

Addressing Gaps in Drinking Water Partnership: A Study on Umbulan Springs, Indonesia

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Drinking water management using a partnership system has brought such optimism. However, the Public-Private Partnership (PPP) in *Sistem Penyediaan Air Minum (SPAM)* Umbulan (official groundbreaking was on July 20, 2017), East Java, Indonesia, has not been optimal. This study aimed at analyzing the partnership quality that included planning, efficacy, responsiveness, and effectiveness in managing springs. It also aimed to reveal the partnership gap and find solutions that supported the management of drinking water sources. This study employed a qualitative method with a phenomenology approach. Data were collected through participant observations and in-depth interviews related to the knowledge and attitudes of key informants. Findings confirmed the partnership gap in the management of SPAM Umbulan. We concluded that there was a fundamental assumption and fundamental presumption with the partnership system—the activities were merely pseudo-skills and business behavior, not a long-term learning process. The study would be vital for the local government within the partnership management context. We recommend revitalizing PPP through instruments with readiness criteria, such as Self-Assessment Toolkit and Business Plan Revision agreed by all stakeholders to achieve the long-term partnership goals.

Key words: *drinking water service, partnership gaps, SPAM, readiness criteria*

Introduction

Securing a reliable and managed drinking water supply for Indonesia's future is becoming increasingly challenging. The need for the water is now increasing due to increasing domestic needs doubled with the increasing number of commercial places (hotels, restaurants, and markets), offices, and industries. However, clean water sources are increasingly scarce. The

largest water needs are divided into three major groups: domestic needs, agricultural irrigation needs, and industrial needs (Cain and Gleick, 2005; ADB, 2016). The current situation can affect the future of the ecosystem (Gozlan *et al.*, 2019; Wen *et al.*, 2020) and the dynamics of functions and services (Finlayson *et al.*, 2018). Population growth amid increasingly scarce drinking water sources is also an issue for the public sector because drinking water is the most basic public need. As such, every drinking water management policy must refer to targets that increase access to sustainable, fair, and safe sources with specific criteria (WHO, 2017; McCaffrey, 1997) including physicochemical parameters (Bwire *et al.*, 2020).

Data from the Central Bureau of Statistics (BPS, 2020) show that access to drinking water in Indonesia reaches 89.27%, with a significant increase from 2018 to 2019 by approximately 13.91%.

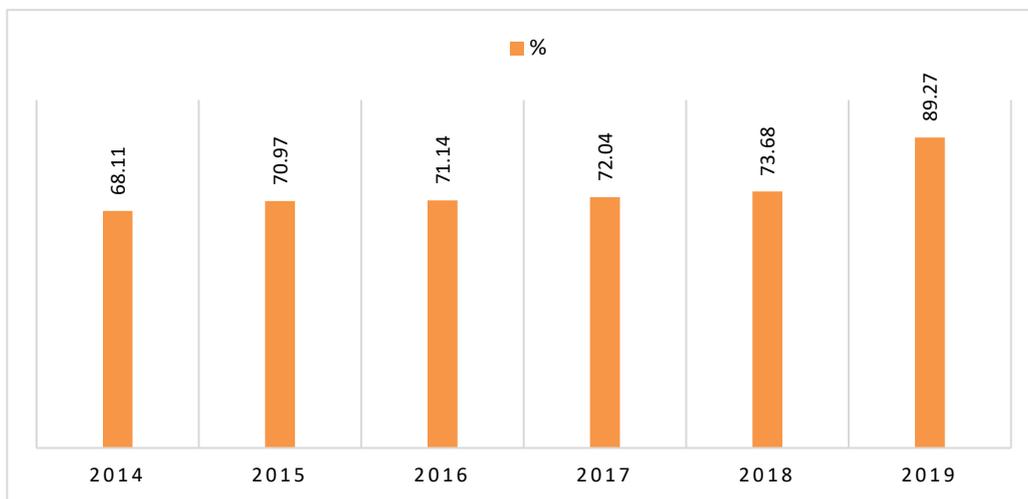


Figure 1. Household and Feasible Drinking Water Access in Indonesia (BPS, 2020)

