR 2,200 in Tamil Nadu.

These discrepancies highlight the need for SoR standardization to make Karnataka's rates more competitive and aligned with neighboring states. Additionally, differences in specifications, such as assumptions related to thickness of primer coating and weight of kilometer stone, could also potentially be reasons for inconsistency and can be explored for standardization. This would improve budget predictability and reduce project costs across the state.

9.4.3: Recommendations proposed

This section presents a series of targeted reforms aimed at enhancing the quality, efficiency, and accountability of Public Works Department (PWD) projects. Drawing on insights from prior analyses and best practices from NHAI, these reforms address critical areas such as obligations of

³¹ (1) Different flora listed in each state's SoRs (2) KN uses 0.7kg primer/sqm vs 0.6kg/sqm in MH (3) Kilometer stone specifications vary across states. E.g., KN has 6kg stones compared to TN's 4 kg stones



authority, DPR quality, review mechanisms, normative cost guidelines, and O&M expenditure management.

Key recommendations include:

- Introduction and enforcement of Conditions Precedent for timely land acquisition and clearances
- Improvement of DPR quality
- Setup of a multi-disciplinary Capex Projects Review Committee
- Introduction of normative cost guidelines
- Updates to the Schedule of Rates (SoR) to align with competitive benchmarks
- Implementation of digital monitoring for real-time project tracking
- Use of innovative contract structures for repair and maintenance works

Together, these reforms aim to strengthen PWD's capacity to manage large-scale projects effectively, reduce cost and time overruns, and deliver better outcomes for the state.

9.4.3.1: Changes in Obligations of Authority

As described in sub-section 9.1.3.2 in the context of WRD projects, changes in obligations of authority should also be reviewed for PWD projects. It is recommended to consider addition and enforcement of Conditions Precedent clauses as mentioned below:

1. Timely Land Acquisition:

- 80% of the required land shall be acquired before floating the tender
- 90% of land acquisition shall be completed before awarding the tender
- Remaining land shall be acquired within 6 months of awarding the tender

2. Permits and Clearances in Authority's scope:

- Clearances from relevant authorities (Forest, NHAI, Revenue, etc.) shall be secured by the Authority before awarding the tender to prevent any future legal or operational roadblocks

3. Additionally, no tender shall be accepted, signed, or finalized **until the Conditions Precedent are met.**

This approach ensures that all preconditions for project execution are met before tenders are awarded, significantly reducing the likelihood of delays caused by land acquisition or incomplete clearances.



9.4.3.2: Improving the quality of DPR

To minimize cost & time overruns, it is essential to improve the quality of Detailed Project Reports (DPRs). For the same, linking consultant payments to key project milestones and execution, as well as standardizing qualification criteria across projects will help ensure that consultants deliver high-quality, execution-ready reports and meet consistent standards across projects. There are five key recommendations to achieve a higher quality to DPR preparation:

- **Standardize DPR Bid Evaluation Criteria:** To enhance the focus on technology and performance, it is recommended to increase the weightage for technology to 20% and for firm experience to 25%. Additionally, consultant evaluations should include weightage for past performance, with scores based on the last three years of DPR submissions.
- **Leverage Technology Interventions to Improve DPR Quality:** To ensure high-quality DPRs, it is advised to incorporate advanced technology interventions such as digital elevation methods, remote sensing, and 3D modeling for alignment. Additional tools like network survey vehicles and falling weight deflectometers should be used for pavement testing, while aerial LiDAR and GIS can enhance topographic surveys. GDR radargrams should be utilized for soil investigations, and remote sensing hydrology data should be applied for drainage design.
- **Implement a Rating and Scoring System for DPR Consultants:** It is recommended to rate and score DPR consultants based on their work quality and adherence to timelines in past projects. Strong warnings or blacklisting should be issued to very poor performers, and their work should be monitored closely to ensure compliance with expected standards.
- **Establish Standardized Deliverables and Checklists for DPR Preparation and Approval:** To streamline DPR preparation, a comprehensive checklist should be created, covering all required clearances and land acquisition plans. Payment terms should be linked to project execution milestones beyond just DPR creation, and financial implications should be enforced for significant deviations by the consultant during implementation.
- **Define a Robust DPR Review and Approval Process Involving Stakeholders:** It is recommended to establish a detailed review and approval process for DPRs that includes internal and external stakeholders. This process should encompass review stages for Inception, Feasibility, Land Acquisition, and Clearances. Final DPRs and Technical Schedules should undergo thorough review, with active interaction with district administration and relevant agencies for land and clearance approvals before finalizing alignment.

These recommendations aim to strengthen evaluation, improve quality through technology, and establish a robust review mechanism to enhance DPR development and approval processes.



9.4.3.2a: Standardize payment terms to increase DPR consultant accountability

To enhance accountability among DPR consultants, it is proposed that a portion of their payments be withheld until the project receives final approval and enters the execution phase. This approach ties consultant payments to key project milestones, ensuring that their work aligns with the requirements needed for successful project implementation. Payments would be released only after the following milestones are achieved: final approval of the utility shifting plan, declaration of identified land awards, award of project packages to the concessionaire, and the start of civil works. By linking payments to these crucial stages, PWD can encourage DPR consultants to deliver higher-quality, execution-ready project reports that are aligned with the practical needs of project implementation. Figure 9.4.7 below depicts the DPR consultant payment schedule for NHA projects, making it evident that almost 40-50% payment weightage is towards execution related items.

No.	Item Description	Payment %
1	Submission of final Quality Assurance Plans and Inception Report	10%
2	Approval of final Alignment Report	5%
3	Submission of final Feasibility Report	5%
4	Submission of 3A Notification, Draft 3A, and Approval of Final Land Acquisition Report containing details of 3A, 3A	5%
5	Submission of all utilities shifting proposals to user agencies and utilities relocation plan	2.50%
6	Submission of all stage I clearance proposals and submission of clearances report	5%
7	Approval of final DPR report, documents, and drawings	10%
8	Approval of bid documents and draft civil works contract agreement along with technical schedules	5%
9	3D publication for land parcels identified in item 4 above and submission of Land Acquisition II report	10%
10	Stage II clearance approval and submission of final clearances II report	5%
11	Final approval of utilities shifting estimates and submission of Utilities II report	2.50%
12	Completion of award declaration (3G) for 90% of land identified in item 9 & submission of Land Award report	10%
13	Earlier of award of package to contractor/concessionaire or 6 months from launch of tender process	10%
14	Receipt of land possession certificates (3E) for 90% of land parcels identified in LA II report and submission of Land Possession report	10%
15	Amount to be released at earlier of projects COD or 3 years from start of civil work	5%
16	Bonus on submission of draft 3A within 15 days of alignment finalization	1% bonus
17	Bonus on submission of draft 3D within 60 days of draft 3A	2.5% bonus
18	Bonus on receipt of possession certificate (3E) for more than 90% of land identified in item 9 above within 165 days of draft 3A	5% bonus
19	Bonus on submission of utility shifting proposal including clearance within 60 days of alignment finalization	1% bonus

Items worth **65-70% weightage** in NHA tenders are **not mentioned** in the KRDC tenders.

Figure 9.4.7: DPR consultant payment schedule for NHA project

This exemplar executive summary outlines the essential components of a Detailed Project Report (DPR) for infrastructure projects, serving as a comprehensive guide for project planning and assessment. Key sections cover all critical aspects, from the project introduction, alignment, and existing site conditions to detailed analysis of traffic, material availability, and overall design. Additional sections address specific design elements such as pavement and improvement

The following Figure 9.4.8 shows an exemplar Executive Summary for DPR.

Key sections	Contents	Formats to be defined
Introduction	Package name, timeframe, stage of report, key issues, context	
The project road	Project alignment, alignment map, key junctions elements, key map of key elements	Sample alignment, key map
Existing site conditions	Road inventory, pavement condition & strength, soil strength results, major structures, key intersections, land use, key utilities	Table for inventory, pavement, soil surveys, table for other data
Traffic surveys	Current traffic, axle load results, cumulative MSA, turning survey	Table and key data
Material investigation	Locally available material types, availability	Table of material availability
Overall design	Alignment and widening scheme, bypasses proposed, major structures, toll plazas and wayside amenities (laybys, bus stands, bunks etc.)	Widening scheme, bypass, elevated structure , toll plazas and summary of amenities proposed
Pavement design	New pavement design, pavement strengthening requirements	Pavement type and layer data
Improvement proposals	Summary of intersections, grade separators, elevated sections, VUPs, PUPs, bridges, flyovers to be built	Table summary of porposals
Utilities, clearances and LA	Summary of utility shifting estimates, land acquisition required, other clearances and status	Table for clearances, LA by region
Env. and social impact	Summary of env and social impact of project road	
Cost estimate	Summary view of key cost heads	Table for cost heads
Potential for value engineering	Key value engineering options explored by DPR consultant	Table of proposals
Economic and financial analysis	Simulated ERR and IRR for project, viability for PPP	-
Construction plan	Key construction considerations, order of construction, expected time to completion, traffic management requirements if any	-

Figure 9.4.8: Exemplar executive summary of a roadworks DPR

9.4.3.2b: Standardize qualification criteria of DPR consultants

- Financial stability (10%),
- Previous experience (25%), and
- Personnel qualifications (30%).



- Advanced equipment and software (15%)—such as drones, DGPS, and specialized design tools for topographical surveys and road alignment as essential tools for achieving accurate project planning. Additionally, weightage towards site inspection (5%) is emphasized, ensuring that consultants conduct thorough on-ground assessments to enhance feasibility and quality assurance before bidding. This revised criteria structure is intended to bring greater consistency and technology-driven rigor to DPR preparation across all projects, resulting in more reliable project planning and implementation.

Figure 9.4.9 below shows the comparison table and the proposed qualification criteria for DPR consultants.

Evaluation criteria of a DPR consultant		KRDCL	KRDCL	KRDCL	Proposed
Project		Sindhanuru-Raichur SH	Devanahalli-Maluru	Devadurga	
Year		2021	2023	2020	
Financial	Turnover, liquid assets	-	-		10
Prev. experience	Past projects of similar scale	20	30	15	25
	HAM/BOT/EPC model	10	10		10
Personnel	Skillset, qualifications	50	50	70	30
Methodology	Workplan, list of activities	10	10	5	5
Equipment / software	Drones, DGPS, design software	-	-	-	15
Site inspection	Site inspection certificate	-	-	5	5
Total		100	100	100	100

+10% for trx advisory

+5% for local office, ISO certification

Previous experience important for risk mitigation & proven track record

Increased focus on site inspection & equipment, with advanced tech for topographical surveys, road alignment, modeling, etc.

Figure 9.4.9: Comparison of DPR consultant qualification criteria across KRDCL projects

9.4.3.3: Setup multi-disciplinary Capex Projects Review Committee

As highlighted in sub-section 9.1.3.3, independent review mechanisms are crucial for preventing errors, misuse of authority, and undue influence. Through objective oversight, they promote accountability and transparency, allowing early detection of irregularities and minimizing chances of mismanagement. This ensures that projects are carried out with integrity and align with the public interest.

It is recommended that a multi-disciplinary Capex Review Committee shall be created for approving PWD projects, as observed in the case study of MoRTH Standing Financing Committee.



Recommendations for PWD Projects

The Capex Projects Review Committee is proposed to have the following members:

- ACS (Finance Dept.)
- Secretary Expenditure (Finance Dept.)
- Principal Secretary/ACS (Public Works Dept.)
- Principal Secretary/ACS (Urban Development Dept.)
- Principal Secretary/ACS (Rural Development Dept.)
- 2 Private sector experts

These members of the CPRC shall conduct a 360-degree holistic review including but not limited to these four themes:

- **The quality of expenditure** should be evaluated through a cost-benefit analysis, taking into account the area of land that will be irrigated, the number of beneficiaries, and other relevant factors to assess the project's value.
- **Review of estimate:** The project's estimates should be reviewed by comparing costs with similar or adjacent projects and conducting a detailed rate analysis to ensure accuracy and feasibility.
- **Land acquisition and necessary clearances:** The status should be confirmed, detailing the amount of land required versus what has already been acquired and identifying any disputes in ownership or other issues that could delay the project.
- **A final go-ahead for floating tenders** should be given only after ensuring that all Conditions Precedent have been met, public opinion has been incorporated, and any potential concerns have been addressed.

9.4.3.4: Introduction of normative cost guidelines for standardization

As discussed in Sub-section 9.1.3.4a in the WRD context, it is recommended that an action focused committee shall be set up to create state-specific normative cost guidelines that would enable identification of projects with under- or over-estimated costs, both of which can be detrimental for the implementing agency.

Case study: Project Cost Analysis tool used by NHAI

The National Highways Authority of India (NHAI) has taken a systematic approach, as shown in Figure 9.4.10, to address similar issues in road and highway projects by employing a customizable cost estimation tool. This tool allows for the input of key project parameters, such as length,



structure type, and material requirements, to calculate standardized costs across different regions and project types. By applying these consistent guidelines, NHAI has been able to standardize costs and improve budget predictability across its projects.

