Sewerage and Recycled Water PPPs

Strengthening Audit Oversight of Public Private Partnerships

Case Study Based Training Programme for Officials of the Comptroller and Auditor General of India

Indian Institute of Management Mumbai

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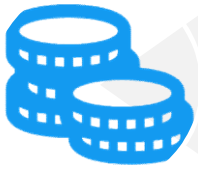
PPPs in Wastewater Treatment

Delivery of municipal services is beyond asset construction – Service delivery to the public is the primary objective

In PPP frameworks – the private sector is incentivized to optimize lifecycle costs and enhance asset life for optimum service delivery

Over the next 15 years, USD 450 billion is required for urban infrastructure in India – this does not include operation and maintenance expenses.

Public funding and commercial capital raise by ULBs can be leveraged to achieve this target through Private Capital Mobilization through PPPs



The private sector is better placed to leverage existing assets for greater commercial opportunities.

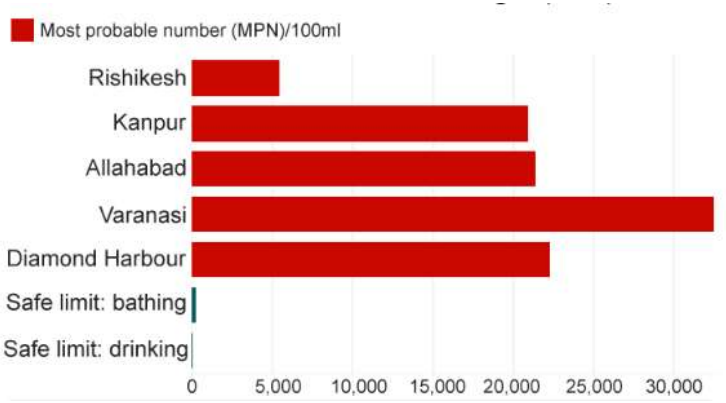
Examples include utilizing an existing waste processing facility for waste from non-municipal sources or surrounding cities or developing high value stores around a bus terminal

Some risks are better managed by the private sector including design risk, operating risk

Public entities are slow to innovate and respond to advances in technology even with financing

Namami Gange

- 2,525 km – immense political, economic, cultural, religious importance, serving 40% of India's population
  - Polluted waters, bacteria levels of over 30,000 MPN
  - Over three-quarters of the sewage generated flowed untreated into the sacred river
  - Waste produced by local industries
  - Water used for irrigation leading to health and safety challenges



- Recognizing the need to rejuvenate the river Ganges, the Government of India (GoI) approved the "Namami Gange" ("Clean Ganges") program in 2015.

- **IFC** was engaged to support the National Mission for Clean Ganga and state water authorities to design and tender PPPs to find the right private sector partners to sewage treatment plants and rehabilitate the associated infrastructure in Varanasi, Mathura and Haridwar

Project Terms

Project Coverage	• 2 STPs with 82 MLD cumulative capacity in Haridwar and 50 MLD STP in Varanasi • 20 MLD Tertiary treatment plant in Mathura • Rehabilitation of 2 existing STPs, transmission networks and pumping stations
PPP Model	Hybrid Annuity Model with a 15 year concession period; (Upfront capex reimbursement + monthly payments)
Contract Structure	Tripartite agreement between NMCG, state water authorities and the winning bidders
Payment mechanism	<u>Construction linked payments</u> • 40% of Bid Project Cost quoted by developer to be paid by COD <u>Monthly payments</u> • Capex annuity for balance 60% to be paid over 180 months of O&M period • O&M annuity as quoted by developer in financial proposal • Utility charges to be paid on actuals by concessionaire and reimbursed by NMCG subject to cap as per power units quoted in bid
Responsibility of Concessionaire	• Design, develop, finance, operate, maintain and transfer the project facilities as per specifications • Comply with all discharge norms, PPP contract conditions and local regulations • Install an online monitoring system to measure volume and characteristics of sewage and discharged water

