



e-ISSN: 2319-8753 | p-ISSN: 2320-6710

IJRSET

International Journal of Innovative Research in
SCIENCE | ENGINEERING | TECHNOLOGY

INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH

IN SCIENCE | ENGINEERING | TECHNOLOGY

Volume 9, Issue 11, November 2020

ISSN INTERNATIONAL
STANDARD
SERIAL
NUMBER
INDIA

Impact Factor: 7.512

9940 572 462

6381 907 438

ijirset@gmail.com

www.ijirset.com

Application of Antonio Vives analytical framework on water infrastructure projects

Kandipilli Mehar Kumar¹, Tiriveedhi Dileep Kumar²

B.Arch, MURP, School of Planning and Architecture, Vijayawada, India

B.Tech (Civil), MURP, School of Planning and Architecture, Vijayawada, India

ABSTRACT: This paper analyses the cases studies of the Public private partnership projects with the tool proposed by the Antonio Vives and other from Inter-American Development Bank. This analytical frame work helps the government and financial institutions in selecting the modality of the project in order to make the project success, makes to understand the major risks in the projects and guides the ways of the project to minimise the various risk by selecting certain modality suites for the project. Feasibility and selection of the modality to the project based on the matrix contains the types of modalities on columns and local conditions on rows.

Keywords: Modality, Feasibility, Local conditions, Risks.

I. INTRODUCTION

The most hear word in financing projects is PPP, called Public Private Partnership. Theory says PPP is the technique in financing the projects from the last decade. But history says the PPP is not started in the last decade, but it just changes its structure over the time. If we observe the history, in good olden days the best example of PPP project was construing of Suez Canal in Egypt. In very brief, canal was constructed by forming a company by French diplomat Ferdinand de Lesseps with permission of Khedive Said Pasha and run the Suez Canal for 99 years. Years later, this company become Suez Canal Company in year 1958 and operating the canal(<https://www.history.com/author/history>, 2018).So, it is pretty old, the BOT, the old PPP concept.

Private investment is not only alone technique to create the funding for the projects or recouping the cost of public infrastructure. But it always grouping the various functions and techniques to enable public authorities. It should be understanding that application of project modality is always based on the local conditions, economy of the concern public authority, political attitude towards project and funding and relation between government and private players.

Before going to choose the project modality to make project as PPP, there should be definite reason to choose PPP over the public investment. Here are five reason according to this paper to choose PPP over public investment are financial routes/ capacity, better services, lack of expertise, save funds, operations savings.

Various risks are confined to every PPP modality depend on the project type, intensity of investment and many factors. It is very easy to say project should be held on PPP mode, but selection of the project modality plays key role in the success of the project. Every project can't be move on the same modality as previous. PPP modality should chose based on the factors like local condition, economy of the region and rules and regulation of the government.

II. PPP SPECTRUM

A project can be assigned in different modalities from fully public to fully private. These eight modalities will vary with characteristics like key investor, service provider, regulator & enabler and size of privatisation. In the size of the privatisation, these eight modalities are divided into three categories are public owns & operated the assets, Public Private Partnership and Private owns & operates the assets(infrastructure) i.e. in first category government organisation own the infrastructure and operates its and provide services to the public, in second category roles and responsibilities are shared by the both government and private sector. As we move on from the first modality to last, key investor will change from government(public sector) to private sector i.e. investment fully bared by the government organisation to mobilising the investment by private and owns the assets.

