

Making PPPs work for efficient urban water supply

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ABSTRACT

Urbanization, economic growth and changing consumption patterns would increase the demand for water in urban areas. Irrigation would still continue to be the dominant user of water but its demand would come under severe pressure from other competing users. Climate change would further extenuate the situation. Given that the total availability of water (surface and ground) is fixed, the focus would be on efficient management both on the supply and demand side in urban and rural areas. Focusing on urban areas, the water supply systems continues to be inefficient and poor in service quality. On the demand side too inefficiencies and inequities continue to persist. Unclear and contestable entitlements, poor pricing mechanisms, weak incentives for prudent use of water and politics of water have all contributed to the present poor state of water sector. The state and local governments' approach towards water management has focused on asset creation and developing new bulk sources of water rather than maintaining the assets created and promoting efficient consumption. Even after consideration for affordability and minimum necessary requirement of water for survival, the overall level of water tariffs are too low to even cover the operation and maintenance costs let alone generate any surplus for capital investment. Consequences are that cities suffer from intermittent supply, insufficient coverage and poor quality of water. Moreover, the high share of non revenue water has only compounded the financial constraints of water utilities. It has been argued particularly by multi-lateral institutions that institutional arrangements that involve private sector in partnership with public sector through public-private-partnership (PPP) could potentially improve the efficiency in water management. A number of states/cities in India have experimented with PPPs in water and sewerage services since 1990s. The motivation for engaging in PPPs has been that the private sector would infuse necessary capital in financially strained sector and also introduce efficiency in operation and delivery of water services. The position with regard to the role of private sector in catalysing pricing reform has been controversial in ideological debate around PPPs. Early PPPs during 1990s focussed on large bulk water supply projects, most of which failed to take off. Post 2000s, the focus has shifted from full water value chain engagement of private sector to engagement limited to operation and maintenance (O&M) improvements of the distribution system. In line with this shift, the financing and incentive structure and extent of involvement of private sector in a PPP project has also changed. Many new water PPPs have involved financial assistance from the respective state governments or from international funding agencies. However, for the most part, even with the support from state governments, these projects have had limited success - constrained as they have been by one or more institutional, structuring, governance or technical issue. By analysing a range of water PPP projects in India, this paper evaluates the technical and economic efficiencies achieved in these projects and also identifies project level challenges associated with policy and institutional arrangements. The paper puts together a framework that addresses various challenges associated with PPPs that have been faced in the past. This framework addresses concerns at the project level, at the level of the institutions involved in these projects and for financing with the objective of efficient and equitable water management and service delivery. The hope is to create a roadmap of solutions that can be incorporated into future projects and catalyse efficient delivery.

1. INTRODUCTION

The process of urbanisation in India, as elsewhere, is a defining trend of the country's modern economic growth and there is invariably an associated rising demand for investments in both physical and social infrastructure. However, the urban infrastructure in India face chronic shortages in investments and inadequate Operation and Maintenance (O&M), which has led to problems such as inadequate service coverage, inequitable access, deteriorating infrastructure and environmental un-sustainability. Water and sewerage sectors are no exception. According to the Census of India (2011) a good 36 per cent of urban households still have to fetch water from a source located within 100 meters and about 19 per cent of urban households do not have toilet facilities. These service levels indicate that the state of service delivery in Indian cities is far worse than what is expected of an economy which is one of the fastest in the world (HPEC, 2011).

The High Powered Expert Committee (HPEC) Report on Indian Urban Infrastructure and Services estimated that the investment requirement for water and sewerage sectors is about Rs. 5.6 lakh crore (at 2009-10 prices) for the next two decades to meet the basic minimum requirements. In addition, an amount of Rs. 7.8 lakh crore (at 2009-10 prices) is required for Operation and Maintenance (O&M). It is also clear, from the Report, that given the high capital costs of infrastructure, limited traditional budgetary sources cannot meet the large requirements.