SL. No.	Description	Input	Total Cost (Cr.)	Total Cost (Rupees)	Cost Per Unit (Cr.)
1	Name of State	Delhi			
	Aggregate Lead in km	50			
2	Flexible Pavement				
(a)	Type-1				
	Configuration of Road with Pavement Combination	Greenfield Alignment - 2 Lane+ PS, (BC, DBM, WMM & GSB)	21.400	214,000,000	4.280
	Length in Km	5			
	Embankment Height in meter	1			
	MSA	50			
	Aggregate Lead in km	50			

1 Drop-down options to pick different states, configurations, etc.

2 Manual entry for parameters like length, embankment height, MSA, etc.

3 Total cost of project & cost per unit as an output to help standardize costs

Figure 9.4.10: NHAI's Project Cost Analysis tool

Moreover, NHAI ensures that deviations from standardized costs are justified with evidence, allowing for more effective oversight and control. This framework has proven effective in limiting cost overruns and ensuring that similar projects are comparable in terms of financial outlay.

Recommendation for PWD: Introduce normative cost guidelines

To address the disparities in costs across projects, it is essential to implement a cost standardization framework similar to NHAI's approach.

To implement the same, the following actions shall be undertaken:

1. Creation of Custom Guidelines:

Develop specific guidelines for calculating project costs based on inputs like material type, presence of shoulders, culverts, etc, and location. These guidelines should be used consistently across all implementing agencies and other evaluating authorities (including Capex Projects Review Committee) to ensure uniformity in project cost estimations.

2. Establishment of a Cost Norms Committee:

Form an action-focused committee to define normative cost guidelines. This committee shall have representation from PWD technical teams, Finance Department as well as DPR consultants and contractors to ensure that the normative costs guidelines are co-created



and therefore have wider buy-in from the stakeholders. The committee may be dissolved after its mandate and may be reconvened as and when required for updates to the normative cost guidelines at the request of the Capex Projects Review Committee.

3. Treating deviation as an exception and not a norm:

Any deviations should be justified with substantial evidence and presented to the Capex Review Committee for approval.

4. Digital Cost Estimation Tools:

The guidelines as created by the Cost Norms Committee may also be converted into a customizable and interactive digital tool to enable parameter-based cost estimations for all projects. This tool would provide a standardized method to calculate estimated costs across regions and project types, helping to eliminate cost discrepancies. It may be used by the Finance Department as well before recommending projects for approval.

9.4.2.5: Schedule of Rates not at par with other states

As depicted in Figure 9.4.11, there is a potential to reduce rates by 15-30% for some works related to site clearance, WMM, etc. where Karnataka is higher compared to states like MH, TN, TS, etc. Additionally, there is also potential to streamline the specifications of items being used (e.g., thickness of primer coat, weight and dimensions of kilometer stone, etc.) which could help optimize expenditure.

Line Item	Unit	Karnataka	Tamil Nadu	Telangana	Maharashtra
Hire charges					
• Road roller	INR/hour	1560	990	1750	-
Site clearance					
• Removal of stumps & roots of trees (girth 300-1800mm)	INR/each	600-3500	100-200	20-80	500-3000
• Clearing of light jungle ¹	INR/100 sqm	745	-	644	-
Base & sub-base creation					
• Wet Mix Macadam (Plant Mix) basis MoRTH 406	INR/m3	2500	-	-	2000
• Primer coat on WMM surface basis MoRTH 502 ²	INR/m2	41	-	-	31
• Applying tack coat on prepared surface with Bituminous Emulsion	INR/m2	14	-	-	13
Road furniture					
• Kilometer stone ³	INR/each	2900	2200	-	-

Figure 9.4.11: Comparison of SoR items with other states³²

³² (1) Different flora listed in each state's SoRs (2) KN uses 0.7kg primer/sqm vs 0.6kg/sqm in MH (3) Kilometer stone specifications vary across states. E.g., KN has 6kg stones compared to TN's 4 kg stones



9.4.2.6: End-to-end digital project monitoring

The frequent delays, cost overruns, and resource inefficiencies highlighted emphasize the need for enhanced visibility and stringent monitoring within the Public Works Department (PWD). These challenges disrupt project timelines, escalate budgets, and diminish overall effectiveness. Implementing digital monitoring can provide PWD with real-time insights and standardized tracking, helping to address these recurring issues and enabling better control over complex project execution. This approach will improve PWD's ability to manage large-scale projects efficiently and respond effectively to the demands of a rapidly growing infrastructure landscape.

Case study: Project Management Information System tool used by NHAI

The Project Management Information System (PMIS) developed by NHAI offers a powerful tool for improving visibility and control over project management processes. Key features of the system include algorithms designed to automatically identify projects requiring intervention, comprehensive dashboards for efficient decision-making, and the ability to generate custom reports, ensuring that users across all levels of the organization have access to relevant information. Additionally, the PMIS provides a single source of truth for project-related details, ensuring data consistency and transparency. For mobile access, the PMIS app supports project tracking on the go, offering customized navigation, task management tools, and the ability to upload photos and check-ins for better visualization at both headquarters and regional offices.

9.4.2.7: Rationalize O&M spends

To rationalize Operations and Maintenance (O&M) spending and improve O&M effectiveness, the National Highways Authority of India (NHAI) has adopted innovative contract structures designed to optimize expenditure. A recent circular issued on 6th July 2023 outlines two primary contract modes for maintenance and repair work: Performance-Based Maintenance Contracts (PBMC) and Short-Term Maintenance Contracts (STMC).

The PBMC is intended for roads in good condition, where major development work is planned to begin within 3–4 years. These contracts have a duration of 7+ years, with renewal options, and focus on long-term performance and maintenance. Payments under PBMCs are linked to performance, incentivizing contractors to maintain high-quality standards. The scope typically includes major repairs over a minimum length of 50 km, with the primary aim of ensuring sustained road quality over an extended period. PBMCs are tailored for specific long stretches and end upon contract completion, with the option to renew in phases.



In contrast, STMCs are short-term contracts suited for roads that will undergo major development work within a year or so. These contracts have a one-year term and cover immediate, short-term fixes, focusing on operational readiness rather than long-term upgrades. With a minimum coverage length of 25 km, STMCs are structured to allow early termination if development work begins ahead of schedule. This flexibility enables efficient allocation of resources to high-priority areas needing urgent maintenance, spanning multiple road stretches if necessary.

These contract structures offer a strategic approach to managing O&M expenses, balancing long-term and short-term needs to ensure optimal resource utilization.

The following Figure 9.4.12 summarizes where can PBMC contracts suitably be used and potential operational measures that can be incorporated in the same:

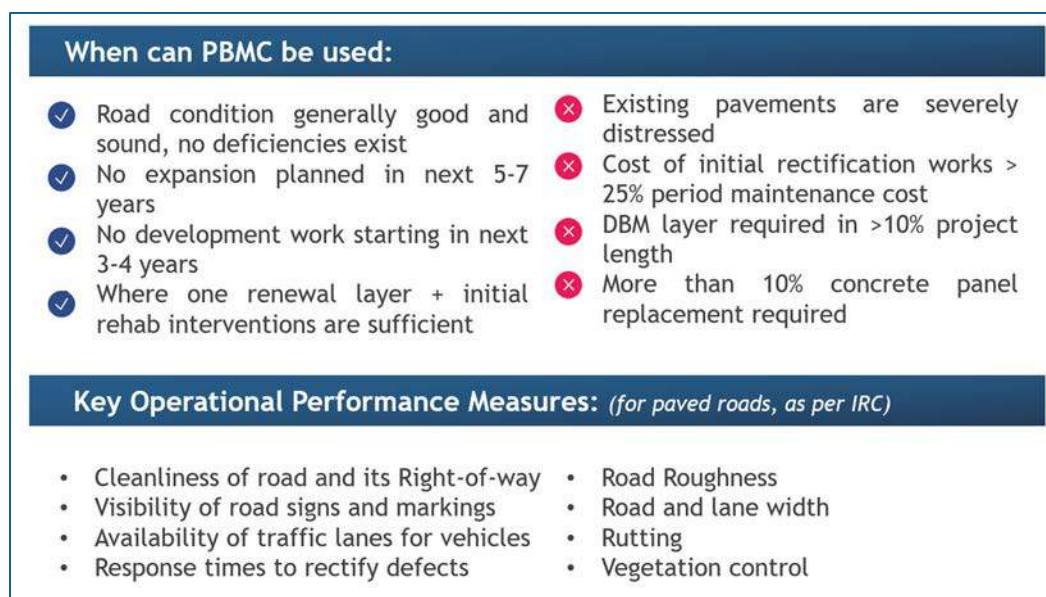


Figure 9.4.12: Features of PBMC contracts

To successfully implement PBMC contracts, constant monitoring and reporting is required enabled through digital interventions. A key component of this digital approach in the NHAI context is the TATPAR Maintenance App, a mobile application that facilitates transparent, real-time tracking of maintenance activities.

The app supports monthly and daily inspections as part of routine O&M procedures, allowing for efficient identification and reporting of defects. Authorized personnel—such as Assistant Engineers (AE), Project Directors (PD), and Regional Officers (RO)—can submit geo-tagged defect



information with detailed descriptions, which is then instantly relayed to contractors for resolution. Contractors address the defect and submit rectified photos from the same location, enabling AE/IE to verify the repair directly in the app.

Through these features, the TATPAR app promotes accountability and enables seamless defect rectification, providing a structured workflow from defect identification to closure. By integrating digital tools in maintenance operations, NHAI ensures that O&M resources are allocated effectively, enhancing road quality and extending infrastructure lifespan through consistent oversight.

The following Figure 9.4.13 explains how NHAI uses TATPAR to communicate, track and monitor lapses in performance measures:

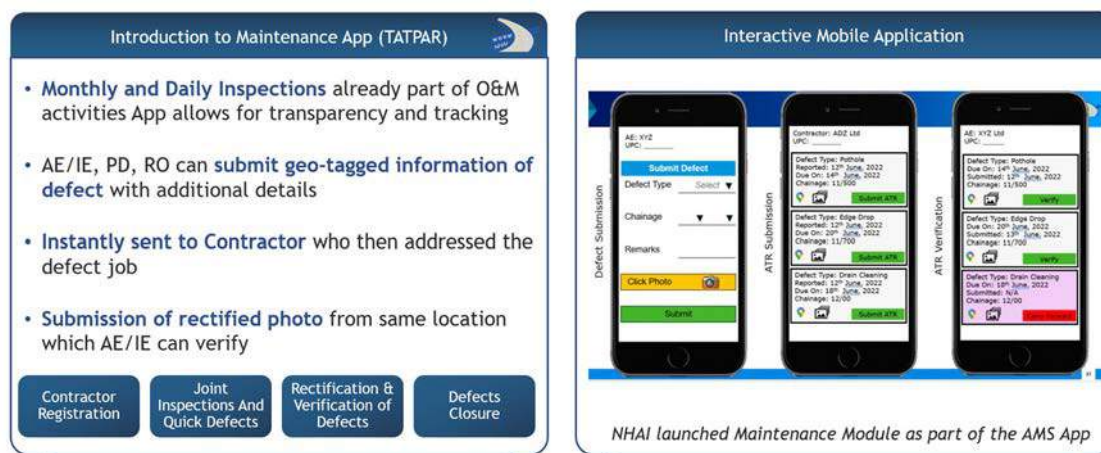


Figure 9.4.13: Features of TATPAR platform used by NHAI for PBMC

Similarly, Pradhan Mantri Gram Sadak Yojana (PMGSY) has introduced digital monitoring interventions that utilize a set of predefined performance parameters for road maintenance. These parameters assess various aspects of road upkeep, assigning a total of 100 marks to gauge the quality and completeness of maintenance activities.

Key performance indicators include maintenance of the road surface (including pothole and patch repairs), which carries the highest weight of 50 marks. Other essential tasks such as berm/shoulder upkeep, restoration of rain cuts, and maintenance of drains also contribute to the scoring system, with each item weighted according to its importance. Maintenance of culverts, guardrails, road signs, kilometer stones, and trimming of trees and shrubs are also evaluated to ensure comprehensive road upkeep.



A significant digital tool in PMGSY's approach is the "Time and Space Walking" feature, which enables inspectors to view the condition of roads at different time intervals, enhancing accountability. This feature provides a visual history of road conditions, allowing PMGSY to verify maintenance quality over time. Such structured, data-driven monitoring enables targeted interventions, helping to optimize O&M resources by focusing on critical areas of road maintenance.

