Lessons Learned from Public–Private Partnerships in Indonesia’s Water Sector

Radies Kusprihanto Purbo*, Christine Smith, and Robert Bianchi

Griffith University, Brisbane

ABSTRACT

This paper reveals and examines the differing motives of Indonesian actors in adopting public–private partnerships (PPPs) in the water sector. It also analyses the challenges of vertical coordination across different levels of government in PPP programs. Three motives for adopting PPPs are perceived differently by central government respondents and subnational government respondents. However, no significant differences are found between the two groups’ perceptions of the importance of vertical coordination problems. These results highlight the need for local capacity-building programs and improved coordination mechanisms to enhance PPP adoption and implementation in the water sector.

Keywords: Public–private partnership, multi-level governance, inter-governmental relations, vertical coordination problems

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*Corresponding author. Email: radies.purbo@griffithuni.edu.au

INTRODUCTION

Global water demand has significantly increased and now exceeds water supply because of world population growth. The World Health Organisation identified that 6.6 billion people needed access to improved sources of water in 2015 (WHO 2015). In Indonesia,

2013 data from the Ministry of Health (MOH) indicated that 31% of children aged less than one year, and 25% of children aged between one and five years die because of diarrhoea caused by poor access to clean water (MOH 2013).

In the past 50 years, public investment in the water sector has failed to keep up with the demand for water (Mandri-Perrott and Stiggers 2014; Winpenny and Camdessus 2003; Van Ginneken, Netterstrom, and Bennett 2011). This may be because governments tend to focus on infrastructure such as transport systems in order to accelerate national economic growth.

Adopting public–private partnerships (PPPs) has become an indispensable way for governments with limited budgets to ensure that infrastructure is developed and managed (Klijn and Teisman 2003; Bovaird 2004a; Hodge and Greve 2005, 2007). More than 110 countries have adopted PPPs for their water and sanitation services (Jensen 2017). However, progress in this regard has varied. The responsibility for managing water services is often shared not only among central government agencies but also among different government levels, with local governments often providing the services (Akhmouch 2012). Consequently, actors from various levels of government may have different public policy and PPP adoption motives, which can complicate the governance of the water sector (Ameyaw and Chan 2013; Wibowo 2015).

The Indonesian government has been encouraging the private sector to adopt PPPs in the water sector. However, the progress has been arguably stagnant. Data from the National Development Planning Agency (Bappenas) show that since 2005, only one full-concession PPP project, Tangerang Water Supply, has been successfully implemented, and one build-operate-transfer (BOT) project, Umbulan Water Supply, has been successfully tendered, while five BOT projects are still under preparation (Bappenas 2017). This paper examines the motives of Indonesian actors in adopting PPPs in the

water sector, because these motives significantly shape the institutional arrangement of the PPPs (Winch, Onishi, and Schmidt 2012). Examining PPPs from a multi-level governance perspective allows gaps between the motives of central government actors and subnational government actors to be identified. Furthermore, this study identifies the challenges of coordinating the different levels of government involved in PPP programs.

REVIEW OF LITERATURE

Broadbent and Laughlin (1999, 2004) note that understanding the motives for adopting a PPP is important in order to better understand the challenges of developing a PPP. This idea is supported by Winch, Onishi, and Schmidt (2012), who highlight the significance of actors' motives in shaping the local institutional arrangements of PPPs.

Adopting PPPs in the Water Sector

PPP Motives

Studies have identified several motives for adopting PPPs in developed and developing countries, including economic motives. In developing countries, PPPs have been adopted since the 1990s in order to provide water services in areas where adequate water coverage and service quality is difficult to achieve (Marin 2009).

In many Asian countries, the desire to supplement limited budgets for infrastructure has also become an important motive for adopting PPPs (Wu, House, and Peri 2016). This motive is clear in Indonesian policy, such as Presidential Decree 67/2005 and its amendments (Wibowo 2015). PPPs are seen as a way to supplement public investment funds and to develop infrastructure earlier than would otherwise be possible.

Many studies on developed countries note other economic motives, such as the desire of governments to more efficiently provide infrastructure and its associated services, finding the most cost-effective means, and driving local economic development

(Petersen, Houlberg, and Christensen 2015; Bel and Fageda 2007; Storto 2013; Carpintero and Petersen 2016; Bland and Overton 2016).

Other motives identified in literature relate to non-economic factors, including the transfer of skills and technology in developing countries. Andres et al. (2008) state that private sector participation in the water sector can improve public access to piped water and reduce water loss. Marin (2009) finds that in countries such as Brazil and the Philippines, private operators can reduce non-revenue water (NRW)—water that is lost before it reaches the customer—to similar levels as in developed countries. In China, inadequate technologies have become a concern of the government as it tries to improve its water services (Lee 2010).

