

(de)Constructing the conditions for private sector involvement in small towns' water supply systems in Mozambique: policy implications

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Abstract

Contracts have been developed to govern the relationship between principal and agent. These contracts are necessary for the principal to exert control over the agent assuming that the interest of both parties are at odds and information asymmetries exist. In the cases of private sector involvement in the expansion of water services in small towns in Mozambique we review in this paper we propose a revised approach to these assumptions. We argue that given the conditions present in small towns a different relationship is developed between private operators and asset holder than it would be the case in bigger, longer contracts for bigger urban centers. In this relationship much more information is exchanged and the objectives are shared, often making the conditions of the contract irrelevant for understanding how services have and will develop, giving more space to relational contracts and other informal arrangements.

Keywords: Contract; Small towns; Private sector involvement; Water services

1. Introduction

In small urban centers the existing coverage of basic public services is 'neither adequate nor far-reaching' (Brockhoff and Brennan, 1998 in Cohen, 2006). The incidence of disparity in access to public services is further accentuated in Sub-Saharan Africa, where almost 50% of households in urban areas under 100,000 inhabitants lack access to piped water, waste disposal, electricity and schools (Cohen, 2006). These small urban centers in rural regions lack the infrastructural facilities or communication linkages, which prevent them from benefiting from regional growth (Randinelli, 1983). Access to

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water, albeit only including services by formal providers, is lowest in those settlements with the lowest population (Ferre *et al.*, 2012).

In order to address these situations, the water community has brought forward different technological and, mostly, managerial solutions thought most suitable for rural realities. In the last two decades, community based management, through Community Based Organizations (CBOs), became widespread and the most common model for management of rural and village water supplies across sub-Saharan Africa (Moriarty *et al.*, 2002; Harvey & Reed, 2007; Lockwood & LeGouais, 2011). CBOs for water services have been promoted in many countries as they are argued to provide a structure that enhances ownership and empowers the recipient community. However, the successful implementation of these models also proved challenging and when successful only due to context-specific situations that hardly related to model but rather to local circumstances (Moriarty *et al.*, 2002; Harvey & Reed, 2007; Lockwood & Le Gouais, 2011). As an alternative to community-based management, forms of delegated management to (local) private operators through different Public-Private Partnerships (PPPs) arrangements have increasingly come into vogue (WSP, 2010).

1.1. The onset of small-scale private operators

Engagement of private sector such as the involvement of private operations in daily system management and operations, dates as back to the 1990s. In an attempt to restrict public borrowing and expenditure, donors and development banks promoted the private operators as a solution to replace the predominance of public organizations in the sector. In this period influential donors, such as the World Bank, highlighted the rampant ‘pitiabile’ performance of the public sector and strongly advocated for the involvement of the private sector rather than concentrating efforts on other types of reforms aimed at strengthening the role of the public sector in the provision of services (World Bank, 1994). As part of this advocacy, private sector actors were praised for their capacity to act as new sources of non-public investments and their ability to improve access and quality of water supply (Prasad, 2006).

The combination of disappointing experiences of CBOs in sustaining services in rural and small village water supply systems and the advocacy for private sector involvement gave rise to the promotion of small private operators for the expansion of services in small towns. The (local) private sector quickly became a preferred alternative to community-based management. The local private sector was assumed to have the capacity to operate professionally and have the right incentives to ensure the desired level of services. This would, consequently, lead to efficiency improvements in the system, increasing coverage and ultimately enhancing service provision altogether (Harvey & Reed, 2006; Harvey & Reed, 2007; Adinyira *et al.*, 2010; Lockwood & Le Gouais, 2011; Ameayw Effah *et al.*, 2015). The promotion of small private operators as water operators in small towns mirrors the trend in urban settings, where the local private sector is presented as a viable alternative to increase access to those communities that bigger (public and private) operators have not been able to reach. These operators of small-scale systems are viewed as performing a bridging function to the communities which government has failed to reach through centralized water supply systems (Mehta *et al.*, 2007). As a result, these operators, once termed ‘informal providers’, are no longer seen as a nuisance, but rather as a long term partner with which to extend and improve water supply (Schaub-Jones, 2008). As part of this increasing recognition, these small private providers are seen as ‘gap filers’ and ‘pioneers’, providing services in those places where other (public) alternatives were not reachable. In some cases these providers have subsequently become sub-concessionaires of the formal utility (Kariuki *et al.*, 2006).