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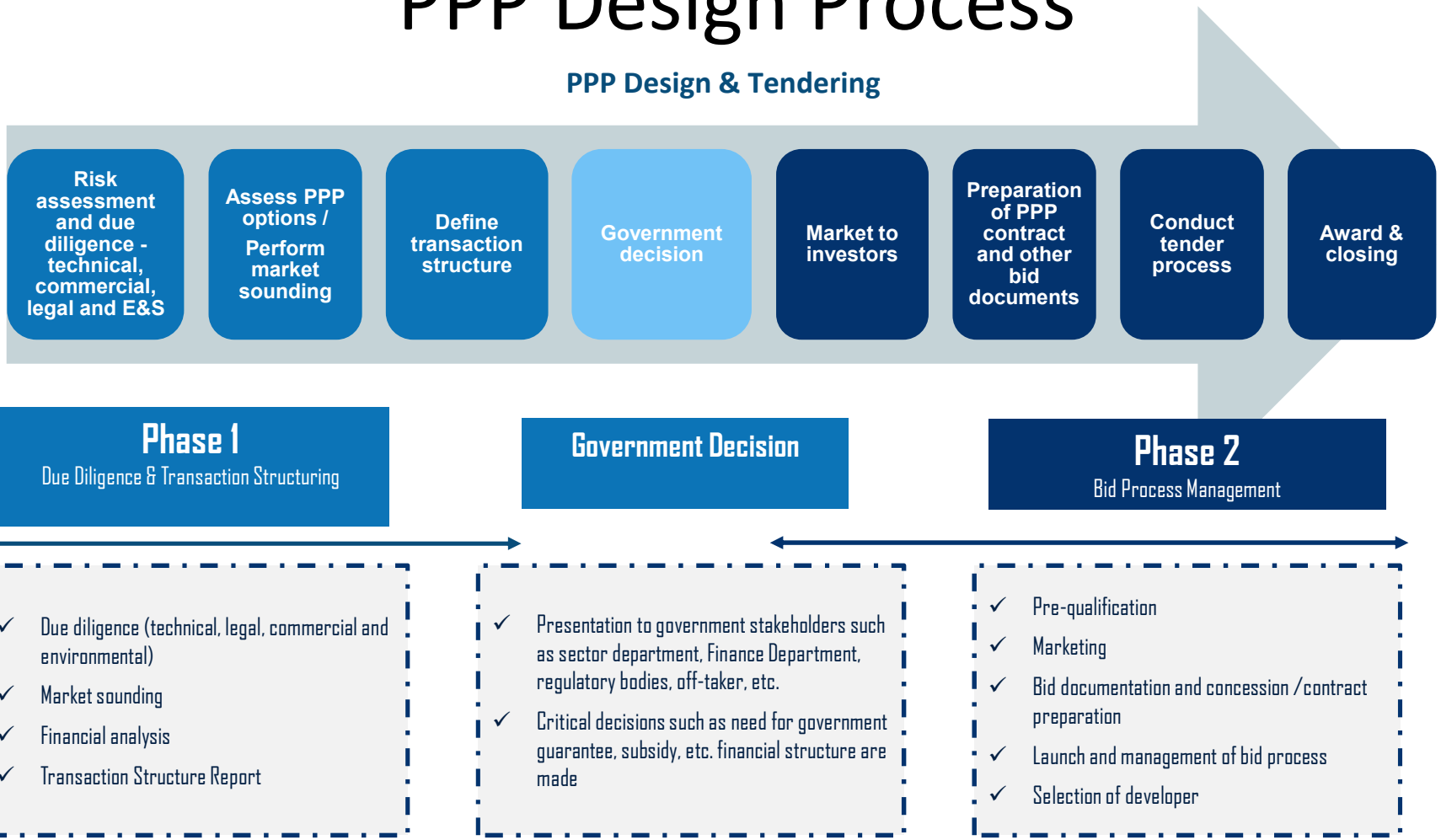
PPP Design Process



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Why were sewage treatment plants not performing despite decades of significant investment…and how were they addressed?