Several strategic issues exist in the supply of drinking water to meet the 2020-2024 National Mid-Term Development Plan targets, including service coverage, technical problems, funding sources, and availability of raw water. Policies and strategies have been formulated to address these strategic issues in providing drinking water for all citizens of Indonesia, including encouraging the development of a drinking water supply system through non-state funding and facilitating its implementation through Regional-Owned Enterprises (*Badan Usaha Milik Daerah – BUMD*). It is hoped that within the next five years, the Prima Drinking Water Zone will be formed. One of the projects to address the drinking water supply is the Drinking Water Supply System (*Sistem Penyediaan Air Minum – SPAM*). This project is regulated by Government Regulation Number 122 of 2015. It is included in the first National Strategic and Priority Project in Indonesia that utilizes raw water from local water sources (Ministry of Public Works and Public Housing, 2020).



This study describes spring management in East Java as one of the three main economic development corridors (Java, Sumatra, and Sulawesi) (ADB, 2016). One of the biggest and well-known springs on Java Island is Umbulan Spring (*Mata Air Umbulan* – MAU), located in Umbulan Village, Pasuruan Regency, East Java. Umbulan Spring is a fault artesian spring produced from the flow of water under hydrostatic pressure due to the force of gravity, so it has a large water discharge of 4,600 liters per second (Rengganis and Seizarwati, 2015). However, the great potential of this water resource has not been optimally utilized for drinking water.

The challenge for the central and local governments (including the provincial, regency, and municipality government) is on good spring management, from building the infrastructure to sending drinking water to households. A partnership project is required by involving all the nine actors responsible for managing SPAM Umbulan.

Springwater management must fulfill readiness criteria regulated in the Master Plan for Drinking Water Supply System (*Rencana Induk Sistem Penyediaan Air Minum* – RISPAM). RISPAM consists of guidelines and technical justification, Detail Engineering Design (DED), Budget Planning (*Rencana Anggaran Biaya* – RAB), raw water license, instruction on preparing the management (*Perusahaan Daerah Air Minum* – PDAM or the Local-Owned Drinking Water Enterprise) and the community, and Local Budgeting under the National Urban Water Supply Project (NUWSP) (Ministry of Public Works and Public Housing, 2020).

Table 1. Actors in the Partnership Management of SPAM Umbulan

Actors	Authority
Central Government	<ul style="list-style-type: none"> • Establishing regulations to develop the Drinking Water Supply System (<i>Sistem Penyediaan Air Minum – SPAM</i>) at the national level • Managing and developing SPAM among provinces and SPAM for national strategic interests
National Urban Water Supply Project (NUWSP)	<ul style="list-style-type: none"> • A steering committee formed by the National Development Planning Agency (Bappenas) to provide a technical team from Bappenas, the Ministry of Finance, and the Ministry of Public Works and Public Housing
Central Project Management Unit (CPMU)	<ul style="list-style-type: none"> • A unit formed by a ministry in collaboration with the implementing unit at the central level • Coordinating with other institutions and offices, such as the Association of Indonesian Drinking Water Companies (<i>Persatuan Perusahaan Air Minum Indonesia – Perpamsi</i>) in managing drinking water for urban areas
Provincial Government	<ul style="list-style-type: none"> • Managing and developing SPAM among local governments or city governments
Regency Government	<ul style="list-style-type: none"> • Managing and developing SPAM among regency or city governments
District Project Implementation Unit (DPIU)	<ul style="list-style-type: none"> • Involving in planning activities and investments—participating in every stage of activities, including budget planning and other activities
Local Drinking Water Enterprise	<ul style="list-style-type: none"> • Determining drinking water tariffs and rationalize costs to cover operational needs and development of drinking water services
Business Sector	<ul style="list-style-type: none"> • Supporting distribution capital, promotion, marketing, and technical assistance

It is not always easy to regulate clean, potable water springs because drinking water is a public need, yet it is contested. Ownership and management of Umbulan Spring have constantly been changing since the colonial era. Several regencies and cities to the provincial government claimed to have the right to drinking water from Umbulan, not to mention the rent-seeking activities of commercial water business actors. Water business corporations such as Danone, Thames, and Suez always use the power of international financial institutions to dominate water sector business in Indonesia, and the surrounding community feels the injustice of the management system (Ray *et al.*, 2016; Anggraeni *et al.*, 2017).

