www.water-alternatives.org Volume 14 | Issue 3

Marks, D. and Breen, M. 2021. The political economy of corruption and unequal gains and losses in water and sanitation services: experiences from Bangkok.
Water Alternatives 14(3): 795-819

The Political Economy of Corruption and Unequal Gains and Losses in Water and Sanitation Services: Experiences from Bangkok

Danny Marks

School of Law and Government, Dublin City University, Dublin, Ireland; danny.marks@dcu.ie

Michael Breen

Anti-Corruption Research Centre, Dublin City University, Dublin, Ireland; michael.breen@dcu.ie

ABSTRACT: This article presents empirical information on experiences of corruption in the wastewater sector. Previous studies have examined the types and magnitude of corrupt behaviour that have been documented in water supply and sanitation services and have found that corruption in the sector is sophisticated and pervasive. Drawing on interviews with key stakeholders, we document a range of corrupt behaviours at the citizen–institution interface and in public financial management. Our findings underline the importance of contextual factors, including the rapid industrialisation and urbanisation taking place in the Extended Bangkok Metropolitan Region, as well as the existing institutional and regulatory weaknesses. Our findings also point to the environmental impact of corruption in the wastewater sector, a hitherto neglected factor which our respondents perceived as an immediate and direct threat to their communities and livelihoods.

KEYWORDS: Political economy of corruption, wastewater and sanitation sector, Khlong Dan wastewater plant, integrity failures, Extended Bangkok Metropolitan Region, Thailand

INTRODUCTION

Corruption, the abuse of public power for private gain, threatens the right to clean and safe water for billions of people. Previous studies find that it hinders access to safe drinking water and adequate sanitation (Anbarci et al., 2009), contributing to millions of preventable illnesses and deaths every year (Montgomery and Elimelech, 2007). Several prominent studies have found that corruption is pervasive in the water and sanitation sector; this ranges from bribery, to falsification of meter readings, to institutionalised corruption at high levels of government (Davis, 2004; Butterworth and De La Harpe, 2009; Gonzalez de Asis et al., 2009; Tetreault and McCulligh, 2018). In response, the United Nations Sustainable Development Goals 6 and 16 have prioritised access to safe water and the fight against corruption. Scholars of water governance have also proposed a series of creative solutions to the problem, including greater attention to the study of incentive structures (Araral and Wang, 2013), citizen participation (Carr et al., 2012), and innovative technologies (Krolikowski, 2014).

We contribute to this literature by documenting the political economy of corruption in the wastewater sector in the Extended Bangkok Metropolitan Region (EBMR). Our study responds to the concern that this sector does not receive the same political attention as drinking water (Smith and Walker, 2019) and, more generally, that there is a need for further research on local corruption in urban centres (Zimelis, 2020). We argue that a study of the EBMR is important to an overall understanding of corruption in wastewater as the region is experiencing several interlinked social processes which are emblematic of

developing regions across the world. Among the most salient of these processes are rapid industrialisation and urbanisation, which in recent years have strained the region's water infrastructure to the breaking point. A highly fragmented regulatory structure has compounded the problem, plunging the sector into crisis and dysfunction and creating a breeding ground for corruption. Our study sheds light on this murky phenomenon, illustrating the political economy of corruption in the sector, as well as its broader social and ecological consequences.

Drawing on interviews with key stakeholders, we document a range of corrupt behaviours in the wastewater sector. Our analysis is informed by the classic definition of corruption as the abuse of entrusted power for private gain. This definition encompasses bribery and undue influence, and both grand and petty corruption. In the wastewater sector, these behaviours are typically manifested as the paying of bribes to avoid paying fees or to enable illegal dumping; they also include corruption related to the construction of wastewater treatment plants (WWTPs). While our analysis is sensitive to the classic definition, scholars of corruption argue that it is important to also consider questions of integrity in public life (Rose and Heywood, 2013). The lax enforcement of regulations regarding wastewater and pollution, for example, is not necessarily corrupt but can pose a significant threat to society. To address this concern, our analysis casts a wider net, considering integrity failures in wastewater in addition to behaviours that are in accordance with accepted definitions of corruption.

