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Rural Water Projects under PURA Scheme: An Assessment



**PURA-Provide Urban Amenities
in Rural Areas**



Background

Rural infrastructure would be the next driving force of infrastructure sector, with the stage set for bringing about urbanized transformation in rural areas followed by strong policy initiatives by the government for rural development, investments in rural infrastructure projects would emerge as the most sought after investments in coming years. The current PURA scheme is one of the suitable models for bringing urban amenities in rural areas, PURA scheme which was initially started has pilot projects in 2009-10, has undergone structural changes, which now has better implementation mechanism and incentives structure. The scheme also has given more priority towards the livelihood amenities that is required for hosting better infrastructure services rather focusing more towards connectivity. A wide spread transformation in the infrastructure dynamics which can attract business activities and attract investments which can help in urbanizing rural areas and decreasing stress on urban cities.

Private participation in rural infrastructure projects are considered to be the key for making rural projects viable and manageable and player with local knowledge and local experience in conducting rural infrastructure projects are preferred in the case of PURA scheme. The PURA scheme has been considered more as a community based projects major funding from gram panchayats and the center. The uniqueness of the scheme is roping in the private players and having them participate in Add-on projects which can yield the desired revenues and achieving both the goals of having a private player and urbanized quality infrastructure in the rural areas.

PURA and PPP models

The current PURA model which has been reframed from the learning's of the pilot projects has become more flexible for private participation. The investment structure considered for the PURA project includes gram panchayats, government funding and private players.

The Capital structure considered includes a investment upto 50 % from Gram Panchayats, 20% through private players the remaining from the central government funding post viability gap assessment.

Gram Panchayats: invests and monitor the facility, an independent engineer is appointed who reports the activities of the project. The revenue billing would be collected by the Gram Panchayats.

Center: only brings in the viability gap investments of the projects and would invest upto 35% of the project.

Private Player: will professionally manage and in return would be availing the management fee and return on investments based on revenue generated. Invests establishes and operates add-on projects to increase the revenue capabilities of the private players.

The envisaged PURA scheme needs to be developed in those areas / location with requires those amenities that can be achieved through clustering. The location of PURA projects should enable growth of the peripheral rural areas rather just having small scale infrastructure which only provides mere linkages. The PURA pilot projects were mostly skewed towards road and connectivity infrastructure, which has lead to less priority in livelihood amenities such as water, local market creation, communication services, establishment of training institute's educational centers, and housing facilities. The focus is now towards creating those infrastructure amenities which will enable livelihood amenities that can help drive the growth of rural areas. To make projects viable private participation is important with private players given the wide showcase of opportunities in other revenue generating opportunities PURA will make private investments attractive and business driven.

Village cluster study

Shakthi group of companies under the helm of Dr.N.Mahalingam an educationalist, philanthropist and industrialist hails from Pollachi 40 Kms away from Coimbatore. An array of educational institutions under the banner NIA Educational Institutions is a part of Sakthi Group providing yeoman service to the society. Sakthi Group of Companies and NIA Educational Institutions in Pollachi has undertaken the mission of fulfilling the dreams of the President of India, His Excellency Dr.A.P.J.Abdul Kalam in Providing Urban Amenities in and around the Rural Areas of Pollachi through Physical Connectivity, Electronic Connectivity, Knowledge Connectivity and Economic Connectivity.

Shakthi PURA was established with objective of creating community based rural development projects.

The Shakthi group has mapped out four village clusters around the Pollachi district, the village cluster considered for the Kanjampatti, Samathur, Negamam, Kovilpayam. The villages lack the basic necessity. The village cluster taken up by Shakthi PURA for the accelerated development of the village clusters includes:

1. Kanjampatti :
2. Samathur
3. Negamam
4. Kovilpalayam

The above villager clusters come within the vicinity of Pollachi district; the project proposed has not considered any water projects / has any proposed water project to be implemented in the village cluster. As water infrastructure is a part of the PURA scheme we propose a water project would have a greater impact in the development of the Shakthi village cluster.

Evaluation of PURA project under PPP model

Investment Structure

The investment structure defined for the PPP – PURA model includes:

Gram Panchayat: The Gram Panchyat finances the projects up to 55% through the MoRD funding.