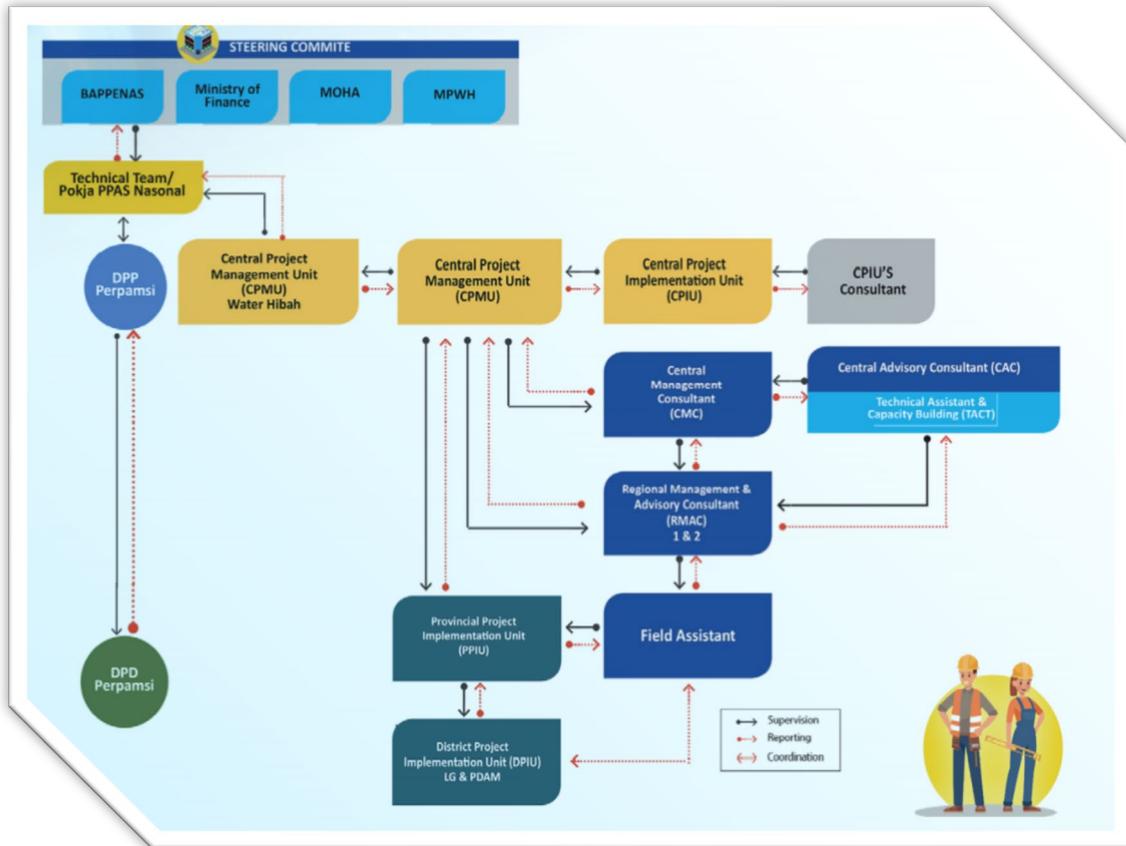


Figure 2: NUWSP Organizational Structure (The Ministry of Public Works and Public Housing, Materials for Field Assistants, 2020)