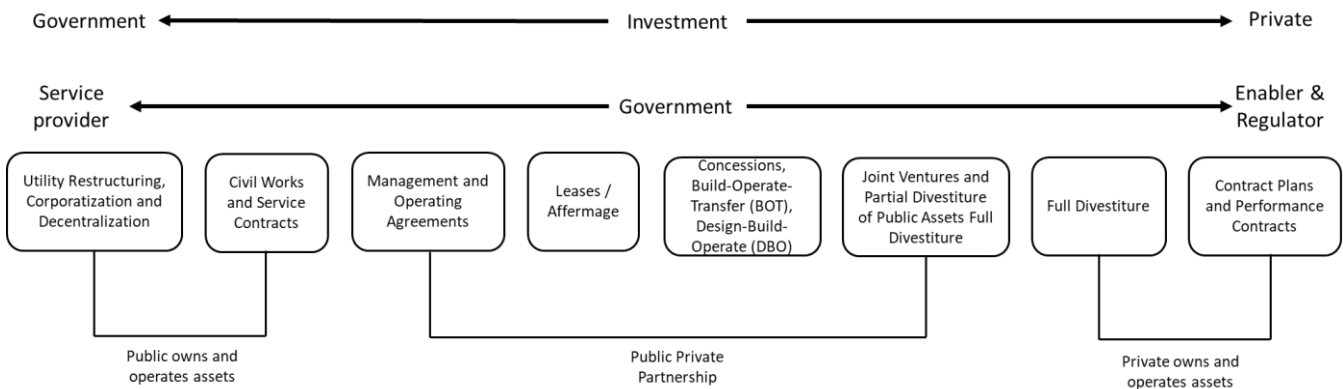


Fig. 1: PPP Spectrum

Role of government changes from service provider to enabler & regulator i.e. in the first category of modality government own the asset and operates it to provide the service to the public, in the second category private sector operates the asset(infrastructure) and provides the service but government own the asset after certain time period with rules and conditions agreed between government and private operator, in the third category private owns and operates while government acts as only enabler and regulator to asset(infrastructure).

III. CATEGORIES OF PUBLIC PRIVATE PARTNERSHIP

The following Concession Agreement or arrangements with their variations and combinations may be arrived at by the Government Agency or the Local Authority for undertaking Infrastructure Projects. The arrangements enumerated hereinafter are indicative in nature and the Government Agency or the Local Authority shall be entitled to evolve and arrive at such Concession Agreement or arrangement incorporating any of the arrangements enumerated hereinafter or any other arrangements as may be found necessary or expedient for any specific Project.

Table- I: Categories of PPP

Category	Contracting progress
Build-and-Transfer (BT)	Financing and construction followed by transfer to concerned public authority.
Build-Lease-and-Transfer (BLT)	Finance, construction and transfer to concerned public authority on lease for fixed time period and followed by transferring ownership.
Build-Operate-and-Transfer (BOT)	Construction pf project with financing followed by operating the facility for fixed time period and transfer to concerned public authority.
Build-Own-and-Operate (BOO)	Construction pf project with financing followed by operating the facility until contractor recover the total investment. Concern authority may terminate its obligations after specified time period.
Build-Own-Operate-Transfer (BOOT)	Construction pf project with financing followed by operating the facility by collecting charges, levies under contract agreement for fixed time period and transferring ownership of the project to the concern authority.
Build-Transfer-and-Operate (BTO)	Transferring the project to theconcern public authority after completion of construction then government allows to operate the facility by the contractor under collection of specified charges and levies.
Contract-Add-and-Operate (CAO)	Develops or expand the existing infrastructure and operates by collecting user charges/ levies under contract agreement for fixed period and here transferring the infrastructure to the concern public authority depends on the agreement.



Category	Contracting progress
Develop-Operate-and-Transfer (DOT)	Addition to BOT method, here contractor allows to enjoy right to develop adjoining property to benefitting the capital in form or higher value and rent.
Rehabilitate-Operate-and-Transfer (ROT)	Refurbish the existing infrastructure and operates it by collecting use fees for a fixed period and transfers to the public authority.
Rehabilitate-Own-and-Operate (ROO)	Refurbish the existing infrastructure and operates it by collecting use fees with no time bound until the contractor proves violator under agreement and rules of the government.

Methodology:

Usually projects will undergo PPP mode when the large, complex and expensive. PPP is the agreement procedure between public authorities and private entities who invests in the public projects. PPP arrangements require revenue sources or rights to support their capital, operating, financing, and transaction expenses and to provide a return on equity investments (Public-Private Partnerships for Highway Infrastructure: Capitalizing on International Experience, 2009). Many factors affect the project to make it as PPP from conventional form but, critically PPP revolves around the two parameters are fiscal space and value of money. View of public authorities will be on the fiscal conditions of the authority that can fund the large projects or not. On other hand private entities follow the value for money and return that they are investing on the projects.

Feasibility of the project is import character in view of both private entity and public authority. Project should be viable to make it implementable and successful. But every viable project cannot be undergone a PPP mode. At first that project should be qualify that can be undergo the PPP mode and should have value for money and profitable returns. Before analysing PPP projects feasibility in monetary terms, first the project should be qualified to be taken as PPP project or not.

