

FICCI

2030 Water Resources Group

Urban Wastewater Public-Private Partnerships

White Paper



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Executive Summary

Introduction:

This study on **Urban Wastewater PPPs,** prepared by **FICCI Water Mission** and the **2030 Water Resources Group (2030 WRG),** with knowledge partner **Powertec Engineering**, aims to provide the industry perspective on issues affecting PPP projects in the urban wastewater sector and suggests measures to improve the investment climate for these projects and enhance reuse of treated wastewater. This study is the outcome of extensive stakeholder consultation with industry participants through formal interviews, consultative workshops and surveys supplemented by extensive desk research involving review of existing reports on the domestic sewerage sector as well as international and Indian PPP case studies of projects in this sector.

PPP Variants in Sewerage Sector:

- **Build, Operate and Transfer Model (BOT) - End User PPP –** A model in which the end user or consumer itself is the private operator, hence owns and takes responsibility for the project.
- **BOT Third Party PPP(Annuity) –** A model where a third party operator is hired by Concession Granting Authority (CGA) to provide wastewater collection, treatment and discharge/ reuse services to the end users and is paid an annuity by the CGA to cover capital and O&M costs.
- **BOT Third Party PPP (User Charge) -** A structure wherein a third party operator is hired by the CGA to provide wastewater collection, treatment and discharge/ reuse services to the end users and collects user charges in return from end-users itself to recover its capital investments, cover O&M costs and meet its return expectations.
- **Design, Build, Operate Model (DBO) -** In this model, the ULB or parastatal meets the capital costs for the project, and uses the private sector to bring in technology and managerial skills to operate and maintain the assets for a period of 5 to 10 years. The construction, technology and operating risks are borne by the private sector operator while the financing risk is borne by the government counterpart.

Successful Variants: An analysis of all the aforementioned categories of Public-Private Partnerships (PPPs) in India has revealed that the two most successful categories of PPPs were the BOT End-User PPP and the DBO model. The **DBO model** is a success provided some sort of surety on O&M payments is given to the private operators. However the **BOT End-User PPP model** is successful even without any payment guarantees as the private operator is the end user itself. The only guarantee required for the BOT End-User PPP model is that the quantity and quality of raw or secondary treated sewage assured by urban local body in the concession contract is as per the quantity and quality specified by the private operator. The limitation is that the BOT End-User PPP model cannot be replicated extensively. The success of the BOT Third-Party (User Charge) model hinges on tariff reforms based on full cost recovery and conjoint pricing of water and treated wastewater reuse. The annuity model can be a success if the payments are back stopped / made by a more credit worthy and credible counter party than the ULB or State Utility, such as the Government of India.

Principal Risk Factors:

- **Revenue Risk:** Both demand and payment emerges as the biggest challenge to PPPs according to a cross-section of developers and sector experts. The conventional BOT Third-Party PPP model, as mentioned above, is highly susceptible to both demand (off take) and payment risk. Over the years, hybrid PPP models such as the DBO, BOT Third-Party PPP (Annuity) and BOT End-User PPP have emerged to tackle this risk. Except for the BOT End-User PPP model, none of the other models have managed to mitigate both the off take and payment risk satisfactorily. For instance, while the DBO and BOT Third-Party PPP (Annuity) models successfully solve the wastewater demand or off take problem, they are still open to payment risk.

- **Other Risks:** The paper also addresses other risks at the project level such as inadequate scoping and poor quality data, hasty bid process, land availability and permitting, poor quality of municipal sewage, rigid contracts and limited public/end-user consultations.

Revenue Risk Mitigation Strategy: It is recommended that a three-level payment security mechanism be adopted, which involves ring fencing of sewerage revenues at the local government/state utility level followed by funding support from the state government through a separate State Sanitation Fund, back-stopped by a guarantee facility from the Government of India. It is also recommended that the country moves to a regime where sewerage charges at least cover O&M expenses. This approach is in line with international experience with PPPs, where the revenue risk is borne by the concession granting authority (CGA) or the government counter-party which collects the sewerage charges from the end-users but pays contractually agreed amount to the private sector.