In recent developments, optimism has grown among interested parties and the community with partnership in spring management. However, as discussed in this study, the Public-Private Partnership (PPP) in *Sistem Penyediaan Air Minum (SPAM) Umbulan* (official groundbreaking was on July 20, 2017), East Java, Indonesia, has not been optimal. The Feasibility Study (FS) as the initial process could not fully reveal the exploitation issue of water resources and environmental improvements needed to solve the problem. There has been no comprehensive risk analysis to examine the decreasing water quality and quantity of Umbulan Spring. Umbulan's water debit was 6,000 liters/second in the 1990s, yet it decreased to 3,200 liters/second in the 2020s. The Umbulan's management also could not guarantee justice in its practice based on the existing socio-economic analysis. The water quality is also different in different places of Umbulan—the downstream water quality is getting worse, especially the turbidity parameters and total coliforms (Rengganis and Seizarwati, 2015).

Thus, the management of SPAM Umbulan needs an innovation that can combine four primary functions: regulators and operators, business, environmental, and welfare functions. All programs will not be effective without professional investors and active community involvement under government control (Rengganis and Seizarwati 2017). In this case, it is

necessary to analyze the possibility of a drinking water partnership process that does not create service gaps and is more socially innovative (Bailach and Martí in Feia *et al.*, 2019). It is primarily a partnership pattern that has a strong relationship with the strategic goals of public and business organizations, fulfills customer satisfaction, and contributes to economic prosperity (Anggraeni *et al.*, 2017).

Such collaboration or partnership has been acknowledged as an innovative method because it involves some government-owned enterprises, the private sector, and the community to improve drinking water quality. The partnership conceivably fits for changing authoritative government structures and business forms, likewise attract a favorable response from stakeholders (Alenezi, Tarhini, and Sharma, 2015; Harymawan *et al.*, 2019).

Based on the explanation above, the present study aimed at examining the partnership quality in the management of drinking water that included: planning, efficacy, responsiveness, and effectiveness that meet readiness criteria in managing springs at the local level through the PPP scheme (*Kemitraan Pemerintah dengan Badan Usaha – KPBU*). The study also aimed to reveal that such a partnership pattern could lead to creativity and innovations in the drinking water service system managed by the government. A good quality partnership can help the local governments ensure a high-quality drinking water service system amidst the scarcity of clean water.

Method

This study employed a qualitative method with a phenomenology approach. Data were collected through participant observations and in-depth interviews related to life views, activities, and experiences of social interaction of partnership' actors as key informants (Wolf and Wallace, 1986:234). According to Schutz (1972), phenomenology connects scientific knowledge with everyday experience, where daily activities and experiences are the source and root of scientific knowledge.

Discussion

Cooperation between the government and the private sector in providing the drinking water infrastructure has given rise to many models of cooperation contracts. One of the new models used in Indonesia is PPP model (KPBU). This collaboration is a Build Operate and Transfer (BOT) cooperation contract, but a group of state-owned enterprises represents investors. The BOT model is regulated in Presidential Regulation Number 56 of 2011 concerning the Development of a Drinking Water Supply System and several previous regulations on the Management of State or Regional Property. Drinking water infrastructure projects using the PPP model are considered the most effective. The model allows infrastructure development and distribution of drinking water to continue while accommodating the involvement of all

constituents, regardless of political affairs, even when the government does not have enough funds. This model is increasingly encouraged when the government faces a fiscal deficit; in other words, the model becomes an alternative amidst financial needs for responsive essential services provision (Boripis and Kitjarak, 2020).

Some optimal outcomes of this PPP project had been revealed during interviews with key informants:

1) Planning

The problems in meeting the needs of drinking water are not limited to the availability of water sources. Other issues add to the complexity of planning, including overpopulation, high and steadily increasing demands of water resources, widespread deforestation, and degradation and depletion of natural resources (Liyanage, 2017; Wen *et al.*, 2020). The problems have slowed down planning because planning often has to adapt to the affairs of other sectors (Murray and Hasselman, 2015). The DPIU team leader stated that one of the team's unclear tasks was ensuring the activity run well according to the time and the specified investment value.