Our findings corroborate previous studies which expose corrupt behaviours that range from petty corruption and favourable treatment to grand corruption that has made national headlines. Our findings suggest that rapid development has placed infrastructure under considerable pressure, giving rise to corruption as a way to 'get things done'. This factor is further compounded by regulatory fragmentation, weak oversight of corruption, deregulation of environmental controls, and perverse incentive structures among state agencies. While some of these findings will be familiar to scholars of corruption and water governance, our interviews also point to novel effects and consequences, including substantial spillovers from the wastewater sector to other economic sectors, and severe environmental and ecological impacts. The environmental impact of wastewater – a hitherto neglected factor in the corruption studies literature – was perceived by some of our respondents to be an immediate and direct threat to downstream communities and their livelihoods. A common thread in our findings is the problem of unequal losses, where the impact of corruption is experienced most acutely by vulnerable individuals and communities. This is particularly evident in our findings related to smallholder farmers and those located in downstream areas.

This paper is organised as followed. First, we review the literature on corruption in the water and sanitation sector. Next, we outline our methods and the context of our investigation, providing an overview of corruption in Thailand in general and of the EBMR's wastewater sector specifically. We then present our findings from interviews with key stakeholders, and conclude with a discussion of potential ways to control corruption in the sector.

THE LITERATURE

The human cost of corruption in the water and sanitation sector is severe, with prominent studies finding that it limits access to safe drinking water (Anbarci et al., 2009; Kenny, 2009) and enables the spread of waterborne diseases (Duflo et al., 2012). Estimates also suggest that millions, and possibly billions, of people are affected. Transparency International (2008) estimates that in a best case scenario as much as 10 per cent of expenditure on water is lost to corruption, while a worst case scenario suggests a loss of as much as 30 per cent.

There are several reasons why the water and sanitation sector is prone to corruption. First, the sector is typically monopolistic in structure, and water infrastructure requires high upfront costs to build and maintain (ibid). Second, water governance is often weak and fragmented, with a small number of officials having substantial discretionary power over spending decision. Third, regulatory fragmentation is very

common, where water management is the responsibility of multiple and sometimes overlapping agencies and ministries, which gives rise to conflicts of interest and inefficiencies in service delivery.

Institutions, actors and incentives feature prominently in most political economy research in the area of water and sanitation. Krause (2007, 2010), for example, finds that the level of democracy and the robustness of the rule of law is associated with greater access to water and sanitation services and that poor quality governance at the subnational level affects the efficiency of providers, which in turn hinders access to services. Harris et al., (2011) also emphasise the importance of institutions, actors and incentives in their political economy framework. Institutions alone thus do not explain everything that we observe in the wastewater sector. A wide range of historical, developmental and distributional issues also feature prominently in the literature. Auriol and Blanc (2009), for example, present evidence on access to water in sub-Saharan Africa, finding that it is vulnerable to capture by the ruling elite. Gandy (2008) points to the historical and postcolonial roots of Mumbai's dysfunctional water infrastructure, arguing that problems that originated in the colonial era have been exacerbated by rapid urban growth, authoritarian forms of political mobilisation, and the dominance of middle-class interests. Kjellén (2018) shows how the burdens and risks of pollution are displaced onto the poorest or more distant populations, and that this process is compounded by economic growth. Taking our lead from these findings, we expect that the problem of unequal losses is compounded by corruption in water and sanitation.

While existing studies shed light on the causes and consequences of corruption in water and sanitation, there is still much that we do not know about the scale of the problem. Cross-national data on corruption in water and sanitation is patchy and there are significant issues regarding its reliability. Most empirical work on corruption uses Transparency International's Corruption Perceptions Index or the World Bank's Control of Corruption Indicator. Both are based on expert perceptions of corruption and there is an ongoing debate about their limitations. Neither take into account the difference between grand or petty corruption or tell us where corruption is located in the public sector. Many scholars have also criticised them on methodological grounds, arguing that they are vulnerable to the biases of the experts who compile the indicators (Svensson, 1999; Reinikka and Svensson, 2006; Fan et al., 2009) and are slow to keep up with new developments (Knack, 2007; Kenny, 2009).