The following Figure 9.4.14 showcases the same:

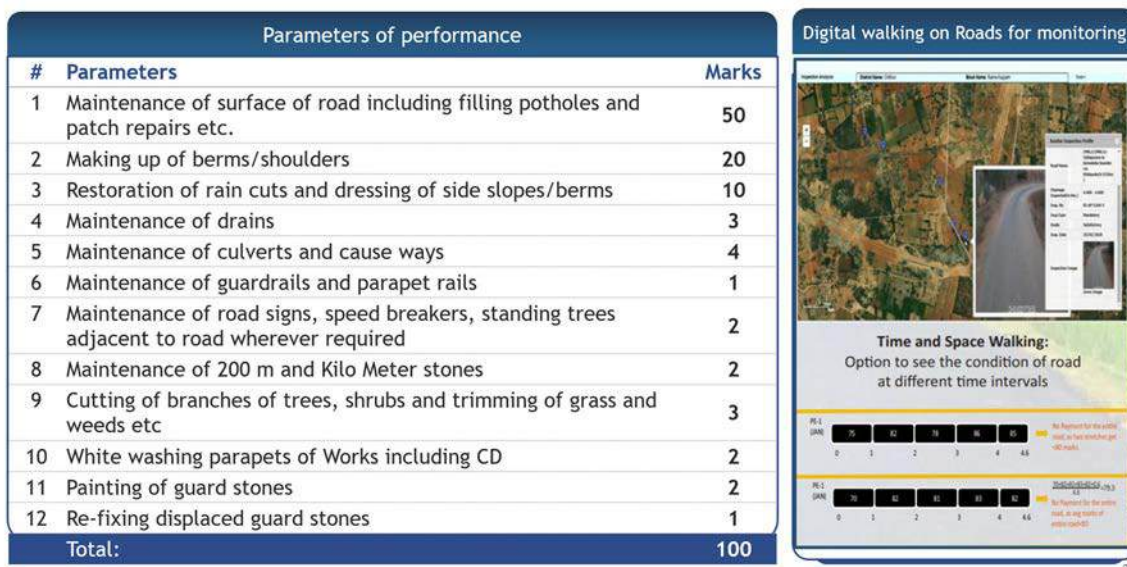


Figure 9.4.14: Digital walking in PMGSY for performance monitoring

9.4.4: Value potential

Implementing the above reforms will lead to improved project delivery with minimal cost and time overruns, rationalized O&M spends, and enhanced outcomes for citizens. The Department can potentially save **INR 400 – 500 Crores** annually, considering a 15-20% reduction in overruns of potentially INR 2,500 Crores across PWD.

9.4.5: Status and next steps

The recommendations have been discussed and aligned with the PWD Secretary for further action. A letter is being shared with the Secretary on the prioritized action items.

Appendix



10.2: PPP for satellite township development: land pooling benchmarks

Maharashtra - Samruddhi Mahamarg:

Project Overview: The Maharashtra Government implemented a large-scale land pooling exercise for the Mumbai to Nagpur expressway, covering an extensive area.

Key features

- Land Return Ratio: 25-30% of developed land is returned to landowners.
- Compensation Structure:
 - Crop compensation for 10 years with a 10% escalation:
 - Rain-fed: INR 30K/acre
 - Seasonal irrigated: INR 45K/acre
 - Irrigated: INR 60K/acre
- Guaranteed buy-back of the allotted plot after 10 years at a value determined by LARR 2013 with 9% simple interest.
- Tax rebates on stamp duties, registration fees, land conversion charges, etc.
- Amenities: Developed plots include open spaces, playgrounds, parks, roads, tap water, electricity, and sewerage.

1. Andhra Pradesh - Capital Development:

Project Overview: The Andhra Pradesh Capital Redevelopment Authority Act 2014 facilitated land pooling for the new State capital.

Land Distribution:

- Landowners: 30%
- Parks, playgrounds, social infrastructure: 10%
- Roads and utilities: 30%
- Balance to the authority: 30%

Key Features

- Land Return Ratio: 30% of land is returned to landowners
- Annual payments for crop loss to farmers.

- Industrial: 0.4 to 2.5



10.3: PPP for satellite township development: SPV structure for seed phase of integrated township development

The Special Purpose Vehicle (SPV) for the Bidadi Integrated Township is a collaborative structure involving the Government and a master developer.

The SPV is designed in order to manage the development and financial flows of the township project.

1. Bidadi Township Seed SPV:

- **Composition:** Government (10-15%) and Developer (85-90%).
- **Functions:**
 - Central management of the township project.
 - Collection of lease payments from commercial tenants.
 - Collection of lump-sum payments from residential tenants.
 - Covers operation & maintenance cost for seed phase
- **Financial Flows:**
 - Pays dividends to the Government and master developer based on their equity stakes.

2. Government:

- **Role:** Equity provider and regulator.
- **Contributions:**
 - Provides land as equity (10-15% stake in the SPV) postmaster development
 - Grants necessary clearances for development.
- **Benefits:**
 - Receives dividends from the SPV basis equity stake.

3. Master Developer:

- **Role:** Executor of land development.



10.4: PPP for affordable housing projects: Draft PPP policy for affordable housing

In order to encourage public-private partnerships in building new affordable housing units, PDAs shall enter into partnerships with Private Developers on their land or on identified vacant Government land. The Government will provide FAR and TDR incentives to Private Developers for undertaking projects under this model. The Government will also facilitate fast track clearances and exemption from identified regulatory charges to such projects.

Partnership with Private Developers on their land: Projects with land area of 1 hectare or more will be eligible for this model. Private Developers can develop AHUs in a proportion of their land over and above the mandatory reservation as per Model 6. They can develop other categories of housing and commercial areas as per local Zoning Regulations on the rest of the land for open sale.

Developers will get additional FAR equivalent to the built-up areas of the AHUs. This FAR has to be consumed on the same site. The Government will provide TDR to Developers as per the KTCP Act 1961 and rules. The Government will facilitate financial assistance of up to Rs. 1.5 lakhs per house under the Affordable Housing in Partnership vertical of the PMAY, as per the guidelines notified from time to time.

In case PMAY funding is not availed, the AHUs will be handed over by the Developer at a pre-determined rate, as approved by the SLECAH³³, to the SLNA³⁴ for allotment.

Partnership with Private Developers on vacant Government land:

Private Developers can develop AHUs on at least 40 per cent of identified vacant Government land as approved by the SLECAH³³. The remaining portion of the land may be transferred to the private developer with full use rights as per the Master Plan/CDP Land Use and local Zoning Regulations, as decided by the SLECAH³³ on a project-by-project basis.

The exact land share ratio will be determined on a case-to-case basis while incorporating parameters like land value, building cost and value of additional incentives provided to the developer.

³³ State Level Empowered Committee for Affordable Housing

³⁴ State Level Nodal Agency



The land share ratio shall be determined as the total cost of construction for the affordable housing units (including amenities) divided by the total land value basis the Guidance Value of the land. The land share ratio to be further adjusted to incorporate the value of incentives availed by the developer e.g., additional FAR, transferrable FAR, stamp duty reductions, among others.

Project DPRs (detailed in Annex 1) shall be submitted to the concerned PDA by the Private Developer. After scrutiny of the DPR, the PDA shall submit the proposal, along with the list of beneficiaries to the DLC&MC³⁵ for scrutiny and appraisal. The DLC&MC³⁵ shall examine the proposal and then forward it along with their recommendations to the SLNA³⁴ for examination and consideration by the SLAC³⁶. The SLAC³⁶ shall make the recommendation to the SLECAH³³ for determination of the rate of the AHUs.

The AHUs shall be handed over by the Developer at the pre-determined rate, as approved by the SLECAH³³, to the identified PDA for allotment.

The Government will support PDAs to avail central financial assistance of up to Rs. 1.5 lakhs through the Affordable Housing in Partnership vertical of the PMAY if at least 35 per cent of the houses in the project are for EWS category (as per PMAY) and a single project has at least 250 houses. In order to avail PMAY central assistance, the PDA must allot the AHUs on a no-profit no-loss basis. In case PMAY funding is not availed, AHUs will be allotted by the PDA as per their current practice.

Mandatory Development Norms: The following mandatory development norms shall be followed by PDA for structuring of projects under this model and the same shall also form part of the bidding documents:

Density Norms: Existing Zoning Regulations / Byelaws should guide limits to gross density and must be on in consonance with provisions under the National Building Code 2005. Keeping in mind that a fixed unit size for AHUs can risk overcrowding for the same FAR on larger sites, it is

³⁵ District Level Co-ordination and Monitoring Committee

³⁶ State Level Appraisal Committee



recommended to limit gross density to 400 units/Ha. This provision may be relaxed in Bengaluru (BDA).

Land Use Norms: The private developer shall utilize the Developer Area for taking up housing and commercial projects, subject to provision of Local Zoning Regulations in force and subject to provisions of this policy. The land under Developer Area will be transferred by PDA to the developer on freehold basis, as per terms and conditions defined in the bidding document.

Developer is permitted to construct the following in the area:

- Residential housing for MIG, HIG-B, and high-rise buildings
- Civic amenities such as
 - Healthcare facilities including hospitals, nursing homes, clinics and diagnostic centers, wellness centers
 - Educational institutions including public libraries, coaching centers, schools
 - Utility services including car parking, fuel stations, Government buildings
- Commercial assets such as
 - Office spaces
 - Retail spaces including shopping malls, standalone retail stores
 - Hospitality projects including hotels/ lodges, serviced apartments, restaurants and cafes
 - Entertainment and recreation spaces including cinema, game centers, multiplex, convention centers, auditoriums / cultural complex, broadcasting stations
 - Tech hubs including data centers, and innovation centers

The free sale development can be started by the developer only after completion certificate is issued for 33% of the affordable housing scheme. Completion certificate for affordable housing scheme shall be issued only after giving possession of affordable houses to beneficiaries.

Service Level Benchmarks: Basic Services provided must aim to meet identified benchmarks of delivery and quality, in a phased manner. Service Level Benchmarks for basic services are given in Annex 2.

FAR: Additional permissible FAR provisions will be allowed for the projects under this model. If part of FAR for Affordable Housing Area remains unutilized, the same can be utilized by the private developer on Developer Area.



Further, an absolute increase in permissible FAR in the developer area will be provided as an additional incentive. Basis the approach road width additional FAR can be provided to the developer:

- For approach road width of 9 – 12m, the developer is eligible for 20% additional FAR to the base FAR
- For approach road width of 12 – 18m, the developer is eligible for 30% additional FAR to the base FAR
- For approach road width of 18+m, the developer is eligible for 40% additional FAR to the base FAR

Number of Affordable Housing Units: Bid documents shall specify the number of EWS & LIG dwelling units to be built by the private developer for handing over to PDA and the size of these units in adherence to PMAY guidelines. The construction specification along with the detailed plan of the Affordable Housing Area development shall also form part of bidding documents.

- **Selection of Private Developer:**
 - Bidding Process: The selection of the private developer shall be done through an open competitive bidding process.
 - Eligibility Criteria: The private developers participating in the bidding process shall qualify on the eligibility criteria given by the PDA and other such criteria as given in Bid documents.
- **Allotment of EWS and LIG dwelling units:**
 - The PDA shall undertake identification, verification and final selection of beneficiaries for the affordable housing units being developed in the project.
- **The selection of the beneficiaries shall be done as per the provisions:**
 - Any BPL/EWS/LIG household in Kutchra or Congested housing, and houseless households, ordinarily resident in urban areas for a period of not less than a year, will be eligible under this policy pending possession of valid identity documents mentioned in Annex 3.
 - In the Local Planning Area (LPA) of Bangalore Development Authority (BDA), an increase of up to 50 per cent on the annual income levels for BPL, EWS and LIG households may be allowed.
- The PDAs & ULBs shall also take up advocacy for new Affordable Housing Schemes and shall also facilitate access to Housing Micro Finance to enable beneficiaries to pay for the house.



- The private developer shall pro-actively participate in this facilitation process for availing of housing finance by selected beneficiaries. The selected developer shall also proactively undertake marketing activities, loan fairs and provide handholding support to the beneficiaries. The details of these obligations will form part of Bid documents.

Developer incentives and relaxations: The projects under this Model will also be eligible for availing following incentives and relaxation:

- **Fast track approval process:** The projects under this model shall be eligible for fast-track approval process as specified in the Karnataka Guarantee of Services to Citizens Act, 2011. These include:
 - Change of Ownership in RTC (Record of Rights, Tenancy, and Crop Details)
 - Conversion order entry in RTC
 - Khata bifurcation
 - Sanction of Building Plan
 - Occupancy certificate from ULB
 - Issue Property Assessment number from Gram Panchayat
 - No Objection Certificate from Fire Services Department for occupancy certificate
 - No Objection Certificate from Chief Electricity Directorate to obtain occupancy certificate
- **Exemption from various fees, charges:** The projects under this model shall be eligible for the following exemptions:
 - Stamp Duty registration fees reduced from 7 per cent to 5 per cent (exclusive of Registration charges and Cess)
 - Projects shall be exempted from payment of Building Plan Sanction / Approval Fee
 - Projects shall be exempted from payment of external development charges of Urban Local Bodies
- **Other Incentives:** The State Government has taken many initiatives to promote the housing sector, including support to Private Developers and Public Development Agencies. These include:
 - Suitable amendment has been made in Sub-section 8 of Section 95 of the Karnataka Land Revenue Act, 1964 which stipulates that, the permission for diversion of Agricultural land for other projects including Housing Projects approved by the State Government, under this Section, shall be deemed to have



been granted when permission for purchase of Agricultural land is accorded under Section 109 of the Karnataka Land Reforms Act 1961, subject to payment of prescribed fees.

- To encourage and promote affordable housing, a suitable amendment has been made to Section 14(B) -Benefit of Development Rights, in Sub-section 1 of Karnataka Town and Country Planning (Amendment) Act 2015, which stipulates that in a local planning area, if any public authority requires any “Area” for public purpose, it shall notify the same in such manner as may be prescribed and if owner of such “Area” hands over possession of such area, free from all encumbrances to such public authority, in lieu of any compensation under the Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act 2013, will be entitled to be granted Development Rights in the form of “Notional Land” which shall be equal to two times of the area surrendered.
- In case PMAY funding is availed in the PPP model, the SLECAH may authorise the Private Developer to sell AHUs to eligible beneficiaries, subject to overall upper limit of AHU cost, as decided by the SLECAH as per the guidelines of PMAY.