2) Efficiency

The challenge in managing the public interest is on eliminating subsidies given continuously (Collins *et al.*, 2005; Mittal and Gupta, 2015). The Ministry of Public Works and Public Housing explained that the involvement of the private sector in the PPP scheme would help eliminate subsidies in the form of the Viability Gap Fund (VGF) in the future for infrastructure development. In the context of drinking water, the example of subsidy is downstream distribution pipelines that only caused dependence on the water flow system from upstream to downstream—such subsidies burdened the State Budget. However, frequent leaks are found in the pipeline system. It is still necessary to prevent and decrease water leakage in the household, agricultural, and industrial environments. The average non-revenue water is still more than 40% (Kurniawan *et al.*, 2020; Frauendorfer, Liemberger, 2010).

3) Better Management Response

The partnership helps the government to be more responsive in providing drinking water due to the integrated distribution and management system and more evident authority division between the regency government, provincial government, and state-owned or local-owned enterprises (Kurniawati and Dianawati, 2020). The government is expected to become more responsible and find better solutions to water allocation between competing uses, the generation of additional revenues, and overall environmental impacts. All of the problems had been reported in drinking water and clean water studies in other countries (Lee and Jouravlev, 1998; Limón *et al.*, 2020).



4) Empowering the Community

The partnership can help determine integrated water pricing for groundwater, and it also provides *assistance* from the government for all stakeholders involved in the SPAM Umbulan project. For the poor, the cost and time to access drinking water correlate with their monthly income. Some cases in cities in Indonesia show that the price to get potable drinking water can be greater than 5% of the total monthly income. The poor often spend more than three hours getting drinking water. It means that, with a standard 8 hours of work per day, 30% of their time is spent on getting access to clean water. If they do not work, then they will have no income. Our interviews showed that the Umbulan project had empowered the community so the access to drinking water was more manageable and the price was more affordable. However, this present study did not analyze to determine the level of access to clean water for the poor—either it was optimal, medium, low, or even no access. The grouping and weighting of access levels commonly use the Howard and Bartram (2003) model.

The assessment of drinking water management also refers to the Decree of the Minister of Home Affairs Number 47 concerning Guidelines for Performance Assessment of Regional Drinking Water Companies. The regulation assess the operational performance aspects, including a) service coverage, b) water distribution quality, c) water continuity, d) productivity in utilizing production installations, e) water loss rate, f) water meter calibration, g) new connection speed, h) complaint handling, i) ease of service, and j) ratio of employees per 1,000 customers. There has been agreement dealing with *the role of each party* in the partnership system to meet the assessment criteria. Discussion is held by the parties involved, including 1) the central government, represented by the Ministry of Public Works and Public Housing, the Ministry of Finance, and the National Development Planning Agency and 2) the private sector, represented by state-owned and local-owned enterprises (PT. Sarana Multi Infrastruktur and Penjaminan Infrastruktur Indonesia (Persero), two enterprises owned by the Ministry of Finance).

