

**RESTRICTED**

**WP PPP/Water Supply and Sanitation**

**May 2018**

**UNITED NATIONS ECONOMIC COMMISSION FOR EUROPE  
WORKING PARTY ON PUBLIC-PRIVATE PARTNERSHIPS (WP PPP)**

**Proposed Draft**

**UNECE STANDARD ON PPPS IN WATER AND SANITATION**

**SOURCE: Water and Sanitation Project Team**

**ACTION: Interim draft**

**STATUS: Draft v1.1**

## Outline

1. Introduction.....	3
2. Objectives of the standard .....	3
2.1. The agenda for water and sanitation services .....	3
2.2. PPPs linking public and private efforts .....	4
3. Scope of the standard .....	4
4. Central Question .....	4
4.1. Project Types and Examples .....	6
4.2. Advantages and disadvantages of PPPs in water supply and sanitation .....	8
4.3. PPPs Meeting People First Objectives – Replicability, Scalability, Equity, Efficiency, Sustainability Effectiveness Demonstrated .....	9
5. Delivering the model in water supply and sanitation .....	12
5.1. Project selection / Baseline requirements for private interest.....	12
5.2. Financing models.....	15
5.3. Legal, regulatory and institutional requirements.....	20
5.4. Feasibility for low and middle income countries .....	22
5.5. Other issues - Allocation of risks .....	23
6. Indicators of compliance .....	23
7. Credits and References.....	24

## 1. Introduction

Water and sanitation services play an essential role in the sustainability of human settlements of all sizes and at all stages of development. They underpin the economy, public health, education, environment, well-being and much more. In spite of this, these services can be neglected and suffer from lack of investment and political abuse which lead to poor service quality levels. Repeated international efforts to overcome this situation have been met with limited success. In spite of progress, a very significant proportion of the world's population today still does not benefit neither from reliable access to water and sanitation services, nor from services that comply with the standards or conditions required to satisfy human rights.

The dedicated water and sanitation goal of the UN Sustainable Development Goals aims to change this situation. Success is contingent upon very significant governmental commitment to good governance and organizational capacity and significant increases in finance, innovation, technology and skills in the water sector. These requirements are widely recognized to be beyond the capacity of the public sector on its own however, and engaging the private sector can help fill this gap. The private sector can contribute in several forms, one of the most effective being through Public Private Partnerships (PPPs).

Well designed and executed PPPs, which are supported by sound institutional structures and the active engagement of both the public and private parties and their commitment to outcomes, can deliver very significant improvement and extension of services to water and sanitation users. Selected examples from around the globe include the East Manila concession where access to continuous potable water supply increased from 26% to 98% and the Senegal affermage where the access ratio went up from 58% to 76% and is now considered as a model of public-private partnership in sub-Saharan Africa. Further examples are available in Annex VII.

This standard provides guidance on best practices for policy makers in developing countries – in both local and national governments – who are interested in developing PPPs in water and sanitation services to fulfill their responsibilities. Drawing on empirical evidence, it provides standard guidance and recommends PPP models to combine the financial, intellectual, and technological resources of the public and private sectors for the delivery of water and wastewater services.

## 2. Objectives of the standard

### 2.1. The agenda for water and sanitation services

Universal access to safe water and sanitation services is a long-standing development goal: it is enshrined in the New Delhi Statement of 1990 as a “crucial component of social and economic development”, it is also acknowledged in the 1999 Protocol on Water and Health as a “pre-requisite both for improved health and for sustainable development” , and it is recognized as a human right that is “essential to the realization of all human rights” by the UN General Assembly and the Human Rights Council in 2010. <sup>1</sup>

Having met the water and sanitation target set under the environmental sustainability Millennium Development Goal, the United Nations continued committing to this goal: it dedicated a standalone goal n°6 to ensure the availability and sustainable management of water and sanitation for all among its Post-2015 Sustainable Development Goals aiming to end extreme poverty by 2030. These SDGs

---

<sup>1</sup> Resolutions on the Human Rights to Safe Drinking Water and Sanitation (HRTWS) of 2010.

are applicable to all countries irrespective of the level of development, and this is particularly true of water and sanitation. While connecting users to these services for the first time is the main challenge in developing countries, in many developed countries urgent attention is required to attract infrastructure financing and improved operational practices and efficiency in order to bring water supply and sanitation to all.

## 2.2. PPPs linking public and private efforts

PPPs are a tool, not an end by themselves. In the water and sanitation sector, they provide governments with the opportunity to bundle infrastructure creation and/or rehabilitation with related service delivery that leverages private sector efficiencies. This can free Governments from the burden of daily operations and maintenance of water and sanitation facilities and allow them to focus on contract administration and monitoring, setting and supervising water policy and planning, overseeing cost management, and overall service quality and impact. Indeed, in some respects PPPs are no more than a natural extension of a “traditional” public procurement contracts in which water and wastewater activities of capital works, supply of pipes and other goods and services have been routinely provided by private entities. The key difference lies in output specification and the transfer of certain risks to the private sector that is best able to manage them. As such, PPP contracts when compared to the traditional approach have a long and proven history in some countries such as in France, the birth place of concessions, and where most municipalities delegate the provision of water and sanitation services to private companies (two thirds of French citizens receive their water from private companies).

## 3. Scope of the standard

In light of the various PPP models and structures (Chapter 4), this standard is designed to assist policy makers of developing countries who decide to pursue PPPs as a tool for water and sanitation service delivery. The standard will specifically assist governments in choosing the appropriate PPP model and addressing important success factors of these arrangements, such as operational and financial sustainability, reliability of baseline data and contract flexibility, institutional and social support, key legal and regulatory issues, willingness and ability to charge and pay tariffs and/or taxes, among others.

This standard builds on the practical experience of PPPs in water and sanitation and their recent evolution to formulate the model favoring the fulfillment of people first objectives.

For purposes of this standard, a Public-Private Partnership is defined as, *“a contractual agreement between a responsible public authority and a private sector operator for the development, redevelopment and/or operational management by the private sector, including often a staffing component, that provides water and/or sanitation service(s) to the community, under the oversight and ultimate control of the governmental entity responsible for the delivery of that service. The assets may be financed by the private sector or the public sector or jointly”*. In some PPP models, the asset ownership is transferred back to the Public Sector owner upon completion of the PPP.

## 4. Central Question

Pressure for the efficient performance of water utilities has reached unprecedented levels. Driven by urbanization, scarcity of resources, and necessary health and environmental protections, governments struggle to ensure access to water and sanitation for all. Yet the challenge persists and the UN Sustainable Development Goals, and in particular Goal no. 6, calls on governments to achieve

access to water and sanitation for all, and relies on eight specific targets, the first three being noteworthy here:

- 6.1 By 2030, achieve universal and equitable access to safe and affordable drinking water;
- 6.2 By 2030, achieve access to adequate and equitable sanitation and hygiene for all and end open defecation, paying special attention to the needs of women and girls and those in vulnerable situations; and
- 6.3 By 2030, improve water quality by reducing pollution, eliminating dumping and minimizing release of hazardous chemicals and materials, halving the proportion of untreated wastewater and at least doubling recycling and safe reuse globally.

Ensuring access to water and sanitation for all is not an isolated goal as a dynamic two-way interdependence exists between the water and sanitation targets and all other Post-2015 Sustainable Development Goals and most of these interlinkages are mutually reinforcing<sup>2</sup>. To meet these targets, or optimize and maintain water and sanitation where these targets have been partially achieved, will require significant commitment from governments. Historically, however, public utilities have generated less than half the money required for investment from their own operations and have been dependent on treasury transfers. With public finances under pressure, the status quo financing approach in low and middle income countries based on insufficient and poorly targeted public funds seems unsustainable as systems will most probably face further degradation and falling levels of service, jeopardizing the achievement of SDG no. 6.