Operation and Maintenance: The private developer shall in accordance with the terms and conditions of the concession agreement maintain the premises till the time Registered Agency is formed and maintenance responsibilities are duly handed over by the developer to the registered agency (Detailed duties are mentioned in Annex 4). This period shall form part of defect liability period to be fulfilled by the developer.



Annex 1: Components of Detailed Project Report (DPR)

The DPR should contain the following:

- Project Brief – Background, Rationale, Objectives, Expected Outcomes
- Project Site – location plan, area, site analysis (slope & climate)
- Project Scoping – Number and size of houses, all infrastructures (physical, social & supporting programs), Regulatory requirements (Standards, Regulations, etc.)
- Project Brief – Special standards, Special construction techniques, Special materials, Special Design requirements, etc.
- Project Drawings – site plan, cluster-plan, unit plan, sections, important details
- Specifications & Bill of Quantities
- Project Schedule – Identification of project components, time frame for each component, overlaps of the component, monthly component progress
- Financing management – Project Costs; Sources of finances, Cash-flow Statements
- Transit Management – requirements, strategies, plans & accommodation
- Approvals Management – Municipality, TP Departments, Fire, Health, traffic, civil aviation, etc.
- Construction Management – Tendering, Contracting & Awarding process, Construction management Stage (Project Consultants, PMCs, Monitoring officers & monitoring schedules)
- Post-Implementation Strategies – (Maintenance, liabilities & guarantees, community hand-holding)
- Evidence of Community Consent from a majority of residents in case of In-Situ Upgradation or Redevelopment as well as relocation projects.

S.No.	Service	Provision	Source
1	Water Supply Connection	100% coverage	Service Level Benchmarks, MoUD
2	Storm Water Drainage	100% coverage	
3	Sanitation	1. Household Toilets (including conversion of insanitary latrines into pour-flush latrines)	Swachh Bharat Mission, 2014
		2. Community-planned and managed toilets for groups of households who have space, tenure or economic constraints in gaining access to individual facilities 3. Adequate Public Toilets	National Urban Sanitation Policy, 2008
4	Sewerage	1. Network-based sewerage systems ensuring connections of households to them wherever possible 2. Disposal and treatment of sludge from on-site installations	



Annex 3: List of Documents as Proof of Address and identity of beneficiary

Any one of the following documents may be considered as proof of address and identification for the purpose of this Policy:

1. Ration Card
2. Voter ID
3. Bank Statement/Passbook
4. Post Office Account Statement/Passbook
5. Driving License
6. Government Photo ID Cards/Photo Identity Card Issued by PSU
7. Electricity Bill (not older than 3 months)
8. Water Bill (not older than 3 months)
9. Telephone Landline Bill (not older than three months)
10. Passport/Passport of Spouse
11. Insurance Policy Issued by Government agency
12. Signed Letter having photo from Nationalized Bank on Letterhead
13. Signed Letter having Photo Issued by Recognized Educational Institution on Letterhead
14. Pensioner Card
15. Freedom Fighter Card
16. CGHS/ECHS Card
17. PAN Card
18. Vehicle Registration Certificate
19. Registered Sale/Lease/Rent Agreement
20. Address Card having Photo Issued by Department of Posts
21. Caste and Domicile Certificate having Photo Issued by State Government
22. Disability ID Card/Handicapped Medical Certificate Issued by the Respective State/UT Government/ Administrations



23. LPG Connection Bill (not older than three months)

24. UID/Aadhar Card



Annex 4: Operations and Maintenance of the Housing Estates

1. Introduction:

Affordable Housing once built needs to be maintained as per set standards, for ensuring that the same does not get dilapidated in short span of time. The objective will be to prolong the time for which the buildings can be used for habitation, thereby optimizing the returns on public investments. Estimates suggest that if long term systems are not set in place for maintenance, then urban poor may not be able to maintain the housing estates to the desired levels. The operation and maintenance of common areas and common functions will be done by a Registered Agency, the detailed procedure for which will be prescribed by the PDA. In case of PPP projects, the private developer shall in accordance with the terms and conditions of the concession agreement maintain the premises till the time Registered Agency is formed and maintenance responsibilities are duly handed over by the developer to the registered agency. This period shall form part of defect liability period to be fulfilled by the developer.

- Structural defect liability period for affordable housing scheme developed by the developer shall be for 10 years from date of completion certificate.
- Repair and maintenance of lift shall be the responsibility of developer for at least 3 years after handing over possession of houses. Thereafter beneficiaries' association will maintain the lift service.

2. Management Structure:

(A) **Formation and Functions of Registered Agency** - All persons who have been allotted a property in a housing eState shall constitute themselves into a Registered Agency (hereinafter called Agency) under these provisions, which shall include as its objects the following:

- (i) To discharge such duties and responsibilities as are specified in regulations and the agreements made thereunder for the proper maintenance, running, up-keep and keeping in good repair common portions and common services of such property as have been allotted to its constituent members.
- (ii) To pay on behalf of the Agency and on behalf of each constituent member



of such Agency all rates, taxes, fees, charges, assessments municipal or otherwise and other levies of whatsoever nature as provided in the regulations and agreements executed with the Authority.

- (iii) To look after the interest of constituent members.
- (iv) To execute with the Authority agreements, lease-deed or other documents as specified in regulations.
- (B) **Constitution of Registered Agency** - The constitution of the Agency and the byelaws governing its functioning shall be such as may be approved by PDA.
- (C) **Application for Registration** - Every such Agency shall make an application to the Chief Executive of PDAs for registration.
- (D) **Registration of Agency** - The Chief Executive after he/she is satisfied that the constitution of the Agency is in consonance with regulations, shall register such Agency and issue a certificate of registration to the Agency and a certificate of membership to each constituent member of the Agency. Further, if so directed by the Chief Executive, the Agency shall get itself registered under Societies Registration Act, 1860 within such period as may be prescribed in the scheme brochure.
- (E) **Execution of Documents by Agency** - No purchase agreement, hire or lease-deed, or other documents shall be executed until the requirements of same have been completed.
- (F) **Election of Managing Committee** - The Chief Executive or Officer authorized by him/her shall as soon as possible call a meeting of the Agency for electing a President, Vice President, Secretary, Treasurer and one member who shall together constitute the Managing Committee of the Agency.
- (G) **Time Limit for Execution of Agreement** - The Agency shall within such period as may be prescribed by the Chief Executive, execute the agreement in regard to common portions and common services with the PDA.
- (H) **Responsibility of Registered Agency about Services** - The Agency and each of its constituent members shall be responsible for ensuring that:
 - (i) no damage or deterioration is caused to the property handed over in terms of the agreement under these regulations



- (ii) no installation or equipment connected with or provided as part of water supply, sewerage, storm water drainage, electricity or other service shall be tampered with
- (iii) no construction within the property shall be made otherwise than with the prior sanction of the competent local authority
- (iv) no obstruction to a person duly authorized shall be caused so as to create difficulties in the discharge of his duties in connection with the matters arising out of the management of property, and
- (v) no obstruction to common portions shall be caused or misuse of the property shall be made, such as following:
 - (a) occupying common passages, staircases, lifts approaches and the like
 - (b) throwing garbage or refuse within the precincts of the property or outside it
 - (c) keeping a vehicle to obstruct the free movement; and
 - (d) creating unhygienic conditions or nuisance.
- (I) **Liability of Constituent Member** - The liability of each constituent member shall be limited to the liability prescribed in the constitution of the Agency and as laid down in regulations meant for the purpose.
- (J) **Control by the Chief Executive over the Affairs of the agency** - The Chief Executive of PDA as the registering Authority shall have the power to:
 - (i) Call for information from the Managing Committee or any constituent member of the Agency in connection with the:
 - (a) Affairs of the Agency
 - (b) Management of the Housing EState; and
 - (c) Relations between a constituent member and the Agency
 - (ii) Call an extra ordinary meeting of the Managing Committee or of the general body of the Agency, if in his opinion such a meeting is necessary or desirable;
 - (iii) Inspect, on a complaint being made, such record, and accounts of the



Agency as may deem fit.

- (iv) Issue any directive for securing the efficient functioning of the affairs of the Agency or management of the Housing Estate, as the case may be which shall be binding on the Agency; and
 - (v) Revoke the registration of the Agency for good and sufficient reasons.
 - (vi) Where the registration of an agency has been revoked in pursuance of above, the Chief Executive may either direct the formation of a new Registered Agency or take over functioning of the Registered Agency, himself.
- (K) **Recovery of Dues** - Any dues payable to the PDA by the Agency or its constituent members shall be recovered by the PDA as arrears of land revenue.
- (L) **Settlement of Disputes** - If any dispute or difference of opinion arises between the President of the Managing Committee or the Managing Committee and a constituent member or amongst members themselves or between any party connected with the property by which the Agency and the constituent members are concerned in terms of agreements with the PDA, such dispute or difference of opinion shall be decided by the Chief Executive of PDA after hearing the parties concerned. The decision of Chief Executive in this regard shall be final and binding on all.
- (M) **Change of Constituents of Registered Agency**
- (i) Deletion of Constituent: If allotment of a constituent is cancelled by the PDA then he/she ceases to be the Member of the Registered Agency with immediate effect. Registered Agency is duly bound to inform the same to all other constituents and take further steps as decided by PDA.
 - (ii) Substitution of Constituent: On transfer of the ownership, which is duly approved by the PDA, the transferee shall be taken in by the Registered Agency as constituent member on terms and conditions, as applicable to other constituent members. No additional levy or fees can be charged by Registered Agency for such substitution.
 - (iii) New Addition: If a fresh allotment is made by the authority for any of the vacant property in the eState, the new allottee shall become the



member of Registered Agency. The new member shall have to pay the fees & charges, as the original member had paid or as decided by the Chief Executive of PDA.

3. **Sources of Fund:** There will be two types of funds to be maintained by every Registered Agency. They will be managed in the manner as provided below:
 - (A) **Corpus Fund:** Every registered agency shall maintain a Corpus Fund. The corpus amount being generated from various sources will be kept as fixed deposit in a nationalized bank. The same shall not be cashed in any case. The interest generated out of the corpus will be credited on quarterly basis into revenue account to be maintained by the registered agency, separately. Following contributions will become part of the Corpus Fund:
 - (i) 2% of the total estimated cost to be deposited after completion of the work by PDA or private developer for the respective projects.
 - (ii) Any other grant or donation received by the Registered Agency for the purpose of Corpus Fund.
 - (B) **Revenue Fund:** Each Registered Agency shall maintain a Revenue Fund in any scheduled Commercial Bank. The following amount will flow into this fund.
 - (i) Monthly contribution by the constituent members, as fixed by the Registered Agency for maintenance of the common areas & common portions.
 - (ii) Any donation or grant received by the Registered Agency for the maintenance of the housing eState from ULB or otherwise.
 - (iii) Interest on Corpus Fund
4. Efforts will be made to help members of the Society in taking up repair and maintenance work of housing eStates by themselves. Their capacity building efforts will be taken up through Livelihood Mission or employment linked training programs.



