

A comparative study of the adoption of public-private partnerships for water services in South Korea and Singapore

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Abstract

Purpose – This paper investigates the internal factors driving public-private partnership (PPP) adoption for water services in South Korea and Singapore.

Design/methodology/approach – This study utilizes a comparative cross-national case study of PPPs in the area of water services by focusing on the similarities and differences between the two countries.

Findings – The findings show that while South Korea has employed the PPP model mostly to expand and modernize their sewage systems, Singapore has used PPPs to build and operate desalination facilities that produce potable water through the treatment and filtration of wastewater. The study also demonstrates that fiscal stress and political incentives stemming from socio-economic pressures are the respective critical factors in South Korea and Singapore's execution of PPP-driven water infrastructure.

Originality/value – Through exploring why and how PPPs have been adopted in the specific context, this paper might be helpful to enhance our understanding of the variations and common factors in the policy adoption process within the Asian context.

Keywords Public-private partnership, Water services, Policy adoption, South Korea, Singapore

Paper type Research paper

Introduction

Originating in Western industrialized countries, public-private partnerships (PPPs) are a contemporary tool for public service delivery and a process for intersectoral collaboration. They can be described as “long term contractual arrangements between the government and a private partner whereby the latter delivers and funds public services using a capital asset, sharing the associated risk” (OECD, 2012, p. 18; as cited in Hodge and Greve, 2018, p. 3). PPP advocates argue that such partnerships are likely to be driven mainly by the public sector's continual search for economic efficiency and innovation gains based on private resources —capital, technological knowledge, and human management skills (Brinkerhoff and Brinkerhoff, 2011; Kim and Kwa, 2020a). For governments who have struggled with fiscal deficits or limited funds, attracting market investment in the sphere of public service delivery could indeed be a way to not only decrease their financial burdens (Ng and Loosemore, 2007), but also fulfill their responsibility to meet citizens' increasing needs by providing a variety of



high-quality public services (Roehrich *et al.*, 2014). Given these expectations, the PPP has gained global popularity and in turn (or simultaneously) has attracted a great deal of attention in the public administration literature.

More notably, relying on generally accepted theories pertaining to partnerships — public choice theory (e.g., transaction cost theory) and inter-sectoral collaboration, much of the current research has discussed issues in management and performance evaluation (e.g., success and risk factors or risk allocation between the two main partners) that are embedded in the PPP arrangement (Kim and Kwa, 2020a, 2020b). In terms of proceeding with PPP projects, scholars have widely documented evidence that external diffusion forces including support by other (industrialized) countries or neighboring communities' practices increase the odds that the same policy will be adopted by a government who have a good justification for doing so, for example, as a way of outperforming others (e.g., economic development) or learning (Appuhami *et al.*, 2011; Ikenberry, 1990).

However, beyond such important external factors affecting local policy change (adoption), little is known about internal factors that represent the political, economic, and social characteristics of a state's policy environment. In particular, there is a relative dearth of scholarly research that closely explores how and why PPPs have been adopted in the specific context of Asia. Thus, this study aims to fill the gap by analyzing main internal factors driving the adoption of PPPs over time as well as external factors, comparing two countries, that is South Korea and Singapore. A comparative case study design is adopted by focusing on the similarities and differences in PPP-driven water infrastructure in these two countries.

Framework: drivers toward local policy adoption

To frame the focused analysis, we basically incorporate a widely cited conventional approach to policy adoption by Berry and Berry (1990, 1992) in this study. This approach encompasses two main determinants of local policy adoption at large: internal and external factors (Eom *et al.*, 2017) (Figure 1). Given such a policy innovation mechanism with the internal-versus-external factor dichotomy, as noted earlier, this study then narrowly focuses more on to exploring internal factors leading to local policy adoption of PPP-driven water infrastructure.

