PPP arrangements in the Brazilian water sector:
a double-edged sword

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Abstract

Public-private partnership (PPP) arrangements have been used all over the world to develop infrastructure and provide public services. The principle of this procurement option seems sound. It consists of obtaining a (private) partner who makes the upfront initial investments, manages the infrastructure that will be paid for during its life-span and assumes all of the corresponding responsibilities. However, the empirical world has proven that frequently results are different from those expected and that the price to pay for service is greater than predicted and sometimes even greater than when traditional public works are involved. With respect to the use of PPP projects, Brazil is no exception. Currently, it is making one of the biggest PPP investments in the world. This paper discusses the use of the PPP model in the Brazilian water sector, its pros and cons and the existing dangers. It also makes some recommendations to improve these contracts. Although the balance seems positive, this research provides some evidence of room for improvement because preliminary studies and procurement documents are seldom well prepared, there is little competition, the risk matrix is unbalanced, favoring renegotiations and the private sector, and contract management is inadequate.

Keywords: Access to the market; Brazil; Contract management; PPP; Risk sharing

Introduction

In Europe, the European Commission’s Green Paper on PPP (public-private partnership) arrangements refers to such arrangements as ‘forms of cooperation between public authorities and the world of business which aim to ensure the funding, construction, renovation, management or maintenance of an infrastructure or the provision of a service’ (COM327/2004). Although this definition changes slightly according to country or organization, this procurement model underlines common principles, including the long run of the project based on its entire life cycle, the provision of a public service or the satisfaction of collective needs, the partial or total funding of the project by the private sector and an appropriate sharing of project risks (Cruz & Marques, 2013a, 2013b). Compared to traditional public procurement based on works, the PPP option might present several benefits (Fuest & Haffner, "doi: 10.2166/wp.2015.115"

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such as a lower global project cost because of innovation and efficiency or effectiveness gains imposed by the private sector, the sharing and transfer by the private sector of some of the risks associated with the project and the availability of and easier access to funding resources and therefore, a leverage of the number of the projects (Yescombe, 2007). At least theoretically, PPP schemes should provide greater value for money. In the empirical world, however, this sometimes does not happen. PPP projects require a very detailed and careful public tender preparation because long term contracts, which are incomplete by nature (Williamson, 1976; Hart, 2003), are necessary. Since there is a lack of appropriate preliminary studies and to justify the need for the projects, optimism bias is frequent. The assumptions and philosophy of a tender for a PPP project is completely different from that of traditional public works because the approach is focused on outputs instead of inputs, and the contract should be protected from the renegotiations that unavoidably will occur at some time in the future (Marques & Berg, 2010). Therefore, to award the PPP tender winner based on the initial cost or the net present value may not be the most adequate approach. Moreover, the contractual structure of a PPP contract is very complex and frequently avoids transferring risks to the private sector if the contract design is not carefully taken into account by the public party (Ng & Loosemore, 2007). In sum, although PPP projects might be preferable in most situations, the consequences of their derailing might be much more serious than those in traditional public procurement (Grimsey & Lewis, 2007).

Currently Brazil, ranked as the seventh-largest economy in the world, uses the PPP model more than most other countries. Several infrastructure projects worth billions (hereafter 10^9) of dollars in different sectors have been launched in recent years (71 megaprojects in 2014 and 55 in 2013). Notwithstanding, Brazil is a closed country with little competition, and it is almost impossible for foreign companies to participate in public tenders under conditions equal to those enjoyed by Brazilian companies (PwC, 2013). Competition is very important to eliminate excess of rents and reduce the temptation of improper or illegal behavior (e.g., collusion and cartels) and, in such a complex matter as PPP contracts, it can have serious consequences. Brazil is also one of the most bureaucratic countries, and the exogenous factor of ‘custo Brasil’ (Brazil cost) has been one of the major determinants of its lack of progress and development (WEF, 2014). Due to Brazil’s macroeconomic context (high inflation and low economic growth), its state investment banks (e.g., Caixa and BNDES) are quite important. The state investment banks are very politicized and constitute, to a certain extent, an important barrier to competition from foreign companies. During the past 2 years (2011–2013), Brazil has developed one of the biggest auction-based PPP programs in the road sector in the world (Brochado & Vassallo, 2014). However, the presence of foreign companies was irrelevant (McKinsey, 2014). In the water sector, the context is similar. Several tenders have taken place in recent years; most have a small number of competitors (one or two) and foreign companies seldom participate. The French companies, together with some Portuguese and Spanish ones, were in Brazil in the 1990s, but were forced to leave the country because of the political and economic context. Currently, only Brazilian companies operate in the water sector. This paper will examine the merits of PPP arrangements in the Brazilian water sector. By analyzing over time the participation of the private sector in the water sector and by focusing randomly on three case studies, several lessons and recommendations will be provided which can be helpful for the use of these contracts all over the world. Even if the results might not be the best ones, the need for infrastructure and improved public services make this public procurement model unavoidable in most countries, particularly in developing countries, since the alternative is not to construct them or make them available. Therefore, the contributions and innovation of this paper are diverse. First, it discusses the pros and cons of the Brazilian PPP model. Second, it reviews and systematizes all of the
private-sector participation in Brazil’s water sector, embracing both its positive and negative aspects. Finally, it provides contributions to the literature on PPPs by analyzing, through empirical case studies, issues such as the public tender procedures adopted, the risk matrix of the contracts and the manner in which these contracts are managed and regulated. Several recommendations are made to improve the PPP contracts.