The promotion of small-scale private operators has increased in recent years due to disappointing progress made in rural water access. In many countries progress in rural water supply significantly lagged behind urban water coverage as eight of ten persons without adequate access to drinking water live in rural areas (WHO, 2015). Furthermore, service provision in small towns has moved beyond become more complex in recent years. Providing services through boreholes and hand pumps is not enough. Small towns require small water supply systems with on-premise access. These increased complexities of small town water provision make private operators more suitable than the ‘traditional’ community-led management practices to provide services (Larbi, 2005; Lockwood & Le Gouais, 2011). These complexities are associated with the sophistication of systems, that private operators are assumed to be better equipped to deal with, or the implementation of ‘professional’ billing collection systems and reporting. As a result ‘the domestic private sector has emerged in many developing countries as a promising partner for addressing the challenges of water and sanitation provision in rural and small towns’ (Ndaw, 2016: 5). National policies increasingly employ language that fosters the participation of private operators, rather than municipal services or CBOs. The option to partner with private operators is explicitly promoted in national strategies in Benin, Burkina Faso, Mali, Mauritania, Mozambique, Niger, Uganda and Rwanda (WSP, 2010). Official PPP statistics, however, fail to capture the involvement of the private sector in managing small piped water systems in Africa. Nevertheless, it is estimated that approximately one-third of small piped water systems in the countries mentioned above are under the management of private operators (World Bank, 2014: 7).

Despite the interest from donors and governments, documentation on the involvement of these operators is limited (Kleemeier, 2010; WSP, 2010; Ndaw, 2016). What is written so far about private sector involvement highlights potential challenges small towns pose to the viable introduction of private operators in these settlements (Hirn, 2013). A few broad assertions have been made, however. The first is that, in comparison with large cities, the customer base in these towns is believed to be insufficient to achieve economies of scale. Moreover, this is compounded by the distribution of the population within the town, which makes achieving economies of scale even more difficult (Annez, 2006; Pilgrim *et al.*, 2007). Furthermore, the economic development of these urban settlements, the welfare system, and the economic possibilities of the user itself severely limit the possibilities of a private operator to generate sufficient revenue (Hopkins, 2003; Moriarty *et al.*, 2002). As a result, challenges in small towns are normally summarized in three factors (Mara & Alabaster, 2008; Mugabi & Njiru, 2006; WSP, 2010; Moriarty *et al.*, 2013; Adank, 2013; Ndaw, 2016): (a) high cost of developing infrastructure and operating services to provide the dispersed population of small towns (lack of economies of density) in combination with a potential low revenue base; (b) limited technical capacity that is locally available within the town; and (c) the dynamic and diversity of customer segments due to the rapid population growth and other demographic changes. Given these factors, favorable conditions for private operators to establish themselves and operate fully functional installations require guarantees that these providers generate sufficient revenue. Tendering of partially functional or abandoned water systems will result in stranded tenders. Second, due to the demographic fluctuations in these towns, the operators in charge should demonstrate their capacity to address increasing technical complexities of the water system. Lastly, private operators should be allowed flexibility to bring in their own funds to expand the water supply system (and their customer base) as it is only through service expansion that their business can truly develop (Kleemeier & Lockwood, 2012).

1.2. *Incomplete contracts and agent relationships*

Underlying PPPs is a formal contract, which is signed in order to manage and govern the relationship between the buyer and seller of services. By stipulating promises or obligations to perform particular actions in the future (Poppo & Zenger, 2002), formal contracts essentially represent ‘organizing mechanisms’ (Vincent-Jones, 2000). With the involvement of the private sector and associated commercialization and professionalization of water services, formal contracts in the water services sector have become more prevalent. As such, formal contracts are becoming increasingly prominent as the organizing mechanism for the delivery of water services in small towns and formalizing the relationship between local private sector and government agencies.

Contracts that organize the provision of water come in a large variety of shapes and forms. The greater the complexity of an activity subject to be organized through a contract, the more detailed the contract necessarily becomes. Complex contracts ‘may detail roles and responsibilities to be performed, specify procedures for monitoring and penalties for noncompliance, and, most importantly, determine outcomes or outputs to be delivered’ (Poppo & Zenger, 2002: 708; see also Cooper, 2003). Water services in small towns are increasingly becoming more complex. These complexities are derived from the increasingly elaborate technical requirements of the systems, the requirements imposed on operators to formally report on performance, and the control exerted over these systems as regulators ensure more and more people have access to water. As a result the contracts organizing the provision of water services are also relatively complex contracts.

It is however impossible to develop contracts that will cover and foresee all contingencies that could possibly materialize. When contracts are unable to cover all the contingencies that may occur these contracts could be considered as ‘incomplete’ (Lane, 2000). Small towns include a diversity of demographic, socio-economic and bio-physical conditions. Developing contracts which covers such an array of conditions is virtually impossible. Given the complexity of water provisioning and the wide array of conditions to which the complex contract is applied, a blanket application of a model contract for water delivery in small towns is most likely going to be incomplete.