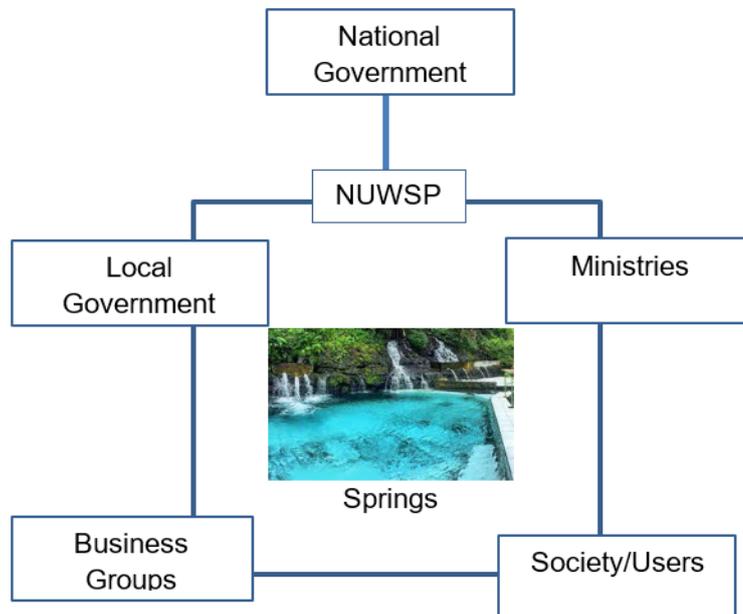


Figure 3: Major Partnership Entities in Drinking Water Supply

The legal basis for involving the private sector in SPAM Umbulan is Government Regulation Number 16 of 2005 concerning the Development of Drinking Water System. BOT helps ensure that the government's responsibility to provide good drinking water services to the community can be efficiently done. The State-Owned Enterprises can lift the government's burden related to funding.

5) The Role of the Government

The local governments at the provincial and regency/municipal level have provided many fiscal facilities to support collaborative projects such as PPP for drinking water provision. The fiscal facilities include a) the land funds, b) the infrastructure fund, and c) the guarantee fund. The government also guarantees and assists PPP as mandated in Presidential Regulation Number 13 of 2010. The Minister of Finance may agree upon giving support in the form of tax incentives and/or fiscal contributions based on the proposal of the minister/head of institution/head of the region.

6) The Role of the Business Sector

The main actors from this sector are the State-Owned Enterprises and Local-Owned Enterprises in drinking water. The Local-Owned Enterprises can be a local government-owned firm whose operations are still limited to the district capital or urban areas. The state-owned or local-owned enterprises were chosen because they represent the public—they look for profit and give social services simultaneously. Within the SPAM Umbulan drinking water project, the role of the local-owned enterprises is considered effective if 1) the construction of the drinking water

infrastructure can be completed, 2) the business process can run well, and 3) there is an increase in distribution services including access to bulk water by the community. Increasing access to clean water amid the Covid-19 pandemic has been more challenging (Purwanto, 2020).

Partnership Principles in Drinking Water Management

There are benefits related to partnership in drinking water management. *First*, there are alternatives for the public to choose from (Delorme, 2006). If drinking water is only managed by the government, it will become a monopoly, and it tends to have low-quality services. Water suppliers on the local level are subject to strong political interference by local politicians (Felgendreher and Lehmann, 2015). The partnership becomes can be considered as a more moderate method of managing public goods. *Second*, the partnership encourages the ability of financial institutions to finance without sovereign guarantees (Magnusson, 1999; Jett, 2018). *Third*, the partnership reduces the risk of project failure. *Fourth*, the partnership attracts experienced and high-quality bidders in public procurement (OECD, 2011; Khan and Khan, 2015; Komakech, 2016). *Fifth*, it prevents government officials from corrupt practices (Moldogaziev and Liu, 2020). A key informant, the Umbulan water resources manager, stated that:

The PPP at SPAM Umbulan aims to provide basic infrastructure, in this case, is drinking water. It is the government's responsibility, yet, the partnership scheme is done because it has not enough funds. All parties have the same interests, so we have to uphold the principles of fairness, openness, and transparency to meet the required quality, quantity, and continuity of bulk water (Umbulan PDAM Planning and Development Manager, June, 2020).

PPP also belongs to the method to achieve readiness criteria—good quality and enough quantity of drinking water. Water quality meets the requirements if physically it has specific chemical contaminants and bacteriological levels (biological contaminants) does not negatively affect the health of those who consume the water (Setiawan, 2015; Gadgil, 1998). In terms of quantity, the volume of clean water must be sufficient with the needs of the existing urban population and social development (Putro, 2017). The calculation of the projected population is carried out to predict current and future water needs (Naway, 2013). This population data was obtained from the District Office and the Central Bureau of Statistics.

As such, the success of the partnership in drinking water management is assessed based on three criteria as follows:

- 1) The water does not change into a commercial item or commodity. The community must constitutionally be able to access drinking water more easily and cheaply than before it was managed professionally, with better quality, quantity, and continuity (Gadgil, 1998; WHO, 2004; Gilbert, 2012; Kamala, 2013; Dewi 2019). It is essential to maintain such public

policy because the control of water resources business sector also targets to control drinking water. Most foreign investors are looking for the position as the operator of drinking water and water sources, as happened in Umbulan.