10.5: State-guided development of Wayside Amenities: Natural halting points

	Passenger traffic	Commercial traffic
Average speed	~50 kmph	35-40 kmph
Frequency of stop	1-1:30 hrs	2:45-3:30 hrs
Natural Halting point	60 km	100 km
Travel time before 1st stop	1:30-2 hrs	2:45-3:30 hrs
First stop	80 km	100 km
Subsequent stops	60 km	100 km
Min spacing	50 km	80 km
Max spacing	80 km	120 km



10.6: State-guided development of Wayside Amenities: Minimum specifications and standards of project facilities

1. Service station

Facility	Initial capacity	Minimum area per seat	Total area
Restaurant seating capacity	100	1.5 sqm per person	150 sqm
Parking	Cars- 80 Bus/Trucks- 30 2-wheelers- 30	Cars- 2.5m X 5m Bus/ Trucks- 4m X 13.5m 2W- 1m X 2.5m	2,700 sqm
Convenience store		10 sqm	10 sqm
Other facilities such as toilets, fuel station, landscaping, roads, open area, area for future expansion			4600 sqm
Total size of facility			7,500 sqm (0.75 Ha)

2. Travel center

Facility	Initial capacity	Minimum area per seat	Total area
Restaurant seating capacity	120	1.5 sqm per person	180 sqm
Food court seating capacity	120	1.3 sqm per person	160 sqm
Motel	25	45 sqm per room	1125 sqm



Facility	Initial capacity	Minimum area per seat	Total area
Parking	Cars- 200 Bus/Trucks- 50 2-wheelers- 50	Cars- 2.5m X 5m Bus/ Trucks- 4m X 13.5m 2W- 1m X 2.5m	5,300 sqm
Shopping area	10 stores	40 sqm	400 sqm
Vehicle repair shop			100 sqm
Other facilities such as toilets, fuel station, landscaping, roads, open area, area for future expansion			5,800 sqm
Total size of facility			15,000 sqm (1.5 Ha)

3. Truckstop

Facility	Initial capacity	Minimum area per seat	Total area
Restaurant seating capacity	120	1.5 sqm per person	180 sqm
Food court seating capacity	120	1.3 sqm per person	160 sqm
Dhaba seating capacity	100	1.3 sqm per person	130 sqm
Dormitory	80	8 sqm per person	640 sqm
Parking	Trucks- 100	Bus/ Trucks- 4m X 13.5m	5,400 sqm
Vehicle repair shop			100 sqm
Other facilities such as toilets, fuel station,			5,730 sqm

4. Travelers' and truckers' plaza

354



Facility	Initial capacity	Minimum area per seat	Total area
Total size of facility			20,000 sqm (2 Ha)

In order to design Wayside Amenities (WSA) on State roadways in Karnataka, it is important to study the design and implementation of these services at a global level. Set of best practices emanating from country wise benchmarking of WSA will contribute to better design in Karnataka. WSA are known by different names in different countries. Also, they have different formats even in the same country. WSA are known as rest areas, motorway service areas, motorway service stations, truckstops, travel plaza, service stations, et cetera. These terms will be explained while detailing out the system for various countries. Benchmarking of allied services has been done in detail for 5 countries. These countries are

- United Kingdom
- Germany
- United States of America
- Australia
- South Africa

4 broad areas were covered with respect to setting up WSA on highways. These include

- Types of service area format which exist on highways of a country. This also includes facilities provided by each format, type of highway user segment aimed at and broad layout
- Spacing between 2 service areas on highways and factors considered while selecting specific locations along the highways
- Signage deployed along the highways for communication of service areas to users
- Contracting model between
 - Government and operating firm
 - Operating firm and individual brand outlets located on service area

Basis benchmarking of 5 countries, key themes with regard to service area formats, locations,



signage and contracting model are as follows-

- There are **4 types of service area formats** which exist globally. They differ in depth and range of services offered at these formats.
- A **well-defined structure** with multiple parameters has been put in place by different countries for identifying locations of allied services.
- Government or highway agency specifies **guidelines on signage** of allied services. These guidelines cover design, content, spacing and ownership of signage
- Government owned **land is leased out** to private operators in some countries. In other countries where land is privately owned, agreement between operator and Government is restricted to **paying nominal fee** for access from highway.

Theme 1: 4 types of service area formats

Service area formats vary on range and scale of services provided by them. Range refers to different types of services for various user segments (e.g. truck drivers or car passengers) and scale refers to choices available with customers (e.g. 10 F&B outlets including QSRs, full-service restaurants, coffee shop, etc). Different service area formats take this into account as well. These formats are-

- Rest areas- These places are non-commercialized in nature. Rules prohibit undertaking commercial activities at rest areas. They are mostly built and operated by Government since monetization scope doesn't exist for private players. Typical services offered at rest areas include-
 - Parking facilities
 - Toilet facilities
 - Picnic area- Garden/Landscaping
 - Barbecue grills
 - Vending machines
- Truck stops- As the name suggests, target user segment for truck stops is truck drivers. They focus on driver specific services and truck specific services. Price point at truck stops is lower than service areas aimed at car passengers. Also, parking covers majority of area at truck stops. They are not situated directly on the highway but requires an exit from highway and travel for 500m-1km. Facilities provided at truck stops include-



- Overnight parking
 - Budget lodging
 - Hot food restaurant
 - Toilet and shower facilities
 - Laundry and barber
 - Driver's lounge with TV
 - Fuel station
 - Minor repair
 - Washing and tyre change
- Basic service stations- These service stations provide limited range of services which are critical for highway users. They focus mostly on car passengers. However, there is no restriction on truck drivers to use service stations. Facilities provided are-
 - Parking facilities
 - Toilet facilities
 - Fuel station
 - 1 convenience store
 - 1 F&B outlet (might be absent in some cases)
 - Comprehensive service stations- These service stations provide a large range of services compared to basic service stations. Facilities provided in addition to basic service are-
 - Multiple F&B outlets- QSRs, full-service restaurant, coffee shop, ice-cream parlour, etc.
 - Motel
 - Large convenience store
 - Gaming zone for adults
 - Playing zone for kids



Figure 10.7.A.1: Global service area formats

Some other observations related to services provided on highways are as follows-

- Needs of car passengers and truck drivers differ significantly
 - Willingness to pay for food and lodging by truck drivers is substantially lower than car passengers
 - Truck drivers prefer hot food compared to fast food
- Toilet and fuelling play a major role in inducing halts at service areas
 - 90% of the time highway users stop for either a bio break or to refuel the tank
 - Thus, offering toilets and fuelling option is essential for inducing halts at service area
- Food and Beverages generate highest profit for Operators
 - Wide variety of F&B options available on highways (QSRs, packaged food, bistro, etc)
 - F&B has high margins and improve the profitability of the service area
- Service Areas should be thought of as a network of offerings rather than stand alone outlets
 - Passenger's needs change as per the stage of the journey



- Service area operators should understand these various needs and offer services accordingly

Theme 2: Well defined structure with parameters for identifying locations

Parameters such as traffic flow, natural halting points, crash zones and availability of sites have been considered globally for selecting locations to set up rest areas. These parameters can be categorized into need for allied services and location for allied services.

A. Need for allied services

• Traffic flow

- Prioritization of highways done to decide on feasibility and frequency of service areas
- Factors such as AADT (Average Annual Daily Traffic), traffic growth potential and traffic mix considered
- It is not feasible to provide active service stations below certain PCU traffic
- Major industrial hubs and freight lanes identified to setup truckstops

B. Location for allied services

• Natural Halting Points

- **Spacing between service areas-** Primary objective of service areas is to reduce fatigue related accidents by giving enough opportunity to drivers to stop and rest. Most of the countries provide opportunity to rest every 30 -60 mins and thus maximum distance between 2 areas varies from 45-80 km
- **Distance from origin/destination town-** Service areas situated midway between towns is preferred rather than near to towns. First service station at ~30- 40 km with limited size since land is expensive

• Crash Zones

- Crash zones identified along the route basis higher than normal incidence of accidents attributable to driver fatigue



- New facilities proposed in such areas
- **Availability of site**
 - Plain terrain for site, availability of water, energy and sewage system
 - Local requirements to be fulfilled e.g. native land rights, wildlife conservation

Theme 3: Signage for allied services on highways

Multiple signages are placed on highways in a systematic manner. Government guidelines on signage help in ensuring consistent standards across highways. These guidelines include spacing of signage from the facility, design and content of signage and ownership (Government vs facility operator). Signage types are as follows-

- Mile marker sign- Located at 5-20 miles from the facility and mentions the name of facility and distance from current point
- Direction sign- Located close to the facility and provides direction to highways users
- Services sign- Located at the facility itself. It mentions the name of facility, operator logos, brand outlets logos and other amenities being provided
- Next/last services sign- In countries like US, signs indicate last service station on highway stretch for convenience of users.

Below is an illustration of various types of signage along with ownership and design.



	Signage type	Ownership	Design and Content	Illustration
Decreasing distance from service area	1 Mile Markers Signs	Government	- Nearest rest area - Direction to amenities - Various amenities	
	2 Direction Signs	Government	- Categories of service available - Brands available - Exit to services	
	3 Services Sign	Operator	- Company - Services offered - Brands available - Fuel Price	
	4 Next / Last services sign	Government	Indicates last gas / service station for convenience	

Figure 10.7.A.2: Type of signage

Theme 4: Contracting model between Government and operating firm

There are 2 types of arrangements between the Government and the operating firm with respect to allied services.

- In countries like Australia and Germany, land is owned by the Government. It leases out the land to private operators for 20-30 years. Operator then constructs the service area and operates it for the specified duration. Operator pays either fixed fee or combination of fixed and variable fee to the Government. In Australia, variable fee is slab based and linked to turnover of the service area
- In countries like US, UK and South Africa, Government doesn't own the land. Land is owned by individuals. Operating firms need to buy the land from landowner. There is no agreement between Government and operator in US. In UK and South Africa, there is an agreement which specifies ingress/egress from highways and associated fees to be paid by operator.

Operating firm rents out the space to multiple brands and they run the outlet on their own. In some other cases, operating firm runs the brand outlets on its own basis franchise model. They share a pre-determined % of revenue with the brand as royalty.



	 Government	 Operating firm	 Brand outlets
	Leasing arrangement - Government owns land - Leases site for 20-30 years - Provides basic infrastructure to operator - Operating firm pays fixed fee or (fixed + variable) fee basis revenue	Shopping mall model - Firm rents out space to brands Receives fixed rent	Directly involved
		Franchise model - Firm runs brand outlets as franchise Shares revenue % with brand	Indirectly involved
	No contract - Government does not own land - No contract exists between Government and operator No fees/revenue (nominal for UK) needs to be paid by operator	Shopping mall model (Only UK) - Firm rents out space to brands Receives fixed rent	Directly involved
		Franchise model - Firm runs brand outlets as franchise Shares revenue % with brand	Indirectly involved
			

Figure 10.7.A.3: Types of contracting model

Countries like Germany follow a process of bundling where they bundle highly attractive and less attractive sites together on a highway. This not only ensures leasing of less attractive sites which might be difficult to lease stand-alone but also helps offer essential services at least profitable locations as well



10.8: State-guided development of Wayside amenities: Mandatory and permissible wayside amenities

A list of amenities, classified as mandatory and permissible for each type, is summarized below

Sl. No.	Facility	Cars/Passengers	Trucks/Goods vehicle	Both cars/passenger and trucks/goods vehicle
A	Mandatory Facility			
1	Food Court/restaurant	Y	X	Y
2	Convenience store/shops	Y	Y	Y
3	Toilet facility (separate for ladies, gents & Divyang with appropriate ramp and railing), dustbin and baby care room	Y	Y	Y
4	Drinking water	Y	Y	Y
5	Car/Bus Parking (Provision for wheel chair & other facilities for Divyang)	Y	Y	Y
6	First Aid Box	Y	Y	Y
7	Dedicated area for promoting local artisans in the form of kiosk/stall/dedicated covered zone with a	Y	Y	Y



Sl. No.	Facility	Cars/Passengers	Trucks/Goods vehicle	Both cars/passenger and trucks/goods vehicle
	minimum of 1000 square foot or 1% of the area of Wayside amenity whichever is more.			
8	Landscaping	Y	Y	Y
9	Truck parking	X	Y	Y
10	Dhabas for truckers	X	Y	Y
11	Children's play area & open gym	Y	X	Y
12	Safety awareness corner	Y	Y	Y
B	Permissible Facility			
13	Fuel stations (Petrol/Diesel pump, CNG fuel station, any other type of fuel station) and Electric Vehicle charging station with air filling stations, puncture repair and pollution check	Y	Y	Y



Sl. No.	Facility	Cars/Passengers	Trucks/Goods vehicle	Both cars/passenger and trucks/goods vehicle
14	Tourist information kiosk	Y	X	Y
15	Motel/rooms for short stay	Y	X	Y
16	Dormitory for drivers	Y	Y	Y
17	Open gym & Open rest area with benches and tables	Y	X	Y
18	Vehicle repair shop	Y	Y	Y
19	Spare parts shop	Y	Y	Y
20	Car washing facility	Y	Y	Y
21	Medical clinic with ambulance	Y	Y	Y
22	ATM	Y	X	Y
23	Convention centre	Y	X	Y
24	Telephone tower	Y	Y	Y
25	Village Haat & MSME craft shop	Y	Y	Y
26	Self-laundry, cooking facility for truckers	X	Y	Y

Table 10.8.A.1: Mandatory and permissible WSA



10.9: State-guided development of Wayside amenities: revenue driver tree for wayside amenities

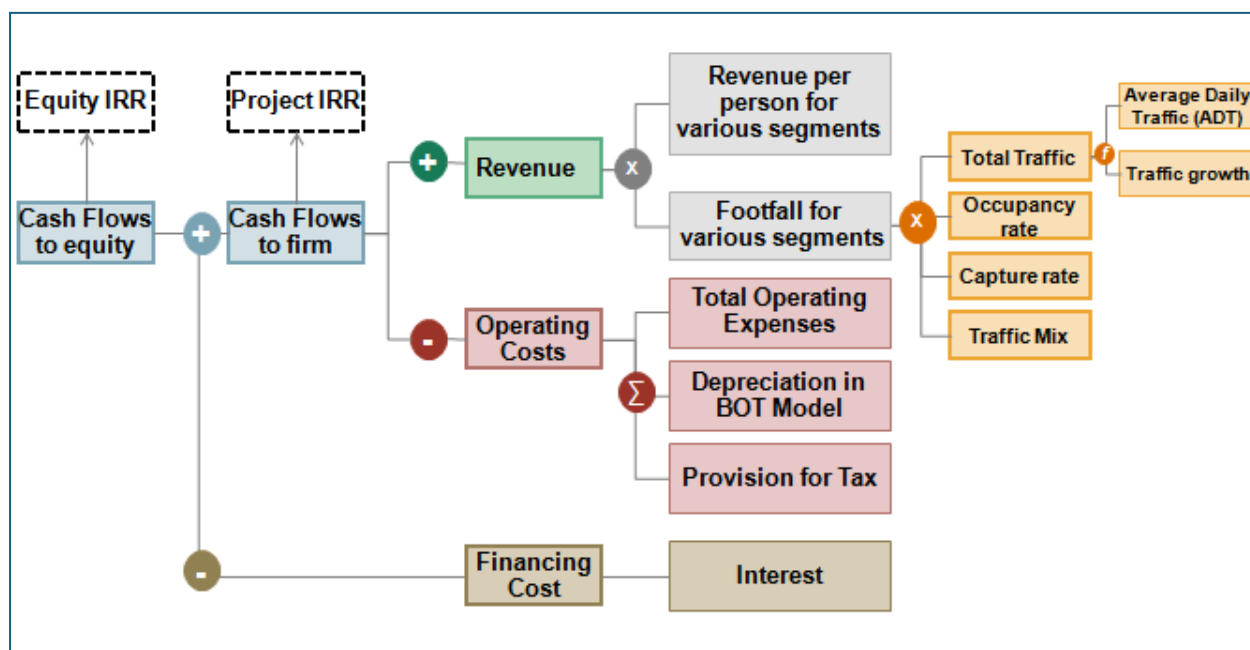


Figure 10.9.A.1: Revenue driver tree for Wayside Amenities

The projected revenue should be calculated based on the expected revenue per person and the anticipated annual footfall at the amenity. Footfall, in turn, will be determined by several factors: the total traffic on the specific highway, vehicle occupancy rate, capture rate for the Wayside amenity, and the traffic mix. Total traffic will be derived from the average daily traffic and the expected growth rate of traffic over the years.