Complex contracts are subject to agency relationships. The principal-agent model is ‘in essence a theory about contractual relationships between buyers and sellers’. In such a contract both parties clearly specify what the seller of the good/service (the agent) should do and what the buyer of the good/service (the principal) must do in return (Waterman & Meier, 1998: 174). The key problem in the agency relationships is to devise a contract that motivates the agent to work for the principal at the same time that the principal is prepared to pay a (fair) compensation corresponding to the efforts of the agent (Lane 2001: 31). The contract is required in this relationship as the two are assumed to have diverging interests and as ‘rational utility maximizers’ each and every one of them may engage in actions that may be pernicious to the other. This problem is exacerbated by the assumption that in such an exchange the agent, in our case the provider of services or water operator, enjoys a comparative advantage to the principal, the government. This advantage is derived from the access to information from the operations of the system that is not available to the principal. What results is an ‘information asymmetry’ in favor of the agent. Contracts are to address this problem as they allow the principal to ‘manipulate and mold the behavior of agents so that they will act in a manner consistent with the principal’s preferences’ (Waterman & Meier, 1998: 174).

The contracts implemented between asset holder and operators in Mozambique, which we are analyzing in this paper, have raised certain issues derived from the complexities highlighted and leads to the

question of which and how suitable contracts are at organizing mechanisms for the relationship. In this article we aim to address this question by studying the development of small-scale private operators in Mozambique. The main argument of this article is that contracts, under well understood conditions, can and should be a suitable way of organizing water services in small towns. An important reason for this is that the cases from Mozambique suggest it is possible to align the interests of the principal and the agent, effectively mitigating the principal-agent dilemma. At the same time, the contracts applied in Mozambique also suggest that these contracts require a degree of flexibility they currently do not have. Moreover, the contracts are incomplete and thus need to be complemented by more relationships of trust between the operators and the government.

2. Methodology

In analyzing this case we employ an analytical framework developed for the evaluation of concessions for the expansion of services to unserved areas in large urban settlements. We realize that small and large urban settlements could behave differently. Having said that, we believe that the analytical framework we employ would apply to contracts of all types and application. The elements of analysis are conceptualized in the performance requirements of the agent, as it is the performance requirements in a contractual arrangement that define what an agent may and must do (or not do) (Komives, 2001: 64; Delmon, 2012). We argue that the use of this framework allows for a better understanding and appreciation of the business strategy for the small-scale private operator. It is also through the application of this framework that we understand what the objectives the implementing agency are as they are the ones defining the requirements around which the framework revolves. In this framework we identify four key elements:

1. Type of and quality of service the agent may and must provide;
2. Number of connections the agent must make;
3. Timing of connections to be installed; and
4. Location and clients the agents may and must service.

These elements determine the cost structure of the water system as it follows from the required level of service level, including quantity, quality and continuity of service. Also it stipulates the potential market to cover which in its turn indicates the potential generation of revenue, taking into consideration the operator's possibilities of choosing to whom and where to expand. This is likely influenced by the affordability and willingness to pay for services of potential customers, as well as the reach of existing service delivery infrastructure. Similarly, when and how the connections need to be developed indicates the pace of service coverage extension. This also translates into costs that the operator would have to recover if they were obliged to expand infrastructure or capacity.

The data used in this paper were collected during fieldwork activities from June 2015 to February 2016. The data have been collected through 29 semi-structured interviews with relevant stakeholders. Interviewed respondents included representatives of the implementing agency (AIAS) in the sector (23), representatives of Directorate of Water (DNA) (3), the regulator CRA (4), technical advisors (5) and small-scale private operators (5). The data analyzed are derived from nine different systems. For three of them (Moamba, Caia and Manjacaze), local authorities such as the Town Council or the

regional representation of the Ministry of Public Works and Water Resources were also interviewed to understand their position concerning the involvement of the private sector in the provision of services. The operator in Moamba is currently operating in six other towns. Moamba was the first system to be tendered in 2013, it has 5,000¹ inhabitants and in 2013 approximately 50% of the population was connected to the system through household connections or in-yard connections. The other systems managed by the same operator vary in size between 8,000 (Homoine) to 43,000 (Mopeia). The operator in Caia is only operating one system under AIAS. The contract for Caia was tendered and at the moment of signature the population was estimated to be about 25,000 inhabitants and 15% had access to water. Manjacaze was only signed in 2016. At that time, this town had about 10,000 inhabitants and only 8% of the population had access to water. This last operator manages two more systems: one in Nametil (65,000 inhabitants and 11% coverage), and one in Espungabera (6,000 inhabitants and 79% coverage).