The remainder of this paper is as follows. Section two introduces the primary features of PPP contracts in Brazil according to the legislation and the practices adopted in the past. Section three analyzes the background of the PPP projects in Brazil’s water sector and shows the major figures, and section four displays some examples of empirical use of PPP arrangements in this sector, discussing their most critical issues. Finally, major conclusions are drawn.

The Brazilian style of PPPs

The Brazilian legislation does not actually define the term ‘PPP’. It states only that PPP is an administrative concession contract categorized into two types: the sponsored concession and the administrative concession. The sponsored concession is a concession of public services or public works when that involves, in addition to the tariffs or taxes billed to customers or users collected by the private company, the payment of a portion of the costs by the public partner. In the case of an administrative concession, it encompasses the provision of services and/or infrastructure for direct or indirect use by the public administration which bears all of the costs. Note that Brazilian legislation does not consider a public service or public works concession (where all of the charges are paid by customers and users) to be a PPP, nor does it consider a PPP to exist when there is no investment by the private sector or when the value is lower than 20 million BRL [as of August 1, 2014, the US dollar corresponded to approximately 2.25 BRL (Brazilian real)].

It should be noted that Brazil’s legislation on PPP projects was originally federal, but states and even municipalities can define state or local rules, respectively. However, states and municipalities must comply with the federal legislation. Sometimes this does not happen, jeopardizing the continuity of the projects (which turn into cases of law). Nevertheless, this is the bureaucratic style of Brazilian public administration. Clearly, there is an excess of rules at different administration layers, and frequently the parties do not comply with them (Bersch et al., 2013).

One particular aspect of PPP projects in Brazil is the existence of the Expression of Interest procedure (also called unsolicited proposal or Procedimentos de Manifestação de Interesse in Portuguese). This procedure is very important for leveraging PPP projects because either the initiative can come from the private sector or it can be encouraged by the public sector, which can publicize notices of such projects (Neto & Batista, 2010). The potentially interested candidates will conduct the viability studies and will be paid later by the winner of the public tender in the case of project execution. The public tender rules are maintained and, at least in theory, equity is guaranteed. However, when the initiative stems from a private company, although there is a call for other interested parties, usually there is some type of barrier to competition because those other interested parties believe that the originating company’s interest in developing studies results from some privilege or advantage. With few exceptions, when this occurs, the number of bidders is just one or two.

PPP contracts in Brazil have a minimum (5 years) and maximum (35 years) duration. For certain works (e.g., dams), this period might be longer. Although the legislation specifies that the financial
sustainability and the socioeconomic advantages of the partnership should be proven, the public-sector comparator is not computed (it has never been until 2015) before the PPP project is launched. This is a major issue because in Brazil, the option taken is nearly always of a political nature and is not based on monetary value. Indeed, instead of being ideological, the reason for this situation relates to the agility and capacity to implement the project more quickly and it can lead us to think that in some cases, traditional public procurement could be a better choice.

The Brazilian PPP law also defines the rules that establish a maximum limit of PPP project-related expenses for entering into a new PPP contract. This is a sound principle but it includes only new contracts, and not renegotiations. To provide a market incentive, it would be preferable to impose a maximum cap on expenses over the life of the contract.

The Brazilian PPP federal legislation takes into account risk sharing, including unpredicted events, ‘acts of god’, changes in legislation and extra economic damage. Furthermore, it establishes sharing with the public sector and the possible benefits of interest risk, but in general, it does not specify criteria for risk assignment or for the definition of the contract risk matrix. Thus, the legislation provides for contractual freedom. This lack of constraints associated with the role of private companies in developing the initial PPP studies and bidder documents can lead to the retention of excessive risks by the public sector. The rule should be to assign risks to the party that can bear those risks with lower capital costs (Grimsey & Lewis, 2002). The direct consequence of this unbalanced allocation of risks is the successive renegotiation of contracts, which often takes place in Brazil. As some authors argue, renegotiations are a major contract failure, and bilateral negotiation with asymmetric information tends to penalize the public sector while favoring the private sector (Guasch, 2004; Marques & Berg, 2010).

Contracts also define the penalties to both parties in the event of default, the form of payment and its revision, the mechanism to update services provision, procedures in the event of lack of payment by the public sector, performance criteria for private sector assessment, securities, inspections and the timeline of payments by the public sector. In addition, the PPP law regulates and elaborates tender issues and the special-purpose vehicle (SPV). Two aspects of the tender procedure should be highlighted. The first is that in the water sector, not only technical and cost criteria, which are compensatory, but also qualification criteria, are sometimes adopted when choosing a partner. The second is that not only the Terms of Reference (ToR) and Request for Proposals (RfP) but also other tender documents are subject to public consultation (and a public hearing if the contracts involve more than 150 million BRL). This is an efficacious practice that considerably improves transparency and stakeholders’ participation, but in bureaucratic countries, it might be an additional barrier to development.