These financial constraints, together with the need to improve the performance of services rapidly, are driving the shift to alternative modes of delivery which acknowledge that water services must be managed as economic as well as social and environmental services, using sustainable economics to meet the costs of extraction, treatment, distribution and maintenance. This warrants the investigation into the potential benefits of greater private participation in the water supply and sanitation sector, under due control by public authorities. Governments should work towards “crowding in” commercial finance to cover for the financing shortfall.<sup>3</sup>

While the UN Right to Water and sanitation is neutral towards the delivery mode, provided Governments remain accountable and aim for project sustainability, the SDG 17 recognizes the importance of Public-Private Partnerships as a tool to deliver against the ambitious targets. Target 17.17 of the SDGs explicitly states: “Encourage and promote effective public, public-private and civil society partnerships, building on the experience and resourcing strategies of partnerships”. The Addis Ababa Action Agenda<sup>4</sup> which forms an integral part of the 2030 Sustainable Development Agenda, also emphasizes PPPs as a mechanism of infrastructure financing, while recognizing their challenges and highlighting the importance of the appropriate structure and the fairness of risk and reward sharing.

Public-Private-Partnerships in the water and sanitation sector build on the private sector’s efficiency and expertise to strengthen the public utilities’ capability and financial viability. However, as

---

<sup>2</sup> UN-Water, 2016: *Water and Sanitation Interlinkages across the 2030 Agenda for Sustainable Development*. Geneva

<sup>3</sup> Publication of the “Water Global Practice” titled: *Easing the transition to commercial finance towards water and sanitation*”

<sup>4</sup> of the Third International Conference on Financing for Development,

governments choose to tap into the private sector's technical expertise, operational efficiency, and financing capacity, they must acknowledge their ultimate accountability and be vigilant in safeguarding the public interest in universal access to water and sanitation. As such, it would be the government's responsibility to respect a fair rate of return on investments in capital or workforce for the private partner, yet, regulate associated profits and performance and proactively raise public awareness of the issues at stake.

#### 4.1. Project Types and Examples

Potential project types for PPPs in water and sanitation lie on a spectrum, ranging from outsourcing of service contracts to more complex project finance structures. Each type is associated with, and defined by, a particular set of objectives, allocation of responsibilities and risks and should be closely scrutinized by governments in order to understand their benefits and limitations.

The following are some of the most frequently adopted PPP contracting approaches.

- For existing systems and assets, the most common project types are:
  - Management contracts are contracts through which a private entity undertakes the operation, management and maintenance of a water asset and service, including the associated workforce, for a fee, which is commonly linked to performance. The assets are publicly financed and owned, though the private operator could bear the cost of routine replacement of small, low value parts of equipment.  
In water short countries, acute water scarcity drives the cost of water supply very high. In order to boost the efficiency of the water and sanitation system, the government can initiate sector reform by entering into a management contract, which targets reducing the level of unaccounted for water and improving the operation and maintenance of the system.
  - Affermage contracts are contracts through which the service in its entirety is transferred to the private entity including the financial risk for operation and maintenance. The private operator's remuneration consists of its affermage fee (*prix du fermier*<sup>5</sup>) multiplied by the volume of water produced or sold, and is retained out of the revenues collected from users while the balance is transferred to the public entity to cover its investment commitments. The operator is in this case is not only assuming some commercial risk since its remuneration depends on the volume of water sold but is also bearing the risk of delayed or non-payment by the government for any arising shortfall, in case the tariff falls below the affermage fee. While capital investments are publicly financed and the assets are publicly owned, the private entity undertakes financing and implementing maintenance, rehabilitation and new works (non-fixed assets, meters, domestic connections).  
Affermage type contracts have improved operational efficiency in countries where access to safe supply of piped water was limited to half of the urban population and where water supply was intermittent and of poor quality. The private sector's financing of new connections and its contribution to repair and maintenance investments was key in decreasing the levels of unaccounted for water and improving revenue collection. (*Senegal affermage contract*)
  - Lease contracts are similar to affermage contracts in terms of scope. However, greater commercial risk is assumed by the private entity whose remuneration is based on cost-plus: after paying a lease fee to the public entity out of the revenues collected from the users, the private entity retains the balance as its remuneration. The lease fee is used to contribute to

---

<sup>5</sup> The affermage incentivizes operational efficiency by awarding the contract to the lowest bidder.

financing capital investments and debt service. The assets are publicly financed and owned while the cost of maintenance and some replacement is borne by the private entity.

Unlike affermage contracts, lease contracts are awarded based on highest “lease fee” bid and heavily depend on the customer tariff level and its adjustment rules as these substantially influence the private entity’s remuneration.

Where successfully implemented, lease contracts have improved water supply duration and quality, metering and collection efficiency, as well as energy efficiency in instances where the energy cost constitutes a major O&M cost center. When tariff programs resulting from the bids are within government expected range, leases do not entail major financial implications on treasury and have even allowed for phasing out of subsidies in some cases. (*Yerevan Djur lease contract*).

- Concessions are arrangements where the private entity assumes the overall responsibility for the services (operation, maintenance, management, collection) as well as capital investments for the expansion of services (including rehabilitation and replacement). Its remuneration consists of the revenues collected from the users after deduction of a concession fee to be paid to the public entity and which may be ring fenced for large asset replacement. The assets purchased by the concessionaire are privately financed and all rights to them revert back to the public entity at the end of the concession. Private financing of investments constitutes the main incentive for governments to resort to this scheme of private sector participation. Concessions could be awarded on a regional (non-nation or capital wide) level, through a simultaneous approach (*Manila concession*) to create competition and a basis for performance comparison and to diversify the risk in case the concessionaire fails to deliver, or they could be awarded in a phased approach (*Casablanca concession*) to pave the way for other regional concessions.

Concessions have succeeded in improving the quality of customer services and boosting network efficiency in countries where the supply system was obsolete and investments were poorly managed by a highly indebted public operator. On the sanitation front, concessions have succeeded in reducing flood risks and expand sanitation service coverage.

- For new assets, the two most common PPP contracting approaches are:

- Design-Build-Operate (DBO) contracts are contracts where the private entity undertakes to design, build, maintain and operate a new facility, for an annual service fee - that is usually comprised of a fixed component, a variable component (based on cubic meter delivered) and pass through charges - paid by the public entity. The assets are publicly financed and owned: the private entity is responsible for financing during construction and gets paid once the construction is completed without retaining any equity stake in the facility. The same private entity is responsible for the operation for a fixed annual service fee; as such, DBOs transfer most of the operating risk to the private entity, including the risk of on budget operation and maintenance expenditures. The demand risk can be borne by the public entity through guaranteeing the purchase of a minimum amount of water regardless of whether or not end user demand exists. Such guarantee requires forecasting, prior to contract signature, based on assumptions on population growth and water demand growth.

In some cases (Lake Pleasant water treatment plant in Phoenix, AZ), DBO contracts have been renegotiated after few years of operations when demand levels proved to be significantly lower than expectations: given the fixed annual operation and maintenance fees, lower demand and therefore, lower water volumes resulted in high unitary operating costs. This highlights the importance of projecting consumer demand and the potential financial implications of demand risk in DBO contracts.

The DBO arrangement streamlines the traditional Design-Build (DB) method by combining the construction and the operation and maintenance (including repairs and replacements) of

the new facility into a single contract, ensuring as such an operator-driven design with significant attention to project operability. This would boost efficiency through technological innovation and improves risk management through performance guarantees, all resulting project lifecycle cost savings which translate into end-user savings.

- Build-Operate-Transfer (BOT)<sup>6</sup> are contracts where the private entity undertakes to finance, build, operate and maintain a new facility and transfer it back to the public entity at the end of the contract. The revenues generated from the operation phase are intended to cover operating costs, maintenance, repayment of debt principal, financing costs and a return for the shareholders of the SPV created for the project. (*Samra wastewater treatment plant in Jordan & Cairo wastewater treatment plant*)

The different aspects of the project types are further compared and identified in Annex I part 1-7 and additional information on the reviewed case study examples can be found in Annex VII.