There have been several attempts to address these concerns. The World Bank's Enterprise Surveys and other major cross-national surveys like the Afrobarometer have collected microdata on corruption in the water sector, surveying businesses and individuals to gather their experiences on corruption and access to water services. Unfortunately, the results from these surveys remain underutilised by researchers. This leaves many gaps in our understanding of the broad causes and consequences of corruption in water and sanitation, including its relationship to other political and cultural institutions and practices.

Davis (2004) gives us the most comprehensive snapshot of corruption in the sector. She documents the types and magnitude of corrupt behaviours in water supply and sanitation services in several localities in South Asia. Her findings suggest significant evidence of petty corruption, with respondents reporting corrupt activities related to falsifying meter readings to produce lower bills and the paying of bribes to expedite repair work and new connection applications. The most common type of bribe was that paid to have meter readings falsified. 41% of respondents had made more than one payment for this purpose in the previous six months. Water and sanitation agencies agreed that it was a common behaviour.

To understand corruption in the water sector and in areas of public and social life, scholars in corruption studies have increasingly turned to experiments and other types of data collection, including the gathering of public procurement data. Adam et al. (2020) use this approach to study corruption in the water sector in Ecuador, Jamaica, Mexico, Paraguay and Uruguay from 2006 to 2018. They estimate the financial costs of corruption on contract award prices and the social costs of corruption in stifling projects through delays and cancellation. They find significant variation in levels of corruption across countries, with substantial prima facie evidence of corruption risk in the water sector.

Adam et al. (2020) and Davis (2004) have produced detailed and sophisticated analyses, but gaps remain in our understanding of corruption in the water and sanitation sector. In particular, there is a need to better understand how societal forces such as rapid growth, industrialisation and urbanisation shape the sector. Studying how these processes give rise to corruption can help us to illuminate the problem and develop more effective solutions and remedies. There is also a need to address deficits in quantitative indicators of corruption. This can be done by studying corruption in contexts such as the wastewater sector, which are generally less visible and which receive less political attention than other sectors. Finally, there is a more general need for research on local corruption in urban centres. Our method and approach are described in the next section.