One aspect not addressed by the Brazilian legislation is PPP contract management. Very little is said about this. The only reference to contract management involves the existence of a procedure of performance assessment. The practice is to install an independent auditor or verifier (verificador independente in Portuguese) who is responsible for some of the roles of the contract manager. However, because he is autonomous from both parties, he is not a true contract manager in the sense of being partial and defending the interests of the public sector (Marques, 2014a). Note that the private sector has its own contract manager (or a project manager) who defends his interests (of the private sector) before the public sector or the independent authority, and the private sector is by nature benefited (due to its know-how, to managing the service every day, asymmetric information, …) therefore, the public sector should have someone who accompanies the contract on a daily basis to defend the interests of the public sector. Many of the issues are not exact and the contract manager can be detrimental (see, for example, the experience in the State of Victoria, Australia, in Ontario, in Canada, or in the UK). Additionally, the
terms under which regulation of these contracts occurs were not addressed. Most Brazilian water utilities, as in other sectors (e.g., transportation), are regulated by external regulatory agencies, and PPP contracts do not fall within the scope of their intervention. However, they interfere with the activity of regulators because they play a role in setting tariffs and quality-of-service targets and, therefore, problems and conflicts are anticipated. Each contract renegotiation requires a review of the tariffs, and the regulator will not easily accept ‘the sanctity of contracts’.

The use of PPP arrangements in the Brazilian water sector

The water sector in Brazil

Estimated values based on the PNAD (Pesquisa Nacional por Amostra de Domicílios or National Research of Households by Sampling) published by the IBGE (Instituto Brasileiro de Geografia e Estatística or Brazilian Institute of Geography and Statistics) noted that by the end of 2013, the coverage level of the water supply had reached approximately 85% and wastewater collection had reached approximately 60%, whereas wastewater treatment remained well below those levels. Furthermore, according to the PNAD, more than 7.8 million Brazilians (from an overall 190 million inhabitants) do not have individual toilets (bathrooms) and 6.7 million of that group do not have a shared (community) toilet. However, the situation is actually worse because these data correspond to piped networks and do not take into account households that are not connected because of economic or technical difficulties and also the informal cities (e.g., slums or, in Brazilian Portuguese, favelas). Geographically, this panorama varies a great deal because the indicators in the southern part of Brazil are much better, whereas in the northern and the northeastern regions, the reality is much worse.

The PLANSAB (Plano Nacional de Saneamento Básico or National Plan for Water, Wastewater, Drainage and Urban Waste Sectors), approved in December 2013 as a national strategic plan for the Brazilian water sector, refers to the need to invest 262 billion BRL (Brazilian real), encompassing 105 billion BRL in water supply and 157 billion BRL in wastewater collection and treatment, to achieve universal service in 2030 (98% in water supply and 88% in wastewater). It also predicts relevant investments in drainage and solid waste service. We have serious doubts about the values and deadline target presented in the PLANSAB and argue that if the current status quo remains, this target will not be achieved and the cost of universal service will be much higher (Marques, 2014b). Private-sector participation might be decisive to achieve these targets, although it is necessary to change the current pace.

The Brazilian market structure is characterized by 27 state water utilities (26 of them commercial companies), six regional companies and 1,422 local water utilities. In most of them (almost one thousand) water supply and wastewater collection and treatment are provided directly by the municipalities. These 27 state water utilities encompass 4,205 municipalities in the water sector and 1,214 in the wastewater sector. The reason for this difference is the lack of, or precarious availability of, wastewater service in many municipalities and thus there is no activity in this area by the State companies. Several PPP or partial-concession contracts are conducted by these companies (e.g., SABESP), which intend to solve particular problems such as insufficient water production or lack of wastewater in a particular municipality or region. The creation of the State companies was fostered by the Federal Government in the 1960s to try to solve the water supply problems of the country that had become critical in bigger cities with the increasing urbanization and population growth. A particular funding program
was developed for this purpose to encourage their development and creation until the 1980s when the model was put in place since the results were far from the ones desired. Simultaneously, there was a huge discussion about the ownership of the water (and wastewater) services; if municipal or State owned. Only recently (2013) was that clarified by a decision of the Supreme Court. The decision was that the ownership is with the municipalities, with the exception of the metropolitan areas where ownership can be with the State if the added value of this bigger scale is proved. Therefore, currently the State companies must sign a delegated management contract with the municipalities where they directly award the water services operation to the State companies.

**Private-sector participation**

At the end of 2013, 287 of Brazil’s 5,570 municipalities were served by private water utilities (approximately 5%), corresponding to 27 million inhabitants (approximately 14% of Brazil’s population). As mentioned above the population of Brazil is estimated at more than 190 million. Of the municipalities with private participation, 128 have full concessions (water supply and wastewater), 22 have partial concessions (only water supply or wastewater, but more frequently water supply), 66 have PPP projects (mostly wastewater) and the remaining have private-sector participation models.