State governments and cities, on the other hand, are facing the challenge of developing assets to sustain the economic growth and to provide liveable environments, especially in basic services such as water and sanitation. In this situation, improving the efficiency of utilities and enhancing capital efficiency is clearly a priority for both state government and cities. While the investment requirements will be needed to fill the backlog and incremental demand for urban services, it will not be sufficient without significant changes in the way in which utilities get operated and maintained to attain efficiencies in utility management. Increasingly, many cities are opting for private sector's capacities through partnership for management of utilities for achieving these efficiencies. However, the evidence for cities in India suggests that there are accompanying problems, both foreseen and unforeseen, with these partnerships for managing the water utilities and service delivery. Many of these problems are often attributed to the lack of administrative and managerial capacities of Urban Local Bodies (ULBs), lack of fiscal space and autonomy, constraints at the policy an institutional level,

macroeconomic environment, policy, political intervention and opportunistic behaviour, failure to involve the stakeholders and citizens in the process etc.

While the success/failure of the PPP projects depend on the many factors (described above), project level issues such as need for the projects, political and stakeholder support, capacity for PPP project development and implementation, and role of private operator or interest play a crucial role. In this paper, we try to understand the project level critical factors, which can be replicated/avoided, of successful/failed PPP projects. The hope is to create a roadmap of solutions that can be incorporated into future projects and catalyse efficient delivery.

2. PPPS IN WATER SUPPLY PROJECTS

Public-Private-Partnerships (PPPs) are promoted as a potential delivery mode for infrastructure services in a variety of sectors in the 1990s (Mahalingam and Seddon, 2012). Though the primary responsibility of providing urban services rests with the state governments and more specifically on ULBs, it is evident that they are unable to muster the required finances, competencies and capacities to meet the demands of the citizens for the services. As a result, a number of states/cities have experimented with PPPs in water and sewerage services. The idea was that private players would not only bring much needed capital, but also introduce efficiency into operations and delivery that would unlock the financial potential of the sector. Despite the perception of PPPs being controversial in water and sewerage projects (Estache and Fay, 2007), it has been seen that well designed and properly implemented PPP projects have improved the performance of the utilities around the world.

In India, PPP in water projects started in mid 1990s. Most of these projects aimed at augmenting bulk water supply systems in cities, which were mostly from southern states (WSP, 2011), however these projects were abandoned due to the issues of tariff setting and lack of political will (ADB, 2011). Since 2000, learning from the failures of large-scale PPP project attempts, states and cities have initiated projects that bring in the private sector for operation and maintenance (O&M) efficiency of the utilities. Almost 60 per cent of the PPP projects now address the improvements in O&M with little investments from private sector (less than 10 per cent of the total projects cost in some cases), while the rest aim at sole bulk water augmentation and integrated water projects with both augmentation and O&M improvements (WSP, 2011).

However, all these projects could only form a small fraction of the total number of infrastructure investments and projects that are being undertaken in India. A

number of factors are responsible for such a low level of PPP penetration in urban water sector. Primary among these is the public inclination against the private sector in water sector, as it is deemed to be in the jurisprudence of the local government (IITM, 2010). This translates into a lack political will for PPPs and a slowdown in *'both creation of an enabling environment for PPPs and augmentation of project development and PPP procurement competencies within a public sector'* (IITM, 2010; pg.6). Resultantly, the projects that are conceived, even with the support from state governments, have had limited success - constrained as they have been by one or more institutional, structuring, governance or project/technical issues (Mahalingam and Ryan, 2008).

In the last few years, some projects have started demonstrating their success and, riding on the success of these, a slew of PPP projects came up in Indian cities. As of December 2012, there were 15 projects that were conceptualised, implemented or under construction. Besides international players like Violia Water, many domestic companies, such as Jamshedpur Utilities & Services Company Ltd. (JUSCO), IVRCL and SPML, have shown interest in these PPP projects. While the increase in the number and value of projects is encouraging, the controversies and agitations surrounding many of these PPP projects bring to our attention the issues that need to be dealt with more carefully.

3. AN ANALYTICAL FRAMEWORK

While many factors affect the success/failure of a PPP project, two critical components have had significant impact on the success/failure. They are project structuring/contractual governance (demand side factors) and local conditions (supply side factors). The analytical framework depicted below shows how these two critical components can interact at a level to shape successful/failed project structure.