Government Grant: The central government has the option of funding up to 35 % of the project cost through grant route, initially the capital cost of the project would be assessed and evaluated that can help in identifying the right viability gap funding of the project. Projects have been initiated with the objective of sustainability and efficiency.

Private Funding: The private players will fund the projects up to 20% of the project cost, which can come in the form of Debt and Equity mix

The project cost for a village cluster is estimated at Rs 9, 60,000 to serve a village population of 40,000 and scale it up with rise in population every year.

Project details:

- This plan supplies 3450000Litres per day.
- Total Project cost is Rs 96000000.
- The population considered for this plan is 40000.
- The debt equity ratio being 70:30 this is for the Pvt. Player.
- The model has considered 10:30:60 ratios for commercial, household and stands post connections.
- The Tariff considered for commercial and domestic is Rs15 & Rs 6 per KL.
- The households that use stand posts will have to pay Rs35 per month.
- The cost to produce 1kl of water is Rs 5.86.
- The Project is for a period of 16 years and it's feasible only if it's for 16 years and above.

Assumptions for the water projects include:

- A village cluster with a minimum population size of 25,000 and above would be viable for setting up a water project and then scaling it based on the development and rise in population of that particular village cluster.
- The total project life considered is 20 years with the BOT model and thereafter extension of the project
- Private Player brings in 20% of the total investments and the remaining is funded through Gram Panchayats and Government grants.

Private player will operate and manage the plant if required would even also take up the billing of the services, the private player in return would be contributed with a management fee, which will be funded from internal accruals through the revenues earned from the project, the management fee would be 1% of the total revenues earned for the particular financial year.

Based on the above information water PPP project has been evaluated on the investment structure and viability gap funding required in a water PPP project.

Projects analysis

The total project cost is estimated at Rs 12 crore, Rs 3000 per person is considered as the infrastructure cost for the project for a population of 40,000 – 50,000 users of the service. The assumptions considered requires a minimum population of 40,000 – 50,000 for the project to be viable, the village cluster considered is Shakthi PURA established PURA complex near Pollachi Tamil Nadu. The total annual capacity of water generation is estimated 25, 00,000 kilo liters which is based 120 liters per house hold. Cost per kilo liter is estimated at Rs 5.82 and the tariff is fixed at Rs 6.50 per kilo liter. The total annual revenue for water PPP project is estimated at Rs 65 lakh per annum and annual increase in capacity with the rise in demand.

For a Population of 40000, Commercial-10%,Household-30%,Standpost-60% combination, the NPV and IRR for 25 and 16 years.

Discount Rate	9%			
Project NPV	25years	103,997,187.26	16 years	2,788,096
			IRR	6.20%
Project IRR		17.13%		
			10 years	(29,452,796)
Equity IRR	IRR (16 yrs)			

Scenario1

- When the Population is further increased to 60000

The NPV and IRR are as follows

Discount Rate	9%			
Project NPV	25years	158,195,671.36	16 years	5,967,032
				6.50%
Project IRR		17.27%		
			10 years	(42,849,931)

Scenario2

- When the combination of commercial, household and stand post connections are changed to 10%, 40% and 50%.

Discount Rate	9%			
Project NPV	25years	121,212,895.42	16 years	(7,220,994)
Project IRR		15.69%		
			10 years	(49,419,336)

Sustainability analysis

Groundwater used for freshwater drinking supplies can be easily overexploited by other competing users like irrigation, industry, etc. When this happens it can become contaminated with salt water, fluoride or other geogenic contaminants which makes it unsuitable for use. Water available in rivers and lakes is sometimes polluted, making it harmful to plants, animals and people. Sustainability and safe sanitation practices are the forerunner for safe drinking water supply.

Source Sustainability = Ensuring availability of safe drinking water in adequate quantity throughout the year.

System Sustainability = Optimizing the cost of production of water, devising proper protocol for O&M, building capacity etc.

Financial Sustainability = Proper utilization of Finance Commission and O&M funds under PURA guidelines and recovering at least 50% cost through flexible methods devised by the local self government and improving energy efficiency.

Social and environmental Sustainability Proper reject management and involvement of all key stakeholders

Risks associated with PURA projects

The business risks associated for a PURA project is in identification of right investments structure which can de-risk the private players and only play an operation and capacity handling role. From the gram panchayats implementing projects on time would be important and needs to follow the stipulated project timelines else will lead to increase in total project cost.