The first concession took place in Birigui in 1994. From that year until 2013, 111 PPP contracts were signed, corresponding to an average of 5.5 PPP contracts per year. Figure 1 shows the number of PPPs signed per year from 1994 to 2013. There are 26 PPP players operating in the Brazilian water sector, but only four major operators (AEGEA, Águas do Brazil, CAB and Odebrecht) represent approximately 84% of the market. Odebrecht is the largest operator, serving 38% of the population (approximately 10.4 million). Figure 2 shows the importance of each player to the population served.

The private sector has made investments of 5.5 billion BRL, with another 6.5 billion predicted in the next 5 years. The private sector has committed to invest 28 billion (Abcon & Sindcon, 2014).

![Fig. 1. Number of PPPs signed in the Brazilian water sector per year.](https://iwaponline.com/wp/article-pdf/18/2/463/404449/018020463.pdf)
Choosing the private partner

In Brazil, public tenders are compulsory. There are several entities that intervene at this stage, such as the court of auditors, which is very active in Brazil. Frequently, state prosecutors also analyze both the public tender documents and the contract. As mentioned above the process starts with the Expression of Interest procedure. After the technical and economic viability studies have been developed and approved by the public sector, these documents, together with the remaining tender documents, are available for public consultation and eventually public hearing. Next, the private companies can present their bids. Several states also have specialized agencies for PPP projects that manage the entire process. These bureaucratic procedures might damage the deadlines of the public tender stage and, therefore, the date of the beginning of the project is unpredictable. In addition, the procedure significantly increases the bid cost, which, as a rule, is already high. Even without taking into account the high likelihood of the public tender process being cancelled, contract requirements are generally complex and call for an innovative offer, which always leads to an expensive proposal (Marty & Voisin, 2008). Moreover, the public works market, particularly that of concessions and PPP schemes, is not very competitive, and Brazilian companies have great respect for their colleagues’ ‘space’. This situation is exacerbated by the Expression of Interest procedure. Thus, there are few avenues for new entrants. In practical terms, most public tenders are not competitive and usually just one or two bids are submitted for each public tender. Finally, we should note that in the world of infrastructure, water-related infrastructure is one of the most risky areas because the assets are sunk and the public service provided is both more sensitive and a proxy for political influence and patronage (Berg, 2013).

Some empirical evidence

Overview

Next, three case studies will be displayed and discussed. They will be analyzed taking into account the public tender stage, including the preliminary studies performed and the level of competitiveness, the risk
matrix and the renegotiation processes associated with the contract management and some remarks about the value for money of the project. These three issues have been the major determinants of the failures of the PPP contracts (see, for example, Guasch, 2004). Note that these failures do not necessarily mean that the Governments or the population are not satisfied with the PPP projects or that this option is not preferred when compared with the traditional public works, especially since it can be the only way to provide or to make the infrastructure or the service available. They only mean that the contract failed and that there was loss of value for money. The first case study will be a full concession (Águas de Juturnaíba), the second a partial concession for a wastewater system (Rio AP5) and the third a PPP for the wastewater system (Compesa PPP). These three different contracts, which are not dissimilar from others in Brazil, give a sound snapshot of the merits, failures and lessons of the PPP contracts and the conclusions drawn can be reasonably generalized for the whole country.

Figure 3 shows their location on a map of Brazil.

Águas de Juturnaíba

Introduction. The municipalities of Araruama, Squarema and Silva Jardim are located in the Lake region of Rio de Janeiro. In 1996, after facing serious water-scarcity problems during peak consumption periods, along with an absence of wastewater service, these municipalities decided to privatize their municipal water supplies and wastewater services. The model adopted was a full concession arrangement. The municipalities encompass a resident population of nearly 200,000 inhabitants, which more than triples during the summertime. The date set to begin the contract was April 25, 1998, and the contractual deadline was fixed at 25 years with the possibility of an extension by agreement of the parties.

The investment plan was of 197 million BRL, an amount relative to the beginning of the contract. For the company of Águas de Juturnaíba, both the state and the municipalities involved were considered to have grantors’ powers; therefore, both the Governor of the State of Rio de Janeiro and the mayors signed the concession contract.

The tariff structure and the scheduling of investments were provided in the tender notice. The tariff system established in the tender notice eliminated tariffs in increasing blocks and eliminated any

Fig. 3. Location of case studies on a map of Brazil.
minimum tariff to account for peak consumption, thus penalizing the seasonal population. It should be noted that 16 years after the contact began, the key performance indicators of the water supply and wastewater services have improved substantially. However, the price trajectory is quite different from what was initially set and now is much more costly.

Access to the market. The tender was launched on December 16, 1996 and proposals were delivered by February 14, 1997. Both the notice and the draft contract were subject to public hearing. The public tender was open to foreign companies, both on an individual basis and in partnership with Brazilian companies, although the majority of the shares were to be Brazilian. A minimum amount for the share capital of 35 million BRL (1998 values) was imposed; in addition, it was required that the technical operator of the services own at least 5% of the shares.