So, Antonio Vives and other from Inter-American Development Bank proposed a analytical frame work which determines the modality that suites to the project. According to the analytical frame work by the Antonio Vives the project depends upon the three factors significantly on local conditions, modality and mitigation instruments.

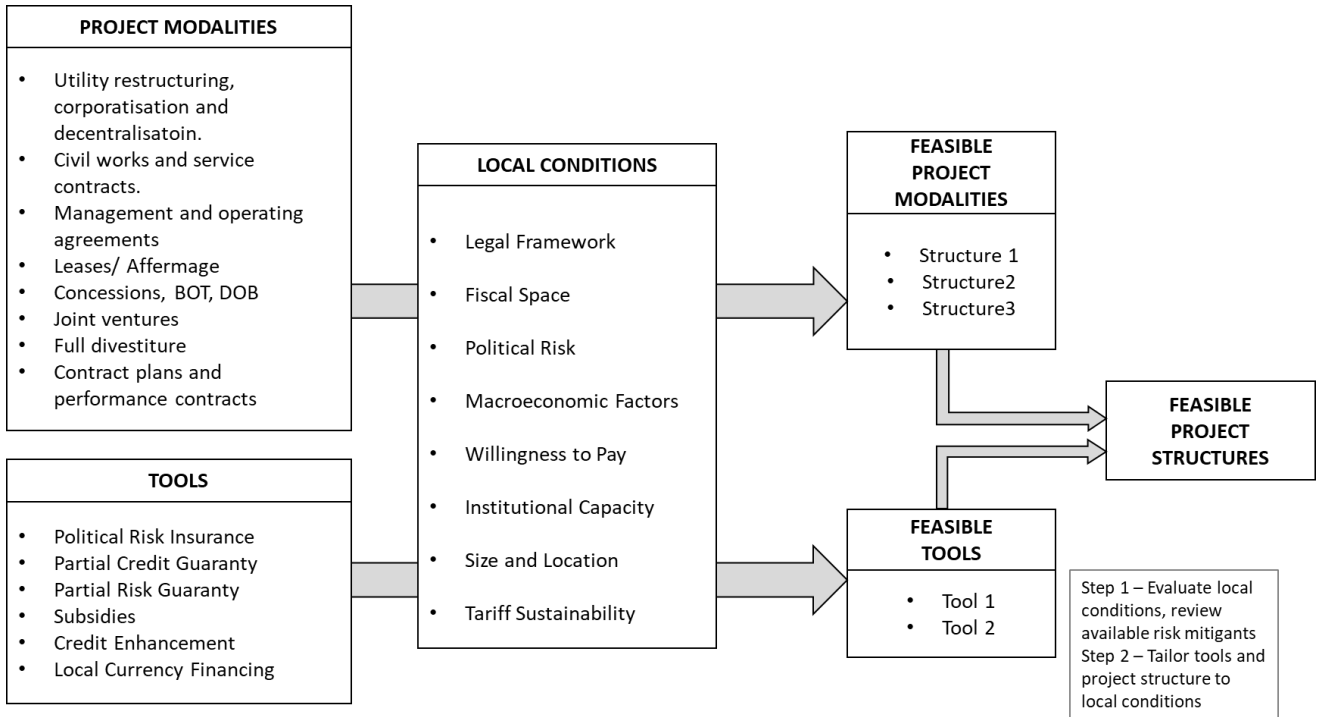


Fig. 2: Analytical framework

As per analytical frame work to define the eligibility of the infrastructure project for PPP a project feasibility map by framework component was developed and shown in below table. Project feasibility map comprises with local conditions, projects modalities which evaluates the project feasibility.

Table- II: Project Feasibility Map by Framework Component

Local Conditions	Public	Management contracts	PPP	Fully private
Legal framework				
Political Risk				
Fiscal Space				
Macroeconomic Factors				
Institutional Capacity				
Willingness to Pay				
Tariff Sustainability				
Size and Location				

Project feasibility map is a matrix made with local conditions and PPP spectrum in which cell were highlighted under PPP spectrum against local condition when local conditions having positive response on the specific modality. Modality will be selected to any project for which more number of local conditions are favourable. So, project feasibility map shows the suitable modality to the project by considering the local conditions. To turn the project in to PPP mode even project feasibility map does not recommend tools in analytical frame work helps in upgrading the local conditions and turns the projects to PPP mode.