Studies have also highlighted political motives for adopting PPPs, such as the desire to reduce the potential for corruption and collusion among, investors, contractors, and government officials, and to promote greater transparency in procurement processes (Allès 2012; Farlam 2005). Jensen (2017) notes that politics in Asian countries significantly affects the motives for adopting PPPs, because attitudes toward them often shift between being ‘supportive and being critical’. Wibowo (2015) finds that the Indonesian government is often motivated to adopt PPPs by the need to maintain access to funding from international donors.

Opportunities to share the risk of investment in projects and to benefit from market competition may also motivate governments to adopt PPPs (Klijn and Teisman 2003; Bovaird 2004b). However, in Indonesia such motives are arguably less significant than the political and financial ones (Wibowo 2015).

PPP Challenges

The adoption of PPPs in many countries’ water sectors fails because the governance

involves multiple actors (Akhmouch and Kauffmann 2013). The responsibility for managing water resources is often shared not only among central government agencies but also among tiers of government. In general, local authorities provide the water services, but water assets such as river systems and catchments can span multiple jurisdictions (Akhmouch 2012). This often complicates the adoption and governance of PPPs in the water sector more than in other sectors because the actors come from various levels of government and have different interests and motives that need to be considered (Mandri-Perrott and Stiggers 2014; Ameyaw and Chan 2013; Castro and Heller 2009). Moreover, having multiple actors involved in the PPPs affects the establishment of an appropriate legal framework. With fragmented responsibility, conflict among agencies can occur because tasks overlap (Lee 2010), and conflict between central government actors and local actors can emerge because authority is decentralised (OECD 2011). To deal with these matters, coordination mechanisms are needed to suit individual countries.

Indonesian Water Governance

Under Law 7/2004, the responsibility and authority for managing water resources is shared among levels of the Indonesian government, based on the geography of river basins. Local governments are responsible for providing water services (Azdan 2011; Al 'Afghani 2012). The central government is responsible for managing a water resource if its river basin crosses provinces or countries or becomes a national strategic interest (article 14). Provincial governments have authority for river basins that span municipalities in their regions (article 15). Districts and municipalities are only responsible for managing the basins contained within their jurisdictions (article 16). However, under certain circumstances, either provincial or local governments can be mandated to manage water resources under the control of the central government (article

18) (see table 1).

TABLE 1 Responsibility for Managing Water Resources, under Law 7/2004

Central government	Provincial government	Local government
i. Resources that cross country boundaries	i. Resources that cross districts or municipality boundaries	i. Resources within one district
ii. Resources that cross province boundaries	ii. Resources controlled by the central government, if mandated by regulation	ii. Resources controlled by the central government, if mandated by regulation
iii. Resources that are national strategic interests		

Source: Adapted from Law 7/2004 (articles 14–16, and 18).

At the central government level, responsibility for policy making is shared among several bodies. The Ministry of Public Works (MPW) is responsible for defining policies and technical standards related to water supply. In 2006, the MPW established the Supporting Agency for Drinking Water Supply System Development (BPPSPAM), a national water board that supports the development of the water supply system (ADB 2012). The MPW has enacted regulations regarding this development (Hadipuro 2010). However, under Law 22/1999 on Local Government, the Ministry of Home Affairs has a role in determining the water tariffs charged by Indonesia's regional water utility companies (PDAMs), and it supervises the management of PDAMs, as well as the performance of local governments. As a fiscal regulator for state assets, the Ministry of Finance provides guidance on the involvement of the private sector in PPP programs. The

role of subnational governments (i.e., provincial and district governments in PPP programs is to act as contracting agencies, according to Presidential Regulation 38/2015.

Indonesian PPP Programs in the Water Sector

Several PPP projects in the water sector began under President Soeharto. The first project contract was signed by Singaporean company Sembcorp in 1995 for the island of Batam, an industrial area close to Singapore. Jensen (2017) reports that this project was successful because of the New Order's stability and a high tariff. Its success led the government to adopt PPPs in other areas.