METHODS

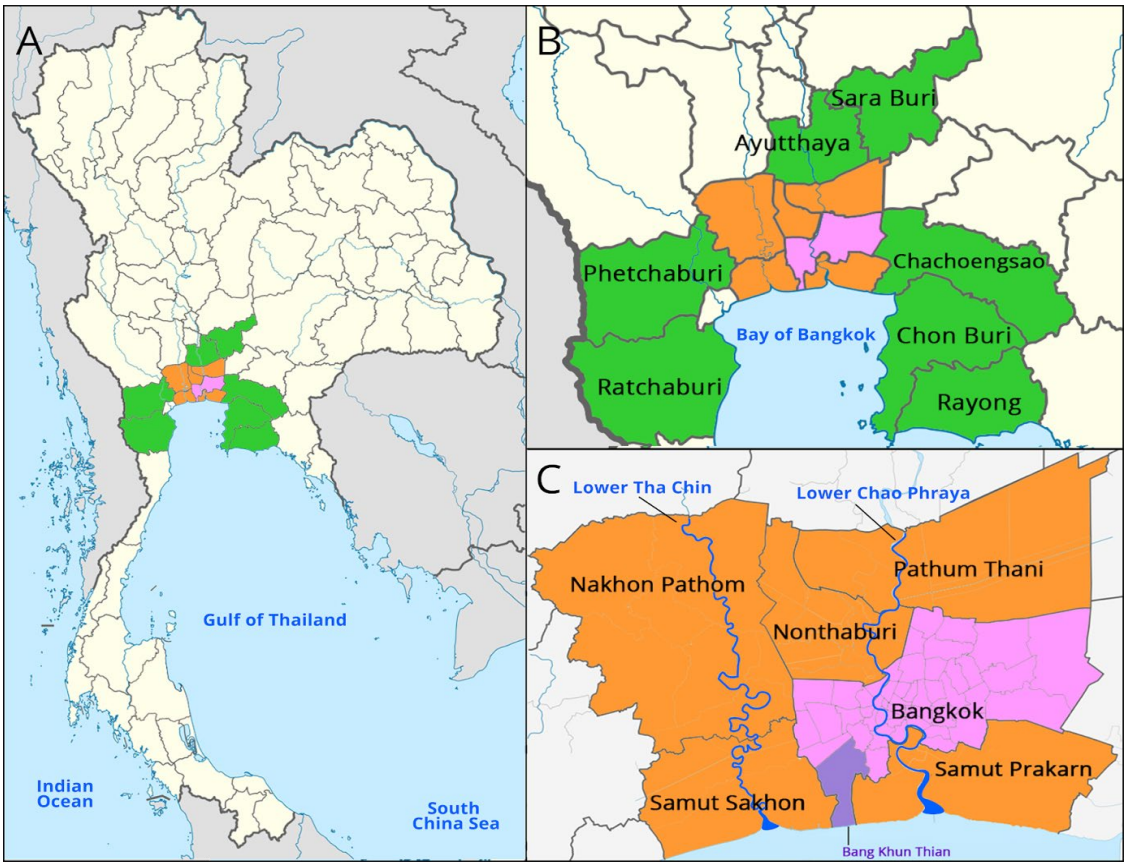
Our methods were comprised of two components, a literature review and key informant interviews. The literature review included NGO and donor reports, policy documents, academic articles, newspaper articles, and online media. From that review, a stakeholder list was created, which was refined as the research evolved. Key informant interviews were conducted with the actors mentioned below. The interviews took place over the course of approximately five weeks from June to August in both 2019 and 2020, in the EBMR. In total, 31 stakeholder interviews were conducted with NGO representatives, national- and local-level government officials, academics, think tank officials, community leaders, and farmers. Using the snowball sampling method, we identified additional stakeholders during our interviews, allowing us to connect with a wider community of actors involved in wastewater governance in the EBMR. We asked them about the linkages between corruption and poor wastewater treatment, the actors involved in corruption, the effects of politics on corruption in the sector, and their suggestions of ways to address this problem. Interviewees' identities were kept confidential given the sensitive nature of the topic. Most statements could not be formally substantiated because – as is the very nature of corruption – it is hidden and is threatening to whistle-blowers.

The research area extended substantially beyond the formal urban boundaries of Bangkok to encompass the entire mega-urban region. The Bangkok Metropolitan Region (BMR) consists of Bangkok and the surrounding five provinces (Nonthaburi, Pathum Thani, Samut Sakhon, Samut Prakarn and Nakhon Pathom); the Extended Bangkok Metropolitan Region (EBMR) is comprised of the BMR plus the surrounding provinces of Ayutthaya, Saraburi, Chachoengsao, Chonburi, Rayong, Ratchaburi and Phetchaburi (Figure 1). In the past few decades, these areas have rapidly urbanised and industrialised. The region's population grew by over 40% from 1970 to 2010 (Puttanapong, 2018). As of 2017, 55,630 licensed factories were located in the EBMR; this constituted the majority of the country's factories (Thailand Clean Air Network, 2020) (Figure 2). Much of the wastewater problems arise not only in Bangkok; a large proportion is generated in these surrounding provinces. Due to lower land and labour costs and more lax regulations, it is in these provinces that many industrial areas and new housing developments have come to be located (Parnwell and Wongsuphasawat, 1997). The EBMR contributes about half of Thailand's GDP.

