NITI Aayog

Public Private Partnership in Micro Irrigation

Improving water use efficiency, building sustainable agriculture and crowding in private investment

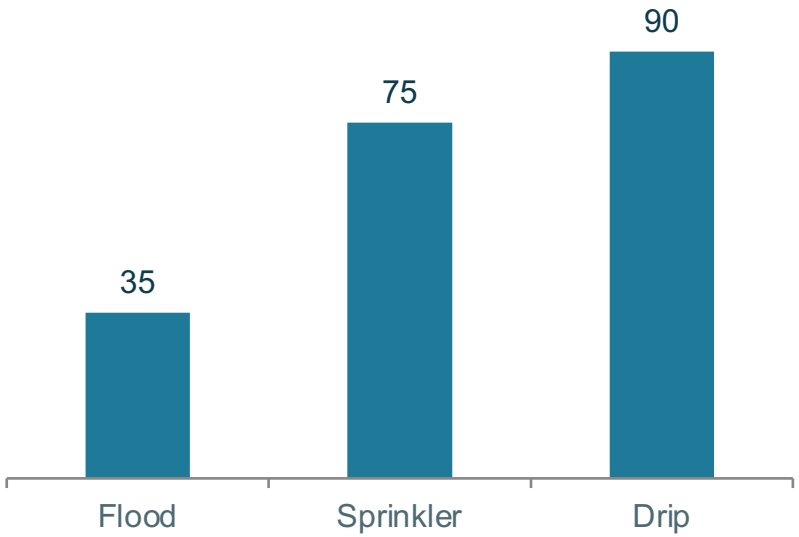
Ch. P. Sarathi Reddy
Programme Director (PPP)
24.09.2026

Water Use Efficiency for Viksit Bharat

- Sustaining Agriculture Productivity and Food Security
- Supporting Industrial Expansion
- Urbanization and Quality of Life
- Climate Resilience and Adaptation

Why irrigation efficiency matters

Typical field application efficiency (%, approximate)



~80%

of freshwater use goes to agriculture, by common estimates

Falling water tables

many blocks are over-exploited

~56%

of net sown area is irrigated; the rest depends on rain, so every drop saved extends reach

Micro irrigation and sustainable farming

Water

Typically 30-50% savings versus flood irrigation

Yield and income

Yield gains of 20-50%, higher for horticulture and sugarcane

Energy

Less pumping time, so lower diesel and electricity use

Inputs

Fertigation raises nutrient use efficiency and cuts fertiliser waste

Land and soil

Less waterlogging, salinity and weed growth; works on uneven terrain; Levelling of land not required

Climate resilience

Reliable moisture in dry spells; supports crop diversification

Investment driven Growth

Private Sector Investment in Infrastructure

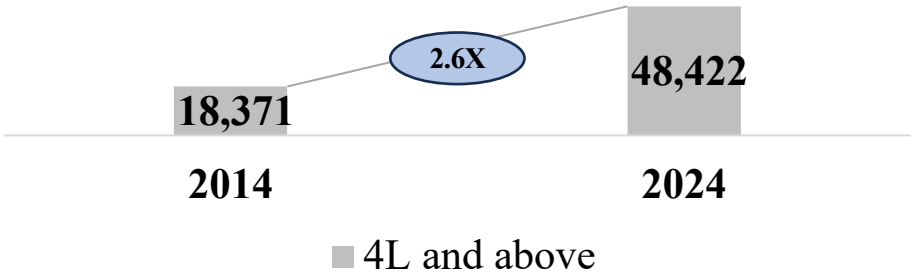
1. Sectors that attracted private investment grew faster:

   - **Highways, Ports, and Aviation -** PPP;
   - **Power and Telecom –** Direct private sector investment.

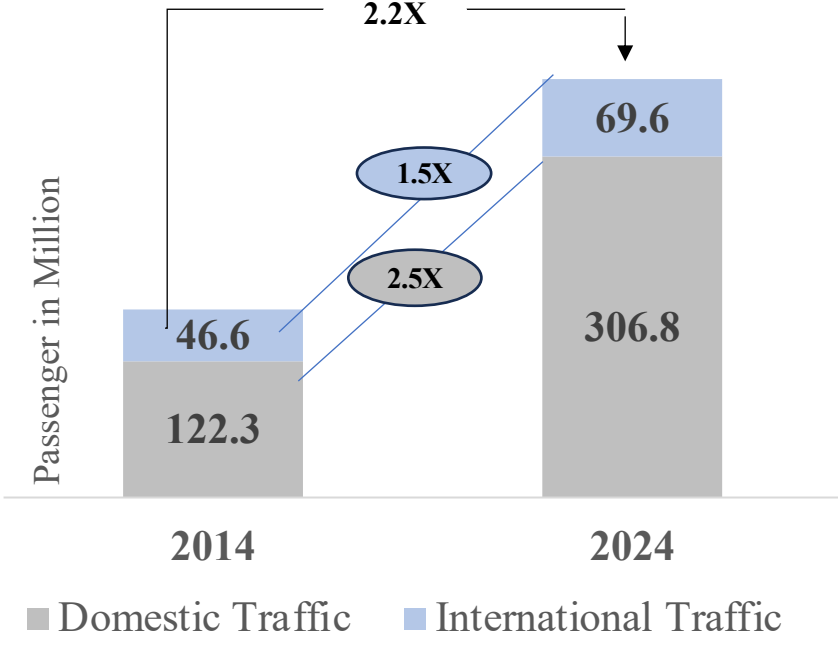
2. PPP projects being long term require **robust concession frameworks** with defined KPIs, detailed scope of the Project etc.