Focus on upfront cost minimization, not lifecycle costs – Asset Creation not Asset Maintenance	→	**Capital and O&M costs covered in project assessment and government payments**
High interest rates, high inflation	→	Complete coverage of interest and inflation risks
Performance metrics not properly applied	→	KPIs performance for input volume and quantity
Contract period does not merit investment; Assets rehabilitated every 6-8 years	→	**Longer term contracts matching asset life (15 years)**
Treatment capacities for 30% of wastewater generated	→	Planned for long term consumption (2035)
Lack of cost recovery and poor payment record	→	**Assured Payments, Escrow Account, Tripartite Agreement**
Electricity charges main operational cost driver	→	Utility charges on a reimbursable basis

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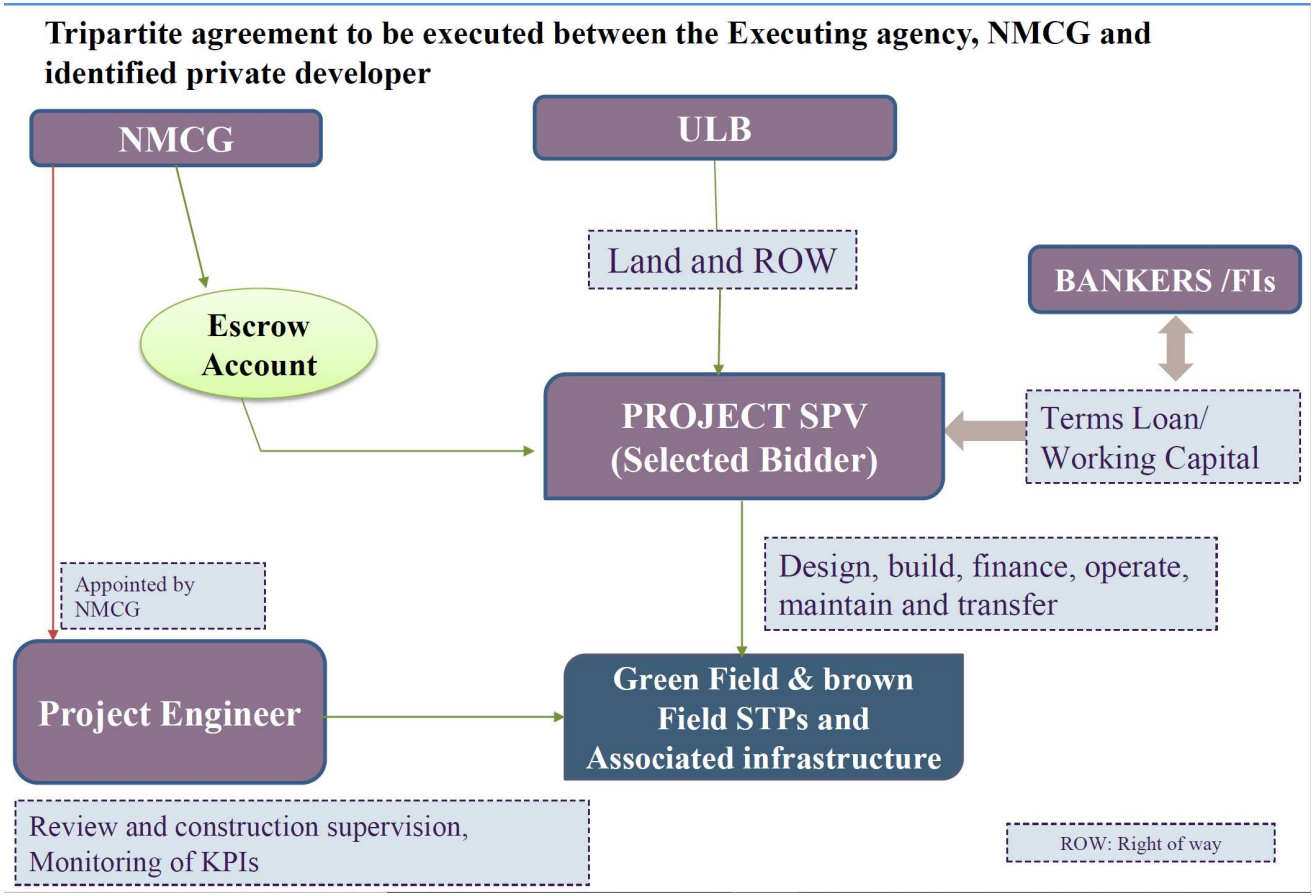
Payment Risk