For the internal drivers, scholars have tended to broadly discuss a government's *domestic* circumstances, including their political systems and (in)stability, financial status, social

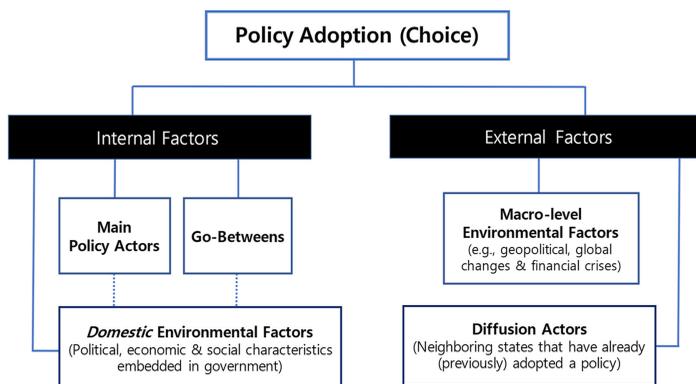


Figure 1. Policy Adoption Framework (Sources: Authors modified the analytical approaches by Berry and Berry (1990, 1992) and Eom *et al.* (2017))

demands and support, level of commitment, and legal and regulatory frameworks (e.g., [Berry and Berry, 2014](#)). In short, these factors may represent traditionally cited local environmental influences — political, economic and social (cultural) ones embedded in a government — or demographic characteristics.

Interestingly, recently published work has started to focus on the role of internal policy actors and political and legal institutions as the main drivers toward policy adoption and diffusion across local governments in a broader manner. For instance, scholars have further narrowed their focus to the willingness or incentives to adopt a policy among internal policy actors, such as elected and appointed local officials, interest groups, and policy advocates who consider adopting or supporting a specific policy ([Eom et al., 2017](#); [Graham et al., 2013](#)). Besides, evidence has shown that the vertically-forced role of political institutions, also known as “go-betweens,” such as the form of government, the relations between higher- and lower-tier governments, the top-down influence of a leading public agency, or a statewide guideline — may motivate local actors (or governments) to adopt a policy ([Kim et al., 2020a](#)). This direct, institution-centric mechanism for policy adoption is related to *competition* across jurisdictions at the local level and/or coercive forces (or sticks) in hierarchical central-local relations. Both policy actors and go-betweens are intertwined with domestic environmental factors at large in practice.

Research methodology

The research design is a comparative cross-national case study of PPPs in the area of water services. In this study, particular attention is paid to two Asian countries — South Korea and Singapore — based on the following rationale. First, although two countries have different governance contexts (e.g., political systems, history, and culture), both are Asian Tigers whose economies experienced relatively high growth from the 1960s through the 1990s, and both have experienced globalization, rapid demographic change (e.g., an aging populace and a subsequent lack of labor force), and the Asian financial crisis of 1997, not to mention progress on multiple public reforms since each government gained independence from a neighboring state (Japan and Malaysia, respectively) ([Common, 2001](#)).

Second, as they have pursued modernization and urbanization progressively, both governments have had stable political environments and strong leaders who have been willing to adopt and implement new policy initiatives, including PPPs to develop their economic and social infrastructure. Although “PPP policy reform is still in a kind of experimental stage” in many developing countries ([Appuhami et al., 2011](#), p. 432), according to recent data ranking the infrastructure development of 137 nations by the Global Competitiveness Report 2017–2018, Singapore ranks 2nd and South Korea ranks 8th, respectively ([Schwab, 2017](#)). This is not surprising, because Singapore, as one of the first countries in Southeast Asia to encourage private-sector investment in infrastructure, has continued to implement PPPs to deliver long-term large-scale public services, and has established a successful track record in the area of PPPs since the 2000s ([Kim and Kwa, 2020b](#), p. 150).