This project feasibility map will be applied to successful and failure PPP models in infrastructure projects and see how tools in the analytical frame played a major role in the reshaping the project.



IV. CASE STUDIES

A. Case study 1: Alandur sewage treatment plant

▪ Location:

Alandur municipality is part of the Chennai Metropolitan Development Authority in the Kanchipuram district and acts as a suburb to the Chennai. As per census 1991, population of the municipality is 1,25,44 with an area of 19.5 sq.km. There is decadal growth of 17% from 1991 to 2001 which population in 2001 census year reaches to 1,46,287.

▪ Project details

Alandur municipality acts the residential suburbs of the Chennai with less percentage of the industrial use. As population increases in mid-90's in municipal region there is a greater need of the systematic sewage network to the municipality to facilitate the needs of the public as same to Chennai urban population had. So, Alandur municipality proposes a sewerage system with five components costing about 337 million rupees.

Component	Details
Underground drainage system	<ul style="list-style-type: none"> • 120Km of sewerage network (19km main sewers, 101km branch sewers). • Estimated population 3,00,000 in 2027.
Sewerage pumping station	Pumping station with 6km from pumping station to STP.
STP	<ul style="list-style-type: none"> • 12MLD for 2012 • 24MLD for 2027
Low cost sanitation	Construction of community toilets
HSC	HSC to the sewerage network

Source: Alandur Municipality

Sewerage project with five different components are planned by the municipality as population has rapid growth and to provide better services to the public. This project costs over 337 million rupees at that time to complete but Alandur municipality has not capacity to fund the project alone. Alandur municipality forms a steering committee with Tamil Nadu Urban Infrastructure Financial Services Limited it is called TNUIFSL to help in the funding of the project with the help of Tamil Nadu Urban Development Fund from which funds are spent on the upgrading/ development of the urban infrastructure in Tamil Nadu. TNUDF was created by the Tamil Nadu government in collaboration with other financial institutions ICICI, HDFC and ILFS.

▪ Project into PPP

Alandur sewerage project had two stages, construction of STP and second is laying of pipe line and construction of pumping station. Regular method of construction of these phases should be done on BOQ basis i.e. with the government funds will leads the construction slower and efficiency might be less and therefore the cost of operations will be much higher. Other side of the coin the project should be awarded as BOT(PPP) in which construction could be much faster and can get return very early with more efficiency. So, after analysing the risks and benefits from two methods by the Alandur municipality and steering committee they decided to award the project in both BOT and BOQ. In two stages of construction of sewerage project, steering committee decided to go forward the construction of STP under Build, Operate and Transfer method & laying of pipe lines and construction of pumping station are under Bill of Quantities. In addition to construction contractor should operate and maintain the sewerage system for 5 years after completion of construction.

Finally, project was awarded to IVRCL Infrastructures and Projects Ltd in technical collaboration with Va Tech Wabag Technologies Ltd. Special Purpose vehicle was established on the name of First Sewerage Treatment Plant Pvt Ltd and concessionaire company with whom the BOT Agreement was signed.

▪ Political willingness

In the shaping of any project political willingness plays a crucial role which makes projects successful and cessation also. Here, in the Alandur sewerage project political willingness was an important aspect in successful completion of the project. Mayor of the Alandur municipality and council members took and successfully completed the risky task to make the people public to accept for charging them user fees to provide the facility including one-time fee connection



to the municipality. This huge public participation makes Alandur municipality got to take lower amount of loan than act actual loan amount.

▪ **Public participation**

Stakeholders are another important character in making shape of infrastructure. Making infrastructure as success will have many procedures and risk according to the project, location, decision makes etc but final result of the projects should reach to the user public. Getting public acceptance in step of the project duration is very difficult job. And, this was taken by the Alandur municipal mayor and councillors.