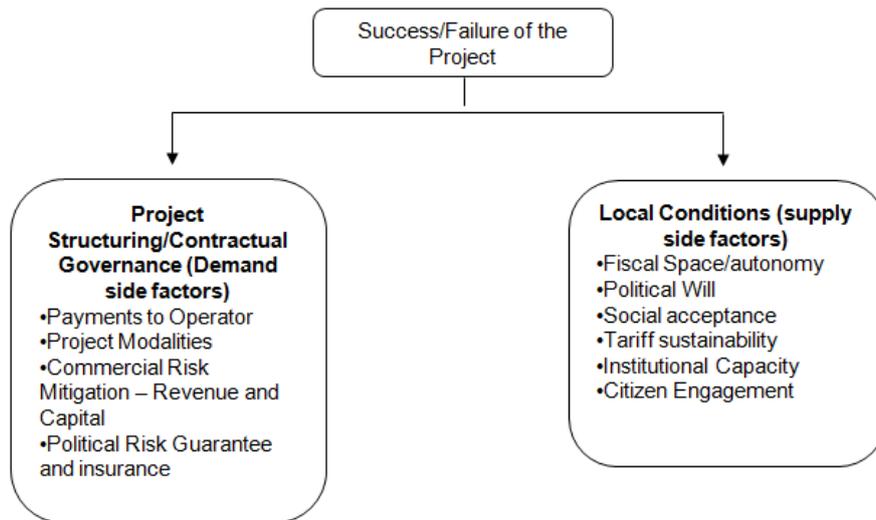


Figure 1. Analytical Framework for Analysis

3.1 Project Structuring/contractual Governance (Demand side factors)

A large amount of literature focused on strategies for successful project structuring. The objective of these strategies is to optimize the processes that lead to awarding of a PPP concession to ensure an equilibrium point wherein the both private and public sectors feel that the risks involved in the project are adequately addressed (Mahalingam and Kapur, 2009; Garvin, 2009). However, contracts and projects structuring strategies cannot possibly account for every possible contingency since unpredictable, incalculable events are inevitable (Garvin, 2009; Gupta, 2011) and identifying all the risks and negotiating appropriate contingencies is time consuming and impractical (Gomez-Ibanez, 2003 cited in Gupta, 2011). The tendency for the opportunistic behavior can be controlled, provided both the parties have recourse to an independent and efficient legal and judiciary system (Gupta, 2011; Mahalingam and Kapur, 2009).

3.1.1. Payments to the operator

Payments to the operator is one of the key factors that affect the success/failure a PPP project. Payments to the operator would need to be ensured as most ULBs do not have adequate resources to meet the expenditure (Satyanarayana and Swamy, 2011). In case of water and sewerage projects where the viability of the projects often depends upon the future increases in water tariff, the private sector has expressed reservations to undertake such a project as tariff related decisions are prone to political and local situations (ibid.).in the case of Mysore, EPC payments from the city government are made to the operator and management fee for operation and maintenance. Many other PPP projects in other cities have similar arrangements to reduce the payment risks for the operator.

3.1.2. Project Modalities

Not all project modalities (BOT, BOOT, Lease and Management Contracts etc.) can work in a macro environment which is considerably weak. Weak fiscal space and fiscal autonomy for ULBs indicates that public sector resources are limited for subsidies and other investments (Vives et al, 2006). In Indian context, 24x7 water supply PPP projects in Belgaum, Hubli-Dharwad, and Gulbarga, and Nagpur indicate that lease and management contracts seem to have performed better than concession contracts (Zérah and Jaglin, 2011). However, contracts that experimented with innovative grants (JNNURM funds in Shivpuri and Khandwa, and Salt Lake City) with a stepwise approach were also been successful (WSP, 2001 and Zérah and Jaglin, 2011) and rather than contracts following textbook lease and management contracts (Zérah and Jaglin, 2011).

3.1.3. Risk Mitigation - Capital and Revenue

Capita Risk: Growth in population, addition to the consumers and expansion of municipal jurisdiction require new investments over the concession period. There should be mechanism for addressing these investments – either sharing of investments between ULB and the private operator or the private party incurring the costs and recovering them through a contractual agreement (Satyanarayana and Swamy, 2011). Successful projects account for these mechanisms in the contracts. The private operator was expected to invest towards repair and maintenance of the assets and the operator was given the flexibility to determine the amount of yearly lease amount to be made to the ULB in Chandrapur project (WSP, 2011). In the case of Mysore, the private operator would be reimbursed if the cost overruns of construction exceed up to 10 per cent of the original tender costs (ibid.).