Needless to say, water is an essential prerequisite for human life, and PPPs in the water services sector, including the treatment and distribution of drinking water and the collection, treatment and disposal of wastewater, have increasingly been adopted and diffused in Asian developing countries since the 1990s ([Jensen, 2017](#)). Among those countries, South Korea (particularly with regard to wastewater) and Singapore were both initially considered stable second-wave adopters but later became successful role models to neighboring countries (for more information, see [Jensen, 2017](#)). For instance, Seoul sewage treatment systems have served as a benchmark for other Southeast Asian countries (e.g., Vietnam, Indonesia, and Brunei) ([MOE, 2016](#)).

All in all, South Korea and Singapore are suitable study sites for an exploratory and comparative case study to identify both common and unique factors with regard to the adoption of PPP-driven water infrastructure in the Asian context. Such a multiple-case approach is useful as it helps us validate explanations that may apply to other policy systems or cultural settings (Lijphart, 1971).

Analysis and findings

Given the conceptual framework underlying internal and external motivators that are believed to affect local policy adoption illustrated above, the authors attempt to answer the question: What can explain the adoption of PPP projects in the water services sector in each country? (Table 1). Then the similarities and differences in the factors that led to adoption of PPPs in the two countries are discussed.

Case 1: South Korea's PPPs in sewage services

Internal factor I: Rapid urbanization and modernizing infrastructure of local governments

Now that water-related infrastructure has been long regarded as a form of social overhead capital that has the nature of a public good in Korea, local governments have played a role as the main actors in charge of the supply of water and sewage services. As the government has moved toward rapid urbanization, however, it has faced increased demand from residents to modernize the sewage system over time. This is because major local governments (especially in metropolitan areas) have experienced population concentration accompanied by more use of industrial wastewater, causing aggravated water conditions. For example, during the 1960s and 1970s, serious contamination of the Han River and its tributaries escalated due to the gravitation of the population toward Seoul. Despite the continued success of economic development plans in the 1970s and 1980s, national sewage coverage has remained relatively low compared to developed countries. Moreover, almost every year, localized torrential downpours in the late summer and fall flooded houses in Seoul. This situation led local governments to revamp their sewage treatment policies, including building new sewage treatment facilities and repairing old or damaged pipes (Jeong, 2013).

Comparison Criteria		South Korea	Singapore
Internal Factors	Main Policy Actors	Local Governments	A Central Government (MOF)
	Go-Betweens	<ul style="list-style-type: none"> - Interlocal Competition - Collaboration among Institutions (here, MOE, MOEF, PIMAC, and localities) 	
Domestic Environmental Factors		<ul style="list-style-type: none"> - Rapid Urbanization - Demand toward Modernizing Wastewater Systems 	<ul style="list-style-type: none"> - Political Tensions with Malaysia - Limited land space with a tropical climate (lack of potable water) - A highly external-investment-dependent economy
External Factors	Macro-level	Financial Crises (e.g., Asian financial crisis in 1997; Global financial crisis in 2008)	
	Environmental Factors		
	Diffusion Actors	-	-

Source: By authors

Table 1.
Summary of Findings

More interestingly, in the 1980s, the so-called “environment rights” of residents were written into the Constitution, accompanied by a guideline to install sewage systems (MOE, 2016). People started to advocate for the human right to live in a clean, healthy environment. In the 1990s, demand for the expansion of basic environmental infrastructure (including the sewage system) surged. The growth of environmental non-governmental organizations (NGOs) such as Green Korea supported this tendency (Ku and Hong, 2013). Yet in practice, due to the need for funding to substantially expand sewage infrastructure, especially to ensure that wastewater services meet the standards of the Organization for Economic Co-operation and Development (OECD) (MOE, 2017), PPP-driven sewage-related management (e.g., sanitation and pipe maintenance) has begun to receive particular attention.

While water supply services are still mostly run by local governments, operation of the public sewage system now takes several forms, including direct management by localities, indirect management by local public corporations, and operations entrusted to private corporations. Private entrustments in particular have increased in recent years. Presumably, this is because new or expanded sewage treatment plants have been required to adopt private entrustment, and older plants have gradually converted to entrusted operations. For instance, in 2015, 69.9 percent of public sewage treatment plants were operated by private entrustment, 18.6 percent by local governments, and 26.1 percent by local corporations (Cho and Hong, 2017). Such changes appear to be driven by the pursuit of the new and advanced technology offered by private companies, which increases the competitiveness of the infrastructure and ultimately reduces government costs (MOE, 2007).