Other Risk Mitigants:

- **Data Quality And Project Scoping** can be improved considerably through extensive public consultations and detailed technical surveys and audits to determine the base line values.

- **Bidding Risks:** Further**,** it is important to recognize that the PPP project preparation and bidding takes time and rushing through this process leads to poor quality bids and unsatisfactory project outcomes. Therefore **adequate time** for data collection, stakeholder consultation and project preparation is **non-negotiable.**

- **Rigid Contracts:** Moreover, contracts should be flexible enough to allow revision in Key Performance Indicators (KPIs) and costs should the initial contours of the project change significantly with the passage of time. It is recommended that KPIs should be progressively tightened as the project progresses instead of stating excessively high threshold values at the time of signing the contract.

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Measures at Various Levels to Improve Investment Climate for Sewerage PPP Projects:

- **Central Government Interventions:** The paper identifies measures to be taken at the Government of India level to promote private sector participation in the sector such as setting up a National PPP Fund/Guarantee Mechanism as well as a National River Management and Sewerage Treatment Corporation, which could be assigned the responsibility of constructing, operating and maintaining crucial STPs along river basins such as Ganga.

- **State Government Policies:**
  - As a first step, state governments should begin by developing an integrated water and wastewater plan along with wastewater collection, treatment and reuse policy along the lines suggested by the National Urban Sanitation Policy (NUSP).
  - Government of India guidelines should be adopted with regard to service level benchmarks particularly for wastewater recycling. Tariffs should be used not only for recovering costs, particularly O&M cost, but also to discourage raw and treated freshwater use by industry.
  - To promote reuse by industries, units requiring bulk water and located close to urban areas should be mandated to use treated wastewater for process use instead of freshwater.
  - Groundwater use in construction, public parks etc. should be banned and the ban should be strictly enforced. Also, groundwater consumption by industry should be limited and the limitations strictly enforced.
  - To promote reuse of treated municipal wastewater by domestic (non-potable), commercial and institutional users, building codes and plans for new townships and cities should make it compulsory to install dual pipe lines.
  - In order to minimize environmental risks, it is recommended that a certain percentage of treated wastewater be discharged into surface water bodies to maintain minimum environmental flow and for recharging the groundwater table.
  - Further to minimize conflict with peri-urban farmers, guidelines would need to be issued earmarking a portion of treated wastewater for agricultural use.
  - Moreover, state governments should set up a State Level Sanitation Fund to back-stop O&M and annuity payments to the private sector for PPP contracts in the sewerage sector.

- **Local Government / State Utility Measures:** The paper also proposes **ring fencing of water and sewerage service revenues** and costs, **tariff reforms** and **capacity building** at the local government/state utility level to create the enabling framework for sustainable investments in the sewerage sector. Thus, the paper proposes risk mitigation strategies at the project level supported by measures at the local, state and central government level to create a conducive environment for PPP projects in the country.

Way Forward:

It is suggested that the **BOT End-User PPP model** should be used wherever there is a large industrial unit with water-intensive operations which is constrained by lack of freshwater supplies. This model works in cases where there is inadequate freshwater availability, excessively high cost of procurement, regulatory restrictions on abstraction of groundwater for use by industry, and where the end-user is in the immediate vicinity of a large urban centre for sourcing raw or secondary treated sewage.

In cases where large end users with the above mentioned constraints are not available, it would be **prudent to adopt hybrids of the DBO structure,** with the proviso that the EPC portion is largely funded by Central Government schemes and/or multilateral and bilateral agencies, and O&M payments can be met by (a) a financially sound counter-party, (b) can be guaranteed by higher levels of government, or (c) met through an earmarked fund, till such time that the operating environment reduces the extent of revenue risk to allow extensive use of the BOT Third-Party PPP User Charge model.

In the case of Namami Gange projects, the Government of India may also consider using the hybrid annuity models, where between 30 - 40% of the capital investment may be paid by the Government through milestones linked to construction progress and the balance may be paid through annuities over the remaining life of the concession which may extend up to 20 years. This will ensure private sector has “skin in the game” and commitment over the life of the concession.