CORRUPTION IN THAILAND

Corruption remains rampant and widespread in Thailand. The country's score on the Corruption Perceptions Index has backslid in recent years, coinciding with the military government's putsch in 2014. In September of last year, a representative of the United Nations Development Programme asserted that the Thai government has lost up to 100 billion baht due to corruption-related public procurement (*Bangkok Post*, 2019). A 2017 poll by the University of the Thai Chamber of Commerce found that extra payments ranging from an average of 5 to 15% were given to state officials and politicians when bidding on official government projects (Khaosod, 2018). In 2017, Thailand scored only 2.5 out of 7 and ranked

Figure 1. Map of a) Thailand; b) the Extended Bangkok Metropolitan Region; and c) the Bangkok Metropolitan Region.

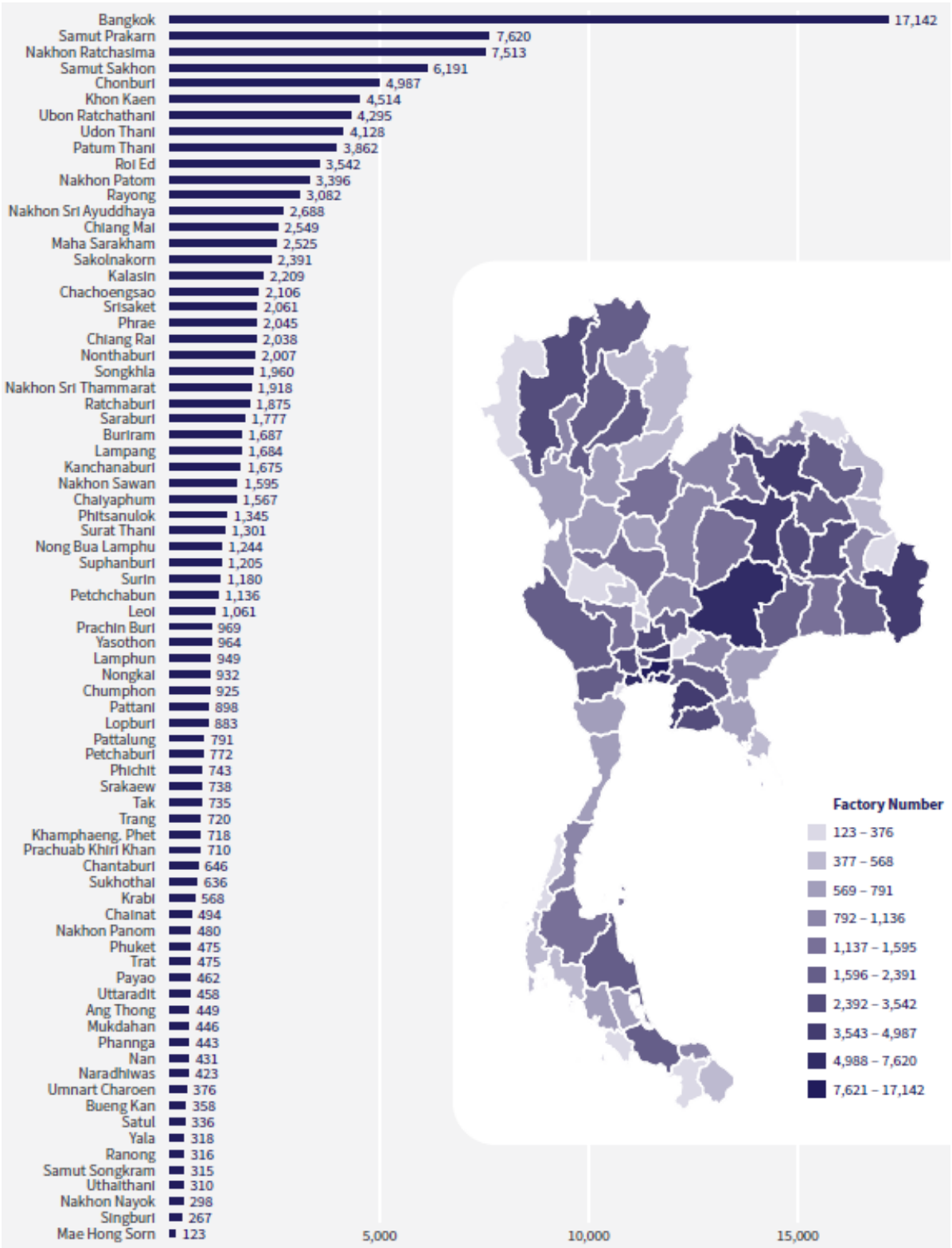


Source: Fisher (2021).

108 out of 140 under a World Bank index on Wastefulness of Government Spending (Watcharothai, 2018). In a 2002 PricewaterhouseCoopers survey of Thai companies, bribery and corruption adversely affected 31% of respondents. Almost one-fifth (18%) of respondents stated that they had been asked for a bribe, while the same proportion believed that they had lost an opportunity to a competitor who had paid a bribe (PricewaterhouseCoopers, 2020).

The number of corruption-related complaints against local government agencies is much higher than against any other agencies. Half of all Thais believe that local governments are corrupt (GAN Integrity, 2017). Local governments are notorious for their connections to construction companies and many scandals have been reported in the media. One reason for the high number of cases is the sheer number of local agencies. Another potential explanation is that decentralisation, which began in the 1990s, has led to more power and financial resources being placed in the hands of these local bodies (Buchenrieder et al., 2017). Still another possible reason for the perceived high levels of corruption in local government is that higher levels of government are less transparent and thus corruption is better concealed. Yet another explanation is the low wages of local officials, especially in comparison to those in the private sector (ibid). Finally, high-ranking officials