The winning consortium that formed the concessionaire Águas de Juturnaíba included five construction companies – Cowan, Developer SA, Erco, EIT – Empresa Industrial Técnica and Queiroz Galvão – that currently comprise the Saneamento Ambiental Águas do Brasil (SAAB).

The criterion used for the proposal selection was that of the highest grant value. There were also two eligibility phases, the first legal and the second technical. In the qualification phase, which related to technical capacity, applicants had to reach 70 points to qualify. The third stage matched the price proposal relative to the higher value of the grant, given a predetermined tariff structure. The payment of grants was to be made within a very short time, through fixed installments, not by a proportion of revenue monthly sales.

The first installment was to be due immediately on the beginning of activity and the remainder would be paid in 22 successive annual installments, with the value to be proposed by the bidders.

The tender notice stipulated a minimum value for granting 5% of the net revenue planned for the concession. The revenue of granting rights for Águas de Juturnaíba is divided between the entities that comprise the grantor’s power: 50% for the State and 50% to the municipalities of the concession area in proportion to census populations.

Risk. Clause 6 of the concession agreement addresses risk assumption, and establishes in paragraph 1 that ‘the Concessionaire assumes, according to the clauses of this contract, integral responsibility for all the risks inherent to the concession, except in cases where the opposite results from what had been established in the tender notice and on its annexes’. However, clause 14 assigns almost all of the risks to the grantor, not only those that the entity commonly assumes (such as unilateral modification and political, legislative and force majeure risks) but also those relative to its operation. Although this is already stated in the tender notice, paragraph 14 of section 13, which concerns revision of the concession tariff, it reinforces that

‘there is no ‘fixed periodicity’. The revision is made whenever there are structural modifications in the relative prices of the production factors or substantial changes in the prices of inputs relating to the major components of costs considered for the determination of the Grant Value of the Concession that are not met or covered by the tariff revisions provided for in the contract.’

Thus, the grantor assumes all of the risks. As a direct consequence, the contract is always being renegotiated, with ‘normal’ damage to the public partner. Since 1998, the concession contract of Águas de Juturnaíba has been renegotiated eight times, always penalizing the grantor. The first three times, which
occurred during November 1998, April 2000 and January 2001, tariffs increased by 11, 18.7 and 6.2%. 

Those increases were authorized by the Regulatory Agency of Public Services Concessions (ASEP – Agência Reguladora dos Serviços Públicos Concedidos) of the State of Rio de Janeiro (Mello, 2005).

The situation did not deteriorate because the current regulator (Agenersa) established a 5-year period for tariff revision, at which time the concessionaire is supposed to recover the return by transferring most of the risks to the grantor (or to the customers). It should also be noted that there is a great flexibility in how to compensate the private (or the public) partner, which may be accomplished through tariff change, contract duration, direct compensation or ‘any alternative that may be agreed between the parties’.

Contract management. The concession contract stipulated a set of activities to be continuously conducted both by a supervisory entity that represented the Grantor and by two committees, one technical and one economic and financial, to settle any disputes and conflicts between the parties. In the event of impasse, arbitrage is also possible, but this solution would only be possible before the creation of the regulatory authority.

The contract also provides for a significant set of obligations and penalties and contractual fines in case of non-compliance. With respect to contract management, no performance reports are known and the information that exists is that published by the regulatory authority for tariff reviews and application of sanctions.

Discussion. The PPP model adopted, which can be extended to other contracts in Brazil, is not appealing and does not stimulate competition. Even during the private sector’s best days in the water sector worldwide (the late 1990s), only a few competitors were attracted. The complexity, length and cost of drafting a proposal and the high likelihood of not being awarded a project discourages participation in tenders. In addition, there are clear limitations on the participation of foreign companies (e.g., the Brazilian certification of technician skills). The technical qualification requires many resources in a short time (2 months) and it is only possible to meet if the existence of the tender is known in advance. In addition, bidders are requested to present high warrants for the bidding proposal, which have dubious benefits. Moreover, the extensive involvement of national banks is required with an assumption of firm commitments. In opposition to the best practices and recommendations for this type of contract, the tender is too input-based and insufficiently output-based.

After qualification, the selection criterion is based on a single quantitative criterion, the value of the grant, which a priori should be positive due to its objectivity, but did not have the expected result. On the one hand, the assumptions were not properly standardized to enable a true comparability between tender proposals and therefore, it was not assured that the best bidder would win. On the other hand, concession tenders have other, equally important criteria, such as the shareholder’s internal rate of return (IRR), the financing structure, the robustness of the business model and the transfer and assumption of risks.