Infusion of private capital fuels infrastructure growth

NH- 4 laning and above grown by 163%, in km

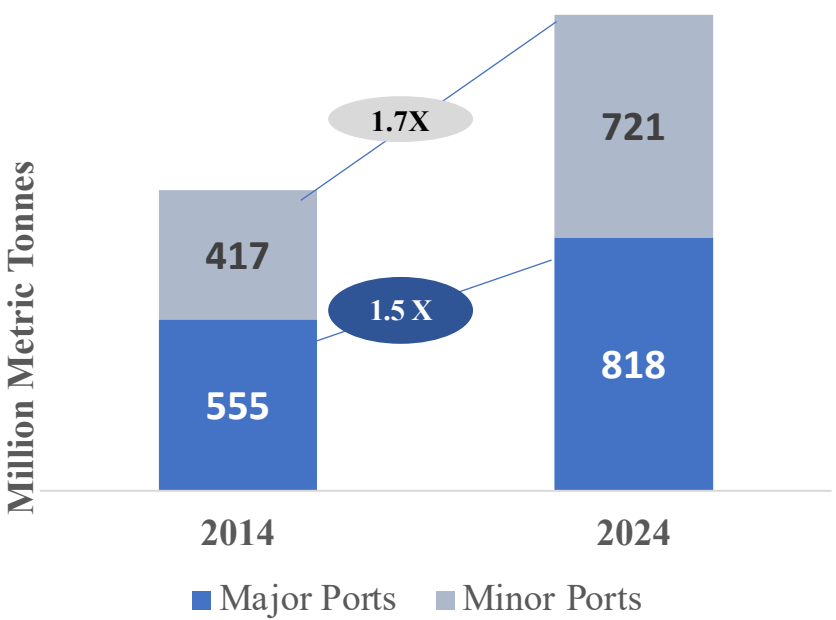


Air passengers grew at a CAGR of 8.3% per annum, in million passengers per annum

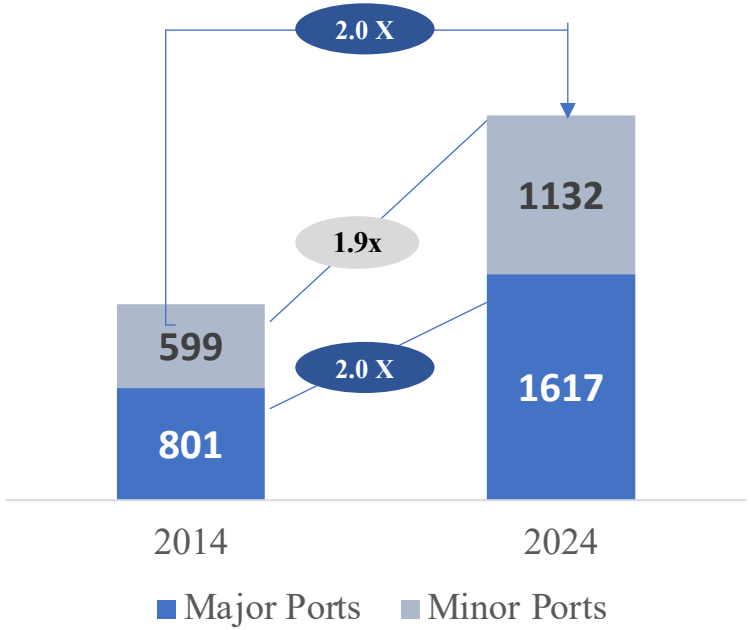


Infusion of private capital fuels infrastructure growth: Port Sector

Traffic handled grew at a CAGR of 4% & ~5.5% per annum for Major & Non-Major Ports



Capacity of Major and Non-Major Ports grew at a CAGR of ~7% and ~6.5% per annum



PPP Framework in Micro Irrigation

How the PPP mode accelerates coverage

Barrier	What the partnership adds
Small, scattered holdings; inadequate irrigation infrastructure	Cluster-based projects that aggregate demand through water user groups; development of irrigation infrastructure
High upfront cost	Private finance, plans layered on subsidy and Micro Irrigation Fund; improved institutional credit to farmers
Weak after-sales service	Long-term operation and maintenance contracts tied to performance
Approvals and subsidy flow	Appointed Date for the Project only after all approvals
Skills and advisory gap	Agronomy, fertigation and digital advisory bundled with hardware
Multiple Schemes; Equipment oriented support programmes	Support to Project through convergence of Schemes

Conceptual shift with PPP mode

From

"Financing Micro-Irrigation Assets"

to

"Financing Water Productivity and Irrigation Services-

leading to **increased farmer income**"

How PPP attracts private investment

Indicative market

Rs 2.5-7.5 lakh crore

Rough cost to cover about 50 million ha of remaining potential at Rs 50,000 to 1.5 lakh per ha.