In 1998, the second contract for a PPP project was signed; this time for the provision of water services in Jakarta. However, several studies document the failures of this project (Jensen 2005; Bakker 2007; Kurniasih 2008; Wibowo and Mohamed 2010). Jensen (2005) reports that the project was troubled by political and economic crises and the lack of an adequate regulatory framework. The contract that sought to join private and public actors proved insufficient for dealing with the political and economic challenges. The fall of Soeharto in 1998, the subsequent rule of President Bacharuddin Jusuf Habibie, and the start of decentralisation further complicated the political and legal environment. Important service improvements could not be achieved: the growth in new water connections remained low compared with the growth in population, the level of NRW remained high, and the former public utility became significantly indebted to the concessionaires because of a gap between the water price that customers were charged and the costs (Jensen 2017; Bakker 2007).

The failure of the Jakarta PPP discouraged other local governments from starting PPP programs in the water sector. During the early decentralisation era, no large-scale PPP projects began (Jensen 2017), because the government was focused on recovering from the crises. Under President Susilo Bambang Yudhoyono, the central government

reintroduced the concept of PPPs by stipulating two main regulations associated with infrastructure development (Wibowo 2015). The government also held an infrastructure summit in January 2005 in order to offer 99 infrastructure projects to the private sector. This included 24 projects in the water sector (JICA 2009). A second summit was held in 2006 to offer 111 projects to the private sector. However, by 2015, only 22 projects had been successfully tendered, including 2 projects in the water sector—the Tangerang Water Supply project in Tangerang District, and the Umbulan Water Supply project in East Java Province (Bappenas 2017). There are 3 water supply projects remaining in the pipeline (the Bandar Lampung Water Supply project, Pekanbaru Water Supply project, and Pondok Gede Water Supply project). The other projects that were scheduled have been dropped for various reasons, including their cancellation by local government, their inclusion in other government projects, and problems with water resources (see table 2) (JICA 2009; Bappenas 2017).

Relevance of the Study

The literature highlights that there are different views on the motives for adopting PPPs in the water sector. However, many studies—such as those by Bel and Fageda (2007), Allès (2012), and Wu, House, and Peri (2016)—do not consider how the interaction of actors from various levels of government can affect the motives. It is highly possible that each actor has different motives for adopting PPPs and these differences may trigger conflict in the ensuing decision-making processes.

TABLE 2 Water Sector PPP Projects Offered at the 2005–2006 Infrastructure Summit

No.	Water supply project	Region	Recent status
1	Upgrading WTP Water Project Kali Garang	Semarang municipality	Absorbed into another project
2	Cirebon Bulk and Water Supply	Cirebon municipality	Absorbed into another project

3	Jatinangor Water Supply	Bandung district	Cancelled by local government
4	Cikarang Water Supply	Bekasi district	Cancelled by local government
5	Pondok Gede Water Supply	Bekasi municipality	preparation completed
6	Tangerang Water Supply	Tangerang district	Already implemented
7	Ciparens Tangerang Water Supply	Tangerang district	Cancelled by local governments
8	Benda and Cengkareng Water Supply	Tangerang municipality	Already started in another scheme
9	Cileduk Water Supply	Tangerang municipality	Started in another scheme
10	Tanjung Pinang Water Supply	Tanjung Pinang district, Sumatra	Cancelled because of problem with water resources
11	Umbulan Water Supply	East Java province	Tendered in 2015 and being developed
12	Karang Pilang IV Bulk Water	East Java province	Started in another scheme
13	Menganti Water Supply	Gresik district	Cancelled because it was funded by another scheme
14	Greater Yogyakarta and Magelang Water Supply	Yogyakarta province	Legal problem
15	Surakarta-Sukoharjo Water Supply	Central Java province	Cancelled because of its small capacity
16	Tegal Water Supply	Tegal municipality	Cancelled because of problem with water resources
17	Semarang City Water Supply	Semarang municipality	Cancelled because of its small capacity
18	East Semarang New Water Supply	Semarang municipality	Cancelled because of its small capacity
19	Semarang Raw Water Supply	Semarang municipality	Pre-qualification stage
20	Bandung Water Supply	Bandung municipality	Absorbed into another project
21	Dumai Water Supply	Dumai district, Sumatra	Cancelled due to being funded by another scheme
22	Duri Water Supply	Tangerang municipality	Cancelled due to being funded by another scheme
23	Manado Bulk Treated Water Supply	Manado municipality, Sulawesi	Cancelled by local government
24	Samarinda Bulk Treated Water Supply	Samarinda municipality, Kalimantan	Cancelled by local government
25	Bandar Lampung	Bandar Lampung municipality, Sumatra	Already tendered in 2017

Source: Authors' compilation based on various sources.