Internal factor II: Go-betweeners

1) Inter-local competition

Since the mid-1990s, decentralization reforms by the enactment of the Local Autonomy Law have led local jurisdictions to compete to attract more resources, especially for infrastructure projects, and subsequently increased employment and incomes, in response to different local demands (Kim *et al.*, 2020b). However, in practice, local government revenue has remained heavily dependent on the central government (e.g., intergovernmental grants), despite the massive transfer of political and administrative power to localities (Kim and Hong, 2016). Thus, the local government-led approach to sewage operation and management has faced substantial structural and financial challenges. It has been difficult for localities to operate the facilities in a cost-efficient manner, and they have had trouble securing the funds to build new infrastructure or repair deteriorating facilities (Cho and Hong, 2017). Facing make-or-buy decisions, local governments turned to PPPs.

Later, despite the limited (and unbalanced) local fiscal capacity resulting from the hierarchical nature of central-local relations, local communities have been able to influence sanitation projects. Since the 2010s, in response to emerging needs for efficient and environment-friendly infrastructure, water service projects have shifted toward offering “ecological space” for local residents and visitors. For example, sewage treatment centers have been built underground to mask unpleasant odors and topped with resident-friendly facilities including garden/forests, sports areas, swimming pools, playgrounds, parking lots, and a cultural complex that includes a water science museum and parks (e.g., Tanchon center (1999–2015) and Seonam center (2008–2027) as cited in Jeong, 2013). The growing popularity of such eco- and resident-friendly underground sewage systems was another important example toward local policy adoption. It seemed to produce *competition* among peer cities. Recently, many local governments (internal actors) have proceeded with this innovative strategy based on PPPs, which has encouraged a shift from NIMBY (not in my backyard) attitudes to PIMFY (please in my front yard) ones.

2) Collaboration among institutions

Although the initial stage of adoption of the PPP model for infrastructure development proceeded along with individual laws related to fundamental public facilities (e.g., the Port Act, and the Sewage Act in 1982), the Korean government has progressively established more comprehensive, systematic legal approaches, beginning with the enactment of the Act on Promotion of Private Capital Investment in Social Overhead Capital in August 1994 (MOE, 2016). This Act was considered the historical legal basis for private sector participation in Korean water services. Specifically, under this Act, while waterworks such as dams and the potable water supply remain under the direct control of the public sector, the government began to allow the transfer of the operations and management of sewage service projects to the private sector. In 1998, this Act was renamed the Act on Private Participation in Infrastructure (APPI), and the government set clear execution criteria for concession periods, risk sharing, minimum revenue guarantee, and user fees. In 2005, the government amended APPI again and since then, as a special Act, the APPI has taken priority over other Acts, and can thereby be exempted from strict government regulations (Kim *et al.*, 2011). Also, the PPP Act Enforcement Decree details the eligible infrastructure types, procurement types, and the role of public and private parties, among other provisions. For instance, Article 2 lists different types of infrastructure projects that are eligible for the PPP model (including 62 facility types across 16 sectors), including sewage-related facilities.

Furthermore, the MOE documented so-called work guidelines for the privatization of environmental facilities in 1997. Subsequently, individual laws related to water resource management, namely the Sewage Act and the Waterworks Act, were amended in 1997 and 2001, respectively, to encourage private participation in the installation and operation of each type of environmental structure. In support of this basic legal framework for each sector, the follow-up Enforcement Decree of the Water Supply and Waterworks Installation Act has defined the related technical and legal terms and conditions for water-related PPP projects. Notably, in 2013, to enhance professionalism and efficiency in public sewage management, the MOE revised the Sewage Act again, adding more regulatory standards. Enterprises with the intention of operating public sewage facilities are required to register for review and approval. This requirement laid the groundwork to ensure that private companies have direct responsibility for the operation and maintenance of public sewage facilities (Kang *et al.*, 2018).