Official documents such as contracts and regulations, and consultancy reports have been used to complement the data collection process. Additionally, data such as performance in relation to contractual KPIs have been accessed through the involvement of two of the authors in the actual implementation of contracts with private operators in small towns in Mozambique.

3. Water services in small towns in Mozambique

In Mozambique, the Ministry of Public Works, Housing and Water Resources (MPOHRH) through the National Water and Sanitation Directorate (DNAAS) is responsible for strategic planning and management of the sector (Figure 1). In case a municipal council exists, it is this body that remains responsible for guaranteeing water services. The municipality may decide to delegate these services to a third party or deliver those using municipal staff or creating a separate municipal company. In the absence of competent municipal services, the government is represented in the provinces by the Provincial Offices of the Ministry (DPOHRH) and at district level by the offices of Infrastructural

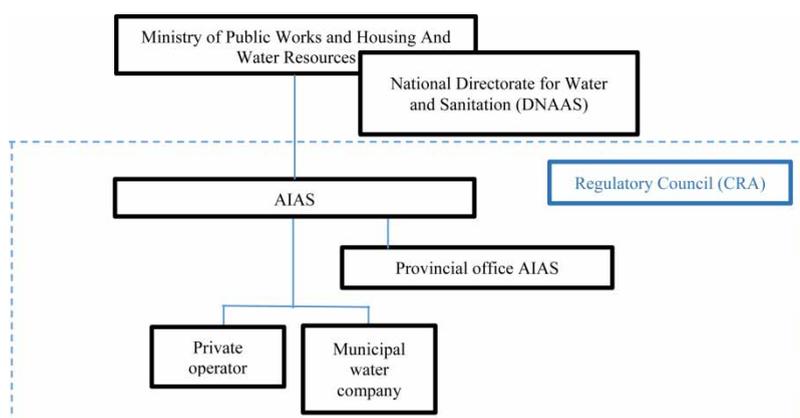


Fig 1. Source: Adjusted from WSP-AIAS (2015).

¹ All population figures are projected from the last census carried out in 2007.

Development (SDPI). These last offices support the development of water services in remote areas of the country.

In 1998, the government created the Delegated Management Framework (Decree 72/98). The DMF was to give an impulse to decentralization efforts in the water sector by allowing the possibility to grant management, lease or concession contracts to private companies, as a temporary measure to retrieve services from the public domain. Under this reform a new organization (FIPAG) was founded to act as asset holder and fund management for the development of water infrastructure. FIPAG was to enter in contracts with private operators for the development of water services in the larger urban areas of the country such as Maputo, Beira, Pemba or Nampula. During this same reform, an independent regulator CRA (Conselho de Regulação de Água) was set up to supervise the performance of those private operators engaged in contracts with FIPAG. After the delegation of services in large cities was consolidated, the Government of Mozambique extended the DMF to small towns creating the Administration for Water Supply and Sanitation Infrastructure (AIAS). Up until that moment, small towns that had not fallen under the mandate of FIPAG, but received the assistance of the National Directorate of Water (DNA) for the development of water works and other technical support through the provincial offices of the Ministry of Public Works. Systems remained solely managed by municipalities as stipulated by the National Water Law. The mandate of AIAS was designed to promote autonomous, efficient and financially viable management of water systems through the delegation of operations to the private sector, or other entities, to initially around 130 small towns² (Decree n. 19/2009 13 May 2009). The selection of small towns was rather ambiguous as no clear criteria were used for differentiating AIAS towns from other towns. As a result, the resulting list of AIAS towns is somewhat heterogeneous in nature (see [Schwartz et al., 2017](#)). The towns assigned to AIAS range in population size from 2,430 (Nova Mambone–Inhambane) to 207,543 (Mocuba–Zambezia) inhabitants. The average population of AIAS towns is 25,000 inhabitants. AIAS manages the investment plans for the rehabilitation and construction of existing and new water systems, launches public tenders to encourage the private sector to participate in the operations of these systems and supervises the implementation of the contract. The selection of towns assigned to AIAS is not only diverse in size, but there is also a great divergence in both the state of the infrastructure as well as the extent to which water is already provided in these towns. In 2013, the average coverage in the towns assigned could vary from 6.1% in the province of Niassa or Sofala, to 38.1% in the province of Gaza. However, these divergences are also registered within the same province. For example, Gaza towns, such as Massingir or Eduardo Mondlane, reported access rates of 67.9% and 83.5% respectively, whilst the town of Manjacaze reported an access rate of 8.4%. Having said that, the general state of access to water in the selected towns for AIAS can be considered poor and only in very few exceptions (13 out of 130) exceeds 50%. The regulator CRA supervises and approves the implementation of water tariffs as well as the performance of operators. In the case of small towns, the monitoring responsibilities is delegated and is effectively carried out by local committees formed by local representation of users and local authorities. However, such committees had only been formed in a handful of towns by early 2016.