Moreover, studies such as those by Hadipuro (2010), Hadipuro and Indriyanti (2009), and Wibowo and Mohamed (2010) do not focus on the obstacles faced when many actors try to coordinate their roles in PPPs. In contrast, this study uses a multi-level governance approach and seeks to contribute to the literature by providing empirical findings related to the knowledge gaps and challenges that arise when coordinating PPP programs in Indonesia's water sector.

RESEARCH METHOD

Survey Design and Administration

We emailed 52 questionnaires to collect empirical data from central government actors who guide PPP activities, and from provincial and local government (subnational) actors who establish and implement PPP projects. Emailed surveys are commonly used for studies on PPPs, especially those that examine risk allocation (Wibowo and Mohamed 2010; Ameyaw and Chan 2015) and critical success factors (Li et al. 2005a; Wibowo and Alfen 2014). An emailed survey was also an efficient and suitable way to collect data on respondents in different regions (Andrews, Nonnecke, and Preece 2003).

We used purposive sampling, selecting respondents from the 2014–17 Bappenas PPP books because of their knowledge and experience (Tongco 2007). However, we asked officials from Bappenas and BPPSPAM to nominate alternative respondents if the books' listings were out of date—for example, if a listed respondent had moved to another role or organisation (Eriksson and Kovalainen 2008). In order to minimise selection bias, we carefully defined our selection criteria, choosing only central government actors who had been involved in Indonesian PPP programs in the water sector, and subnational government actors who had managed PPP programs in the water sector.

Unlike studies by authors such as Li et al. (2005b) and Ameyaw and Chan (2013, 2015) that collected data on private sector respondents, our study collected data only on government respondents, given that few tendered projects have been successfully granted to the private sector.

The survey asked respondents for their basic demographic information and to rate in order of importance the motives for adopting PPPs and the challenges of coordinating them across different levels of government. To do this, a Likert scale was used, where a

rating of five indicated very high importance and a value of one indicated very low importance. We then analysed descriptive statistics in order to summarise the basic characteristics of the respondents and their experiences with PPP adoption or implementation. We also analysed non-parametric inferential statistics in order to explore the relationships and differences among the responses from the central government actors and subnational government actors.

Profile of Respondents

From the 52 questionnaires that we distributed, we received 28 responses. Of these, 15 responses (54%) were from employees of central government agencies, and 13 (46%) were from employees of subnational governments (including provincial and local governments).

Although the sample was small, the findings were noteworthy: 'most of the respondents were influential employees either directly involved in managing a PPP program or in running a PPP program (22% were senior officials; 52% were middle managers; 26% were technical staff). Moreover, our questionnaire's response rate of 57% was higher than the response rate of similar surveys in Indonesia: Wibowo and Alfen's (2014) survey had a 30% response rate; Wibowo and Mohamed's (2010) had a 20% response rate. Also, our questionnaire's 28 responses represent a reasonable sample size, given that only 6 PPP projects were underway or had been completed in the Indonesian water sector at the time of our study. We are confident that similar results would be found if additional respondents were identified.

Table 3 shows the demographic backgrounds of respondents. It highlights that adopting PPP programs in the water sector was relatively new for the central government respondents, although some projects had started before the 2009 economic and financial

crises (Wibowo 2015).

TABLE 3 Background of Respondents

Characteristic	Category	Count	%
Working position	Central government	15	53.6
	Subnational government	13	46.4
Echelon*	Echelon 1 or 2	6	21.4
	Echelon 3 or 4	14	50.0
	Staff	3	10.7
	N/A	5	17.9
Experience with PPPs	Less than 1 year	9	32.1
	2–4 years	8	28.6
	More than 4 years	11	39.3
Intensity of work with PPPs	My work is mostly in PPPs	10	35.7
	Some of my work is related to PPPs	10	35.7
	Only a very limited amount of my work related with PPPs	8	28.6
Educational background	Accounting, finance, and economics	11	39.3
	Social and political science	2	7.1
	Engineering	10	35.7
	Law	3	10.7
	Other	2	7.1

Source: Authors' compilation based on survey results.

Note: *Echelon refers to the managerial level of the respondent within the Indonesian public service.

More than 50% of the respondents had less than four years' experience with PPP projects. Likewise, more than 60% did not work mainly on PPP projects. Regarding education, more respondents without an economics background (61%) were found than respondents with an economics background (39%). Consequently, differences in the respondents' perceptions regarding the motives for adopting PPPs and the challenges of implementing them are highly likely. Revealing these differences in perceptions, especially among central and subnational government actors, may help to refine the decision-making processes in Indonesian PPPs.