in many departments are corrupt which, in turn, induces lower-ranking officials to become "inducted into a subculture of raising unofficial revenues and redistribution through the hierarchy of the department" (Phongpaichit et al., 1996: 185). Treerart's survey (2004) of civil servants found that "position buying" was widespread, with lower-ranking officials giving bribes to their superiors in the hope of obtaining a promotion.

Figure 2. Number of licensed factories by province in 2017.



Source: Thailand Clean Air Network (2020).

Scholars have identified a number of reasons for Thailand's persistent high levels of corruption. Patron – client relations form the backbone of Thai society and are a driver of widespread corruption. Patrons provide their clients with protection and connections and, in return, the clients are expected to reciprocate by providing money or an in-kind payments (Persons, 2016). Patron-client relationships are particularly prevalent among three groups in Thailand: politicians, public officials, and businesspeople (Tangsupvattana, 2011). Individuals also tend to stay silent to protect their own interests rather than expose corrupt practices. Whistle-blowing can be deemed a betrayal and Thais worry that they will become isolated and lose their jobs if they do so (Sirisophonphong, 2019).

Another problem is that Thailand's National Anti-Corruption Commission (NACC) has not been very effective in curbing corruption, one reason being that it cannot fully handle its workload. Although the number of staff members grew from 300 to 2200 between 2000 and 2017, the workload of each commissioner is still high and, as a result, the agency still has many outstanding cases (Pathmanand and Connors, 2019). In its 2017 annual report, the NACC reported a backlog of 15,363 cases out of a total of almost 50,000 cases that it had dealt with since its inception (NACC, 2017). This heavy workload results in long periods of time before cases are concluded. The agency has also not been very successful in securing convictions; only 105 of the 1285 cases sent to judicial authorities actually led to convictions (Pathmanand and Connors, 2019). The lengthy time period that court cases require and the low conviction rate enable corrupt individuals or agencies to act with a high degree of impunity.