Indicative values for revenue assessment are as follows:

Revenue from Fuel Station	Unit of Measure	State Roadway	
		Petrol	Diesel
Price Range	INR/liter	90-100	80-90



Revenue from Fuel Station	Unit of Measure	State Roadway	
Average Fueling per stop	Car (liter)	20-25	20-25
	Bus (liter)	-assumed to be filled at depot	-assumed to be filled at depot
	Truck (liter)	-	200
Margin on sales (%)		4.30%	3.20%
Annual increase in price	%	As per inflation indices	

Unit of Measure	Greenfield roadway	Brownfield roadway
Average spend per head for food court (INR)	150	100
Average spend per head for restaurants (INR)	150	-
Average spend per head for dhabas (INR)	100	-
% Footfall for food court (% of passenger footfall)	70%	-
% Footfall for restaurant (% of passenger footfall)	30%	-
No. of passenger travelling in 1 car (footfall)	4	4



Unit of Measure	Greenfield roadway	Brownfield roadway
No. of passenger travelling in 1 truck (footfall)	3	3
Additional Non-Food & Beverage revenue (% of F&B revenue)	20%	10%
Annual increase in F&B prices (%)	As per inflation indices	As per inflation indices

Unit of Measure	Greenfield roadway	Brownfield roadway
Maximum traffic capture rate (% of vehicles)	6% - 7%	3%
Rate of decrease due to 1 competing fuel facility (%)	0.060%	0.060%
Rate of decrease due to 1 competing retail facility (%)	0.031%	0.031%

A competing facility is defined as any establishment located within 20 km on either side of the Wayside amenity for brownfield roadway, and within 40 km on either side of the Wayside amenity for greenfield access-controlled roadway.



10.10: Inter Corporate Deposits: Draft investment circular for State PSUs

GOVERNMENT OF KARNATAKA

Karnataka Government Secretariat,

Vidhana Soudha,

Bengaluru,

CIRCULAR

Subject: Guidelines for implementation of Inter Corporate Deposits (ICDs) by select State-Owned Public Sector Undertakings (PSUs)

Introduction

In line with the ongoing measures to operationalize Inter-Corporate Deposits (ICDs) under the provisions of the Companies Act, and as further detailed in this draft circular, the following guidelines are hereby issued for 20 State-owned PSUs, as referenced in the Annexure C.

A company can make investments in another company provided the provisions laid down under the Companies Act, 2013, Chapter XII, Section 186 titled “Loan and investment by Company” paragraphs 1 through 13 are followed.

Justification

For PSUs with surplus funds, ICDs present an opportunity to achieve higher returns by deploying surplus capital at competitive interest rates compared to bank deposits.

Simultaneously, borrowing entities benefit from accessing funds at interest rates lower than those typically offered by commercial banks or other financial institutions.

This recommendation promotes financial prudence and mutual benefits across Karnataka’s PSUs, that fosters the State’s economic development. It is estimated that the implementation of ICDs will generate total benefit of INR 150 – 200 Crores per annum across PSUs.

Two norms as issued under the circular reference No. FD 55 INV 2024 titled “Prudent Financial Management in State PSUs, Boards, Corporations, Local Bodies, Universities, and Medical Colleges, etc.” be modified for the 20 PSUs as follows:



Additions to the norm 1e

Manner of investment: In relation to inter corporate deposits, the following shall be ensured:

- a) **Entities with Reserves and Surplus in excess of INR 100 Crores:** All concerned undertakings possessing reserves and surplus exceeding INR 100 Crores shall be required to invest no less than 50% of their total reserves and surplus in ICDs as a mandatory compliance measure.
- b) **Deviation from Prescribed Investment:** In circumstances where adherence to the above directive is deemed infeasible, the respective entities must submit a formal justification, including detailed year-on-year plans for the utilization of excess funds. This submission must outline the committed or planned expenditures, duly approved by the entity's Board of Directors in concurrence with the Finance Department.
- c) **Inter corporate deposits to only be permitted between commercial organizations:** Lending not permitted to non-self-sustaining / welfare focused institutions with insufficient own revenue generation capabilities. Only selected PSUs, as detailed in the 2C, to be permitted to undertake ICDs.
- d) **Facilitation of ICD transactions:** The concerned entities are instructed to proactively engage with ESCOMs and RTCs, as potential borrowers, to facilitate discussions and initiate transactions related to ICDs, ensuring a strategic alignment between the concerned parties. The selected borrowing entities are listed in the Annexure C.
- e) **Managing Directors of organizations to present the ICD proposition to their respective boards** during the Board Meetings and may secure necessary approvals to facilitate transactions.
- f) **Investment of Residual Funds:** Any remaining funds, following the investment in Inter-Corporate Deposits and the allocation for planned expenditures, to be deposited in term deposits. Such deposits must strictly adhere to the relevant instructions and compliance



guidelines as stipulated from time-to-time by the Finance Department including the manner of investment in relation to term deposits as prescribed in 1e of circular no. FD 55 INV 2024

- g) The Finance Department be apprised quarterly by each organization regarding the progress on ICD transactions.

Additions to the norm 1f

Risk management in inter corporate deposits: To effectively manage risks associated with funds invested in ICDs, the following actions are to be strictly adhered to:

a) Discovery of terms of transaction:

- a. The lending corporation shall engage with a **minimum of three (3) potential borrowing entities** before finalizing the terms of the transaction, which shall include the principal, rate of interest, tenure, and moratorium.
- b. The discovery of terms of transaction should be a mutual process between the borrowing and lending PSUs.
- c. The lending corporation to ensure that the interest rate for the inter corporate transactions is **at least 50 bps higher than the weighted average annual term deposit rate of interest as on sanction date** for the lending organization.
- d. In cases where the offered interest rate is lower than the above, the corporation may lend if it is justified.
- e. The lending corporation to timely benchmark ICD interest rates to Government securities and relevant market rates to comply with the Companies Act, 2013, Chapter XII, Section 186, paragraph 7.

b) Assessment of corporations:

- a. The borrowing corporation to
 - i. Provide **full disclosure** on the intended usage of proceeds.



- ii. **Utilize proceeds** in the following order of priority: 1) capital expenditure, 2) operations and maintenance. ICD lending may be avoided to the extent possible for company liabilities like PF, salaries, pensions.
- iii. **Maintain an up-to-date borrower profile**, which shall include the following updated details:
 1. **Financial position:** Turnover, net profit, free cash flow
 2. **Leverage ratios:** Debt to equity ratio, debt service coverage ratio, interest coverage ratio
 3. **Existing debt:** Details of existing long-term and short-term borrowings, terms of borrowing, usage of proceeds, repayment schedule, and outstanding liabilities
- b. The lending corporation to
 - i. **Diversify exposure** across multiple borrowers and maturity profile to reduce concentration risks and manage liquidity.
 - ii. Periodically **review exposure limits** to ensure diversified investments.
 - iii. **Implement robust internal controls and periodic audits** to ensure transparency in fund allocation, utilization and repayment status.
- c) **Repayment mechanisms:** The borrowing corporation to
 - a. **Provide a formal guarantee of repayment** to the lender. Further the guarantee may be supplemented with **appropriate collateral** for the borrowed funds, as applicable.
 - b. **Set up an escrow account** to operationalize an automatic clearance house mechanism by pooling in a share of collected revenue into the escrow account.
 - c. Ensure that at least **50% of the remittance** is credited in the escrow account at least **15 days prior to the due date**.
 - d. Provide **second charge of repayment**, as feasible, per mutual agreement between both parties.
 - e. Promptly **disclose to the Finance Department and lending corporation** if these measures are not implemented at any point.



d) **In case of default by the borrowing corporation:**

- a. The **cost of funds** for the transaction shall increase for the borrower as follows:
 - i. By 50 bps over and above the agreed upon rate of interest in case of 15 days of default
 - ii. By 100 bps over and above the agreed upon rate of interest in case of 30 days of default
- b. In case of further defaults beyond 30 days, the Finance Department shall intervene and remit the outstanding funds from the upcoming subsidy of the borrowing entity, or departmental Department heads, as applicable.

e) **Standardized operational procedures:**

- a. All transactions to be **formalized through legally binding agreements** between the lending and borrowing corporations.
- b. The agreements to be **vetted by legal and financial experts** from both parties and reviewed timely on a case-by-case basis.
- c. The vetted proposals to be submitted to the respective **boards for approval and further processing**.

f) **Monitoring and reporting mechanism:**

- a. The borrowing corporation to provide **regular status reports to the lending corporation** where the financial health of the entity, progress on fund utilization, and repayment will be outlined.
- b. The lending corporation shall perform **quarterly reviews** of all inter corporate transactions to evaluate their performance and potential risks and submit reports to the Board.
- c. In cases where **deviations from agreed terms** are identified, these must be reported immediately to the Finance Department, with recommendations for corrective measures.



Role of Secretaries of Administrative Departments:

- a) It shall be the responsibility of the Secretary of the concerned Administrative Department to ensure that the above-mentioned instructions are complied by the 20 State-owned PSUs, as referenced in the Annexure C.
- b) Further the Administrative Department to maintain accurate data on inter corporate deposits across PSUs and monitor the timely disbursement of funds.
- c) The Secretary of the concerned Administrative Department shall periodically verify the compliance to aforesaid instructions.
- d) Managing Directors of respective organizations are responsible for effective implementation of the above norms. In case of non-compliance with the aforesaid instructions, appropriate action shall be initiated against concerned MD / CEO and Head of the Finance Division of the concerned PSU.

For PSUs not listed in the Annexure C, the provisions of the investment circular No: FD 55 INV 2024, titled "Prudent financial management in State PSUs, Boards, Corporations, Local Bodies, Universities, Medical Colleges, etc." shall continue to remain in effect.

(Shri. L. K. Atheeq)

Additional Chief Secretary to Government

Finance Department

Room No. 255, Vidhana Soudha

Bengaluru 560 001

To,

The Compiler, Karnataka Gazette - for publication

**Copy to:**

1. Managing Directors / Chief Executive Officers / Directors / Administrative Heads of State Public Sector Undertakings mentioned in annexure C
2. Additional Chief Secretaries / Principal Secretaries / Secretaries / Heads of Departments of respective departments overseeing the State Public Sector Undertakings
3. Special Officer, Finance Department (Computer Cell) - To Publish in the official website of FD

Annexure | List of borrowers and lenders eligible for inter corporate deposits

S. No.	List of lenders
1	Karnataka State Mineral Corporation Limited (KSMCL)
2	Karnataka Renewable Energy Development Limited (KREDL)
3	Karnataka State Beverage Corporation Limited (KSBCL)
4	Hutti Gold Mines Limited (HGML)
5	Karnataka State Industrial and Infrastructure Development Corporation (KSIIDC)
6	Karnataka Soaps and Detergents Limited (KSDL)
7	Karnataka Rural Infrastructure Development Limited (KRIDL)
8	Karnataka Silk Industries Corporation Limited (KSIC)
9	Karnataka State Small Industries Development Corporation Limited (KSSIDC)
10	Mysore Sales International Limited (MSIL)
11	Karnataka Urban Infrastructure and Development Finance Corporation (KUIDFC)



S. No.	List of borrowers
1	Bangalore Electricity Supply Company (BESCOM)
2	Hubli Electricity Supply Company (HESCOM)
3	Gulbarga Electricity Supply Company (GESCOM)
4	Mangalore Electricity Supply Company (MESCOM)
5	Chamundeshwari Electricity Supply Corporation (CESC)
6	Karnataka State Road Transport Corporation (KSRTC)
7	North Western Karnataka Road Transport Corporation (NWKRTC)
8	Bengaluru Metropolitan Transport Corporation (BMTCL)
9	Kalyana Karnataka Road Transport Corporation (KKRTC)



10.11: Water / Irrigation Department: CWC checklist for DPR preparation

In order to ensure comprehensiveness and thoroughness of the DPRs, the following checklist as per the CWC guidelines on DPR preparation should be referred to.³⁷

A. GENERAL DATA

1. Name of the project
2. Location
 - (a) State(s)
 - (b) District(s)
 - (c) Taluka(s)/Tehsil(s)
 - (d) Longitude/Latitude
 - (e) Survey of India Topographical Map Reference No.(s)
 - (f) Earthquake Zone number
 - (g) Complete address for correspondence along with pin code/e-mail
3. Category of the project
 - (a) Irrigation/Multipurpose
 - (b) Storage/diversion

B. PLANNING

4. Has the Master plan for overall development of the — river basin been prepared and stages of basin development discussed?
5. Have the alternative proposals (including set of smaller developments vis-a-vis a single large development) been studied and their merits and demerits discussed?
6. Does the scheme fit in the overall development of the river basin and has its priority in the —_ overall development of the basin been discussed?
7. Have the other Departments concerned with the development been informed?
8. Is the present scheme proposed to be executed in stages? If so, are its various stages of execution and development discussed in the report?
9. Are the effects of the scheme on the riparian rights & existing upstream and downstream projects etc. discussed?
10. Has the provision for municipal and industrial water supply been made?