#### 4.2. Advantages and disadvantages of PPPs in water supply and sanitation

Private financing can be one of the main attractions of PPPs, however, given that the water sector is by nature capital intensive and characterized by high fixed long term investments and low returns, full cost recovery through tariffs is challenging. Such specificity of the sector makes efficiency gains, improved service quality and compliance brought about by the private sector's management systems and innovative technologies and techniques as the main attractive aspects for PPPs in water and sanitation.

Many of the advantages of PPP arrangements over traditionally procured projects apply in the water and sanitation sector:

- Risk reduction in cost and time overruns in civil construction and equipment specifications and deliveries;
- Faster achievement of performance targets due to specialized experience;
- Higher incentives of boosting operational efficiency to optimize both capital and operational expenditures, hence improving productivity and results;
- Better performance in reducing non-receivables and average collection period due to management focus on results and the bottom line;
- Improved system longevity and insulation of projects and service provision from unexpected changes through long term management approaches;
- Channeling of the public sector's resources to focus on the legislative and regulatory environment and contract supervision and monitoring;
- Increased transparency as private companies providing water and sanitation through PPPs face a very high level of public scrutiny, as they must answer to the government entities, to various regulators, auditors and committees, to public opinion and media.<sup>7</sup>

Disadvantages to PPPs in water and sanitation include:

---

<sup>6</sup> Variations on the BOT structure include (but are not limited to) BOOT (Build-Own-Operate-Transfer), BOO (Build-Own-Operate), DBOOM (Design-Build-Own-Operate-Maintain), DBFO (Design-Build-Finance-Operate), Rehabilitate-Operate-Transfer (ROT), Rehabilitate- Operate-Own (ROO) and more, and for purposes of this document, all these variations will generically be referred to as BOT.

<sup>7</sup> In France, the Loi Barnier of 1995 requires water utilities to submit comprehensive data on their performance to their municipal owners.



- Opposition from stakeholders and be politically controversial. Causes of this include, (i) purely political opposition to the government attempting to implement a PPP policy, (ii) economic motives of some stakeholders, (iii) lack of public awareness of the investment needs and actual costs of water services (linked with a fear of tariff increases, attributed rightly or wrongly to private sector participation), and (iv) ongoing perceptions of “free water” and water as a human right that is to be provided without a direct cost.
- Communication with stakeholders can be challenging: employees affected, the community receiving the service, the media, appropriate labor unions and relevant interest groups, may formulate opposition.
- There is frequent misalignment in the timeline between the term of the political mandate (c. 4 years), the duration of the planning phase (c. 3-4) years, and the length of the operational phase (usually exceeding 10 years).
- Inappropriate scrutiny of the project’s financial implications on government’s treasury in terms of costs and contingent liabilities and the blind adoption of PPPs in imitation of success cases had led to large fiscal costs<sup>8</sup>.

### **4.3. PPPs Meeting People First Objectives – Replicability, Scalability, Equity, Efficiency, Sustainability Effectiveness Demonstrated**

#### **4.3.1 Concept**

People first PPPs in the water and sanitation are arrangements which achieve people first objectives - that is providing universal and equitable access to safe and affordable potable water and sanitation services, with special attention to vulnerable groups.

#### **4.3.2 Approach to private sector**

In low and middle income countries whose governments are targeted in this standard, the water and sanitation sector share common constraints and characteristics such as fragile financial situation, weak regulatory environment, inadequate access to service, intermittent supply and poor quality, prevalent customer dissatisfaction, low collection rates, low non-cost recovering tariffs and limited baseline data. Involving the private sector through a PPP arrangement too soon and too quickly in such environments poses a high risk of failure in meeting people first objectives and could potentially create a backlash and strong public resistance which has been shown to lead to contracts being terminated early and/or tainting PPPs in the sector with such monikers as “leasing the rain”<sup>9</sup>. In light of these realities, a sequential approach to private sector participation is recommended, starting with a “private sector - light” arrangement and building on its success to move towards deeper partnership involving higher risk transfer to the private sector.

#### **4.3.3 Initiating the partnership**

Such stepwise development of PPP in the water and sanitation sector can be initiated through a short term management contract of high flexibility (allowing for example a reversion to public management if necessary), which aims at reducing non-revenue water and improving the functioning of the public utility. Direct operation and transfer of managerial and technical know-how through hands-on training would ease an institutional upgrade and improve the utility’s efficiency. Such

---

<sup>8</sup> ‘Public-Private Partnerships: Defusing the ticking time bomb,’ The European Network on Debt and Development (Eurodad), <http://www.eurodad.org/PPPs-briefing-2017>, October 2017

<sup>9</sup> Cochabamba Concession

efficiency gains would potentially translate into baseline knowledge and data, better quality and more responsive service, which can positively impact the consumers' willingness to pay for such improved services and allow the general public to experience and weigh the advantages of PPP without any long term commitment. In addition, the fact that the government maintains asset ownership and control over tariffs can ease fears and the common misconceptions of a 'loss of sovereignty' or 'selling water resources to foreign private companies'.

The management contract could be performance based and include financial incentives and penalties for the private entity to meet priority performance targets of financial and technical efficiency.

A trade-off exists between the contract duration and the probability of meeting performance targets: while short term contracts (e.g. 3 – 4 years) are more accepted by the general public and perceived as less committing, experience has shown that, in a relatively weak environment, significant improvements to water systems and service requires longer time, as much as 6 or more years to be achieved. As a result, the management contract can include a clause allowing for extension, upon the government's request, in case further improvement is deemed possible under its scheme.

#### ***4.3.4 Follow up to a stronger commitment***

Upon contract expiry and alternatively to its extension, the government can choose to seek longer term and a greater degree of private sector participation. The attractiveness of this more pronounced form of private sector participation, which transfers more risks to the private entity, depends on the comprehensiveness and quality of information collected through the term of the management contract regarding the parameters and performance of the utility. In its decision to pursue a greater degree of private sector involvement, governments should also take into consideration the public's perception of the success of the management contract and its trust in the capacity of the private sector to improve service level and quality. Public trust is primordial for the success of PPP contracts in socially sensitive sectors such as water and sanitation, as it paves the way for the acceptance of unpopular but often times necessary measures of universal metering and tariff increases.

#### ***4.3.6 Setting the next level of partnership***

On the private sector's side, its willingness to assume greater risks in its operations depends on the performance and efficiency of the utility. Improvements achieved under the management contract could make the utility more attractive for the private sector to assume additional commercial risk, a scheme which by its very nature creates further financial incentives to improve performance.

As PPP models for water and sanitation lie on a spectrum, ranging from management contracts to BOT schemes, the move along the project type spectrum is recommended to be continuous, avoiding sudden increase in the degree of private sector participation. As such, moving from a management contract to a concession scheme - which relies on private financing of investments based on tariff revenues - is particularly difficult and unsustainable for water and sanitation challenged countries. Often these countries require massive investments and yet the tariff level and the initial number of customers typically falls short of the recovery needed to meet even the operation and maintenance costs, let alone capital investments. As such, public financing of capital investments will remain necessary for many of these countries as the financial conditions required for project financing will hamper raising private equity and commercial debt. As a result, once the management contract comes to term, affermage or lease arrangements, which combine public financing with private efficiency, emerge as perhaps the next most suitable scheme for low and middle income countries.