Notwithstanding the gradual enactment of legal frameworks for environmental infrastructure, well-functioning institutional arrangements have been essential to implementing PPP projects. As the central public agency with authority over all national-level PPP projects, the Ministry of Economy and Finance (MOEF) has played a vital role in formulating the relevant plans and processes and managing PPP projects, such as assessing the feasibility and value-for-money of potential projects, designating concessionaires, promoting foreign investment in the projects, conducting policy research on programs and disseminating advice within the MOEF and to procuring ministries (Kim *et al.*, 2011).

The APPI organized a PPP review committee as a core unit in MOEF to implement national-level PPP policies (Kim and Lee, 2013) and also established an independent agency, Public and Private Infrastructure Investment Management Center (PIMAC), at the Korea Development Institute (KDI). PIMAC was launched by the merger of the Public Investment Management Center (PIMA) at KDI and the Private Infrastructure Investment Center of Korea at the Korea Research Institute for Human Settlement in 2005. As per PIMAC's specific guidelines in consultation with the MOEF, the center is required to perform "the feasibility analysis of large-scale projects and the evaluation of project plans" prior to the actual implementation of a PPP (Kim *et al.*, 2018, p. 9).

For regional-level PPP projects, the head of each local government is charged with executing and managing the projects. Local governments are also asked to organize the

performance assessment committee, which is responsible for evaluating private partners' sewage service operations on a quarterly basis (MOE, 2017). Taken together, the collaboration among institutions including the MOE, MOEF, and local governments appears to be a crucial factor in the successful operation of PPP-driven sewage services in Korea and related innovation adoption.

External factor: financial crises

The Asian financial crisis in 1997 led to significant constraints on the country's budget. Per capita income declined sharply after the crisis, from US\$12,197 in 1996 to US\$7,355 in 1998 (An *et al.*, 2010). Fiscal resources in the public sector alone were not sufficient to supply the level of infrastructure needed to support continued economic and social development. To overcome the financial crisis, the Korean government put considerable effort into promoting the PPP model for their large-scale infrastructure projects, seeking to utilize the private sector's creativity and efficiency in the construction and management of PPP projects (Bae and Joo, 2016; Lee, 2017).

In PPP-driven sewage projects, the government attempted to attract more private funds including foreign investment rather than aid or loans, not only to ease the financial burden on central and local governments, but also to introduce competition in the wastewater sector by diversifying potential investors. As a result, in 2005, in addition to the traditional build-transfer-operate (BTO), the build-transfer-lease (BTL) method was employed not only to attract a substantial inflow of investment into sewage pipe maintenance projects, but also to decrease the project risks borne by private investors (MOE, 2017; MOEF, 2011).

However, despite steady progress in the expansion and upgrading of projects, the number of private investments decreased due to the global financial crisis in 2008. In response to this challenge, the Korean government announced a PPP revitalization initiative in 2009, including easing regulations such as the equity capital requirement for BTO- and BTL-driven projects (Kim *et al.*, 2011). This decision was made in order to continue stimulating private investment in the operation and management of PPP-driven sewage service projects. In turn, by 2018, the total number of public sewage facilities was 4,111, and the national sewage distribution rate was 93.9 percent (Statistics Korea, 2018).

Case 2: Singapore's PPPs in desalination and reclaimed water services

Internal factor I: Political tensions with a neighboring state, Malaysia

Historically, Singapore's uncomfortable relationship with the neighboring state of Malaysia has elicited a great deal of attention in the water sector development. Since its days as a British colony in the 1920s, Singapore has relied heavily on water imports from the Malaysian state of Johor, located just north of Singapore. In 1961 and 1962, respectively, Singapore signed two different water import agreements with Malaysia to address its lack of an adequate water supply system (e.g., underground water reserves) due to the geographical constraints of its own territory (Centre for Liveable Cities, 2020; Chew, 2019).