AIAS is currently engaged in 24 contracts with private operators. Each contract is linked to one single system. However, some operators have accumulated the management of more than one system. AIAS works in partnership with 14 different operators. One operator currently manages eight systems, and two

² Authors' translation.

other operators manage two or three systems. The other 11 are operators of one single system. On paper, all contracts are designed the same with the same requirements and conditions. In practice, some contracts are more specific than others, stipulating to a greater extent the expected coverage expansion and other KPIs such as service hours or billing and collection. The contracts are signed between the operator and the Directorate of AIAS. The subsequent monitoring is done via AIAS with local accountability committees formed by CRA at the local level, and the general oversight CRA exerts over the exercise of AIAS.

4. AIAS and the local private sector in partnership

Since its inception, AIAS has envisioned the expansion of services in small towns through the rapid engagement of private operators. Their standard procedure before an operator actually starts managing and operating a system begins with the rehabilitation or construction of the water system in the selected town. AIAS allocates a budget for these developments from its own funds channeled from the MPOHRH and through funds received from donors. Once the construction and rehabilitation work is set in motion, AIAS issues a tender call for private operators to bid on specific systems. For each tender a contract is granted to a private operator for an initial period of five years with an option of renewal for another two. The total maximum length of a contract is thus seven years. Once the contract is granted the operator is involved in the final stages of construction and/or rehabilitation works. This allows the operator to gain insights into the system that will become useful in the operation of the system. This was initially not the case but AIAS modified this part of the process due to a series of problems encountered with the initial system startups. Even though technical and operational characteristics are almost always clearly specified, operational realities have been known to deviate leading performance levels to differ from initial expectations. As a result, some private operators had to rapidly adjust their business plan to the new realities. The conditions stipulated in the contract, however, remain unchanged.

At the start the private operator receives a new or rehabilitated system with an initial set of connections, from 200 to 1,500 initially depending on funds available during rehabilitation. The number of connections is meant to ensure that the private operator has sufficient customer base to start financially viable operations. This allows the operators to collect revenues from the very beginning. After this initial start, it is up to the operator to define their expansion strategy to make it a profitable business. Expanding services means a larger customer base and greater possibilities for generating revenue and profits. The contractual arrangement stipulates the payment of a fee to AIAS and to CRA to support their services. The private operator is supposed to pay a fee from the revenue they generate from selling water. These fees are currently not transferred to AIAS. This is because AIAS' current organizational status does not allow the organization to collect payments. In the short term, new regulations concerning AIAS will allow the organizations to issue invoices and manage their finances more independently. The first contracts were all granted with the single water tariff³ applicable to all systems. The reason to implement a singular tariff was that there was insufficient historical data to be able to generate a more accurate tariff that would reflect the actual cost structure of each individual system. The operators to which the contracts

³ 18 MZN/m³, volumetric consumption cost or an average 23 MZN/m³, for 10 m³, consumption (domestic use) – including a MZN 50 fixed charge per month.

were granted initially had some experience in the water sector but none of them had hitherto operated a water system and lacked knowledge or reference to be able to calculate such a tariff. In early 2015, a first evaluation of prices performed by AIAS with information on operational costs provided by operators revealed that tariffs would have to go up to tariffs 30–32 MZN/m³, in order to allow operators to recover operational costs⁴, fee payment and generate profit. The new tariff required has been negotiated and approved by CRA in 2015. However, until today these revised tariffs have not been implemented. CRA had initially indicated that the tariffs will have to be set according to affordability studies and the purchasing power of the users in these locations. Raising the tariffs remains one of the focus strategies of AIAS as it would allow them to co-fund their operations from the receipt of fees.

AIAS came to realize that in order for their ideal model to work they had to invest in the development of a strong local private sector dedicated to water services. This private sector previously did not exist in Mozambique. Therefore, an important part of the approach of AIAS, which is not formally documented in the contract, concerns capacity development activities and the strengthening of private operators and their staff. Several external organizations implement on-the-job training for operations and support the efforts of reporting on operations. As part of this approach the systems are regularly visited by AIAS staff, or donor staff reporting to AIAS. Each town is recipient of a capacity building activity (i.e. maintenance training, installation of meters, network design) on location. Apart from that, all system operators participate in financial seminars in which information is shared. Other meetings between AIAS and the operator occur whenever there is a need. This approach has grown to include the procurement of materials such as pipes or water meters on behalf of private operators in order to facilitate the expansion of services and increase coverage in small towns.