#### ***4.3.7 Affermage type contract versus Lease contract***

Low and middle income countries often have inadequate regulatory capacity, so affermage arrangements which are regulated by contract and focus on reaching performance targets should be preferred to lease arrangements. This is particularly true when affermage contracts are compared

lease arrangements in which the private entity collects tariff revenues for its own account and directly deducts its operations and maintenance expenditures before remitting the operational surplus to the public entity. Such lease arrangements require meticulous monitoring of operational expenditures by an established and empowered regulatory authority with a significant amount of contract management capacity.

In light of people first objectives, the affermage contract type is more a suited tool than the lease type in achieving them, particularly in terms of affordability and equitable access. In a lease arrangement, the lessee's profitability is highly correlated with the customer's tariff level and often times requires a tariff program beyond the internationally recognized affordability threshold of 3% of household income. In contrast, affermage contracts rely on an affermage fee which is paid by the public partner and is independent of the customer's tariff level. This focuses the private partner's profitability on minimizing costs, which in turn creates an incentive to maximize operational efficiency. In addition, efficient water use is more emphasized in affermage contracts, where performance targets are structured according to water production, than in lease contracts which incentivize water sales and hence water use.

In terms of equitable access, lease schemes by their very nature dis-incentivize the lessee to provide service to customers billed at low – often below cost – subsidized tariffs, as this reduces its sales revenues and profitability. As such, price differentiation by consumer income class can incentivize the lessee to concentrate on high revenue market segments, thereby further discriminating against the poor. Affermage contracts, by contrast, are blind to social classes as the private entity's remuneration is a function of the volume of water produced and operates somewhat independent of the end user tariff.

#### ***4.3.8. Selecting a PPP model***

In light of the conditions characterizing the water and sanitation sector, either by its intrinsic nature or due to constraints resulting the precarious conditions prevalent in low and middle income countries, the sequential approach of a short term management contract, followed by an affermage contract seems to be the most appropriate approach to meeting people first objectives of the SDGs in water and sanitation. However, this does not imply that approach is the sole optimal one for water and sanitation PPPs. In fact, the selection of a particular PPP model and the development of a structure to underpin it should be based on the specific needs of the government entity in charge of delivering a public service, and of the community receiving the service.

Annex I shows the main PPP models in water supply and sanitation and Annex II proposes a decision tree for the selection of a PPP model which best addresses the challenges faced by the water and wastewater services, whether these challenges are operational by nature and / or related to capital investments, and depending on the financial and tariff constraints. As such the assumed conditions of difficult initial conditions (poor service quality coupled with unqualified utility staff) combined with the non-bankability of a privately financed PPP arrangement, has led to the selection of a management contract as an initial step in involving the private sector and followed by an affermage type of contract once service levels have improved. In some instances (*Senegal*), where the water utility is well run from a technical point view, successful PPPs were based on direct engagement of the private sector, without passage by a management contract, in the more advanced PPP type of arrangement of affermage. It is worthwhile to note that PPP schemes lie on a continuous spectrum of contract types, and therefore, in practice tailored or hybrid solutions can be developed to match a government's preferred approach of risk and responsibility allocation. Examples of customized risk-sharing arrangements are possible include the "lease-plus" or "enhanced lease" model, whereby some responsibility for investment is transferred to the private partner: in this case, the private partner could fund the extension of service coverage to poor areas or peri-urban neighborhoods, while the contracting authority retains responsibility for other investments.

Another example consists of an innovative affermage arrangement which would incorporate targets for technical and collection efficiency in the private sector's remuneration formula, penalizing as such failure to attain the targets and rewarding outperformance. These targets would provide strong financial incentives to reduce leakage and improve billing and collection, incentives which otherwise do not exist in traditional affermage contracts. (*Senegal affermage contract*)

The government should nevertheless seek qualified advice, especially if they wish to adopt variants of the common model types: expert transactional, finance, and legal advice will be required to tailor the approaches to their needs (see Section 5.3 hereafter). Annex III provides more detailed insight on the respective advantages of each type of PPP regarding (1) water and/or sanitation expansion, (2) cost of service and impacts on tariffs, (3) quality of service and (4) operational efficiency.

## **5. Delivering the model in water supply and sanitation**

### **5.1. Project selection / Baseline requirements for private interest**

#### **5.1.1 Project dimension**

While there is no optimal dimension for a project, a minimum size remains required to achieve sustainability and attract private sector. Projects that are too small to be financially feasible on a standalone basis could be merged with larger ones to boost their bankability, even if they are not adjacent geographically. By the same logic, several cities and small settlements (in regions, provinces, or districts) can be merged into a bigger project.

Although water distribution's costs are often directly proportional to dimension, larger projects generate larger economies of scale, risk mitigation and lower tariffs. However, in heavily populated areas, it may be advisable to split the projects in two or more PPPs in order to reduce risk and increase competitiveness and emulation between operators.

#### **5.1.2 Baseline requirements for private interest**

##### **5.1.2.1 Tender process**

In water and sanitation, as in any other sector, the private sector's interest depends on the credibility and transparency of the bidding process undertaken to award the PPP contract. Countries where international competitive bidding was adopted and professionalism was upheld (Yerevan and Senegal) have witnessed smooth closing of transactions, while contracts awarded after the bid submission deadline to unsolicited unqualified and inexperienced companies have failed dramatically (Cochabamba).

##### **5.1.2.2 Project sustainability**

The private sector's interest also depends on the sustainability of the project, in terms of operations and financial performance. For such sustainability to exist in a water and sanitation project, significant effort is required from the government side prior to tendering any project given the sensitivity of the sector.

##### **5.1.2.2.a Sustainability of Operations**

The sustainability of operations requires political championship and the buy-in of all stakeholders, be it end users, existing employees or labor unions or the informal water providers as well as other government stakeholders such as the departments of health and environment. Stakeholder engagement and communication is imperative and should take place prior to tendering any PPP project in the water and sanitation sector, where private sector participation can easily be perceived as a hostile takeover of natural resources and local jobs by foreigners. Therefore, the very first step would be the identification of stakeholders and anticipating their reaction to address their concerns prior to launching the tender.

### Public Perception

Public perception is the cornerstone for the success of any PPP project, and more so, for a water and sanitation PPP project given ongoing perceptions of “free water” as a human right and association of private sector participation with tariff hikes. The government can start laying the foundation for the need of private sector participation by raising awareness on the existing quality of service (*Manila where the water crisis was announced by the President*), which the end users might be oblivious to it and its consequences on their health. The effectiveness of such awareness campaign and its credibility in terms of the PPP proposed solution depends on the level of trust in the authority delivering the message. A such, prior success in stabilizing the economy (*Buenos Aires*) or a prior successful PPP transaction (*power sector in Manila*) would instill some trust in the public authority and would lead to a supportive environment and a favorable public opinion. Public consultation through opinion polls undertaken at different times throughout the project preparation stage would help the government monitor public perception and its evolution into project tendering (*Buenos Aires*) and would allow it to take required remedial actions before opposition spirals out of control. Tainted public perception and ensuing social opposition have been the driving force behind the most notable failures of water and sanitation PPPs, especially when actions were undertaken without prior awareness campaigns or justification, and went as far as being perceived as private ownership of water resources (*Cochabamba*).

### Existing Employees

The general public or the end users are not the only stakeholders whose buy-in would contribute to the sustainability of private operations. The utility’s existing employees, who would be concerned about their future, can create resistance and impede a smooth start for the private entity jeopardizing as such the success of any PPP arrangement. As such, governments should manage existing employees’ issue proactively, prior to tendering the project or by contract design, to bring comfort to the private entity regarding the viability of its operations for the contract term.