³⁷ "Guidelines for preparation of DPRs of Irrigation and Multi-purpose Projects", 2010
https://cwc.gov.in/sites/default/files/dpr_guidelines.pdf



C. INTERSTATE AND INTERNATIONAL ASPECTS

11. Are there any International/Interstate issues involved? If so. have these issues been identified and present status of agreement or tribunal decision indicated specially in respect of

- (a) Sharing of water
- (b) Sharing of cost
- (c) Sharing of benefits (irrigation, flood control. power etc.)
- (d) Acceptance of the submergence by the upstream state(s)
- (e) Acceptance by the upstream state(s) of compensation of land coming under submergence
- (f) Settlement of outsees
- (g) Any other

NOTE:- If there is no agreement state, the present position against each of the above item.

D. SURVEYS

12. Have the detailed topographical' surveys been carried out for the following items and maps prepared as per prescribed scales ;

- (a) River surveys
- (b) Reservoir surveys
- (c) Headwork surveys (dam(s), dyke(s), barrage(s). weir(s) etc. and auxiliary components)
- (d) Plant and Colonies' sites
- (e) Canal(s), branch canal(s) and water distribution system
- (f) Major canal structures
- (g) Power house, switch-yard, surge shafts, tailrace
- (h) Tunnel(s). adit(s). penstocks etc.
- (i) Surveys (detailed and sample) of areas of the command for OFD and drainage works
- (j) Soil surveys
- (k) Surveys for soil conservation
- (l) Any other surveys i.e. archaeological, right of way, communication etc.

E. GEOLOGICAL INVESTIGATIONS

13. Have the geological surveys for the following items been carried out and report on geology of the following appended?



- (a) Region as a whole
- (b) Reservoir
- (c) Headwork and energy dissipation area
- (d) Power house and appurtenances
- (e) Intakes and regulators
- (f) Major 'canal structures
- (g) Tunnel(s), Penstock(s), hill(s) etc.
- (h) Communication routes
- (i) Any other

F. SEISMIC INVESTIGATIONS

- 14. Has the seismicity of the region been studied and co- efficient of vertical/horizontal acceleration for the various structures discussed?
- 15. Has the approval of the Standing Committee for recommending design of seismic coefficients for River Valley Project been obtained?
- 16. Is there possibility of liquefaction of foundations? If so whether liquefaction studies been carried out?

G. FOUNDATION INVESTIGATIONS

- 17. Have the detailed foundation investigations (including in-situ tests and laboratory tests) for the following structures been carried out and detailed report(s) appended?
 - (a) Earth and rock fill dam(s)
 - (b) Masonry/concrete dam(s)
 - (c) Barrage(s)/Weir(s)/head regulator(s) etc.
 - (d) Canal(s) & Canal Structures
 - (e) Powerhouse(s), tunnel(s), ennsnwier cavern(s), de-silting chamber(s), surge tank(s)/shaft(s), intake(s)
 - (f) Pump House(s)
 - (g) Any other
- 18. Are there any special features slits the designs?

H. CONSTRUCTION MATERIAL SURVEYS

- 19. Have the surveys and laboratory tests for the – following construction materials been carried out and report(s) appended?
 - (a) Soils for impervious, semi-pervious and pervious zones of earth and rock-fill dam(s)
 - (b) Sand



- (c) Rock and coarse aggregates
 - (d) Bricks and tiles
 - (e) Pozzolona
 - (f) Cement and lime stone
 - (g) Steel
 - (h) Any other
20. Have the sources for each of the above material been identified and need etc. indicated?
Have the proposals for procurement of scarce materials been indicated?

I. HYDROLOGICAL AND METEOROLOGICAL INVESTIGATIONS

21. (a) Have the hydrological and meteorological investigations been carried out and status of following data discussed in report?
- (i) Rainfall
 - (ii) Temperature
 - (iii) Sunshine
 - (iv) Gauge & Discharge
 - (v) Sediment
 - (vi) Water quality
 - (vii) Evaporation
- (b) Has the above data been collected & appended?

J. HYDROLOGY

22. Is the hydrology dealt with in detail in a separate volume? Have its brief details been included in this Report?
23. Have an index map and bar chart showing locations of various hydro-metric, climatic and rainfall stations existing/ongoing/planned water resources projects and the data availability at those stations been attached?
24. Have required detail note about project specific hydro-meteorological data observatories been attached?
25. Have required detail in case of Himalayan rivers, if project being planned in upper reaches, the satellite imageries of project catchment especially one during snowmelt period (March-May) and one during monsoon (June-September) period been attached?
26. Are detail notes about quality, consistency, processing and gap filling of the data included?
27. Have hydrological studies been carried out for the following:
- (a) To establish the availability of water for the benefits envisaged?
 - (b) To determine design flood for the various structures (spillway, weir, barrage etc.)
 - (c) Sediments storage



- (d) Design flood for diversion during construction
 - (e) Tail water rating curve
 - (f) Evaporation rates from reservoirs/concerned area
 - (g) Command area rainfall
28. Has the Ground Water Potential (existing use and additional availability) been indicated?
 29. Have the studies regarding reservoir sedimentation been carried out and revised elevation-area capacity curves been used in the simulation studies (Working Table)?
 30. Have the ecological requirements of water such 'as low flow augmentation and water quality control etc. and water requirement for domestic, industrial use and power generation (thermal, hydel, nuclear) been considered and included in the Project Report and incorporated in the simulation studies?
 31. Have the details of the simulation studies (Working Tables) and conclusions arrived from the various alternatives explaining the factors and assumptions been included and discussed?
 32. Has the number of failures for different aspects been indicated?
 33. Have the likely desirable and undesirable changes in the hydrologic regime due to the project been brought out in the
 34. Is the criteria adopted for selection of the construction diversion flood discussed? '
 35. Has the basis for determining the storage capacity been discussed?
 36. Have integrated working tables (for more than one reservoir in the system) been prepared?
 37. Has carry over storage been provided? If so, whether studies for most economic carry over storage been done?
 38. Have the flood routing studies. been carried out?
 39. Have the back water studies been carried out?

K. LAND ACQUISITION AND RESETTLEMENT OF OUSTEES

40. Have the type and quantum of land proposed to be acquired in the submerged area, project area, area coming under canals and distribution system, area required for rehabilitation of the outsees been detailed?
41. Is the basis for provision for land compensation indicated?
42. Have the rehabilitation measures, amenities and facilities to be provided to the Project Affected Persons been discussed .and whether their provisions included in the report? Are these in accordance State's policy/project. specific policy/draft national policy for rehabilitation and resettlement?
43. Are the basis of. land acquisition of the submerged area up to FRL/MWL etc. discussed?



L. DESIGNS

44. Does the state have established a Central Design Organization and State level multidisciplinary Advisory Committee and whether its composition has been indicated in the report?
45. Has the selection of final location of the headworks and appurtenances, in preference to the other sites investigated, been discussed?
46. Have the layout of the project viz location of headworks, workshop sheds, offices, colonies etc. been finalized and discussed?
47. Has the layout of the various major components of the headworks been discussed in the light of site features, geology, foundation characteristics etc.?
48. Have the detailed designs been prepared for the following components & got vetted by CDO?
 - (a) Earth or rockfill dam, masonry or concrete dam, spillway, barrage, weir, etc. and appurtenances.
 - (b) Energy dissipation arrangements, training walls etc.
 - (c) Openings through dams-galleries, head regulators, penstocks other outlets, sluices etc.
 - (d) Regulators
 - (e) Canal and water conductor system
 - (f) Canal structures
 - (g) Pump house, intake structures
 - (h) Power House, tunnels, surge shaft
 - (i) Instrumentation
 - (j) Power evacuation arrangement
 - (k) Design of Hydro Mechanical equipment
49. Have the salient features of the above components and the assumptions made in the design of above components. of the project been indicated and their basis discussed?
50. Have any model studies been carried out for location of the dam, spillway and other appurtenances & checking the design profile of the spillway, energy dissipation arrangements, location of outlets/regulators etc.?
51. Has the final alignment of 'canal(s) and branch -canals(s) been discussed in the light of various alignments studied?
 - (a) Does the canal design provide for meeting requirements of rush irrigation?
 - (b) Have any intermediate storages and_ tail tanks been considered to reduce the canal capacities?
52. Are the canals and distribution system being lined and: if so what is the minimum capacity of the channel proposed to be lined?
53. Is the location of canal structures on main and branch canals fixed after detailed surveys of the final alignments?



54. Are the regulation arrangements of the off-taking channel both near and away from the cross regulators discussed?
55. Are sufficient escapes including terminal escapes provided on the main/branch canal distributaries/minors?
56. Have the basis for adopting water way for the cross-drainage works been discussed?
57. Have the proposals for rating the canal section by providing standing wave flumes, rating of the falls, broad crested weirs. V- notches etc. been discussed for the canal and distribution system?
58. Have any model studies for major canal structure(s) been carried out and if so are the results discussed and incorporated in the design?

M. IRRIGATION AND COMMAND AREA DEVELOPMENT

59. Have the conveyance and field irrigation efficiencies for paddy and upland crops during kharif, rabi etc. been indicated, discussed and justified?
60. Have the 10-daily/monthly crop water requirements at the canal head been worked out?
61. Are there any proposals for introducing warabandi: and if so have these proposals been discussed in the report and sample calculations for a typical distributary/minor/sub-minor furnished?
62. Has the present position of irrigation in the command through existing canals, tanks, lift schemes, wells etc. been brought out in the report?
63. Are the particulars of all irrigation projects (including minor schemes) existing/proposed in the command been indicated?
64. Are there any potential areas, where ground water is available? If so, has the quantity & quality of the ground water been indicated?
65. Has the quantum of available ground water been assessed and plan for its conjunctive use with surface water been prepared and incorporated in the report?
66. Have the semi-detailed soil surveys been carried out for the entire command? If not the extent of area surveyed may be indicated.
67. Have soil and land irrigability classifications brought out in the report?
68. Is the method used for determining the crop water requirements discussed?
69. Has the pre-project cropping pattern and the proposed cropping pattern along with justification been. furnished?
70. Has the proposed cropping pattern been certified by Centre/State Agricultural Authorities giving the statement of having considered the soil characteristics and land irrigability characteristics of the command area in deciding the percentage of the command area falling under respective crops as suggested in DPR?
71. Whether drinking water needs of the population projected for the 25-30 years after construction of the project on enroute and that in the command of the project considered.
72. Whether the proposed G.W utilization is certified by CGWB and a statement furnished.



73. Are the areas and percentages of the CCA that will be irrigated during kharif, rabi, two seasonal, summer and perennial been indicated?
74. Is justification furnished' for irrigating perennials and summer crops from the reservoir?
75. Have the monthly reservoir operation studies been carried out at least for 20 years. And summary on annual basis attached?
76. Have the number of blocks selected for detailed surveys for On Farm Development (OFD) works including drainage and total area covered by such blocks been indicated?
77. Have the existing locations of the Trial cum Demonstration Farm, input centers (seeds, fertilizer and insecticides) in the command been indicated and proposal.to strengthen the same discussed?
78. Have the arrangements for financing the OFD works and proposals, if any, for strengthening the same been discussed?
79. Have the agencies responsible for execution. of OFD works been identified and simultaneous planning of execution of OFD works along with engineering works discussed?
80. Has-the year-wise phasing of irrigation development as a result of the project been discussed?
81. Is the existing communication system telephone. wireless and roads within command area sufficient to meet the requirement after full development of irrigation? If not, have the new proposals been planned and discussed?
82. Is the adequacy of the marketing centers in the Command Area and new proposals to meet the requirements after full development of irrigation been discussed?
83. Is there any stabilization of existing irrigation proposed?