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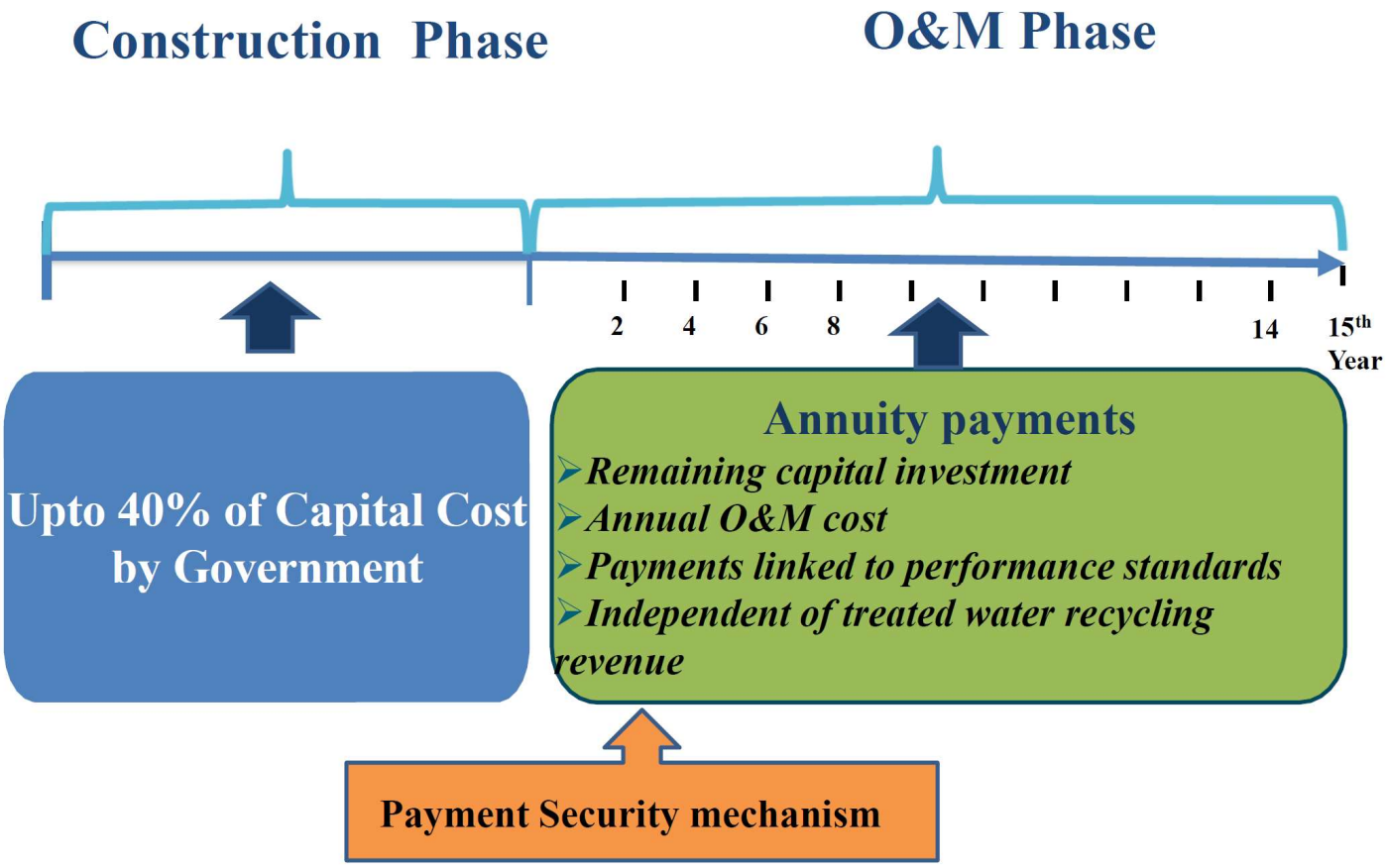
Structuring of Hybrid Annuity Payments