DATA ANALYSIS

The questionnaire asked respondents to rate 15 motives for adopting PPPs and 8 challenges of coordinating them, where a rating of 1 would indicate very low importance

and a rating of 5 would indicate very high importance (table 4). We then checked the internal consistency and reliability of their responses, using Cronbach's alpha test. This produced reliability coefficients of .766 for the motives and .829 for the challenges, where a value of 1 would represent perfect consistency and a value of 0 would represent no consistency. This means that the data collected in this study were reliable (Christmann and Van Aelst 2006; Tavakol and Dennick 2011).

TABLE 4 *Motives and Challenges*

No.	Motive for adopting PPPs	Explanation of motive	Challenge of Coordinating PPPs
1	Lack of infrastructure budget		Asymmetries in information shared between central and subnational governments
2	Better service than traditional procurement		Fragmented authorisation at the central government level
3	Integrative solution for infrastructure and public service		Overlapping central government regulations
4	Private sector has a better capacity to provide infrastructure		Unstable or inadequate subnational government fiscal capacity
5	PPP has been successfully adopted by other countries		Insufficient technical skills and/or capacity of local actors
6	Leader endorsement		Less political support from local politicians
7	Benefit to local economic development		Strong political intervention
8	Transfer technology to local enterprise		Insufficient evaluation by central government regulation
9	Reduce the price of the infrastructure services for the public		
10	Accelerate infrastructure development		
11	More opportunities for private sector to be involved in public service		
12	Long-term maintenance of infrastructure		
13	Timely and more effective construction period		
14	Public initiative		
15	Following national program		

Source: 'Authors' adaptation based on literature review.

Perceived Importance of Motives for Adopting PPPs

The descriptive statistics from our survey showed that the central government groups' mean rating of each motive's importance ranged from 3.21 to 4.57 on the Likert scale. The subnational government respondents' mean ratings ranged from 2.58 to 4.72 (table 5). In the central government group, 8 motives had mean ratings greater than 4, and 7 motives had mean ratings between 3 and 4. In the subnational group, 11 motives had mean ratings greater than 4, while 1 motive had a mean between 3 and 4, and 3 motives had means less than 3.

TABLE 5 *Ratings of the Motives for Adopting PPPs*

Code	Motive for adopting a PPP	Central government		Sub National government	
		Mean	Rank	Mean	Rank
M1	Lack of infrastructure budget	4.43	4	4.42	2
M2	Better service than traditional procurement	3.57	13	2.58	15
M3	Integrative solution for infrastructure and public service	4.50	2	4.08	8
M4	Private sector has a better capacity to provide infrastructure	4.00	8	3.42	12
M5	PPP has been successfully adopted by other countries	3.43	14	2.73	14
M6	Leader endorsement	4.36	5	4.73	1
M7	Benefit to local economic development	3.78	10	4.36	4
M8	Transfer technology to local enterprise	3.78	10	4.17	6
M9	Reduce the price of the infrastructure services for the public	3.64	12	4.08	8
M10	Accelerate infrastructure development	4.36	5	4.42	2
M11	More opportunities for private sector to be involved in public service	4.14	7	4.00	11
M12	Long-term maintenance of infrastructure	4.57	1	4.08	8
M13	Timely and more effective construction period	4.50	2	4.33	5
M14	Public initiative	3.21	15	2.80	13
M15	Following national program	3.92	9	4.09	7

Source: Author's calculation based on survey results.

The central government group ranked *long-term maintenance of infrastructure* as the most important motive, with a mean rating of 4.57. The group ranked both *integrative solution for infrastructure and public service*, and *timely and more effective construction period* as the second most important motives—both had a mean rating of 4.5.

Surprisingly, *lack of infrastructure budget* was the fourth most important motive to the group, with a mean rating of 4.42. This finding differs from Wibowo's (2015) finding, which indicated that limited public infrastructure funding was the most important motive for adopting PPPs in Indonesia. In the central government group, *leader endorsement* was ranked as the fifth most important motive, with a mean rating of 4.35.

Conversely, the subnational group ranked *leader endorsement* as the most important motive, rating it 4.72 on average. This rating suggests that local leaders play a vital role in the adoption and arrangement of PPPs in the water sector. *Lack of infrastructure budget* also appears to be important to the subnational group, which ranked it as the second most important motive for adopting a PPP, with a mean rating of 4.41. With this rating being similar to the central government respondents' rating, it appears that budget constraints have become a problem in the water sector not only for central governments but also for subnational governments. According to data from the Ministry of Public Works, funding for water infrastructure at the subnational level represents only .04% of the ministry's budget (Simanjuntak 2016). Furthermore, the subnational group ranked *benefit for local economic development* as the fourth most important motive, with a mean rating of 4.36. In contrast, the central government ranked this motive as the tenth most important motive, with a mean rating of 3.78.