5. The PPP contract

5.1. What (standards) and where (beneficiaries)

Although there is some variation⁵, each contract specifies a standard degree of operational performance in the form of commercial and physical leakages that the operator should achieve, as well as service continuity, which is specified in days of service and hours of service per day. As a general rule the operator should be able to offer service seven days a week for at least 14 hours per day. This, as mentioned, varies per contract and system. The contract does not specify equipment or material standards that are to be used in achieving these service outcomes. The only specifications that exist in the contract make reference to the limits of infrastructure development. As the private operator has an incentive to expand the customer base, the private operator tends to be focused on expanding the network to add new connections. Expansion of services to additional customers, however, may go at the cost of the level of service delivered to existing customers. The expansion of the network may be beyond the

⁴ AIAS trusts the information generated by the operators, but has not been able to verify whether the reported operational costs are solely operational or if they include as well capital expenditures operators have incurred in order to expand network or other major repairs they have funded themselves.

⁵ All contracts have the same structure and sections. However, some contracts are more specific than others in determining which service levels are to be reached. Operators that have been engaged longer with AIAS have more detailed contracts than others.

actual design capacity of the system. Even though this means that active connections would receive less water, having more connections is attractive for the private operator. Operators thus tend to prioritise coverage rates over service levels as more connections potentially enhances revenue generation.

Operators receive a fully rehabilitated system. Any major modification to the system is, similar to other PPP contracts of the same type, the responsibility of the asset holder (AIAS). In our case study towns, no modifications were made to the production systems. However, in expanding the distribution networks instances have been reported⁶ in which the operators compromise on the quality of material used for secondary or tertiary network expansion if they see that the costs of extending services cannot be fully covered by the new connections. The contract does not contain specific definitions of customer segments or areas that the operator is to cover. As a result, the operators have reported to selectively expand to those neighborhoods where densities are higher allowing for them to generate additional revenues for relatively little investment as less infrastructure is required to extend services in these more densely populated areas. This is understandable given the contract conditions and incentive structure of the private operator. There are also instances in which the operators have extended services to less attractive areas at the request of the local authorities. This is, however, not the preference of the operator and is directly linked to the intervention of local authorities. Furthermore, there is no clear definition of the service areas that the operators in an ‘AIAS town’ is to cover. This means it is not entirely clear what areas the operator would need to expand to and which areas remain under the auspices of local authorities or the existing offices for infrastructure planning of the MPOHRH.

Small towns in Mozambique have a very specific population distribution. In these towns it is easy to identify a small ‘cement’ (planned or urbanized) city center that is surrounded at the fringes by rural and more dispersed development (Raimundo, 2015). The local authorities do not always have the capacity to define or to execute long-term urban plans. This means that development of these towns is largely unplanned. As a result, operators often lack information as to what would be the most reasonable expansion work to provide water, particularly in the context of future development of the small town. As a result, expansions are done as a response to users’ demands and on an ad hoc basis rather than in anticipation of such demand. Moreover, the ability to meet user demands is largely dependent on the capacity and ability of the operator to provide for service extensions at the time of the request.

5.2. *How many (connections) and when (contract timeframe)*

The contract does stipulate a gradual growth in coverage. Since additional revenues are generated mainly through service expansion, this stipulation is not seen as a limitation to the operator. Operators report different break even points for each system. This will depend on the type of treatment system and water source exploited (surface water and contaminated groundwater will generally become more expensive to source because of treatment costs). Initial estimates put the breakeven point at 1,000 connections, which resembles the number of initial active connections AIAS tries to facilitate for the operators⁷. However, due to the 2015 economic crisis in Mozambique and the subsequent inflation

⁶ In Caia and Bilene, this was reported to be the case.

⁷ There are no studies available that have been able to define a universal break-even point for these systems in this context (Kingdom, 2005).

rates above 25%, the accuracy of this estimate is increasingly questioned. In 2017 one of the operators with AIAS that is currently managing seven systems reported a breakeven point at 2000 connections.

Given that the operator is motivated to expand services to increase revenues and the limited length of the PPP contract of seven years, operators try to accelerate whenever possible by frontloading the expansion of the network with household connections in the first years. In Bilene, coverage has increased by 63% in two years since the contract was signed. This has also happened in Caia (47% total increase), in Moamba (24%) and in Mopeia (33%) This is favorable for the operators because they can increase revenues.

As asset holder, AIAS is responsible, and supports, the rehabilitation and expansion of intake infrastructure, rehabilitation of energy sources and those system expansions falling outside of the right and responsibility of the operator. Operators are responsible for service expansion, which is essential for them to reach breakeven and start generating a profit. By contract, operators are allowed to develop the primary network up to 500 meters, the secondary network up to 1,000 meters and no limits exist for the development of the tertiary network for the expansion of the system. In order to reach areas that are most attractive, however, operators are developing main network infrastructure that surpasses the limit of 500 meters.