Furthermore, the contract, contrary to Brazilian legislation and best practices, did not transfer enough risks to the private partner. A month after a contract has been signed, it is renegotiated for the first time. It is true 2 years have elapsed between the proposal and the signing of the contract but even so, the lack of risk transfer and the consequent number of renegotiations highlights the failure of the concession contract. All renegotiations have led to significant tariff increases and restoring the profitability of the private partner.
Contract management was also very poor, although not non-existent, which penalized the grantor, especially in renegotiations. In recent years, the Agenersa has somehow replaced the contract manager. Nonetheless, the roles of regulation and contract management are distinct (Marques, 2014a). Even so, the regulator’s presence has been important to prevent eventual abuse from the private entity.

The wastewater system in Rio de Janeiro’s AP5 area

Introduction. The AP5 area of the municipality of Rio de Janeiro (the municipality is divided into five planning areas, or APs) comprises approximately 1.5 million inhabitants and is one of the greatest contributors to pollution by Bacia of Guanabara. Rio will be the host city for the 2016 Olympic Games. The wastewater service in the AP5, which comprises about 600 km² in the western area of Rio, is very precarious. Approximately half of that area’s 440,000 households are connected to a sewer and only a very small portion of them receives appropriate treatment. The responsibility for the wastewater service has been shared between the CEDAE, the state-owned company and the municipality. The lack of integrated planning and some overlapping between them has complicated the progress and quality of service provided. Because of this status quo and for other important reasons (i.e., the Olympic Games), the state and the municipality signed an agreement to cooperate and as a major associated measure decided to privatize (in a partial-concession arrangement) their wastewater services. The contract was signed on January 24, 2012 with a duration of 30 years. The value of the contract is 2.9 billion BRL (2011 values). Investments of 1.675 billion BRL are expected. The tariff system was provided for in the tender notice and was the same applied by the CEDAE at that time. No extra augmentations were predicted beyond yearly inflation.

Access to the market. The tender was launched on August 31, 2011, and proposals were due to be delivered by October 18 of that year. The tender notice was subject to public consultation and hearing. The public tender was open to foreign companies, both individually and in joint ventures. A minimum amount for the capital share of 120 million BRL (2011 values) was imposed. There were three bidders in the public tender: Odebrecht/SAAB, Equipav and Delta. The winning bidder was the Odebrecht/SAAB consortium.

The criterion used for the proposal selection was the greatest grant value. The minimum amount to be paid at the beginning of the contract was 78 million BRL. A variable grant defined as 4% of the total (gross) revenues of the concessionaire was also paid. The winning bidder offered 84.2 million BRL. There were two phases in the public tender. The first included the price proposal and the sorting of the bidders; the second concerned the legal, financial and technical qualifications. If the winner of the first stage did not comply with the qualification criteria, they would be disqualified and the second-best commercial offer would be chosen. The business case to support each proposal had to be audited by a Brazilian bank and the experience required for the future concessionaire was verified by the official Brazilian authorities, such as the CREA (i.e., the professional engineering association).

Risk. In this contract, it is theoretically the concessionaire that bears all of the risks. Indeed, there are no contracts where all the risks are transferred to the private sector. There are always contract clauses and general laws that make the public party retain some of the risks. However, clause 15 (point 6) states that
‘the Concessionaire shall assume total responsibility for the provision of the wastewater services and for all the risks and obligations inherent to the management of the concession, including the operation, conservation and maintenance of the system, observing the conditions set in this contract’.

Actually, compared to Águas de Juturnaíba, the concessionaire assumes more risks. However, relative to the economic and financial equilibrium of the contract, clause 20 establishes a set of exceptions for which the public partner bears the risks. Most of those seem appropriate (unilateral modification/political, legislative and force majeure risks) because the risk premium that the private sector would have to pay to bear them would be enormous (Marques & Berg, 2011). However, consumption (demand) risk should be retained by the concessionaire. Point 5.4 of clause 20 states that if consumption per capita is less than 163 liters per inhabitant, per day, the concessionaire has the right to restore the economic and financial equilibrium. Although the current value is greater than this amount, it is expected to decrease. There have been no renegotiations, but the contract was signed only two and a half years ago.

**Contract management.** The concession contract is regulated by Rio Águas, a municipal regulatory agency. Note that in Rio, there is one state regulatory agency, the Agenerasa. The regulator works similarly to a contract manager, supervising and controlling the execution of the contract. The concession contract defines detailed obligations – including targets and levels of service – using performance indicators and sets the corresponding sanctions when they are not obeyed. Table 1 shows an example of the application of fines if the targets are not attained. The sanctions revert to the municipality, which is not good and can trigger conflict. The contract also includes an annex on governance that establishes rules for the different actors and commissions and how they will work. However, the Rio Águas has not yet publicly released information about concessionaire performance.

**Discussion.** Compared to the Águas de Juturnaíba contract, the Rio Águas contract represents a step further in the quality both of its content and of the letter of the contract itself, which is clearer and more focused on the most important aspects. The existence of an advisory council is also a positive point. However, some of the same problems remain, such as barriers to competition in access to the market and a risk matrix that is more balanced but that still has a good chance of resulting in renegotiation of the contract. Furthermore, subcontracting is completely deregulated and the contract management

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<td>Customer front-office suitability</td>
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<td>Commercial system suitability</td>
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Carried out until now has been focused on the stakeholders. Because the regulator is more of a contract manager than a truly (independent) regulator, the potential for conflict is also high.