A closer examination of the data reveals that the motives relating to the belief that the private sector has superior ability to develop infrastructure were not considered by either group as important as the other economic motives. *Better service than traditional procurement* was ranked as the thirteenth most important motive by the central government group, and the least important motive by the subnational group (the mean ratings were 3.57 and 2.58, respectively). These ratings may indicate that the Indonesian government, as have other Asian governments, has focused more on adopting PPPs to

supplement limited infrastructure funding than to improve service and efficiency. Wibowo (2015) found that limited funding is often raised as a justification for re-allocating infrastructure spending to other priorities, such as public education and health—areas that are not traditionally shared with the private sector. Thus, governments may have become more focused on short-term needs than long-term goals.

The data also revealed that in general, the central government group rated the motives related to local benefits lower than the subnational group. For instance, *benefit for local economic development* was ranked tenth by the central government group, with a mean rating of 3.78, whereas it was ranked fourth by the subnational group, with a mean rating of 4.36. Similarly, *transfer technology to local enterprise* was ranked tenth by the central government group, with a mean rating of 3.78, while it was ranked sixth by the subnational group, with a mean rating of 4.16. Thus, there may be value in recognising the importance of local development to subnational actors when promoting PPP programs. . Water policy is created at the central government level (Hadipuro 2010). This partly explains the low ranking of the *public initiative* motive by both groups, with mean ratings of 3.21 and 2.80, respectively. What has occurred in Indonesia is like what occurred in the UK when its government attempted to use a top-down approach in order to promote the private sector's involvement in the delivery of public services. Indonesia may need a special PPP unit with adequate representation from subnational entities in order to promote PPP adoption across levels of government (Hodge and Greve 2007).

Statistical Testing for PPP motives

Because actors from various levels of government need to be involved in PPP arrangements in the water sector, joint decision-making processes may be difficult to manage (Klijn and Teisman 2003). To overcome this difficulty, Akhmouch and Kauffmann (2013) suggest the need to identify the major differences in the motivations

of actors and to create governance mechanisms in order to address the challenges generated by these differences. Accordingly, we performed a non-parametric statistical analysis using the Mann–Whitney U test in order to investigate whether there were any significant differences in the perception of each motive’s relative importance.

The results suggest that there are significant differences in how respondents from the central government and the subnational governments perceived the importance of the following motives for adopting PPPs: *better service than traditional procurement* (*p*-value: .02); *leader endorsement* (*p*-value: .04); *benefit to local economic development* (*p*-value: .06); and *private sectors have better capacity to provide infrastructure* (*p*-value: .08). The relative importance of the other 11 motives was perceived similarly by both groups of respondents (see table 6).

TABLE 6 *Statistical Analysis of PPP motives*

Motive for adopting PPPs	Government level	Mean rank	Mann–Whitney U	Significance (2-tailed)
Lack of infrastructure budget	Central	13.39	82.5	.61
	Subnational	14.65		
Better service than traditional procurement	Central	17.21	46	.02
	Subnational	10.54		
Integrative solution for infrastructure and public service	Central	16.29	59	.09
	Subnational	11.54		
Private sector has a better capacity to provide infrastructure	Central	16.36	58	.08
	Subnational	11.46		
PPP has been successfully adopted by other countries	Central	15.36	58	.16
	Subnational	11.33		
Leader endorsement	Central	10.96	48.5	.04
	Subnational	16.46		
Benefit to local economic development	Central	11	49	.06
	Subnational	16.42		
Reduce the price of the infrastructure services for the public	Central	12.39	68.5	.24
	Subnational	15.73		
Accelerate infrastructure development	Central	13.96	90.5	.98
	Subnational	14.04		
More opportunities for private sector to be involved in public service	Central	14.11	89.5	.94
	Subnational	13.88		
Long-term maintenance of infrastructure	Central	15.93	64	.15

	Subnational	11.92		
Timely and more effective construction period	Central	14.18	88.5	.89
	Subnational	13.81		
Public Initiative	Central	13.82	65.5	.48
	Subnational	11.95		
Following national program	Central	13.04	77.5	.72
	Subnational	14.04		

Source: Authors' calculations based on survey results.