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Offtake of Treated Wastewater

- To be a truly circular system, the treated water should be utilized – by industry, for agriculture or grey water uses

- For Mathura, IOCL signed an offtake agreement for 20 MLD of tertiary treated water
  - Agreement between IOCL and NMCG – risk not passed to the Operator

- Development of a market for recycled water underway but slow – systemic, regulatory, cultural and economical reforms required to become scalable and widely replicable
  - Regulation around compulsory usage of treated water for some industries/ SEZ/ large offtakers
  - Restriction and enforcement on drawing of cheaper ground water for some industries/ SEZ/ large offtakers
  - Baseline data on large scale consumers, industry water usage, distribution networks and quality of water required

Key Enabling Actions & Lessons

Payment Guarantee

- No user charges as Revenue stream for Project
- Escrow account setup to guarantee payment to concessionaire
- Escrow account, fulfilled by NMCG, to have at least 4-6 months of payments

O&M expenses

- Utility charges are one of the largest contributors to the overall project O&M expenses
- Payment structure accounted for reimbursement of these expenses to concessionaire on actuals
- To secure NMCG interest, bidders required to quote the maximum expected power units to be consumed
- The quote considered as a cap on the maximum reimbursement to be made to the concessionaire

Project Bidding

- 35 companies expressed interest for the Project and actively participated in pre-bid consultations
- Six bids received for Haridwar, Eight for Varanasi and Five for Mathura
- Project reached financial close in under one year

The model is now being replicated in more than 30 cities generating USD 400 million in private sector investment

Lessons

Think Long-Term

Think about delivery of service and not just construction of asset

Long Term Planning: Plan assets for the long term instead of current demand

Get quality baseline data and provide to investors. Seek feedback from investors and public on project needs

Robust Contracts

Bankable Contracts

A robust payment security mechanism, protection of lenders interest at termination, step in rights should be considered

Risk Allocation

Risks better managed by the ULB should be retained: tariff collection risk, etc

E&S risks

To be considered and addressed in project structure

Performance Focus

Performance based incentives, performance linked payments - performance metrics defined

Output based monitoring vs input based measurement

Communication mechanism to ensure feedback on projects is sought and addressed promptly and regularly

Partnership

Contract signing is beginning, not end.

Communication mechanism to ensure feedback on projects is sought and addressed promptly and regularly.

Capacity building of city officials to interpret and implement PPP contracts

Effective processes for contract monitoring and management

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Audit Findings

- ▪CAG highlighted that any reduction in refinery operations or relative decline in freshwater prices ***could weaken the incentive to honour long-term offtake commitments, potentially shifting O&M and financial burdens*** back onto the urban utility or state government
- Audits therefore ***stress the need for legally binding offtake guarantees, payment security mechanisms, and clear post-concession O&M arrangements***, to prevent stranded assets and unfunded liabilities once the PPP term ends

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Points of Discussion

- Are DPRs necessary for PPP contracts?
- Value For Money
  - Should CAG ascertain if VFM is achieved?
  - Data is often not available or reliable
- How should higher costs to account for Environmental & Social Risks be treated?
- Is there true risk transfer in the HAM structure?
  - For Haridwar & Varanasi
  - For Mathura
- Artificially low tariffs vs Cost of recovery – What should the water offtake charge for the Mathura refinery have been?
- Is a MoU sufficient vs a binding agreement? Should the state have taken the risk?
- Re-negotiation risk? In what situations is re-negotiation merited?

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