Singapore originally focused on rainfall catchment and storage, but due to the country's scarce surface area, the catchment method only produced half of the country's total water usage, and Singapore has become more dependent on the state of Johor for the remaining supply (Chen, 2011; Lee, 2016).

After over a hundred years as a colony, on September 16, 1963, Singapore gained independence from the British and then merged with the Federation of Malaysia. During the merger period (1963–1965), however, relations between the two countries were fraught with conflict. It has been widely argued that the two key points of contention between Singapore and Malaysia were differences in political ideology and imbalanced economic contributions

(Abisheganaden, 1964; National Library Board, Singapore, n.d.). Specifically, the Malaysian Federal government wanted to pursue governance oriented around the idea of a ‘Malay Malaysia,’ which means that Malays were recognized as the politically dominant race and accorded special privileges (e.g., being awarded higher positions in and prioritized for promotions in the civil service). This ideology was in stark contrast to that of the People’s Action Party (PAP)–led government of Singapore, which supported a ‘Malaysian Malaysia’ (Lim, 2015). This ideology emphasized an independent, multiracial Singapore in which all races were treated equally under the principle of meritocracy. In the end, these political tensions led the ruling United Malays National Organisation to verbally denounce the head of the PAP government, Lee Kuan Yew. This denunciation created a tense atmosphere that resulted in two race riots in Singapore, on July 21, 1964 and September 3, 1964. Besides, in 1964, following a Malaysian budget call that aimed to raise M\$147 million through new taxes to address the federal deficit of M\$543 million, Singapore was required to contribute 39.8 percent of the total tax despite making up only 17 percent of the total population of Malaysia (Lim, 2017). Singapore found the decision unfair. Overall, one can argue that the political tensions likely played a bigger role than the economic conflicts in the eventual separation of Singapore from the Federation of Malaysia in 1965.

Although Malaysia guaranteed the sanctity of the two existing water agreements despite its conflicts with Singapore (Channel News Asia, n.d.), water has unsurprisingly emerged as a political/security issue since 1965. In other words, Malaysia has used water as political leverage against Singapore during times when relations between the two countries have been strained, for instance, occasionally threatening to cut the water supply (Kim and Kwa, 2020a; Todayonline, 2018). Hence, to reduce its dependence on imports from Malaysia and neutralize the water issue as a political threat, Singapore has turned its attention to developing two new sources of water by working with local and international private water/energy corporations to develop and advance filtration/treatment technologies that enable desalinated water and recycled wastewater to be suitable for industrial as well as household use, which are called as NEWater Public Utilities Board (PUB, 2019). In turn, based on the Design, Build, Own and Operate (DBOO) model, the construction of the Tuas Desalination Plant (2001–2005) near the coast became the first PPP-driven water infrastructure project in Singapore (Kim and Kwa, 2020b, p. 159). Indeed, the launch of NEWater in 2004, was a pivotal milestone in Singapore’s systematic approach to providing water services. To date, the current water resource management in Singapore has proceeded based on the “Four National Taps” strategy: local catchment, imported water from Malaysia, NEWater and desalinated water (Chen, 2011; PUB, 2023).

Internal factor II: a small-sized city-state with a tropical climate

Singapore’s unique geographical and environmental conditions have also had great effects on the adoption of PPPs in the water sector. Located along the equator, Singapore, as the smallest nation in Southeast Asia with limited land space, is home to an annual tropical climate, and has continued to face the challenge of finding sufficient water catchment areas to collect and store rainwater. In recent years, this situation has been aggravated by intensifying climate change (e.g., fiercer monsoon storms and flooding as well as longer hot and dry periods resulting from lower rainfall). According to the government’s prediction, Singapore’s water demand is about 430 million gallons per day (mgd), which is about the capacity of 782 Olympic-sized swimming pools (PUB, 2023). PUB, a statutory board under the Ministry of Environment and Water Resources, has projected that Singapore’s total water demand is likely to almost double by 2065.