- 2) *The water quantity follows population growth and spatial developments.* Clean water quantity analysis requires an analysis of population projections because future domestic water needs are calculated based on trends in the population (customers) and spatial developments to anticipate injustice and sufficiency as a public good (Liyanage and Yamada, 2017; Sharma, 2003; Hersyae, 1992).
- 3) *It must improve the quality of life.* Water is a service product and a basic need that can improve the quality of life of the growing population.
- 4) *There must be water security.* There is a relationship between population and economic growth and water demand, resources, and pollution, ultimately driving water scarcity (Boretti and Rosa, 2019). Long-term partnerships are expected to build an independent and sustainable drinking water supply system.

The drinking water management must also prioritize a quality service system, open to community initiatives as users. Quality resembles excellence and is subjective because it depends on the preferences of each person or user (Feia *et al.*, 2019). The involvement of stakeholders in water management and utilization helps to avoid user conflicts of interest. Each part managing the drinking water system will be known, monitored and, evaluated by all related parties. In other words, the management of activities must be accountable to all parties to avoid social conflicts or as an Alternative Dispute Resolution (ADR), a process for resolving disputes (Dahlan *et al.*, 2020). The management activities must be socialized and carried out based on deliberation to get support from and be accepted by the service user community. Thus, the implementation of activities can provide benefits to the community in a sustainable manner.

Partnership Gaps in Drinking Water Management

The partnership pattern of SPAM Umbulan is unique when analyzed using the cross-sectoral partnership theory by Forrer, Kee, and Boyer (2014). The collaboration form, be it a contract, partnership, corporation, or network model, can change the dynamics of governance and relations among actors in public administration. Collaboration involves interaction between two actors, namely public managers (government) and collaborators who are involved with public managers. There are six dimensions to strengthen the accountability in partnership, including risk allocation, costs and benefits, social and political impacts, expertise, partnership collaboration, and performance measurement.

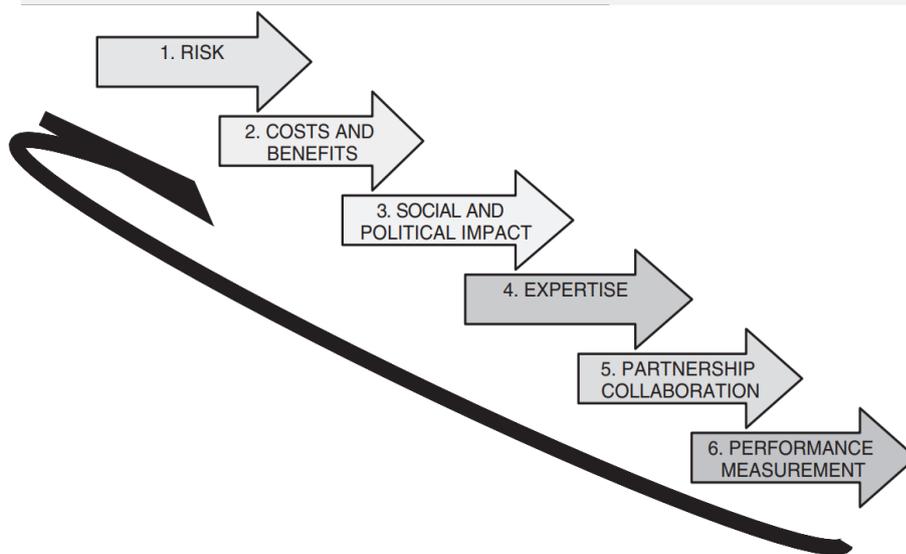


Figure 4: Six Accountability Dimensions in Partnership (Forrer *et al.*, 2010, 2014)