OVERVIEW OF EBMR'S WASTEWATER SECTOR

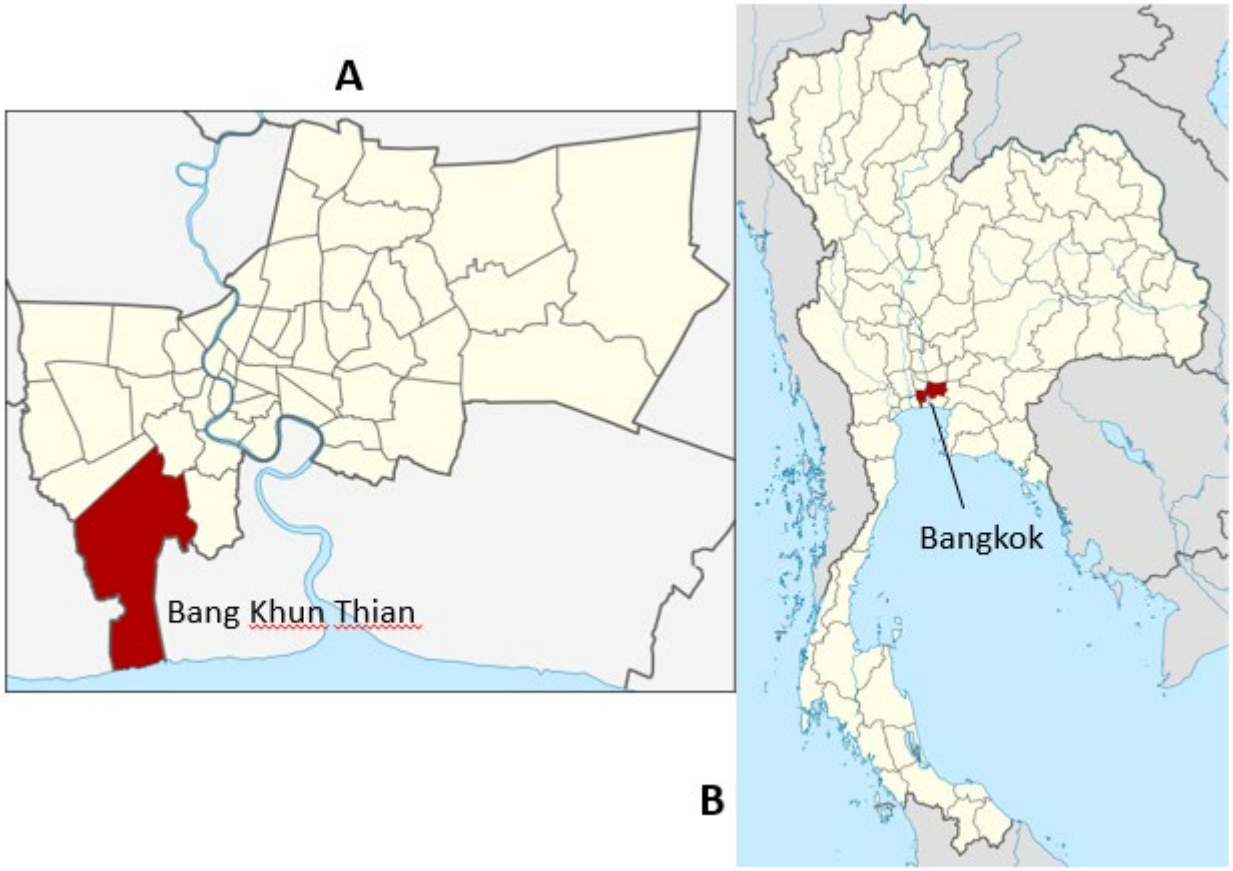
As mentioned, wastewater is a major problem in the EBMR; this is evidenced by the poor water quality of the major rivers flowing through the area and the classification of Bangkok and the surrounding provinces as having "poor water quality". This was confirmed by government officers that we interviewed. For example, a Pathum Thani Provincial Administration Organisation (PAO) official stated that the wastewater situation in his province is "very bad" and a Samut Prakarn PAO officer declared that, "wastewater is getting worse". A Pollution Control Department (PCD) official agreed, saying that, "[t]he situation [in the EBMR] is getting worse and does not show any signs of changing".