**COMPESA’s wastewater PPP**

**Introduction.** COMPESA, a state-owned company responsible for water supply and wastewater services to almost the entire State of Pernambuco, decided to implement a PPP project to develop the wastewater system of the metropolitan area of Recife and the municipality of Goiania. These areas were selected by their populations and for strategic reasons and include the capital along with a very important industrial area for the State. The PPP’s primary aim is to increase the wastewater coverage level from 30 to 90%.

The model chosen was a PPP arrangement that included the construction, operation and maintenance of the wastewater system and some ancillary services. To date (August 2014), this is Brazil’s largest PPP project in progress, covering 3.3 million inhabitants and involving investments of 4.5 billion BRL, three-quarters of which are the responsibility of the private partner. The predicted IRR of the project was 8.5%.

The date set for the beginning of the contract was February 15, 2013, with a duration of 35 years. The tariff structure and target scheduling were provided for in the tender notice. The tariff system was also laid down in the tender notice and is the same as for other areas of COMPESA. The private concessionaire will be remunerated with a percentage of the wastewater revenues and ancillary services provided. Depending on the quality of the service provided (a set of performance indicators), that amount can be reduced.

**Access to the market.** The tender was launched on May 25, 2012, and the deadline for the proposals was 45 days later. Both the notice and the draft contract were subject to public hearings. The public tender contained several restrictions on foreign companies. On the one hand, foreign companies were only able to participate if they were minorities within consortia or if they were settled in the country (i.e., if they were ‘Brazilian’ companies). On the other hand, experience and staff were required to be registered in the Brazilian professional associations.

There were two bidders: the winning consortium, Consórcio Grande Recife, was composed of Foz do Brasil (Odebrecht) and Lidermac Construções; the loser was the consortium OAS/AGBAR. Figure 4 shows the Special-Purpose Vehicle and PPP relationships of the organizations.

Unlike the other two PPP empirical cases discussed, the winner was chosen taking into account the most advantageous bidder selected according to a set of criteria evaluated at two levels, technical and financial. Therefore, in addition to the qualification stage, which previously assessed the merits of the bidders, the second stage corresponded to the technical evaluation. The bidders needed to obtain 70 points (out of 100) to pass to the third and final stage, the financial evaluation. Note that the final score of the bidders consisted of the weighted score of the technical (60%) and financial (40%)
evaluations. The technical evaluation was performed using a set of criteria related to the consortium’s experience (120 points), methodology of execution (40 points), program of operation (20 points) and plan for providing the ancillary services (20 points). This evaluation is highly questionable. On the one hand, if the experience sub-criterion is objective, it should not be a sub-criterion of evaluation but instead of qualification. For example, in Europe, as established by EU legislation, it is forbidden to consider experience as an evaluation criterion because it penalizes competition and new entrants. On the other hand, the remaining sub-criteria are subjective and for that reason, it is difficult to perform an objective and consensual evaluation. Moreover, these criteria are not appropriate for PPP tenders. With respect to the financial evaluation, the criterion adopted was the minor payment of COMPESA, which corresponds to the greatest discount value on the wastewater revenues collected, also taking into account the additional revenues obtained from the ancillary activities. Note that although this criterion is objective, the comparability of the proposals might not be guaranteed because not all of the assumptions of the business case are the same. Therefore, the option can be either the most optimistic or the less robust (but not necessarily the best) option. The score of the bidders is obtained considering the best offer. This is not correct because the difference between the proposals might become neutral in terms of evaluation (very good or very bad) and thus, the technical proposal will become decisive.

The tender notice also stipulated a set of obligations that only damage competition and do not add any benefit to the tender. For example, in addition to the diverse demands and numerous documents needed for the proposal, a 31 million BRL warrant was required for the proposal to be retained.

Risk. In opposition to the previous case studies, clause 5 (point 4) of the COMPESA PPP contract says that ‘the concessionaire and the granting authority will assume the risks related to the administrative concession according to the contract’. The risks are mostly assigned in clause 26. Some of the risks that a priori should be retained by the private sector are transferred, totally or partially, to the public sector and eventually to the customers. For example, the consumption risk is shared to a small degree but will be retained by the state if it exceeds 80% of the value predicted. In addition, the collection risk, the technological risk (e.g., the risk associated with the wastewater treatment plants), the operation risk (associated with changes in the values of performance indicators), the regulatory risk, the archaeological risk (50%) and even the design and the construction risks are mostly transferred to the public sector. Additionally, the international experience proves that shared investment plans normally do not produce good results because the public sector is unlikely to meet the terms. Here, approximately one quarter of the investments are made by COMPESA. Finally, it should be highlighted that the contract also predicts earnings sharing, for example, if interest rates fall before the debt matures.

If one risk event takes place, the economic and financial equilibrium will be restored, taking into account the IRR of the project defined in the economic proposal.