This situation, coupled with the ever-increasing demand for high-grade water resources and the relative lack of in-house government expertise in terms of developing water

treatment/processing technologies and building/running large-scale water treatment plants, has prompted Singapore to look for innovative ways to secure a resilient water supply, including tapping private sector expertise and financing. Following a global trend that applied the PPP model to social and environmental infrastructure development (e.g., the UK's Private Finance Initiative in the early 1990s), Singapore became one of the first Southeast Asian countries to adopt PPPs to provide core public services including water services (Kim and Kwa, 2020a, 2020b).

Internal factor III: a highly external-investment-dependent economy

Now that Singapore is a geographically small country with a high population density but limited natural resources, the likelihood of Singapore surviving economically on its own has been slim. This has led the government to open its economy to the world since its independence in 1965. During much of this time period, Singapore has relied heavily on imports and foreign investments in the manufacturing and services sectors to drive its economy. In turn, Singapore has quickly begun to accumulate wealth and has gained a reputation as a financial hub for the Asia-Pacific region (Kim and Kwa, 2020b).

Due to Singapore's large reserves and budget surpluses, initially there was no urgent need for funding from the market to invest in the country's social and environmental infrastructure projects (Kim and Kwa, 2020a; Ping and Trager, 2014). However, like many other Asian countries, since the late 1990s, Singapore has struggled to protect public programs and services from unpleasant budget retrenchment (e.g., the Asian financial crisis) and maintain funds to respond to such external threats as terrorism and Severe Acute Respiratory Syndrome (SARS) (Kim and Kwa, 2020b; Lam, 2004). As such, beginning in the early 2000s, the government's longstanding embrace of the PPP model (i.e., working with private water and energy corporations) to provide high-quality water services to their people can also be understood as a means of continuously bringing external investment into Singapore for reaping efficiency gains and innovation over the project lifecycle (Centre for Liveable Cities, 2017).

Similarities and differences

Embracing the principle behind the NPM initiative, South Korea and Singapore have both progressively implemented the PPP model in water resource management. That is, both governments have adopted PPPs as a critical strategy to stabilize long-term financing of their infrastructure construction and management (e.g., renovation) while enhancing competitiveness and efficiency in the public sector and without undercutting service quality. In a relatively short period of time compared to Western countries, we thus claim that without the willingness of internal actors (especially political leaders) to adopt the policy innovation and the subsequent government commitment, private — including foreign — investment in national-level or large-scale local policy programs may not have proceeded so easily (Kim and Kwa, 2020a).

However, there are some clear differences in the internal factors influencing the PPP-driven water projects in the two countries. First, while the Korean case deals with wastewater collection and treatment at the local level, the Singapore case focuses on seawater desalination and the distribution of reclaimed water at the national level (Jensen, 2017). Specifically, South Korea has employed the PPP model mostly to expand and modernize their sewage systems, whereas Singapore has used PPPs to build and operate desalination facilities and NEWater plants that produce potable water through the treatment and filtration of wastewater. This difference shows the impact of the unique geographic and climate conditions embedded in each country (e.g., flood patterns and drainage risks in Korea; drought and floods due to tropical weather in Singapore).

Second, regarding the “go-between” factor, Singapore has a *de facto* top-down approach toward PPP water service projects, while the recent examples of environment-friendly and resident-friendly sewage systems in South Korea reveal an approach that combines financial support at the national level with responsiveness to local motivations. In short, in addition to the positive yet politically and financially induced forces by the central government, intercity (local-local) competition over capital and infrastructure may be another important factor in the local policy adoption process. It can reasonably be expected that by attracting private partners to build and/or operate water infrastructure projects, local governments (including politicians) might not only pride themselves on their ability to attract funds, but also to meet their community’s needs (Bae and Joo, 2016). Overall, Korea’s local PPP adoption in water services seems to be resulted from a combination of coercive and voluntary forces.