N. FLOOD CONTROL AND DRAINAGE

84. Have the various flood control components of the multipurpose project been indicated?
85. Have the damage areas in pre-project & post project situations been identified and flood intensities worked out at each of the damage center(s) which gets affected?
86. Have the following flood aspects been discussed?
 - (a) Flood cushion in the reservoir
 - (b) Maximum moderated flood out flows over the spillway etc. and its frequency
 - (c) Existing and proposed safe carrying capacities of the channel below the dam after construction of flood embankment, channel improvement, river diversion etc.
 - (d) Synchronized moderated peak floods due to release(s) from the dam' upstream and unintercepted catchment up to the damage centers
 - (e) Average annual expenditure incurred on flood relief works
 - (f) Area and population affected/likely to be affected before/after the project
 - (g) Estimated saving in annual loss of life, property, cattle, crops etc. (evaluated in terms of money) due to flood control
87. Have the following drainage aspects of command area been discussed?



- (a) Existing Surface and sub-surface drainage network and problems of the drainage congestion, water logging, alkalinity/salinity if any.
- (b) Studies on sub soil water table (pre-monsoon, post-monsoon etc.).
- (c) Maximum intensity of 1,2 and 3 day rainfall.
- (d) Deficiencies in farm drains.
- (e) Deficiencies in existing natural drains
- (f) Proposal for improvement of drainage/water logging /alkalinity/salinity of the area along with justification thereof.
- (g) Identification of the area in Command which will get benefited due to execution of drainage net-work and benefits thereof in terms of relief from crop damage, increased yields etc.

O. NAVIGATION

- 88. Is the present scheme for remodeling of the existing facilities and/or extension of the navigable reach or establishing new navigable reach?
- 89. Is the existing inland transport system being fully utilised? If not, have the bottlenecks in its full utilisation been identified and discussed?
- 90. Have the surveys for goods and passenger traffic been carried out and discussed?
- 91. Is the extent of modification required in the existing system discussed and justified?
- 92. Do design for the canal section and structures take into account the navigation requirements?
- 93. Have the proposals to develop the new scheme and phases of development in the different reaches been discussed?
- 94. If the area is being served by inland water transport, have the following been discussed:
 - (a) The existing toll rates and registration fees for the crafts (size- wise)
 - (b) Proposals for revision of tollage rates and fees, if any.
 - (c) Concurrence of the competent authorities for revision of rates and fees.
 - (d) Proposal to subsidise the tariff, tollage, craft registration fee, passenger fare etc. to attract traffic.
- 95. Has the State Inland Water Authority been consulted while finalising the scheme and its view point discussed?
- 96. Has economic justification and viability of the navigation component of the multipurpose project, been discussed?
- 97. Have the following points been discussed?
 - (a) Availability of the power generating capacity in the state as well as in the region from different sources.
 - (b) Total energy available and peaking capacity of the system in the state as well as in the region from different sources.
 - (c) Integrated operation of the system and present status of utilisation in the state as



well as in the region.

(d) Surpluses and shortfalls in the system in the state as well as in the region.

(e) Future plans of power development. from different sources in the State/region.

(f) Fitment of the scheme. in planning of power development of the State/region.

(g) Energy generated from the project, firm power, seasonal power and total power

(h) Proposal for transmission lines shifting to the existing system/grid.

(i) Project cost per kwh installed and per kwh generated at bus bar as compared to the different hydro-electric, thermal generation and gas projects and different sources in the State as well as in the region to justify the power component of the project.

(j) Whether the proposed addition to the transmission system has been shown. On a geographical map. Whether options considered for the proposed addition have been discussed with statement of justification for the selected option after carrying out supporting studies covering load flow studies, short-circuit studies (three phase and single phase) and stability studies.

(k) *³⁸Whether sufficient surplus off peak power is available for pumping of water from lower to upper reservoir.

(l) *Actual off peak energy requirement of proposed scheme

(m) Cost of peak and off peak energy

P. XVII, CONSTRUCTION PROGRAMME AND PLANT AND MANPOWER PLANNING :

98. Are the major components-of work proposed to be done departmentally or through contractor?

99. Have the various alternative construction programme been studied and proper justification furnished for the final programme adopted?

100. Has the proposed construction programme been: prepared and synchronized for timely completion of each of the major component of work including Command Area Development?

101. Have the year wise quantities of the following materials of construction been worked out for various components of the project:

(a) Excavation separately in -soft and hard strata

(b) Earthwork in filling-impervious, semi-pervious and pervious

(c) Rockfill- for dam, toe, riprap-etc.

(d) Stone for masonry

(e) Coarse aggregate for concrete

(f) Sand- for filter, masonry/concrete

(g) Gravel- for filter

³⁸ * for pumped storage schemes only

- ## Q. FOREIGN EXCHANGE

- ## R. FINANCIAL RESOURCES

- ## S. ESTIMATE

114. Is the separate volume of estimate attached as appendix?
115. Is the year to which the rates adopted in the estimate relate to indicated?
116. Have the analysis of rates for various major items of work for the major components of the project been furnished and with basis of analysis described?



117. Are the provision for the following items made on the basis of sample survey and sub-estimates:

- (a) Distributaries, minor and sub-minors
- (b) Water courses
- (c) Drainage
- (d) CAD Works

T. REVENUE

118. Are the basis for the following sources of revenues furnished?

- (a) Betterment levy and proposal for its recovery
- (b) Irrigation cess
- (c) Flood protection cess
- (d) Crop wise water rates
- (e) Sale of water for village/city/industrial/power/water supply
- (f) Miscellaneous

119. Have these rates been compared with the existing rates at the other projects in the State/region?

120. In case the rates are being enhanced, has the concurrence of the concerned department(s) been obtained?

121. Have the organisational set up for the collection of revenue been indicated?

U. B.C. RATIO

122. Are the allocated cost for the following components of the multipurpose project worked out and basis therein furnished?

- (a) Irrigation
- (b) Power
- (c) Flood Control
- (d) Navigation
- (e) Water supply
- (f) Any other

123. Have the various departments of the State/Centre agreed to the sharing of the above allocated cost?

124. Have the crop wise benefits been worked out for irrigated and unirrigated crops being grown before project in consultation with the agriculture department and statement furnished?

125. Have the crop wise benefits been worked out. for proposed cropping pattern after. the introduction of irrigation in consultation with the agriculture department and statement furnished?



126. Is the B.C. ratio of Irrigation Projects acceptable or otherwise justified? i :
127. Is the B.C. Ratio for Flood Control Projects acceptable or otherwise justified?
128. Is the B.C. ratio for power component of the project acceptable or otherwise justified?
129. Have the financial and economic return statements been furnished keeping in view the phasing of development?
130. Are the benefits other than those considered in the B.C. Ratio and financial return statement: been identified?
131. Is the benefit from Gallper land, if proposed, based on lease rates admissible and statement from concerned Central/State authorities furnished?
132. Are the benefits from fisheries, horticulture, if proposed, based on lease rates admissible and statement from concerned Central/ State authorities furnished.

V. ECOLOGICAL ASPECTS

133. Is the area likely to have any of the following environmental and ecological problems due to the altered surface water pattern? If yes, whether preventive measures have been discussed?
- (i) Excessive sedimentation of the reservoir and the upper reaches of the river and its tributaries tailing into reservoir
 - (ii) Water logging, salinity/alkalinity
 - (iii) Quality of surface and ground water
 - (iv) Ground water recharge
 - (v) Health hazards-water borne diseases, industrial pollution etc.
 - (vi) Submergence of important minerals deposits
 - (vii) Submergence of siesta sites
 - (viii) Fish culture and aquatic life
 - (ix) Plant life (flora)
 - (x) Wild Life
 - (xi) Migratory birds
 - (xii) National parks and sanctuaries
 - (xiii) Seismicity due to filling of reservoir
 - (xiv) Likely change in the regime of the river
 - (xv) Any other
134. Have the environmental and forest clearances from MOE&F been obtained? If not what is status thereof?



W. COLONIES AND BUILDINGS

135. Has the planning of the colony/building been done keeping in view the ultimate use for optimum utilisation of investment?
136. Has an estimate of the extent of higher cost involved been made and details discussed?
137. Are the permanent buildings being constructed required for maintenance of the project only?
138. Can the buildings other than 'required for maintenance of the project being constructed be put to some other use after the completion of the project' by the department or any other agencies?
139. Have the interested agencies been consulted in planning of the buildings to suit their requirements later on?
140. Have the proposals for disposal of temporary buildings been discussed?

X. PUBLIC PARTICIPATION AND COOPERATION

141. Are the possibilities of these been discussed in:
- (a) Planning
 - (b) Construction
 - (c) Improved agricultural practices
 - (d) Any other
142. Have public debates about utility of projects been held and the response thereof outlined in the Report?

Y. SOIL CONSERVATION

143. Is the need for soil conservation measures in the catchment of the project discussed?



10.12: Health (focus on subcenter personnel): Time-work study across 3 districts

PHCO (Workload Analysis)						
Field Visits	Category	Description	Beneficiaries	Time/entry	Total mins/Month	
	ANC and PNC care	ANC PNC care for pregnant women and new mothers	45 - 50 women/month	15 mins	2700	
	Eligible Couple	Distribution of OCPs, CCPs, Antra injections (DMPA) and family planning awareness	30 - 40 couples/month	10 mins	1200	
	Immunization	Immunization and vaccination of children	5 - 6 births/month (vaccines in intervals of 1 month, 2.5 months, 6 months, 1 year)	4 - 5 sessions/month	1200	
	Other National Programs	Awareness campaigns on family planning, vaccination initiatives, and camps held at Anganwadi centers and schools	6 - 8 camps	4 hours	1920	
TOTAL				7020		
Record Keeping	Category	Description	Entries	Time/entry	Total mins/Month	
	Online Portals	1. RCH Portal	Eligible Couple	5 - 8/month	10 - 15 Mins	90
			ANC registration	5 - 8/month	10 - 15 Mins	90
			Child Immunization	50 - 60/month	5 mins	300
			Profile Update	once a year	5 Mins	1
		2. ANMOL (ANM APP)	Similar data as RCH Portal			481
		3. HMIS at HWC LEVEL	Aggregate monthly Data numbers	once a month	2 Hours	240
	Physical Registers	4. FPMIS (FAMILY PLANNING MANAGEMENT INFORMATION SYSTEM)	Distribution of OCPs, CCPs, Antra injections (DMPA)	30 - 40/month	15 - 20 mins	525
		5. PMSMA (PRADHANA MANTHRI SURAKSHA MATRUTVA ABHIYANA)	Pregnant Women Examination portal	10 - 15/month	5 - 10 mins	120
		6. U - WIN PORTAL - IMMUNISATION	Child Immunization	5 - 6/month	15 - 20 mins	120
		Maintaining Physical registers of the same data	Similar data entered in the registers for physical inspection			1125
TOTAL				10,413		
Total Time Available		24 days of 8 hours working		11,520		
				Capacity Utilization= 90%		

Figure 10.12.A.1: Time work analysis of PHCOs

CHO (Workload Analysis)						
Field Visits	Category	Description	Entries	Time/entry	Total time/Month	
	OPD Works	OPD works	Diagnosis of patients coming to Subcenter	10 - 15/day	3 - 5 mins	1040
		Tele Consultations	Tele Consultations over the call	5/day	5 mins	500
	Health Camps	Non communicable Diseases camps	above 30 years - checking BP, diabetes etc.	4 camps/Month	3 hours	720
Record Keeping	CHO Workload Analysis		Description	Entries	Time/entry	Total time/Month
	Online Portals	1. HWC Portal	OPDs and NCDs in a day	10 - 15/day	2 Mins/day	40
		2. NCD App	Details of beneficiaries in NCD app filled	5 - 6/daily	10 mins	1000
		3. e - SANJEEVINI	Tele Consultations	5 - 10/day	5 - 10 mins/day	100
		4. ABHA CARD GENERATION	The Abha Card (Ayushman Bharat Health Account) is a digital health ID	40 - 50/month	5 - 10 mins/ card	320
	Physical Registers	Maintaining Physical registers of the same data	Similar data entered in the registers for physical inspection	10 - 15 mins/day	240	
	Total Time Available		24 days of 8 hours working			11520
Capacity Utilization =					34%	

Figure 10.12.A.2: Time work analysis of CHOs



HIO (Workload Analysis) - 10,000						
	Category	Description	Entries	Time/entry	Total time/Month	
Field Visits	Sample Collection	leprosy, larvae surveys, tuberculosis, malaria, and blood smear tests and other vector borne disease	Identification and Sample collection	25 - 30 houses/day 5 - 10 mins	3,500	
	House to House visits	School visits and camps	Awareness regarding communicable diseases and their prevention	3 - 4/Month 3 hours	540	
Record Keeping	HIO Workload Analysis		Description	Entries	Time/entry	Total time/Month
	Online Portals	1. IHIP (Integrated Health Information Portal)	Real-time data gathering and monitoring of disease outbreaks.	20 - 25/day	3-5 mins	1,200
		2. NIKSHAY	Tuberculosis data	Whenever Identified - depends on cases		
		3. LEPROSY (SPARSHA)	Leprosy Data			120
	Physical Registers	Maintaining Physical registers of the same data	Similar data entered in the registers for physical inspection	10 - 15 mins/day	240	
	Total Time Available		24 days of 8 hours working			11520
Capacity Utilization=					49%	

Figure 10.12.A.3: Time work analysis of HIOs