Contract management. The PPP contract establishes a set of activities related to contract management to be performed continuously both by the supervisory entity that represents the grantor and by the independent auditor. There is also a regulatory agency (Agência Reguladora de Pernambuco – ARPE) that is responsible for tariff setting and for quality-of-service supervision. Furthermore, there is a conflict-resolution committee and the hypothesis of arbitrage is also possible as the final resource. The contract stipulates a set of performance indicators (under four approaches: operational responsibility, environment responsibility, social responsibility and financial responsibility) to control and supervise the quality of service provided, with awards and sanctions that are very positive. The formula for remunerating the
concessionaire takes into account the results of the performance indicators. Moreover, the contract provides for a significant set of obligations and penalties and contractual fines in the event of non-compliance.

Discussion. As shown above, this contract provided evidence of several flaws and there was a great potential not only for conflict but also for failing to achieve, as initially predicted, the goals of the contract. Competition in market access did not really exist and the tender evaluation process did not guarantee that the winning bidder was the best one for the public. Thus, one of the major benefits of PPP contracts was lost. Furthermore, the contract has several gray areas and because the risk matrix is unbalanced for the public sector, the potential of renegotiations is high, with all of the consequences associated with such an event. Although the contract seems to have gone well during its first 18 months, that is only a honeymoon period for a contract of 35 years.

Concluding remarks

This paper presented the status quo of the development of PPP arrangements in Brazil. Private sector participation in Brazil has increased over time and in the future, this trend is expected to continue or even grow. It has been important to leverage investments and to improve service coverage. As Brazil has a great gap and deficit in infrastructure and because of its bureaucratic and chaotic public administration system, which makes conventional public works unviable, the only way to minimize this gap has been through PPP arrangements. There has not been a better alternative to this procurement model, even taking into account the problems identified throughout this paper. Contrary to what occurs in other countries, where private capital is the most relevant motivation, in Brazil the major benefit of private-sector participation is to speed up and overcome bureaucratic barriers and public organizations’ lack of capacity, which restrains the development of the sector. The alternative to not developing PPP projects is not choosing not to carry out the projects since the conventional works have not been an effective alternative able to respond to the needs of the politicians and the population. Although in broader terms these arrangements’ performance is positive, primarily because of their effectiveness, it could be better. In this article, some of the major issues that influence the performance of PPP projects were investigated using three random case studies. In addition to the frequent absence of enough preliminary studies (e.g., public-sector comparators), we found that the rules and practices for market access are not the best ones and it is not guaranteed that the best player will be chosen. This situation can jeopardize one of the major advantages of private-sector participation, which is the elimination of excess profits in market competition. Thus, the following guidelines are recommended to improve performance:

- Foster competition, eliminating the barriers to foreign companies’ participation that prevent them from participating or dominating the consortium and placing constraints on their staff (e.g., asking for their registration in Brazilian professional associations).
- Eliminate documentation and requirements that are not relevant, which only increase bid costs (paid by all Brazilians) and discourage participation in the tender.
- Technical issues should be defined and not an object of evaluation. Eventually, they can be the objects of qualification, such as experience, but should not be used to choose the winner.
- Even in the event of only one criterion, the determination of the financial offer should be standardized to allow comparison of the bids.
• In PPP arrangements, unlike conventional public procurement, there are other criteria that might be very relevant, such as the IRR (shareholder or the project), the robustness of the business case, the structure of financing and the risk assumed.

Risk transfer is one of the primary benefits of PPP arrangements. We found that the risk matrix is unbalanced so that most of the risks will be retained in the public sector. Therefore, it is recommended that:

• the risk matrix should be clearly defined at the tender stage, corresponding to the clauses of the contract;
• risks related to demand, construction, operation and maintenance, collection and technology \( a \text{ priori} \) should be transferred to the private sector;
• the risks associated with political scope (unilateral modification) should be born directly by the granter to avoid changing the business case and to transfer them to the customers (by increasing tariffs or the deadline of the project);
• public tender procedures must be imposed on the new works that might result from the renegotiation of the contract.

Finally, contract management was also investigated and some confusion and overlapping roles were found. Contract governance is a problem in the Brazilian setting. For example, the role of regulator is neither clear nor is it predicted in the law and even in the contract it is poorly considered. Note also that the regulator’s lack of political independence might pose an additional risk for the contract and might increase the risk premium. The independent auditor might have a sound role but as its name shows, it must be independent from the partners and not engage in managing the contract. There are no accountability rules from the parts or transparency and the participation that usually exists is inadequate. Thus, it is suggested that:

(a) if their political independency is guaranteed, regulators should be heard at the important stage of the process, such as access to the market (they should issue opinion about the tender documents) and renegotiations;
(b) the regulators should conduct benchmarking exercises and disclose and publish the information collected;
(c) regulators should control and supervise the subcontracting, particularly when done with the parent companies of the concessionaire;
(d) contract governance must be improved, and contract procedures related to accountability, clearness, transparency and participation practices must be established;
(e) a contract management manual must be developed in which the obligations of both partners are defined, including the definition of a grant team responsible for those tasks.

References


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