In Alandur sewerage project, committee and municipality had decided to charge the one-time fee connection and graded system of user charges based on the plinth area of your facility. So, willingness to pay survey was conducted in 1991 and initially almost huge amount of population are not ready pay one time and user charges developed by the municipality as for the same facilities neighbouring Chennai municipal corporation were at no cost. TNUDF and municipality decided to built trust in people of Alandur to convince to pay the fees. So, they decided to make a team with municipal chairman, other staff of municipality and representatives from TNUDF. Team chaired under municipal chairman crafted a message on the sewerage project to be implemented and spread it through extensive stakeholder meetings throughout the municipality. People are inspired with corner meetings, chairman conducted meeting on holidays and Sundays to convince people and built trust about the project by advertisements on public transportation, news, IPT etc. In addition to stakeholder meeting by municipal chairman, all the staff including sanitary workers involved in door to door campaign to build trust and convince people. And finally, by educating people in various modes more than 10,000 residents were deposited one-time connection fees and accepted to user charges.

Table- III: User charges

S. No	Plinth area (Sq.ft)	Monthly tariff(Rs)	
		Domestic connection	Commercial & industrial connection
1	<500	60	200
2	500-1500	80	400
3	1500-3000	100	800
4	>3000	120	1000

Source: Alandur Municipality

▪ **Transparent funding and finance**

Alandur sewerage project was a unique project in which public directly participated in the funding the project by one-time fees and user charges. Being accountability to residents of Alandur municipality, TNUDF and TNUIFSL requested Alandur municipality to create a separate account in Punjab National Bank on the name of Alandur Municipal Underground Sewerage Scheme(UGS) for depositing money by people, loans from lending institutions and all expenses on the project from general budget of the municipality to make the fiscal management more transparent to the public. To make sure there should be transparency in all fiscal activities municipality formed a committee with Municipal chairman, Commissioner and three representatives from locals to follow the each and every fiscal activity under UGS account.

▪ **Institutional capacity**

Tamil Nadu government under Municipal administration and water supply department issued a Government Order No. 69, Dt 4 May 1998 which provokes the privatisation of municipal services. In addition to GO 69, an amended municipal act of Tamil Nadu (Tamil Nadu Urban Local Bodies Act, 1998 regarding financing and recover the capital for the urban infrastructure projects in Tamil Nadu State. In GO 69, Government of Tamil Nadu established TNUIFSL as nodal agency to makes necessary actions on the PPP projects in state.

These government orders and amendment act makes state stronger in terms of institutional capacity. But here question rises that Alandur municipality had capacity to framework and monitor the whole sewerage project under PPP? So, Tamil Nadu Urban Development Fund and TNUIFSL came into the scene and formed a steering committee with the



Alandur municipality strengthens the institutional capacity of the municipality to prepare framework and monitor the project.

▪ **Application of project feasibility map to Alandur case study**

Below table is the application of project feasibility map to the Alandur case study at initial stage of the project. Feasibility map shows the public investment and management contracts are the suitable modalities can be undertaken for the Alandur project as these had more number of favourable local conditions. Here, PPP modality was lacking legal framework, political risk, fiscal space, institutional capacity and willingness to pay. Only local conditions that favourable to PPP were macro-economic factors, tariff sustainability and size & location.

- Legal frame work: Tamil Nadu government doesn't have any legal framework to support the private sector in building the infrastructure projects with the government.
- Fiscal space: Alandur municipality doesn't have fiscal capacity to build the project on public and management contracts(BOQ). Alandur is a municipality where major income source is through various taxes and have many other responsibilities and duties to be performed by the received revenue.
- Marco-economic factors: as Alandur is the suburban of the greater Chennai municipal corporation, it faces huge development economically and also increasing in the working population.
- Institutional capacity: Alandur municipality doesn't has institutional capacity.
- Willingness to pay: Initially willingness to pay for the infrastructure facility is very low.
- Tariff sustainability: Graded system of user charges based on the plinth area where it is a favourable condition to for all modalities.
- Size and location: Proposed project is in Alandur where it had demand to it and proposed to the population at capacity of 24MLD with origin year of 2027.

Table- IV: Project feasibility map at initial stage

Local Conditions	Public	Management contracts	PPP	Fully private
Legal framework				
Political Risk				
Fiscal Space				
Macro-economic Factors				
Institutional Capacity				
Willingness to Pay				
Tariff Sustainability				
Size and Location				

At initial stage of the project the whole scenario was favourable to the traditional public procurement process. PPP mode is lacking many factors like legal framework, political risk, fiscal space, institutional capacity and willingness to pay by the consumers. To make the project turn into PPP, there should be more number of favourable local condition to the PPP. Improving lacking factors for PPP makes the project in to PPP mode.