Given some utilities are overstaffed, the public entity can prepare for the PPP project by offering generous compensation packages for voluntary early retirement (*Manila concession and Buenos Aires*). The government should also adopt a participatory approach and involve the employees or the labor union in consultations (*Buenos Aires and Manila*) and capacity building events (*Senegal*), in order to build understanding and consensus on the institutional structure and reach an agreement on all open issues. Such consultations could culminate in arrangements such as shareholding rights for the existing employees in the new company (*10% of the shares in Buenos Aires and 5% in Senegal were allocated to existing employees*). Overcoming the labor union’s opposition can take a more extensive approach, by involving their leaders in the decision making process as a member of the PPP committee (*Buenos Aires*) or by arranging meetings with labor unions of other countries where PPP arrangements have been undertaken (*Manila labor union consulting with Buenos Aires*).

Alternatively, and to ensure expertise continuity beyond the contract term, the government can require the private operator to commit to retain all or a good majority of the current staff or fully transfer them to the operating company (*Yerevan, Portugal*), or even offer employment and maintain their legitimate benefits, which might be more problematic in case of overstaffed utility (*Casablanca water and wastewater*) than in the case of a normally staffed and technically well run utility (*Senegal*). Such contract obligations, though they create additional burden for the private entity and could be built into its financial proposal, would help ensure smooth project launch and avoid employee resistance.

In any case, training and capacity building of local staff are of outmost importance since they will be the ones that will manage, operate and maintain the systems after the contract termination. Therefore, the arrangement should be explicit in terms of training programs and capacity building requirements.

### Informal Water Providers

Informal water providers thrive in low and middle income countries where public provision of the service is inadequate, intermittent or involves high time and waiting costs. More often than not, and due to the lack of a proper regulatory framework, water is sold at a premium. As such, informal water suppliers would perceive private operations as a major threat to their profitability and existence. At the same time, the private sector will perceive these established providers as competitors, especially that in some cases they could be supported by local elites who use them for clientelism (*Tripoli*). Such circumstances would negatively impact private sector interest and should be managed early on prior to tender launch during the public consultation phase.

During the contract, as quality of service starts increasing, informal water providers should be incentivized to fill their tank trucks in the Utility's systems and to sell water where public networks are inexistent. By doing so, a healthier coexistence will be promoted with benefits to all stakeholders.

#### **5.1.2.2.b Financial Sustainability**

Financial sustainability of any PPP arrangement is vital for private sector interest, especially in the water and sanitation sector where full cost recovery through tariffs is difficult to achieve given its capital intensive nature which is characterized by high fixed long term investments and low returns. As such, the arising funding gap, should be bridged through government subsidies in concessive arrangements and through public funding of capital expenditures in non-concessive arrangements. The government's ability to fund such gap, or in other words the affordability of the PPP arrangement for the government, and its willingness to assume such financial burden, are major indicators for the private sector to assess the sustainability of the PPP arrangement and its attractiveness. Credit worthiness of the water utility or the offtaker is also of prime importance to attract commercial finance.

Financial sustainability is especially emphasized in concessive arrangement which transfer the demand risk to the private sector, whereby private sector interest would heavily depend on the government's commitment to implement agreed upon tariff structures and tariff hikes and to contribute through subsidies that promote "social tariffs" which would strike a balance between social acceptance and a fair rate of return for the private sector.

In addition, the involvement and support of multilateral organizations, whether through the provision of advisory services (*Manila*) or through mobilization of financing (*Buenos Aires*) has also proved to send a positive signal and attract bidders, while withdrawal of multilateral support has had dire repercussions on private sector interest (*Cochabamba*).

#### **5.1.2.3 Reliability of baseline data and contract flexibility**

Baseline information about the existing service levels is essential for private bidders as it forms the basis for preparing their proposals. Sufficient and reliable financial and management data about the utility should be available at the bid preparation stage to help the bidders assess the feasibility of achieving performance targets and hence, evaluate the attractiveness of the project. This may be achieved by hiring a specialized technical assistance prior to the tender procedure of the PPP.

Many governments have fall into the trap of setting overambitious performance targets, either due to unreliable baseline information or to promote the PPP project among the general public.

While requiring ambitious performance targets such as continuous service by the 2<sup>nd</sup> year (*Cochabamba*) or treatment of 93% of wastewater up from almost no treatment (*Buenos Aires*) could help build private sector acceptance among the end users, failure to meet them can weaken political and public support for otherwise credibly performing private operators. Therefore, governments

should set realistic objectives for the scale and pace of the improvements and should set accordingly achievable target indicators to attract private sector interest.

Performance targets could also prove to be overly optimistic during contract execution due to inaccurate baseline information or unexpected exogenous factors (*Manila*) or unrealistic assumptions (*Lake Pleasant*), and will require adjustment. While undertaking an upfront network assessment prior to launching the tender could improve the reliability of baseline values and help in setting realistic performance targets, governments should still structure some level of flexibility in PPP contracts to allow adapting performance targets to new findings. Such adjustment of performance targets should be limited to the case where they were based on inaccurate baseline information or unrealistic government assumptions or in the case of unexpected exogenous factors, all of which are beyond the control of the private sector and render set performance targets unrealizable. Limiting contract amendment to these cases is crucial to avoid very attractive bids based on the anticipation of contract renegotiation (*Buenos Aires and Manila*).

## 5.2. Financing models

A unique cost structure characterizes the water and sanitation sector, where fixed costs account for a high proportion of the total costs averaging respectively 65% and 80%. Being highly capital intensive, the sector cannot recover its costs based on the economically efficient marginal cost pricing which lags behind the average cost with higher production levels. Another distinguishing trait of the water and sanitation sector consists of the long asset life which reaches 40 years for water infrastructure and 60 years for sewerage facilities. These characteristics make the water and sanitation sector vulnerable to non-cost recovering pricing and deferral of capital investments, especially that the resulting deterioration of the assets is slow and gradual and hence does not threaten the service continuity on one hand, and maintaining untargeted price subsidies is politically tempting on the other hand.

Full cost recovery from tariffs would theoretically emerge as an optimal solution from a sustainable business perspective. However, in low and middle income countries, the substantial level of investments needed to achieve people first objectives of universal and equitable access to safe drinking water and sanitation services, coupled with the social dimension of tariff affordability, create a financing gap that should be bridged by tax and transfers revenues.

As such and independently of private sector participation, cost recovery in the water and sanitation sector depends on the sufficiency and reliability of revenues generated from taxes, tariffs and transfers, or what the OECD has coined as the “3Ts”.

### 5.2.1 The 3Ts – Tariffs, Taxes and Transfers

#### 5.2.1.1 Tariffs

##### From unsustainability to sustainability

The recommended model of performance based management contract and / or affermage does not transfer the revenues risk to the private sector and therefore, the tariff level and its evolution might not constitute an integral element of PPP arrangement. However, sustainable water and sanitation financing should remain the objective of governments to be able to support people first objectives beyond the SDGs term of 2030, and this long term financial sustainability requires a tariff level which would ultimately fully recover the operation and maintenance costs.

In light of the above, and prior to entering into any PPP arrangement, the adequacy of the tariff level should be examined from the perspective of its ability to recover costs. For this reason, clarity on the different cost centers is essential. As such, it requires estimation of the different costs, whether operation and maintenance costs or required investment costs or even environmental, and forecasting their evolution over the short and medium terms. In this respect, it is worthwhile to note

that the estimation of the maintenance cost may be difficult in the water and the wastewater sector especially that the assets lie mostly underground and might lack accurate asset registries.

#### Forecasting tariffs and safeguarding vulnerable groups

The above financial exercise would feed into a financial model, which consists of the main tool to estimate and monitor the financing gap. Accordingly, the financial contribution of Tariff revenues in cost recovery can be established, taking into account the social dimension. For example, it would be unfair, especially for the poor, to use tariff revenues to recover operational costs artificially inflated by overstaffing and inefficient operations. In parallel, any remaining financing gap would be bridged through Taxes while taking into account government affordability and through Transfers while taking into account how easily the government can access them. Any operational efficiency expected to be brought in by the private sector should also be incorporated in the financial model through its impact in cost reduction, and therefore its role in bridging the gap.