Revenue Risk: Revenue Risk in a PPP project could be in the form of revenue collection risk and revenue risk associated with the projected demand. It is possible that some customers might refuse to pay for the services and the actual demand for the services is significantly less than the estimated. In both the cases, the private operator would have to bear the losses in case there are no safeguards available in the contractual arrangement. Subsidizing the costs outside the concessionaire's control in Naya Raipur; safe guards against defaults in customer payments in Khandwa and Shivpuri; and fixed management fee and additional Performance linked incentives in Belgaum, Hubli-Dharwad and Gulbarga are some of the effective safeguarding arrangements in this regard (WSP, 2011). The government's equity stake aligned its incentives and rescued the Tirupur Water Projects when the

opportunistic behavior by consumers who refused to pay and used ground water instead of the water (Delhi, Palukuri and Mahalingam, 2010).

3.1.4. Political Risk Guarantee and insurance

Political risks refers to the possibility of losses arising from investments caused by changes in political structure or policies or any other activity by the local government that over time have the effect of reducing the financial viability of the project (Vives et al., 2006). Many a times these issues create the problem of moral hazard – where the behavior of political environment alters opportunistically at the expense of the other in the knowledge that the losing party is unlikely to withdraw the agreement. Contractual governance should address this issue through some arrangements in the contract. Even the successful projects could not escape from the issues like this. During the course of the project, the government changed and this has led to the replacement of the project officials from the government as well. TNUDF then withdrew from the project and the municipality questioned the readiness of the STP. The newly elected mayor also refused to connect the households to the main sewer and the municipality refused to pay for the minimum guarantee amount of sewage. All these led to the arbitration and the proceedings are underway (Delhi, Palukuri and Mahalingam, 2010).

3.2 Local Conditions (supply side factors)

The local environmental conditions that surround the projects can often change the course of the project overtime. Well structured projects also could go haywire, if such circumstances affect the private or public sector in an unduly manner. This has been the fate of many PPP projects over the past decades (Gausch, 2004 cited in Gupta, 2011). Local conditions – political environment, changing dynamics of the economic and social environment – create a high level of turbulence to the contracts to withstand the tests of time. Projects often get into the ‘spirals of disintegration’ and go from ‘euphoria to degenerative nightmare’ in the times of turbulence (Miller and Lessard, 2000). The infrastructure projects, more often, those are in the nature of public services and with the private sector participation, attracts the media attention and public at large. Therefore, structuring these projects in the midst of changing technologies, policies, political environment and public demands is very difficult yet most important (Gupta, 2012). But the presence of governance capacity (Miller and Lessard, 2000) and the ability to monitor the project and steer it through the turbulences that it might encounter over its lifecycle

(Mahalingam and Kapur, 2009) can provide some protection and often is a key element of a successful PPP Project.

Examination of the project cases from different cities suggest that these uncertainties/success factors have that had severe impact on the success/failure of the projects are political (opportunistic temptations, political will to steer the project through, public acceptance or opposition (on environmental, social, economic, health ethical and moral grounds) and stakeholder involvement (citizen awareness, citizen engagement, citizens as equity partners in the project, monitoring of activities by stakeholders).

3.2.1. Fiscal Space and autonomy

Fiscal space is determined by the extent to which a government can provide resources to a project without adversely affecting its financial position. This variable analyses the capacity of the local government to commit the cash flow to support the project. The fiscal space and autonomy of ULBs in India largely depends on decentralization. In sectors such as water it is not possible for tariffs to cover the costs of services. Grants, subsidies and other inter-governmental transfers available to ULB provide the required cushion in executing the project successfully (Vives et al, 2006). In Alandur, the construction contract was given to a Company. However, the operation was not included and the company has not made any financial contribution to the project. The project was entirely financed by public authorities through grants and loans, and advanced customer contributions as a kind of equity investments. The Chairman of the municipality indicates that they were able to raise a substantial amount from the beneficiaries because of their paying capacity. This may not work in all other cases. Given the limited financial autonomy available to ULBs, state government/central government has to provide grants to the projects.

Successful projects like 24x7 water supply in three cities in Karnataka, Nagpur and Shivpuri and Khandwa have benefitted from central government funding in the form of JNNURM funds. At present, 50 per cent of the PPP projects have been developed with financial assistance from JNNURM or other state government support (WSP, 2011).