6. Adjusting processes based on written contracts

The cases of small town water systems delegated to the private sector in Mozambique suggest that overall PPP contracts can act as a suitable organizing mechanism for small towns, as they have mainly achieved significant progress in extending coverage. In examining the contracts implemented through AIAS, a few important features stand out. The first relates to the proposition of principal-agent theory that posits that information asymmetry and conflicts are intrinsic elements of a principal-agent relationship. In our cases, however, no such conflict was observed. Important in this respect is that instead of having an agent with very different interests as the principal, the cases suggest that the two parties shared a common goal. The private operator sought to expand services as this would allow the operator to expand their customer base, increase revenue and move closer to breaking even and generating a profit. This is perhaps most aptly illustrated by the frontloading of expansion investments in the towns. AIAS shares with the operators the goal of service expansion. Although AIAS's reason for pursuing service expansion is related to improving water access, rather than profit seeking, the motivations of both parties converge in the same outcome. In such a situation contracts can be seen as an organizing mechanism rather than a tool for conflict resolution where goals are shared and the cooperation will remain' as long as all members of the subsystem can be kept reasonably happy' (Waterman & Meier, 1998: 192).

In addition to the shared goals of the operators and AIAS, what also proved important is the frequent consultation between these operators and AIAS to address contingencies that the contract inadequately covered. Illustrative are the investment made by the operator, which should have been made by the asset holder, and the expansion of the distribution network beyond the officially stated limit of 500 meters. Although the contract foresaw that these activities would be carried out by AIAS, in practice in some cases the operator implemented such expansion activities as they were deemed necessary to allow the operator to operate in a sustainable manner. This highlights that formal contracts are, by themselves, not enough as an organizing mechanism for water service delivery. Rather, relational governance appears to complement formal contracts as an organizing mechanism. In relational-governance 'the

enforcement of obligations, promises, and expectations occurs through social processes that promote norms of flexibility, solidarity, and information exchange. Flexibility facilitates adaptation to unforeseeable events. Solidarity promotes a bilateral approach to problem solving, creating a commitment to joint action through mutual adjustment. Information sharing facilitates problem solving and adaptation because parties are willing to share private information with one another' (Poppo & Zenger, 2002: 710).

Having said this, we recognize that the idea of goal alignment and the importance of relational governance in the cases we present should be nuanced. Although the goal is shared, the reasons for pursuing these goals are not. Whereas the interest of the operator most likely lies with profit generation, the interests of AIAS and CRA concern the improvement of water access. These different purposes may still lead to potential conflict in the future. In that sense, the formal contracts, incomplete as they are, remain a necessary tool to guide the behavior of the agent should the goals diverge.

Moreover, it is important to recognize that the existing contracts do show room for improvement. Although operators have the possibility to expand the network and increase the number of connections to increase their revenue, the limited contract time means that these expansions may not materialize in time for the operator to break even. Furthermore, there is no clear specification in the contract defining the service area to be covered by the operator in an AIAS town. One approach would be for AIAS to limit its mandate to expanding services to the most urban areas of these towns. These are arguably the most profitable areas for operators and where infrastructure expansion is more viable. The infrastructure located at the fringes of the town such as (communal) standpipes would then continue to be supported by other organizations.

Apart from these gaps, there are also future concerns, of which the development of the tariff is perhaps the most important as different governmental officials differ in opinion on this topic. The regulator claims that the ability to pay in small towns is limited and that the price of water should reflect that. However, the operators and AIAS both have an interest in a tariff structure that warrants financial sustainability in each and every system. This is necessary in the eyes of the operator as it allows them to effectively run the system, and eventually generate profit. This is also necessary in the eyes of AIAS as it allows them to include a service fee they can use in the common pool fund to further develop their work with other systems supplementing government budgets for infrastructure development. The difficulty to raise tariffs paired with the limited ability to pay, as argued by local government representatives and CRA, may pose issues in the development of business opportunities.

6.1. *Enabling conditions*

The cases also highlight a number of conditions that have greatly aided the success of the contracts. These enabling conditions are not necessarily a formal element of the contract, but did have an important impact on how the private operator was able to perform showing once again the importance of relational governance over contract restrictions.

6.1.1. Support for the small-scale private sector. The approach to PPP contracts as they are currently being implemented around the globe usually adhere to standards based on, and perhaps achievable in, large urban areas. But the realities in which private operators have to provide services in small towns is very different from the large urban centers. Small towns have a much smaller market from which to generate revenues, lower population densities, and a highly diverse population in terms of household income. Such areas require a different set of 'efficiency' standards and as such as different approach

to PPP (Hirn, 2013; Ameyaw Effa et al., 2015). For the private operators in the AIAS towns, much more support is required as compared to traditional approaches to PPP in the water sector. Without such additional support, ranging from capacity strengthening to assisting in procurement of materials and equipment, PPPs in these settlements may not maximize the value of the arrangement for all parties involved and may not incentivize the participation of private companies. As explained by one of the operators: ‘Only because we had the initial support of AIAS we initially entered into this contract. We were technically guaranteed that we were not running considerable risks, so we could experiment’ (operator, personal communication).