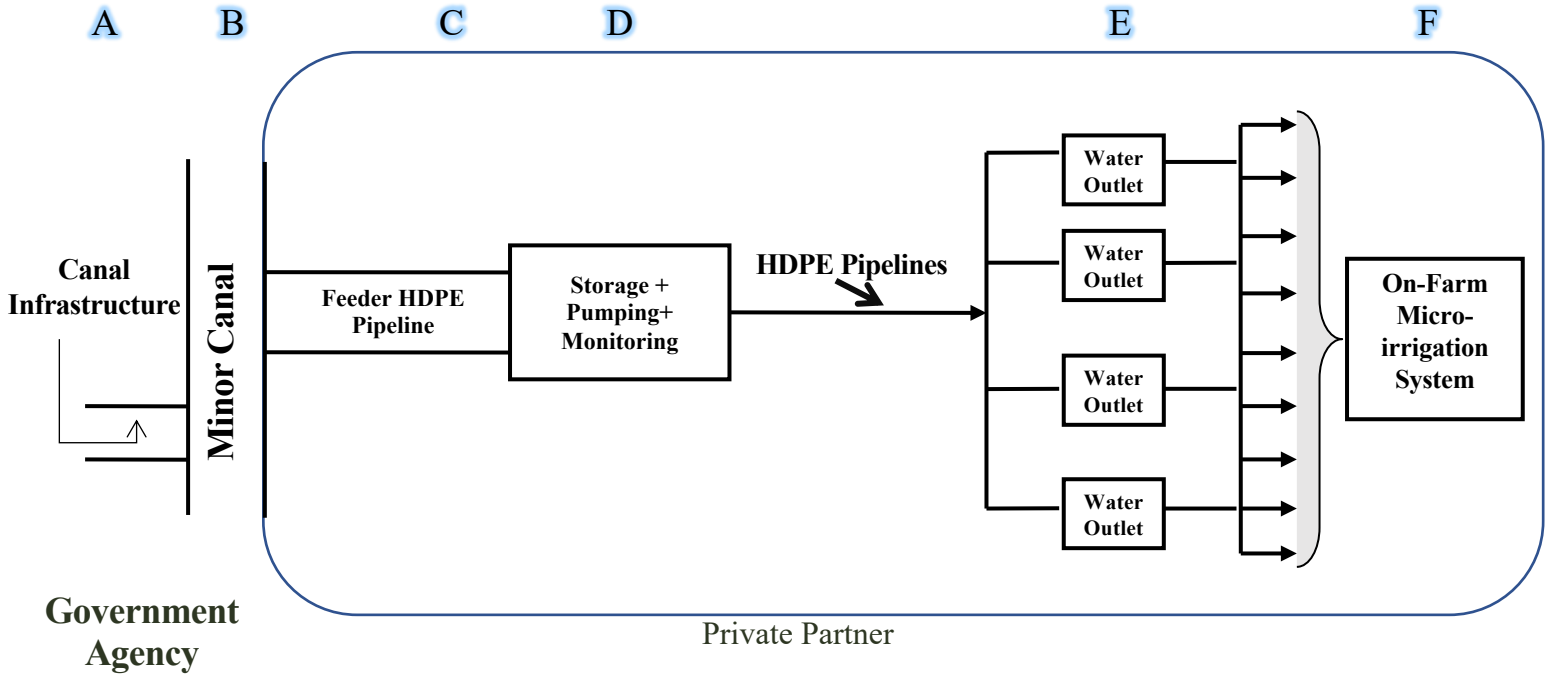
Visible revenue

Multi-year service contracts plus performance-linked public payments

Lower risk

Viability gap funding, MIF concessional loans

Structure of MIS Project



Components C to E – Irrigation Infrastructure
Component F – Micro Irrigation System (MIS)

Proposed PPP framework: Terms

Public partners

- Assured water source and power
- Support for Capex and Opex for common infra
- Support for on–farm MIS
- Land access and clearances

Private partner

- Design, build and finance
- Operate and maintain for 7-10 years- common infra and on-farm MIS
- Meet uptime and water-use targets
- Farmer training and advisory

Farmers

- Basic upkeep and water efficient use
- Commit to cluster area for the term
- Share crop and yield data
- Form Water User Group

Cluster size

500-1,000 ha

Payment

Performance linked support

Investment & User Charges

I. Funding by Government (As per extant Schemes)

- Capital grant for infrastructure (including Solar)
- Annual O&M charge for a defined period
- Subsidy for on-farm MIS & Solar under extant schemes

II. Funding by Private partner

- 40% of capital cost (recoverable over 7 years)
- 50% of MIS & Solar subsidy (recoverable on installation)
- Procure farmers' contribution

III. Contribution of Farmers

- Repayment of bank loan by farmers for MIS
- Maintenance charges for MIS

Thank You.

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