- Legal frame work: Tamil Nadu government under Municipal administration and water supply department issued a Government Order No. 69, Dt 4 May 1998 which provokes the privatisation of municipal services. In addition to GO 69, an amended municipal act of Tamil Nadu (Tamil Nadu Urban Local Bodies Act, 1998).
- Fiscal space: even Alandur municipality doesn't have fiscal capacity to fund the project, in PPP mode due to involvement private investment and funds from TNUDF improves the fiscal space condition and makes favourable to the PPP mode.
- Marco-economic factors: as Alandur is the suburban of the greater Chennai municipal corporation, it faces huge development economically and also increasing in the working population.



- Institutional capacity: Does Alandur municipality had capacity to framework and monitor the whole sewerage project under PPP? So, Tamil Nadu Urban Development Fund and TNUIFSL came into the scene and formed a steering committee with the Alandur municipality strengthens the institutional capacity.
- Willingness to pay: Alandur municipality and steering committee done rigorous stakeholder meetings with common people and different categories of communities to make people understand about the project importance and to convince for willing to pay.
- Tariff sustainability: Graded system of user charges based on the plinth area where it is a favourable condition to for all modalities.
- Size and location: Proposed project is in Alandur where it had demand to it and proposed to the population at capacity of 24MLD with origin year of 2027.

Table-V: Project feasibility map after application of tool or risk mitigation factors

Local Conditions	Public	Management contracts	PPP	Fully private
Legal framework				
Political Risk				
Fiscal Space				
Macro-economic Factors				
Institutional Capacity				
Willingness to Pay				
Tariff Sustainability				
Size and Location				

B. Case study 2: Cochabamba water supply

▪ **Location**

Cochabamba is categorised as on the metropolitan cities in the Bolivia. It is the capital of the Cochabamba department with population of 5,59,872 on 2003 which is raised four times from 1963. It is the one the cities having greater densities in the Bolivia.

▪ **Existing water supply situation and proposed project details**

On ground in 1999, Servicio Municipal de Agua Potable y Alcantarillado (SEMAPA) is the authority in the Cochabamba for water supply in the city. Overall city was connected with only 57% of coverage with 50% unaccounted for water like theft and leakages. Other than overall coverage with the water supply there are 5 to 10% of illegal connections which makes water supply more degradable quality. All these issues make people to depend on the water tankers and bore wells which tends to enormous decrease in ground water level.

So, Bolivian government planned a long-term solution to the Cochabamba water supply problem. The project consists of construction of Masicuni projects with hydro power generation from where water was drawn to the Cochabamba for irrigation purpose and domestic water distribution with the estimated cost of \$US 252 million. Main four components of the project are tunnel, water supply, electricity generation and water distribution.

▪ **Project in to PPP**

The World Bank (WB) has had great influence in Latin America, especially since the debt crisis of the 1980s. For the World Bank, water is essentially an economic commodity like any other. Hence the Bank proposes policies of “full cost recovery”, meaning that consumers should pay the costs of supplying water, and implying that the government must not subsidize water rates (Fuente, 2003). With the influence of the world bank on the Bolivian government, it privatises the Servicio Municipal de Agua Potable y Alcantarillado (SEMAPA) in Cochabamba for water supply and other

purposes. In support the private sector in the infrastructure building in the Bolivia, government took necessary series of

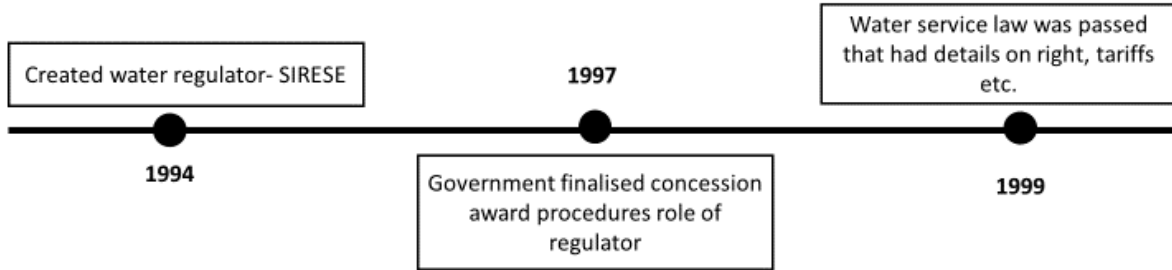


Fig. 3: Time line: Actions by Bolivian government to encourage the private sector in infrastructure

actions. In 1994, they created water regulator- SIRESE followed by in 1997 government finalised concession award procedures role of regulator and finally in 1999 Water service law was passed that had details on right, tariffs etc.