6.1.2. Creating a running start. Important in the PPP contracts in small towns in Mozambique is that the system was fully rehabilitated prior to transfer to the private operator. Moreover, the systems already had a sufficient number of connections⁸ that would allow the private operator to break even and start generating a profit within a reasonable time. This was of particular importance given the limited duration of the contracts. The five year contract with a possible extension of two years means that the operator has limited time to invest in service expansion with the aim of recovering costs and achieving a profit within the contract time. By ensuring that a transferred system has between 200 to 1,500 connections AIAS not only ensures that private operators will be able to break even, but also that the private sector will be interested in providing water services (Kleemeier & Lockwood, 2012). Particularly the combination of the government support highlighted above and providing a rehabilitated network with a sufficient number of connections was important in creating private sector interest.

6.1.3. ‘Pragmatic’ contracts. The contracts implemented in Mozambique by AIAS resemble very much standard contracts implemented elsewhere. Five years down the road, however, AIAS has had sufficient experience and reason to approach these contracts in a ‘pragmatic’ manner rather than in a dogmatic manner. In other words, the implementation of the contracts has been relatively flexible, allowing for points of conflict to be avoided and even mitigated. Allowing a certain degree of flexibility to adjust to the specific economic, political and social context in which such a practice is implemented has been recommended before, elsewhere (Aoki, 2000: 17). Local conditions determine to what extent and how a model such as PPP contracts for small-scale private operators can be implemented. These conditions concern aspects like the local capacity to plan and support the operator, or the capacity of the market to grow and pay the price of water that operators would require to sustain the system. In our cases, local conditions forced both operators and governmental agencies to adjust the processes initially foreseen in the conditions as the PPP contracts in order to ensure that the interests of both the principal and the agent have been addressed.

7. Conclusion: reconsidering principal-agent relationships

The model of PPP involving small-scale private operators has increasingly been promoted in recent years. Underlying this model is the use of formal contracts as an organizing mechanism for the delivery of water services in small towns. The success of models for water services is often attributed to a willing provider, a supportive government and a comprehensive set of regulations (Ndaw, 2016). As we have

⁸ Except in Moamba where the system was transferred with zero connections.

seen in Mozambique, the existence of these elements is important, but in no way sufficient to lead to a successful implementation of the model. The implementation of the model in towns that we studied suggests that it can work. At the same time, the explanations of why it has worked seem to relate less to the actual model and more the adjustments that occurred during the implementation.

Key in understanding the implementation of the model is the delicate balance between and complementarity of the role of formal contracts as a mechanism to shape behavior and relational governance as a means to address the gaps and obstacles that come forth from formal contracts. In a way they represent two sides of the same coin and become important at different stages of the implementation of contracts. Crucial in this respect is also the alignment of the objectives of the agent and the principal. Given that both parties understand the shared benefit from service expansion, we argue that the relevance of relational governance has become more important in understanding the relationship between the parties, rather than a literal study and interpretation of the formal contract. It remains to be seen if relational governance would have the same prominence if the interests of the agent and the principal would have diverted. However, based on the current development we would strongly propose a revision of the current understanding of contracts as means of control mechanisms of the principal over the agent.

Moreover, the actual implementation of the PPP contracts in Mozambique had a few very important adjustments that allowed it to function in the specific context of small towns in Mozambique. The support to private operators, the pragmatic interpretation of the contract, the emphasis of creating a running start for the private operator were all crucial in ensuring a successful first stage for the implementation of this model. The main lesson learnt is that the question is not so much about the model and if it works. The question is more about how to change, adapt and adjust the model to let it work in the institutional, demographic, socio-economic and bio-physical conditions of small towns in Mozambique. In order to allow for these adjustments, parties need to be willing to reinterpret the interests, incentives, possibilities and limitations of all parties involved.

Having said this, questions do remain about the future of the PPP model in the small towns of Mozambique. Questions remain surrounding the development of suitable tariff levels that serve all parties, operator, asset holder and regulator (and households), which service areas and locations of small towns that should be served by small-scale private operators. Moreover, not all operators holding a contract with AIAS have the same capacities (technical, financial and organizational). The end of the contractual period with those operators who signed their contracts in 2014 is closely approaching. This offers an opportunity to revise the relationships of the actors involved and the conditions that govern this relationship.

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