Given that tariff setting is task of political nature, it should be undertaken prior to entry of a private operator and should constitute an “input” in the PPP tender process. In this respect, a social impact analysis is imperative to separate consumers into groups in terms of their ability and willingness to pay.

- Ability to pay would be assessed based on the percentage of households where expenditure on a subsistence quantity of water would represent hardship<sup>10</sup> if a (O&M or full) cost recovering tariff were to be adopted.
- Willingness to pay, on the other hand, depends on existing alternatives of water provision and prices and on how the consumers value the new service in terms of quality and reliability. It is essential that affordability remains in check and social tariff be maintained. (Senegal)

As such, water pricing should not only be regarded as a tool for revenue generation and incentivizing efficient water use, but also as a powerful tool to ensure fair treatment among consumers: for example, providing water for free at common standpipes or adopting a “life line pricing” in the tariff structure for the very low first block (Senegal) are essential to achieve equitable treatment for vulnerable groups, especially in light of the low subsistence quantities consumed and their associated high public health value.

In this respect, two major principles should be respected:

- The principle of protecting consumers' interests, ensuring that the Utility does not abuse of its dominant position;
- The principle of affordability, according to which tariffs should respect the consumers' ability to pay, ensuring universal access to water and sanitation services.

Vulnerable groups, or low-income groups (elder, unemployed, or disabled not living with higher income relatives), should be charged with a “social tariff”. There are different methods of establishing a “social tariff” including direct subsidies, cross-subsidies, or a combination.

#### Subsidies

---

<sup>10</sup> Affordability is set at 3% of median household income as a rule of thumb.



Direct subsidies can be provided by the public sector, either directly to vulnerable citizens or to the Utility. In the first case, vulnerable citizens receive the subsidy and pay the full tariff the Utility. In the second case, the Utility receives the subsidy and applies lower (discounted) tariffs to vulnerable citizens.

Cross-subsidies means that other groups (domestic, commerce and industry) are charged a little bit higher to accommodate the “discount” provided to vulnerable citizens. The Utility receives the “extra income” and applies lower (discounted) tariffs to vulnerable citizens.

Cross-subsidies are also a popular mechanism to restore some level of equity across consumers, which could be type based (e.g. industrial consumers subsidizing residential consumers or urban consumers subsidizing rural consumers) or volume based (achieved through increasing block tariffs) or new connection being subsidized by existing consumers who would finance through the tariff the expansion of the network to unserved areas. The success and sustainability of cross-subsidies depend on the price elasticity of demand, which should be carefully assessed, prior to transferring the financing burden across consumer categories. In cases where the cross-subsidizers’ demand was relatively price elastic, cross-subsidies schemes collapsed due to the disconnection of the cross-subsidizers from the public network and reliance on own private, cheaper supply of water<sup>11</sup>.

It is important to aim for transparent, predictable and targeted subsidies. To be well targeted subsidies must be transparent, made explicit, properly quantified and aligned with the sector policies and plans (Global Water Practice 2017).

### Tariff levels

In instances where financial modeling has proved the need to increase the general tariff level, hikes should be introduced gradually (Senegal) and should be initiated well in advance of the entry or even the announcement of private sector participation (Manila) to avoid their association with profit making and public anger against the private operator (Cochabamba). Caution should also be exercised around packaging tariff increases in connection fees as these will negatively impact expansion of service access and would fire back in public opposition and result protests, especially that new connections consist mainly of poor households (Buenos Aires), and should be subsidized by the government (Senegal).

Connection fees may be prohibitive and constitute a serious barrier to some households. As such, they cause would delays in the growth of the Utility and hinder the achievement of its core objective: serving as many people as possible. The Utility can exempt such households from the connection fees in order to boost its client base and increase significantly its revenues.

Since the financial model is as reliable as its underlying assumptions, its adaptability is crucial to allow some flexibility for periodic revision based on actual achieved numbers after contract award, and to monitor progress towards financial equilibrium and undertake required upward or downward fine-tuning of tariffs. (Senegal)

In concessional PPP models, the financial model also plays a role in bid evaluation (Senegal), as it allows the government to set a “ceiling rate” for the price to be bid by the private operators beyond which private sector participation would not bring value for money. The financial model also allows to identify bids based on unrealistically low tariffs (at times lower than existing tariffs – Buenos Aires) and to test their sustainability in light of bid assumptions. Financial structures where the financial risk is heavily pushed onto the private sector, for example by bearing the burden of public arrears and

---

<sup>11</sup> Côte d’Ivoire during the 1980s

utility's existing debt and investment program, cannot be sustained based on a price bid lower than the prevailing non-cost recovering tariff (Cochabamba and Buenos Aires) and such bids are mostly based on the private sector's underlying assumption and expectation of contract renegotiation in the future (Buenos Aires).

In leases and concessions, the tariff level and its evolution over the contract term are established at the bidding stage and constitutes an integral part of the PPP agreement, which should also provide for the rules of tariff adjustments, in terms of initiation and approval. (Casablanca). Such clauses governing tariff adjustments reflect the extent of financial risk sharing; as such, the private sector might require that some costs be passed on automatically to the consumers such as increases in bulk water tariffs and in electricity tariffs (Casablanca), or might require annual tariff adjustments based on parameters such as inflation, exchange rate fluctuations, changes in the electricity tariff and in the level of water consumption (Yerevan). Tariff adjustment is primordial for the concessionaire and cases where the public entity has denied requests for tariff hikes have witnessed the exit of the concessionaire or the termination of the concession (*West Manila concession, Buenos Aires concession*). Concession contracts identify the initiator of the tariff adjustment which could be the concessionaire and / or the public entity, and can grant the public entity the right to unilaterally impose a tariff adjustment as long as it compensates the concessionaire for any resulting losses. In some cases, concession contracts have been renegotiated to restore balance between the partners, and have led to capping the rate of return of the concessionaire or freezing tariff adjustments and only allowing passing on any increase in the cost of bulk water or energy (*Casablanca concession*). In lease contracts, generated sales revenues have to be sufficient to cover operation and maintenance costs as well as the lease fee and to achieve some profits or reinvest in the operations. As such, it requires a tariff level allowing at least the cost recovery of operation and maintenance expenditures.

Proper risk sharing has proved to be essential in the financial viability of some concessions in developing countries: indexing water tariffs to inflation has allowed the private sector to achieve challenging investment and efficiency targets, such as full cost recovery of water distribution, including asset replacement, interest on debt, and profit (Manila), while the disconnection between the tariffs and the inflation rate and the exchange rate has led to the failure of other concessions (Buenos Aires).

In the process of progressively moving towards operation and maintenance cost recovering tariffs, some financing gap will prevail and will need to be bridged through taxes and transfers; otherwise, utilities will have to absorb the financial loss which will gradually erode the infrastructure and deteriorate service levels.

#### **5.2.1.2 Taxes**

In light of the financing gap resulting from the generalized underpricing of the water and sanitation services, governments could resort to untargeted subsidies sourced from general tax revenues to fund the shortfall. However, these fiscal transfers do not constitute a reliable revenue stream and might fail at times to fully absorb the utilities' financial losses: the fact that such tax revenues are generally not earmarked puts the water and sanitation sector in a position where it has to compete with other sectors and government expenditures, and its share of this revenue stream would vary across periods depending on government priorities and fiscal constraints. In addition, such subsidies are not recommended as they tend to be absorbed by the inefficiencies of the utility rather than being passed on to the consumers.

Charges, as contrasted to taxes, do not flow into the general budget and constitute a regulatory instrument which restricts the appropriation of the ensuing revenue stream and as such earmark it to the water and sanitation sector. At the same time, charges are required which implies that they are

tied to the ecological harm caused by the use of the services. For example, water utilization charges can be linked to the extent of groundwater withdrawal while wastewater charges depend on the quantity and quality of the effluent (*Polluter Pays principle*).