▪ **Project awarding**

Initially the project was designed to be four components like are tunnel, water supply, electricity generation and water distribution. World bank did not support to the construction of Misicuni dam and tunnel process to draw water to the Cochabamba as it was very expensive. Instead to construction of Misicuni dam, world bank suggest to the draw water from lake Corani will be faster water supply to the city and not expensive. To the initial designed project, no private parties shown interest in the project to handle due to high risks involved.

Bolivian government changes the project design more into water supply contrast and then several private parties are interested and finally only there is a one bid by the consortium called Aguas del Tunari which is supported by the Bechtel. This consortium consists of the most important global enterprises in the water business: 50% of the shares are owned by International Water Limited, Bechtel’s subsidiary in USA, and by Edison (Italy), 25% are owned by Abengoa (Spain), and the remainder by Bolivians. (Fuente, 2003).

Project was awarded to Consortium called Aguas del Tunari (Adt) as concession agreement by hoping 15-17% of rate of return which is very high with concession period of 40 years. Tariffs set to go by 35% initially in 1999 and then 20% in 2002. Increasing block tariffs are adopted so that the wealthier pay more than the poor- nearly twice to thrice as much.

Table-VI: Increasing block tariffs

Residential categories	Fixed charge 0-12 Cu.m (\$)	Variable charge 15/25 Cu.m (\$/Cu.m)
Residential 1 (poor)	1.8	0.153
Residential 2	3.02	0.288
Residential 3	4.85	0.394
Residential 4 (Rich)	8.64	0.518

In addition to increasing block tariffs, they gave coverage targets so that entity will not concentrate only on rich but also on the poor to give connections by not considering the low tariff.

Table-VII: Target to AdT

Year end	2000	2001	2002	2004
New water connection	3,850	11,800	33,600	57,600
New sewerage connections	4,150	12,150	34,150	58,200

Bolivian government passes No. 2029 Act to award the project to the consortium of AdT with limiting the public participation. The government didn’t consider the stakeholder opinions in the project implementation, designing and

awarding. Once the contract entered into force, water rates increased more than 100%. A government water service law granted a private monopoly covering water supply and concessions. Everyone, including cooperatives and peasant irrigation systems, was required to be connected to the concessionary's network. People with no access to water were also billed (Fuente, 2003).

▪ **Water war**

Monopolisation of water supply in the Cochabamba and the increase in the water charges after implementing the project up to 300% raised the resistance from the public. In addition to public major association like labour unions, public transport unions neighbourhood committees participate in the resistance over the privatisation and enormous hike in the water charges which parallelises the whole economy.

As supports from different organisations and public were increased the in total protestors become in count of 50,000. At this stage, with huge number of protestors whole city was blocked and blockades were erected. To get control over these protests Bolivian government announces emergency and army called in to action. Government took 6months to handle these protests results in one death and 100's of injuries to the public.

▪ **PPP failure**

On April 10th, Bolivian government cancels the concession agreement from the Adt and revokes the privatisation of water supply project in the Cochabamba. Bolivian government takeover the SEMAPA and appointed 7 board of directors in which 3 were elected by the public through general voting system in April 2002. Aggressive protests in Cochabamba results in formation of national regantes association. The new committee will be responsible to the water charges at local level but not by the national level.

▪ **Application of project feasibility map to Cochabamba case study**

Below table is the application of project feasibility map to the Cochabamba case study before project initiation. Feasibility map shows the public investment are the suitable modalities can be undertaken for the Cochabamba project as these had more number of favourable local conditions. Here, PPP modality was lacking legal framework, political risk, fiscal space, macro-economic factors, and willingness to pay. Only local conditions that favourable to PPP were institutional capacity, tariff sustainability and size & location.