Moreover, the mean rankings show that the central government group, more than the subnational group, tended to rate *better service than traditional procurement* and *private sectors have better capacity to provide infrastructure* as highly important motives. This indicates that there is a gap between the these two groups' perceptions of the notion that PPP arrangements offer better value for money in the provision of public services (Hodge and Greve 2007). Furthermore, the mean rankings also suggest that the central government group tended to rate the motives of *leader endorsement* and *benefit to local economic development* lower than the subnational group. This suggests a gap in the perceived importance of local actors in PPP arrangements in the water sector. Overall, our results suggest that the adoption of PPP programs in Indonesian is progressing slowly, especially in the water sector, because of conflicting goals, gaps in knowledge among key actors, and the lack of an appropriate mechanism for dealing with these problems.

Diversity and Level of Agreement

Because PPPs in the water sector involve groups from various levels of government, measuring the diversity in these groups might allow improved implementation and management of PPPs. The index of diversity (ID) proposed by Blau (1977) was calculated in order to measure the agreement between the central and the subnational governments regarding the perceived importance of each motive for adopting PPPs (see table 7).

An ID score of .80 (the highest possible) would represent strong disagreement in a group regarding the perceived importance of motives for adopting PPPs. Moderate

disagreement would be represented by an ID score of .41–.60, and weak disagreement would be represented by a score of .21–.40.

TABLE 7 *Calculated Measures of Diversity Index*

Motive for adopting PPPs	Level of agreement	
	Central government	Subnational government
Lack of infrastructure budget	.587	.379
Better service than traditional procurement	.769	.722
Integrative solution for infrastructure and public service	.541	.544
Private sector has a better capacity to provide infrastructure	.582	.556
PPP has been successfully adopted by other countries	.694	.645
Leader endorsement	.459	.292
Benefit to local economic development	.643	.569
Transfer technology to local enterprise	.643	.615
Reduce the price of the infrastructure services for the public	.663	.639
Accelerate infrastructure development	.582	.556
More opportunities for private sector to be involved in public service	.643	.609
Long-term maintenance of infrastructure	.500	.651
Timely and more effective construction period	.541	.544
Public Initiative	.541	.645
Following national program	.684	.653

Source: Authors' calculations based on survey results.

In the central government group, there was moderate disagreement about most of the motives, but no weak disagreement. However, the group strongly disagreed about the following motives: *better service than traditional procurement; PPP has been successfully adopted by other countries benefit to local economic development; reduce the price of the infrastructure services for the public; accelerate infrastructure development; and long-term maintenance of infrastructure*. These are generally considered as important motives for adopting PPPs, from a value-for-money perspective (Hodge and Greve 2007). In the subnational group, there was moderate disagreement about most of the motives. However, there was weak disagreement in the group about the following motives: *lack of infrastructure budget; leader endorsement; and transfer technology to local enterprise*.

PPP Challenges

The descriptive statistics also show how respondents from different levels of government ranked the relative importance of vertical coordination challenges in PPPs (see table 8). The central government respondents ranked the challenges between 2.15 and 2.92 on average. The subnational government respondents ranked them between 2.30 and 2.90. The overall average rankings were between 2.30 and 2.87.

TABLE 8 *Perceptions of Vertical Coordination Challenges*

Challenge	Overall		Central government		subnational government	
	Mean	Rank	Mean	Rank	Mean	Rank
Asymmetries in information between central and subnational governments	2.61	3	2.46	4	2.80	2
Fragmented authorisation at the central level	2.87	1	2.92	1	2.80	2
Overlapping central government regulations	2.74	2	2.69	2	2.80	2
Unstable or inadequate subnational government fiscal capacity	2.39	6	2.15	8	2.70	5
Insufficient technical skills and/or capacity of local actors	2.61	3	2.38	5	2.90	1
Less political support from local politicians	2.57	5	2.54	3	2.60	6
Strong political intervention	2.39	6	2.23	7	2.60	6
Insufficient evaluation by central government regulation	2.30	8	2.31	6	2.30	8

Source: Authors' calculations based on survey results.

Overall, the survey results show that *fragmented authorisation at the central level* was perceived as the most important challenge for vertical coordination in PPPs, with a mean rating of 2.81. This was followed by *overlapping central government regulations* and *asymmetries in information between central and subnational governments*, which were ranked as the second and third most important challenges, with mean ratings of 2.74 and 2.61, respectively.