Governments could also adopt consumer targeted subsidies such as quantity based consumption subsidies (through increasing block tariffs or volume differentiated tariffs) or one-time connection subsidies which have proved to be promising in expanding coverage to poor households.

Subsidies can also be designed along a third dimension which is service level, whereby a less reliable, less convenient service and lower quality service level is made available at a lower cost, through communal or public water taps for example. While this service carries a considerable risk of contamination and involves physical effort and time, it might be the preferred option for poor households who are more concerned about cost than convenience and quality and for whom a private connection is prohibitively costly. Service level subsidies also perform well in terms of targeting poor households and excluding wealthier ones from benefitting from them.

Government funded subsidies remain an important element of the equation to bridge the financing gap and guarantee affordability, especially for poor households. While subsidies' design depends on many factors such as the level of coverage and the consumers' profile, considerable effort should be made to ensure that such subsidies are "smart" in terms of being captured by the intended targets.

In addition to consumer targeted subsidies, government can also financially support utilities through grants towards capital investments. Such funding is primordial especially that water and wastewater tariffs typically do not fully recover the costs, and any underfinancing of maintenance and capital programs will lead to the deterioration of the infrastructure and service quality. This issue gains more importance if the government intends to embark on PPP arrangements: in non-concessive PPPs, the private sector's ability to achieve performance targets depends on the government's funding and implementation of an investment program, while in concessive PPPs, the commercial viability of the project depends in many cases on government funding (Viability Gap Funding scheme), granted to the private sector at financial close to be used during construction.

In lease arrangements, the private entity is responsible of planning, designing, tendering and supervising the works of the investment program financed by the government. The investment program should be balanced between works that improve operational effectiveness and capital works for the expansion and rehabilitation of existing infrastructure. Given the impact of the investments on the private entity's revenue levels, the availability of funds for the government to finance the investment is of prime importance; as such, contracting loans from international financial institutions prior to the lease signature would boost private sector interest.

Finally, governments' financial contribution can come in the form of sovereign guarantees, to boost the creditworthiness of water entities and institutions.

### **5.2.1.3 Transfers**

In addition to tariffs and taxes, transfers or foreign donor assistance constitute the third financial flow which can contribute to the financial equilibrium of water and sanitation utilities. Such international aid can be provided by international financial institutions, whether multilateral or regional development banks, for financing of development projects. Their involvement has proved to create a "halo" effect and boost the bankability of projects with other lenders.

Governments can also seek transfers in the form of government to government soft loans and grants, which are sometimes sector-specific. For example, the Oudin-Santini Law in France, permits local water authorities to impose a 1% charge on water bills, and such revenues are earmarked as aid for overseas water projects.

Private (NGO) aid and corporate philanthropy are also emerging as a more innovative source for financing water and sanitation projects.

Finally, with rising urbanization, a new trend for financing urban water infrastructure is emerging: with the aim of boosting their property value, real estate developers are investing in household connections and decentralized water distribution systems coupled with maintenance service contracts.

#### **4.2.2. Access to Project Financing in Water and Sanitation PPPs**

Concessional type PPPs can help governments gain access to alternative market based repayable debt and equity that traditional finance (public funding and/or public debt financing) cannot provide. Nevertheless, this access to capital is a function of the project's ability to generate predictable and stable revenues that ensure the positive Net Present Value (NPV) of the project and an acceptable Internal Rate of Return (IRR) for the lenders and operators. This approach seems to be difficult for the water and sanitation sector in low and middle income countries, where massive investments are needed and the tariff level typically falls short of the O&M cost recovery, let alone capital investments.

#### **4.2.3. Innovative Financing Instruments**

Innovative financing instruments that may become more and more relevant for water and sanitation projects are:

- **Carbon Markets:** A relatively novel instrument to generate climate finance can be found in cap-and-trade schemes, which set a limit to the overall emissions, thereby creating carbon credits (emission allowances). Any surplus carbon credits can be traded at carbon markets, thereby generating a new revenue stream. In equal manner, project developers can invest in low-emissions projects generating carbon-offsets which can be sold at voluntary carbon markets—to private consumers and companies who want to reduce their carbon footprint. Carbon credits are being used to fund a variety of development projects.
- **Resources-for-Infrastructure (Rfi) Deals in Fragile States:** Under Rfi, oil or mineral extraction rights are exchanged for turnkey infrastructure, complementing standard tax and royalty regimes. The Rfi financing model has been adopted by some countries, mainly in Africa, to overcome obstacles related to limited capital market access and domestic capacity to implement large infrastructure projects. It should be noted that it remains to be seen if this model is to be used in combination with PPP models or limited to the more traditional project delivery models.

### **5.3. Legal, regulatory and institutional requirements**

PPPs are a tool, not an end in themselves. Local policy makers have to determine how private participation can be an efficient tool to achieve the public authority's objectives. In many cases, structural reform of the sector is a crucial prerequisite before embarking on a PPP project. For this reason, national and regional governments should establish a plan/strategy/policy with clearly defined goals and allocated resources, before having recourse to PPPs. Context-specific policy goals should reflect national KPIs, complemented by local ones (see Annex VI). They should be time-bound, and in line with financial means.

#### **5.3.3 Legal requirements**

The challenge with the legal framework is to balance public and private interests: the legal framework establishes conditions that ensure effective and efficient operation, while protecting

consumer and public interest in the availability, affordability, and sustainability of water and sanitation services.

An appropriate legal framework should include a water code, consumer protection law, and other sector-specific legislation that enables private-sector involvement in the management of water utilities, as well as any texts that govern private-sector participation in the economy, including regulators and laws governing procurement, taxation, insolvency, dispute resolution and other areas. The legal context plays a major role through the incentives and protections it provides to investors, both domestic and foreign. Investment laws should be aligned with national investment policies and priorities and at the same time meet international standards in order to be attractive to investors.

It is preferable to have a separate law to regulate PPP tendering, as opposed to relying on standard public procurement regulations for capital works, which have often proved to be restrictive in attracting international companies and impeding innovation and the transfer of technology. Any existing restriction needs to be carefully investigated and remedied well before initiating the PPP tender process. However, it is important that such elimination of legislative barriers and uncertainties should not target or be perceived to target a particular PPP project or benefit a prospective bidder. The same applies to tax legislation. Strict regulations for processing unsolicited proposals and subjecting them to competitive tendering should also be in place to ensure value for money for the public purse.

PPPs are particularly sensitive to regulations or their absence. Any exogenous risk (such as usage rights, resource availability or quality, environmental quality controls, etc.) not borne by the public entity under regulations will have to be transferred through the contract provisions.

### **5.3.2 Regulatory requirements**

In the cases of concessive arrangements, a sophisticated regulatory framework is required to provide effective oversight and ensure equitable distribution of benefits to users and the private partner. However, establish an effective, fully independent regulator in the timeframe required by most reform processes have proved to be often challenging and could result in a weak regulator with no previous regulation experience (Buenos Aires).

Regulation empowerment may evolve with the maturity of its market. It may start by an “observatory” onto an institute and then to an independent empowered agency (Portugal).

In cases where an independent regulator is fully established and is implementing rules and regulations, these should be clearly defined and specific to particular service areas, predictable and stable, empowered and enforced equally on public and private operators. These should not replace contractual relations and contract management between the parties to the contract themselves.

In non-concessive arrangements, the contract is largely self-regulating by direct monitoring and control by a government representative (Yerevan) or through a local supervisory commission (Casablanca), and can include a provision for an independent “conciliateur” in cases where the opinion of a third neutral party is required (Senegal).

### **5.3.1 Institutional requirements**

An adequate institutional framework is crucial for the success of PPP arrangements in any sector and more so in the water and sanitation sector, where utilities are typically overstuffed and yet, lack the necessary knowledge and skills needed to design the PPP contract, manage the tendering mechanism or monitor the implementation of the PPP contract.