3.2.2. Political Will

Political will is one of the key determining factors to the success of PPP projects, especially in water supply and Sewerage services where water is considered as a public good. In cases where PPPs have had political backing projects have been

completed successfully. The Alandur Sewerage project had demonstrated that political will and quick decisions result in successful implementation of the project. The political leadership and strong advocacy by the chairman and the municipal council is most critical element of the success. The municipal chairman personally pursued the involvement of the private sector and able to obtain the support of the public and consent of the opposition parties. As a result, despite of the several bottlenecks, this project was ultimately completed successfully (Mahalingam, 2008 and DEA, 2010).

Lack of political support to PPP project had also eventually led to the cancellation of the projects. Pune Water Supply project is such a case. The project was cancelled despite the project being consistent with the state government's policy on PPPs. Opposition to the project mounted after the alterations in political landscape at both local and national level. The local politician, who had initially supported the project, changed his stance and the political support from the state had also begun to vacillate with some ministers taking negative stand against the project (WSP, 2000). With all the odds mounting, the municipal commissioner had no choice but to cancel the project.

3.2.3. Social acceptance of the Project

Gomez-Ibanez (2007) explains that customers of infrastructure services are often heterogeneous groups with different initial conditions and interests. The problems related social acceptances to different service levels, tariffs, coverage etc are intensified in regimes where cross subsidization is prevalent (Gupta, 2011). Thus, conflicts are bound to arise during the project period as a result. In a democratic society such as India where outspoken public protests and demonstrations against the projects can have devastating effects on the fate of the PPP projects. These demonstrations and public outcry may be politically motivated and organized or may represent genuine concerns of the local communities or address the deeper issues such as public right to have access to basic services (ibid.). Mahalingam (2010) also points out that pressure from activists and public in general protesting against the contractual arrangements create difficulties in implementation of PPP projects.

An Opposition Committee was formed in Latur against the water supply project, which started a severe agitation campaign against what they named it as 'privatization of water supply'. Municipal office was vandalized and closed down by the agitators despite the support from the state government for the project. In Delhi Jal Board case, a citizen's group called Parivartan declared that the project

would lead to higher tariffs and that the project ignored the needs of the poor neighbourhoods (Lee and Singh, 2009). Parivartan along with the support from other NGOs mobilized public opposition against the projects. Subsequently, the Chief Minister of Delhi had to abandon the project.

3.2.4. Tariff Sustainability

Tariff sustainability deals with establishing a self-sustainable service provider that can recover full costs through tariffs. From the provider's view this represents the ability of customer to pay the full cost of the services and willingness to charge by the local government and from the customers' view this is the affordability of the services provided and willingness to pay for the services (Vives et al. 2006). Tariff sustainability is a critical factor for the success of PPP project, when the local bodies are often strapped for the resources for payments to the operator. However, since substantial grants in the form of JNNURM and other state grants are available, no significant efforts are made to link the service levels and quality with the tariffs and collection.

Evidence shows that cities have been able to ensure tariff sustainability with innovative arrangements. In the Salt Lake City Project, Kolkata Metropolitan Development Authority (KMDA) engaged in several consultations with the customers to determine the acceptable tariff levels. At the later stage of negotiation, the indicative tariffs proposed by the operator were discussed. A series of renegotiations resulted in the acceptable tariff levels to both private operator and the customers (WSP, 2011). In the case of Alandur, in order to mitigate the risks related to tariff sustainability, the municipal chairman of Alandur carried out a door-to-door campaign throughout the municipality to sensitize the citizens towards the need to pay for the project and the associated health benefits of having a state-of-art sanitation system (Mahalingam and Kapur, 2009). Public toilets were provided for the households that could not afford to pay for the sewerage service, but the households were expected to join a membership register and pay a monthly fee. In the cases of Hubli-Dhawad, Belgaum and Gulbarga, exemptions were made for BPL families for connection charges and households are issued water entitlement cards for consumption. These projects suggest that the 'willingness of users to pay' for the services is a key factor for the success, without compromising on equity issues. However in the case Nagpur 24x7 water supply project, the Nagpur Municipal Corporation (NMC) substantially increased the tariff levels after initiating 100 per cent metering under the project. There were widespread protests and public outcry against the high water bills and the move to increase the tariff had been withdrawn (Times of India, 2010).