There is a unique relationship between the government and the business sector at SPAM Umbulan that can affect cooperation effectiveness. When the government seeks to achieve ultimate responsibility for delivering goods or services, partnerships with the private sector in decision making and service provision are necessary (Grimsey and Lewis, 2004; Yescombe, 2007). Within this process, the fundamental assumption and fundamental presumption take place. The fundamental assumption asks if the government has sufficient knowledge regarding the effectiveness of financing the provision of public goods and services. Local governments are considered to have no knowledge, capacity, and managerial expertise or have never reached the expertise stage (Delorme, 2006; Harris, 2011; Gilbert, 2012). As a result, the government presents a business sector having the necessary expertise, know-how, and managerial innovation to support government responsibilities (Heracleous and Johnston, 2009; Collins and Buttler, 2005). In the Umbulan SPAM partnership context, what has been considered a business sector is government-owned enterprises, which are not fully characterized by professional business management. They are part of the bureaucracy deliberately formed by bureaucratic actors to gain profits over distributing public goods. For example, the commissioners of the companies appointed have political backgrounds, such as the former success team for the regional head election. It clearly shows that PPP still contains strong political interests of regional leaders or the political economy of water issues (Harris *et al.*, 2011) that can weaken the public consultation process and slow down the coordination process between agencies.

The fundamental presumption is the government's ability to absorb the required technical expertise and consider the effectiveness of financing. In the SPAM Umbulan partnership, government-owned partner companies are oriented more towards contracting technical consultants for a certain time than sharing or offering expertise. Thus, the knowledge and experience belong to the consultant. Rigid government bureaucracy (Murray and Hasselman,

2015) fundamentally prefer technical expertise procurement projects over long-term learning processes that sharpen the ability to create cost-effectiveness and efficiency.

This study supports and recommends that the central government creatively provide nationally integrated stimulants in the National Urban Water Supply Project (NUWSP) (The Ministry of Public Works and Public Housing, 2020). However, some local governments have a low capacity in managing SPAM or are not meeting the Minimum Standard Services (Putro, 2017). The complete readiness criteria can help to overcome the technical weaknesses in partnership results, including:

- a) updating the Self-Assessment Toolkit for the Local-Owned Drinking Water Enterprise (*Perusahaan Daerah Air Minum – PDAM*);
- b) reviewing investment plans funded by private investments;
- c) revising the business plans or corporate plans;
- d) simplifying Detailed Engineering Design (DED) and budget planning
- e) providing a list of training topics by PDAM, local governments, and government-owned enterprises;
- f) making cooperation agreement between the head of regional settlement infrastructure center and the regional secretary; and
- g) writing a statement of commitment agreed by provincial and district/city governments.

The local government can respond to this by doing two things. *First*, it forms a District Project Implementation Unit consisting of local government personnel. The unit, at least, consists of elements of government organizations that handle drinking water, the Regional Development Planning Agency (*Badan Perencanaan Pembangunan Daerah – Bappeda*), the Office of Public Works and Public Housing, the Office of Revenue, and PDAM. *Second*, it must conduct a self-assessment to determine the capacity and eligibility of urban drinking water development programs following the national standards for drinking water supply.

Conclusions

The formulated research problem is related to the component of SPAM implementation through PPP between the community, government, and government-owned enterprises, which allows creative and targeted interventions to cover weaknesses in the drinking water supply process. The partnership is expected to increase readiness criteria, which impact efficiency in budget resources, better maintenance of infrastructure, more creative problem solving, and the development of collaborative skills among stakeholders.

PPP involves government-owned enterprises that can create service gaps due to the pseudo-status of the business parties representing the interests of bureaucratic actors. This condition is the reason for the conflictual management of Umbulan water sources from the colonial era to the present time.



Springs are a natural gift. They must not be owned individually. The government must create a community-oriented and professional-based management in managing springs. Thus, the fundamental assumption and fundamental presumption in the SPAM Umbulan partnership have practical implications for management to address readiness criteria. It means providing more efficient partnerships to meet the required quantity and quality of drinking water services sustainably.

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