Given the complexity of structuring PPP transactions and their difference from traditional procurement deals, the existence of a specialized PPP unit would prevent flaws in contract design and tendering processes.

Following contract signature, some institutional hurdles might hamper the proper implementation of PPP arrangements, among which institutional complexity: the fragmentation of responsibilities between two contracting authorities, the resistance of the water utility to surrender some of its administrative and operational responsibilities or interference by the public entity in the private operator's management of services were all reasons which contributed to tension between the parties (*Tripoli management contract*). The existence of a sound working relationship between the parties to the contract is of prime importance, and such should be perceived as true partnership. In addition, the lack of expertise at the level of the utility would prevent proper contract monitoring and can be detrimental to performance based management contracts. This issue can be addressed through setting up local supervisory commissions with necessary skills to monitor performance.

In countries which adopted affermage type of contracts (Senegal), an institutional framework based separation between asset ownership and operation has helped in managing the tradeoff between maintenance and major renewal investments and clarifying asset ownership (fixed assets are owned by the state asset holding company, while moveable assets by the operator). In addition, this segregation creates financial autonomy and accountability to the asset holding company to properly design and execute a sustainable investment program and lobby the government for adequate tariff increases, disconnecting as such private sector participation and tariff hikes.

In affermage institutional arrangements where the municipality was at the same time owner of the assets and majority shareholder in the operating company (Cartagena), the lines of accountability were blurred and as such, this complex institutional arrangement had a detrimental impact on management transparency.

#### **5.4. Feasibility for low and middle income countries**

Public perception plays a key role in the success or failure of water supply and sanitation PPPs in low and middle income countries. Raising awareness and managing public perception is the responsibility of the government and therefore, strong political will and good leadership within the government are essential enhance the feasibility of such projects.

It is essential for governments to foster a relationship between the private partner and the consumers which is built on trust and confidence. This is particularly true for poor communities, to whom special attention was paid in the sustainable development goal of universal and equitable access to safe and affordable drinking water and sanitation services. Paying special attention to these vulnerable groups brings them recognition and elicits their participation in economic activities. In fact, PPP arrangements which included innovative social initiatives targeting disadvantaged neighborhoods and informal settlements, whether based on private initiative (East Manila concession) or through collective billing systems (Cartagena) or in coordination with the government (Casablanca concession), were successful in forging a partnership between the private operator and the community groups and in creating a relationship based on confidence. This approach was also followed by concessionaires in crisis to rebuild credibility (Buenos Aires) through a participatory management model in order to expand access to poor communities living in slums.

Given the role that O&M cost recovering tariffs play in the path to achieve financial sustainability, governments should manage ongoing perceptions of "free water" and water as a human right that is to be provided without a direct cost and raise awareness about the costs of extraction, treatment, distribution and maintenance. Governments should encourage a payment culture at the level of

poor communities, especially that their work in the informal sector does not guarantee income security and as such they tend manage their expenses on a daily basis and prefer to buy their water from informal private providers even if it is effectively more costly on an aggregate basis (Cartagena).

## 5.5. Other issues - Allocation of risks

Allocation of risks should be defined in a clear, unambiguous way in the PPP contract, and should include who takes them, how they will be mitigated, and outlines the consequences of and actions to be taken when the risk event actually occurs, or the risk profile changes over time.

Sustainability of water and sanitation services should always be the first concern. Therefore, rapid early identification of any upcoming risks, events or trends and their mitigation is essential to assure the quality of service.

The PPP Project Life Cycle as described in Annex IV provides a roadmap for projects from inception to completion and closeout over a long period. There will almost inevitably be changes in the external environment, political, economic and operational requirements during the life of a PPP contract. It is therefore necessary for both parties to review the real situation on a regular basis and formalize any adjustments that these changes may require in the contract and the way it is carried out.

In order to avoid loss of sustainability or quality of service, the Public Entity should engage in periodic contract reviews in order to maintain the economic balance originally agreed in the contract and risk allocation.

Listed in Annex V - Table I, are some common risks (both public and private) that may be mitigated from an early stage of tendering preparation, namely, population and demand growth, finance, design, technology, construction, operation, maintenance and commercial risks.

Neither public nor private partner will be able to fully foresee all risks and their consequences. The partners should review the partnership regularly. If either partner falls victim to the consequences of a risk that it was meant to bear, or the consequences would be greater than could reasonably be anticipated, they should modify the contract terms. Failure to do this would otherwise create a risk of failure for the services and the final consumers.

Some exogenous, unforeseen risks need to be taken into consideration and mitigation is still possible, as described in Annex V - Table II. Such risks are: legislative, social, regulatory, environmental and sovereign or political risks.

## 6. Indicators of compliance

- Access to tap water and sewerage, in particular for the poor
- Service quality levels
- Tariffs level evolution and affordability
- Efficiency of service provision as measured by water losses, labor productivity and operating costs
- Subsidies to utilities
- The corporate culture of the utility and management styles

## 7. Credits and References

- Water and sanitation interlinkages across the 2030 agenda for sustainable development, UN-Water, 2016
- Delivering Universal and Sustainable Water Services, Partnering with the Private Sector, The World Bank, 2016
- Approaches to Private Participation in Water Services, a Tool kit, The World Bank, 2006
- Structuring Private-Sector Participation (PSP) Contracts for Small Scale Water Projects, the World Bank, 2014
- Water: fit for finance? Catalyzing national growth through investment in water security, The World Water Council – OECD, April 2015
- Private Sector Provision of Water Supply and Sanitation Services in Rural Areas and Small Towns The Role of the Public Sector, The World Bank, 2016
- Financing for Development Post- 2015, World Bank, 2013
- A Municipal Public-Private Partnership for Urban Water Supply in Cartagena, Columbia, Andrew Nickson, in Managing change in local governance Commonwealth Secretariat, 2008
- Water, Politics and Money: A Reality Check on Privatization, Manuel Schiffler, 2015
- Public Private Partnerships for Urban Water Utilities: A Review of Experiences in Developing Countries, Philippe Marin , 2009
- The Private Sector and Local Elites: The Experience of Public–Private Partnership, Christèle Allès, in the Water Sector in Tripoli, Lebanon, Mediterranean Politics, 17:3, 394-409, 2012
- Water, Electricity, and the Poor: Who Benefits from Utility Subsidies?, Kristin Komives, The World Bank, 2005
- Innovative contracts, sound relationships: urban water sector reform in Senegal. Brocklehurst, Clarissa; Janssens, Jan G., Water Supply and Sanitation Sector Board discussion paper series ; no. 1., The World Bank, 2004
- Managing Water Demand: Policies, Practices and Lessons from the Middle East and North Africa Forums, E. Baroudy, A. Lahlou, and B. Attia, 2005
- LYDEC: Providing Electricity, Water & Sanitation to Casablanca’s Shanty Towns, Tarek Hatem, UNDP, 2007
- Kingdom of Morocco, Recent Economic Developments in Infrastructure (REDI), Water Supply and Sanitation Sector, The World Bank, 2004
- Alternative Project Delivery Methods for Water and Wastewater Projects: Do They Save Time and Money? Gordon Culp, in Leadership and Management in Engineering, 11(3): 231-240, 2011
- The rise of hybrid delegated management contracts: emerging lessons from France, Jan Janssens, Didier Carron, Vivian Castro-Wooldridge, Water Utility Management International, June 2011
- Private Sector Participation in Water Infrastructure, OECD Checklist for Public Action, OECD, 2009
- The Affermage-Lease Contract in Water Supply and Sanitation, Incentive Structures and New Developments, J.G. Janssens, in PPP Insights, Vol. 1, Issue 2, July 2011
- Republic of Armenia, Water Sector Note, The World Bank, May 2011.