3.2.5. *Institutional Capacity*

The institutional capacity available at the ULB level is another critical factor that decides the fate of the project. Delhi and Mahalingam (2012) explains that when the institutional environment lacks the capabilities to develop PPP projects, it leads to governance issues on PPP projects that lead to huge costs and time implications. In the case of Alandur Sewerage Project, a change in government at the local and state level led to the withdrawal of TNUDF from the project. Without the TNUDF's presence, the municipality did not have the capacity to deal with the operator. This has led to arbitrations proceedings on the otherwise successful project (Mahalingam and Kapur, 2009). Similar instances can be found on the other projects where an unmitigated gap in the institutional environment caused significant governance challenges on the projects (Delhi and Mahalingam, 2012).

3.2.6. *Citizen Engagement*

The key to successful implementation of PPP projects is their legitimacy and acceptability among the stakeholders such as consumers and citizens. This requires diligent adherence to participatory, transparent and accountable practices at every juncture of the project bordering even towards 'process fundamentalism' (Wagle et al, 2011). However, the implementation of the PPPs has been a quiet and secret affair without proactive consultations with the people of the project areas they claim to benefit (Koonan and Sampat, 2012).

Some of the successful PPP projects are epitomes for the citizen involvement and engagement. In the case of Alandur Project, the municipality and the state government carried out an aggressive public outreach programme for the sewerage projects to convince the stakeholders of the benefits of the project. In many cases the campaign would start at dawn and proceed late into the evening with the mayor personally meeting as many citizen representatives as possible. The commitment of the chairman and charisma resulted in the collection of amount of one-time deposits exceeded the expectations and thereby reducing the project's debt obligations and allowing it to run successfully (Mahalingam and Kapur, 2009). To maintain continuous support, a Citizen Committee was formed and the Committee met frequently to review the status of the project, monitor performance of the operator (Mahalingam and Kapur, 2009; Gupta, 2011). These kinds of projects '*establish that close involvement of all stakeholders/ departments at the key decision-making stages of the project, as also for review and monitoring, is critical to ensuring that the project stays on-track*' (DEA, 2010).

However, even the most honest efforts from the strongest political champions are not enough for the success of the PPP in urban infrastructure. The failed attempts in Delhi despite Chief Minister's best efforts and the unsuccessful reform endeavor of the HMWSSB despite the advocacy from popular Chief Minister Chandrababu Naidu are examples in this regard (Gupta, 2011). Further, the failure efforts to resolve the conflicts, secure legitimacy and gain acceptance from the citizens resulted in the abandonment of the Latur PPP project (Wagle et al. 2011).

4. CONCLUSION

Water PPP projects in cities have shown a wide diversity of outcomes, and identifying the key factors for the success or failure of specific projects is challenging. Yet some clear patterns have emerged from the cases. This paper highlighted that project structuring factors and local conditions affect the successful implementation of PPP projects. If one or more factors/capabilities are absent in the project environment and structure, the project is bound to experience the turbulences and difficulties. As evident from the cases, due to the combinations of a variety of factors, we observed project turbulence due to misalignment of incentives, unimagined risks (Mahalingam and Kapur, 2009; Garvin, 2009) and other critical factors such as lack of community engagement.

As the cases indicate, the grants from state and central governments can help cities to take up PPP projects (Nagpur, Salt Lake City etc). This also indicates that, with available funding from JNNURM and state grants, a hybrid model with Capex from the city and service improvement by private operator appears to be a more acceptable and implementable model. However, these projects are vulnerable for unforeseen events such as protests, commercial risks, tariff issues, and capability issues at the local level. Therefore, the state government and central government funding must account for the capacity of the ULBs to manage the changes and consequences. Contracts have often proved to be ineffective in sharing the risks leading to delays in implementing the projects. A contractual framework that shares the risks in a more equitable manner with effective communication must be developed, due recognition to the social equity issues. An effective communication strategy should be devised to mitigate political, social, economical, technical and even commercial risk. This strategy should also take care of concerns related to consumer acceptability. A credible and consistent political commitment at a high level is essential if a new window of opportunity is to be opened for private sector participation in water sector.

Finally, it is critical to recognize that the infrastructure business is not about constructing physical assets within estimates of time and budgets, but about delivering services overtime in a sustainable manner. Thus, success is not about signing contracts or reaching financial closure but about delivering the service to the customer at an affordable price, which is a negotiated tariff which is acceptable for all the parties.

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