Moreover, the results show interesting differences in the perceptions between levels of government. For the central government respondents, *fragmented authorisation* and *overlapping regulations* were the most important challenges for vertical coordination,

with mean ratings of 2.92 and 2.69, respectively. In contrast, the subnational government respondents perceived that the biggest obstacle for vertical coordination was *insufficient technical skill and/or capacity of local actors* (with a mean rating of 2.90), while the second biggest challenges were *asymmetries in information between central and local government*, *fragmented authorisation at the central level*, and *overlapping central government regulations*, both with mean ratings of 2.80. The central government respondents ranked *less support from local politician* as the third most important challenge for vertical coordination, with a mean rating of 2.54. This result is unsurprising and consistent with the findings of the Organisation for Economic Co-operation and Development's (OECD) study that finds that fragmentation across government agencies may create obstacles for cohesive water policymaking in developing countries (Akhmouch 2012). In addition, the fact that the central government respondents consider *less support from local politician* as an important challenge indicates that local political issues are important in shaping PPP arrangements in the Indonesian water sector (Jensen 2017). The subnational group's ratings indicate that inadequate experience and training of local actors in managing PPP programs may significantly contribute to the lack of progress in adopting PPPs in Indonesia (Bappenas 2017).

DISCUSSION AND CONCLUSION

This paper explored the motives for adopting PPPs for the provision of water services and identified the challenges of vertical coordination in PPPs. It found that each level of government ranked these motives differently, indicating disparate agendas. First, the subnational respondents appeared to recognise that local leaders have had more authority since Indonesia's decentralisation. Their responses also suggest the belief that the support

of local leaders is essential for promoting PPP adoption in their respective jurisdictions, especially when interregional cooperation is needed and the source of bulk water is in another jurisdiction. However, the central government respondents saw the role of local leaders as less important. Because the central government creates policy for the water sector, the progress of PPP adoption in this sector may improve if the central government amends its national policy in order to more clearly recognise the role that local leaders play in planning, developing, and implementing PPPs. Revisiting the current regulation of interregional cooperation for the provision of water could be especially beneficial.

Second, respondents from the central government and the subnational governments perceived the value of PPPs differently. Our results indicate that the central government respondents were more motivated by the value for money that PPPs can offer than the subnational respondents were. Similarly, the central government respondents, more than the subnational government respondents, appeared to believe that the private sector added value to the provision of services through PPPs. It would be interesting to explore this further.

Third, the central government respondents appeared to value motives related to the local benefits of adopting PPPs, such as local economic development, less than the subnational government respondents did. This indicates that the goals of the two groups differed regarding PPP adoption. Thus, a mechanism based on a better understanding of the groups' differences may be needed in order to reduce the resulting conflicts that delay governmental decision-making and deter the private sector from participating in PPPs. Central government actors need training programs that encourage greater understanding of local actors' perspectives on PPPs. Likewise, increasing the capability of local actors is crucial. Both can be achieved with a capacity-building program provided in the following ways: central government actors or international agencies that actively promote

PPPs could train local actors; local actors could build their capacity by transferring on secondment to the central governments PPP units; local governments could provide training programs to the central government actors so that a mutual understanding and benefit can be attained, or so that their skills and local knowledge are improved.

The survey also found that fragmented authority at the central level of government represents one of the biggest obstacles for vertically coordinating PPPs. Because actors with differing perceptions are involved the PPPs, a stronger coordination mechanism is needed at the central level of government in order to better address the challenges of implementing PPPs. This mechanism should improve the decision-making process and allow problems to be resolved faster. This study suggests that the Indonesian government should establish a central or an inter-ministerial PPP body that comprises representatives from line ministries and streamlines the adoption of PPPs.

Finally, the limitations of this study must be considered when interpreting the results. First, the small sample may have decreased our ability to detect significant differences between the central and subnational respondents. A larger sample of subnational respondents would have helped us to explore whether perceptions varied by jurisdiction (e.g., rural versus urban areas; high-density versus low-density populations). Second, this study captured perceptions only at one point in time. The survey asked the respondents to use only their current experiences with PPP adoption in order for them to rank the importance of motives. Third, the study focused on only one sector, the water sector, in which responsibility for adopting PPPs is largely decentralised (Mandri-Perrott and Stiggers 2014).

Future research could examine Indonesian PPP case studies in greater detail in order to better understand the differences that emerge between levels of government when they adopt and implement PPPs together. Examining such case studies could also focus

on not only the perceptions of actors but also on the effects of places, events, organisational roles, and relationships between actors from different organisations and levels of government on the development of PPP programs in the water sector (Yin 2014). Studies on PPP programs in the water sectors of other decentralised countries, such as India and Brazil, could reveal more general information for comparison.

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SUPPLEMENTARY DATA

The data supporting the findings of this study are available from Radies K. Purbo upon reasonable request: radies.purbo@griffithuni.edu.au

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