- Legal frame work: Bolivian government passes No. 2029 Act to enact the private sector in water supply infrastructure.
- Political risk: Local municipality of Cochabamba was forced to make the project in to PPP mode.
- Fiscal space: Cochabamba department doesn't have enough fund to allocate the water supply and irrigation project to the city.
- Marco-economic factors: Economic development in Bolivia was very low at that time with GDP of 4.2% growth from 1990- 1999
- Institutional capacity: Local Cochabamba municipality doesn't have prior experience to maintain and supervise the whole project.
- Willingness to pay: There is a lot of distrust in the people about privatisation of water and water should be a basic right to the people.
- Tariff sustainability: Increasing block tariffs are adopted so that the wealthier pay more than the poor- nearly twice to thrice as much.
- Size and location: size and location of the project supports to both public investment and PPP mode modality as project makes 100% coverage of water supply and irrigation purpose of the rural areas.



Table-VIII: Project feasibility map before project initiation

Local Conditions	Public	Management contracts	PPP	Fully private
Legal framework				
Political Risk				
Fiscal Space				
Macro-economic Factors				
Institutional Capacity				
Willingness to Pay				
Tariff Sustainability				
Size and Location				

Project feasibility map recommends the Cochabamba water supply project should be held under the public investment modality. Feasibility map show the various parameters that PPP modality lacks like political risk, macro-economic factors, institutional capacity and willingness to pay by the people. In order improving the parameters the PPP modality lacks the project was initiated under PPP modality and results in the resistance from the public which causes the differing the project from PPP after initiation.

V. CONCLUSION:

Initial stages of both Alandur project and Cochabamba project were recommended to the public investment modality by application of project feasibility map proposed by the Sir Antonio Vives. By improving the local conditions in the Alandur case study makes it to successful PPP modality. In Cochabamba case there are no actions takes place to improve the local condition and as a result project experiences the resistance from the public and taken out from the private party. Below table shows action taken by the both cases studies in order to make project successful. In Alandur case, they improved and act diplomatically and make the project successful and Cochabamba case unable to improve in parameters shown in table and failed to implementation of PPP.

Parameters	Alandur case	Cochabamba case
Stakeholder consultations	Extensive stakeholder meeting was taken to convince about single time payment and make them understand about the project validity and importance.	Nowhere in the whole process of project, public were not involved.
Transparency and accountability	With help of involving various sections of public and associations in the process of building the project makes them transparency and maintaining a separate bank account for specially this project makes steering committee accountability to the public.	No transparency between the public and government regarding the process and awarding.
Building trust	Chairman and municipal staff of Alandur municipality stood in frontline by speaking to people and having door to door campaigning builds the trust about the project.	In order to build the trust on the project importance, there is a lot of negative propaganda in different section of people that a private company makes huge profit of 16 to 17 % rate of return by providing their own water to them.
PPP initiation	Local government i.e, initiated the project and make it into PPP with help of TNUDF and TNUIFSL.	Bolivian central government forced to local government to make it into PPP to get fund from world bank.
Considering existing situation	No existing situation, committees that can cause resistance to the project.	In Cochabamba there are many water tanker suppliers, this community was effected a lot by this project.
Tariff as per income nature	Graded system of user charges based on the plinth area of the house.	Increasing block tariffs based on the income of the house hold.

REFERENCES

1. Antonio Vives, J. B. (2006). FINANCIAL STRUCTURING OF INFRASTRUCTURE PROJECTS IN PUBLIC-PRIVATE PARTNERSHIPS A TOOL FOR DESIGNING FEASIBLE STRUCTURES. *IDB publication*.
2. Fuente, M. d. (2003). The Water War in Cochabamba, Bolivia: Privatization Triggers an Uprising. *Mountain Research and Development*, 98-.



3. <https://www.history.com/author/history>. (2018, February 16). *HISTORY*. Retrieved from HISTORY: <https://www.history.com/topics/africa/suez-canal>
4. *Public-Private Partnerships for Highway Infrastructure: Capitalizing on International Experience*. (2009).



INNO  **SPACE**
SJIF Scientific Journal Impact Factor

**Impact Factor:
7.512**

ISSN INTERNATIONAL
STANDARD
SERIAL
NUMBER
INDIA



INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH

IN SCIENCE | ENGINEERING | TECHNOLOGY

 **9940 572 462**  **6381 907 438**  **ijirset@gmail.com**



www.ijirset.com

Scan to save the contact details