Investor's risks: Project funding, business risks and project completion risk are the three broad risks faced by an investor in a PURA project.

Project Funding: Identification of the right capital investments in the allotted projects would be crucial as this will have a direct impact on the return on investments, investor's funding structure (Debt: Equity) would also impact the return on investments, lower leverage would give private players with better opportunity to increase profit margins and higher leverage a ideal investments may lead decrease in the opportunity to increase revenues.

Business Risk: Includes risk of delay in completion and delay in dispatch of funds from the government. Lack of local people capacity to pay the monthly bills / bad debts due to which are the other business risks faced by the investors. Disputes in land acquisition prior to project inception / after project completion would be detrimental.

Project Completion risk: Private Player with capability of completing project would play a crucial role as increase in the timeliness would increase the cost of the project. For which the centre and the gram panchayats have to work on hand in hand to deliver projects on time

Project Implications

The total project life needs to be considered for a period of 15 years and extended thereafter. The total minimum population required would be 40,000 for the project to be viable and sustainable. With the rise in population expected a higher capacity of plant needs to be considered initially which can stem up operations in the later years. The project IRR is estimated at 16% and Equity IRR is estimated at 13%

Viability GAP Funding

The viability gap funding is not clear for the water PPP project and viability gap funding needs to be considered for the water project, which is estimated at 25% of the project cost.

The viability gap funding would help increase the sustainability and profit earning capacity of the project. The viability funding needs to be funded in phases based on project milestones achieved, incentives needs to be provided for projects completed before scheduled timeliness.

Other changes required

Community participation in such projects needs to be encouraged among the locals. As community participation can increase the sense of responsibility among the locals. A initial installation fee needs to collected from every household which also contributes to the initial operational requirement / working capital requirements of the projects. The left out collection can be invested in government based projects.

Recommendations

Based on the above analysis the following aspects are recommended for the PURA water project.

- Water PPP projects needs to given priority under PURA scheme as it is the minimum and basic infrastructure amenities required in rural areas.
- A viability gap funding up to 25% is estimated for water projects
- The water can be supplied for both commercial and residential purpose.
- Up to 3 standpost connection can be considered per street.
- The project life of water PPP projects under PURA scheme needs to extend from 10 years to 15 years based on the scale of operations.
- A minimum population of 40,000 is required for the project to be viable and operating lower levels may not be feasible.

Table 1: Project Cost

Particulars	Sub head 1	Sub head 2			Rs in million	Final Assumptions
Population						40000
Projected population 2001						46400
Rate of population growth per decade	%	16			Equity	10%
Demand assessment per day	Ltrs				Govt. grant	35%
Mode of supply					GP	55%
						100%
		Commercial Connection	10	%		4000
	1	House hold share of connection	30	%		12000
	2	Stand post connection share	60	%		24000
		Demand per house hold connection	87.5	LPCD	Litres per capita per day	1050000
		Demand per stand post connection	75	LPCD	Litres per capita per day	1800000
			150			600000
		Cost per house hold connections				24000000
		Cost per person	2000			24000000
		Cost per stand post	1000			8000000
		Commercial Connection	15	Rs		
		Total cost of project				56000000
		Depreciation				5%
Consumption per house hold	Ltrs					
Consumtion per person	Ltrs	70				
Total consumption per day including all wastages	Ltrs	87.5				
Operations and Maintenance Cost						
Establishment charges	140000					140000
Electricity charges	HP	hrs of operations	No. of days	conversion rate	tariff per unit	
Raw Water Rising Main	163	16	365	0.746	2123862	
	163	16	365	0.746	2123862	
					4247724	
Rentals	0.878	142.675				
	0.878	142.675				
		285.35			171210	
Total Power cost					4418934	4418934

Table 1: Project Cost Contd

Repairs & Maintenance	0.30%		168000	2016000	2016000	
	Escalation	1.50%				
Consumables					247440	
Escalation of Tariff annually	10%				560000	
Recharge Cost						
Total cost of operations					7382374	
					7382374000	
				litres per day	3,450,000	
					1259250000	
Cost per kilo litre			Levellised cost	Rs	5.86	
		Assumed tariff	Tariff domestic	Rs	6	
			Tariff stand post	Rs	35	4800
		Escalation		%	1.60%	

This report is based on internship projects of Swati & Meghana Paul under the guidance of Browne & Mohan Consultants

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