More importantly, in South Korea, local governments have played a leading role for this policy adoption, with the strong support of ministries (e.g., MOE and MOEF) and a research institute (PIMAC). Yet, in Singapore, the Ministry of Finance (MOF), a central coordination agency, has solely played a promoting and managerial role in proceeding with the PPP projects initiated by the government. For this, it should be noted that Singapore is a small-sized city state in which neither subnational structures (e.g., central-local tier relations) nor the rural-versus-urban continuum exist (Kim *et al.*, 2022). Besides, its political system that has been long dominated by a strong ruling party has been known as a competitive authoritarian state or an illiberal democracy (Abdullah and Kim, 2020). Such unique political characteristics could result in a more straightforward adoption and downward management to the PPP project scenarios.

Furthermore, in the Korean case, the legal foundation and institutional framework for PPP-driven water service projects have become more refined and sophisticated over time. Eventually, one comprehensive special law was made, which is still in use. Conversely, although all PPP contracts have been legally binding ones that exist for each project in practice, Singapore still lacks a single PPP-centric Act. No standardized PPP model contracts or transaction documents have been required, yet instead, an official set of guidelines (the PPP handbook) developed by the MOF in 2004 and then revised in 2012 (MOF, 2012) details related rules and procedures that cover the bidding process through the awarding of contracts.

Lastly, since the Asian economic crisis of 1997, government-led partnerships with the private sector have proliferated, creating a PPP boom since the 2000s (Bae and Joo, 2016), and both countries have embraced the trend. Yet in South Korea, it is likely that the adoption of PPP-driven water projects has occurred in response to financial challenges (e.g., lack of funds) in managing sewage systems. In Singapore, the longstanding political conflict with Malaysia over water access as well as the government’s will to ensure the resilience of external investment against the backdrop of contingencies appear to be the additional motivators of its willingness to adopt PPP policy in the water service sector.

Conclusion

Managing water resources, including the water supply and sewage and wastewater treatment, has long been a government responsibility in line with citizens’ basic needs and welfare, and government-led PPP arrangements for water services are no exception. Given these expectations, this study closely focuses on PPP policy adoption in the water service sector in two Asian countries—South Korea and Singapore.

The overall findings of this study suggest that to compete in the world market and to meet their citizens’ needs, both South Korea and Singapore chose to employ PPPs for long-term water infrastructure projects. In short, a lack of sufficient water infrastructure in their early years of nation-building has led both governments to seek innovative ways (here, via the

partnerships with the private sector) to provide high-quality potable water or wastewater services to their people in a cost-efficient way. This study thus reaffirms observations made in prior research supporting public choice theory (e.g., transaction cost theory) and inter-sectoral collaboration. However, we could take a wider view that in addition to unique environmental characteristics (e.g., climate-related factors) as a common driver, several internal (e.g., relevant legal and institutional development) factors and external ones (e.g., fiscal stress) work together as critical factors to proceed with of PPP-driven water service projects in South Korea, whereas the influence of internal factors far outweigh that of external ones in Singapore.

Although the evidence in this study cannot be generalized to all services or to all governments and is still preliminary and somewhat descriptively and chronologically organized, it is hoped that the case analyses can help enhance our understanding of the variations in and the common factors associated with the adoption of PPPs in the water service sector. Admittedly, our analysis deals with only the factors that could facilitate to the PPP projects and looks quite linear. Thus, future research should explore more latent (horizontal and vertical adoption) factors (e.g., the influence of policy networks or associations), education/training, or barriers such as bureaucratic culture and local politics. Further study may also be undertaken using similar cases in different Asian countries that value the management of mountains and water (治山治水) as an important agenda of the government since the old dynasty to better explore how the interactions (dynamics) of internal and external factors have played a role in shaping the PPP adoption process over time. Additionally, it would be interesting to compare the East with the West that has different tradition and political culture, given that these two have historically developed by competing and cooperating with each other.

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