The three major sources of wastewater in the EBMR's waterways and along its coasts are households, factories and agriculture/aquaculture. Bang Khun Thian (BKT) is a peri-urban subdistrict in southern Bangkok, bordering the Gulf of Thailand (Figure 3). The BKT District Assistant Director stated that wastewater in his district was a national environmental problem. He felt this to be the case because it came not only from Bangkok but also from many other provinces, since the Chao Phraya River, its tributaries, and hundreds of interlinked canals run through many provinces before flowing through BKT and then releasing their water into the Gulf of Thailand, and they thus bring wastewater from many sources. As of 2018, for the country overall, the industrial sector is the highest polluter, discharging up to 18 million cubic metres (Mm^3) of wastewater per day; this is followed by the municipal sector with 10 Mm^3 (which includes waste from residences and commercial buildings), and the agricultural sector at 3.9 Mm^3 (OECD, 2018).

One source of wastewater that enters waterways which then flow down into BKT is households. According to a Department of Marine and Coastal Resources senior official, some small houses – such as those in slum areas – do not have septic tanks; also wastewater treatment is lacking in many villages and these households thus release their waste directly into canals and rivers. He added that Bangkok's sewage system does not cover all households, with coverage rates estimated by the PCD to be between 60 and 70%. Statistics confirm that much wastewater is untreated, with only 45 to 53% treated in the Bangkok

conurbation (Mrozik et al., 2019).[1] A PCD senior official stated that many households in Bangkok and Samut Prakarn, a neighbouring province, operate small, household-size factories in their houses and illegally dump significant amounts of wastewater. A 2010 study conducted in Nonthaburi Province also found that new residential developments worsened wastewater quality in nearby canals (Honda et al., 2010).

Figure 3. Maps of a) the Bangkok subdistrict of Bang Khun Thian, and b) Thailand showing Bangkok.



Source: NordNordWest (2009).

Other sources of wastewater are factories, particularly those in the EBMR. While industrial estates have sufficient wastewater treatment facilities, some small factories do not, even though by law they are required to have them. While the PCD sets wastewater standards, the Ministry of Industry rarely enforces them. Despite the PCD seeking to enforce wastewater standards, the department has limited staff since, about a decade ago, the national government reduced the number of inspection officers in order to save money. There are thus only three such officers in each province, making it impossible for the officers to inspect all of the factories. As of 2018, over half of the factories near Bangkok's San Saab canal – much of whose wastewater eventually flows into BKT – did not treat their wastewater properly (OECD, 2018). A 2020 study by a local Thai NGO found that land and water samples taken from an industrial area in Muang

[1] Mrozik et al. (2019) derived the cited statistics from two other articles; a 2013 article stated that 53% of wastewater in the Bangkok conurbation is treated (Buathong et al., 2013) whereas a 2016 article stated that 45% of the wastewater is treated (Thitanuwat et al., 2016).

District in Samut Sakhon province were "contaminated with high levels of arsenic, lead, cadmium, chromium, zinc, copper and nickel" (Kongrut 2020a).

Agriculture and aquaculture farming also exacerbate the problem. Pig farms, for example, generate a significant amount of waste and some of it runs off into waterways; some upstream aquaculture farmers, such as fish and shrimp farmers, also do not treat their water adequately and thus cause downstream pollution, including in BKT. In 2017, hundreds of freshwater fish and shrimp farmers from Samut Songkhram and Phetchaburi protested outside the Ratchaburi provincial hall, complaining that the public waterways in their provinces were contaminated with untreated wastewater from a large pig farm in Ratchaburi's Pak Tho district (Srinualchan, 2017). Farmers elsewhere along the Chao Phraya River have blamed wastewater for several mass die-offs of fish (Lebel et al., 2019).

According to an official from a local NGO, worsening wastewater in the EBMR over the past few years has primarily been due to increased wastewater discharged from waste recycling, such as from the recent boom in smelting of electronic waste (Kongrut, 2020b; Jirenuwat and Diggleby, 2021; Juengsmarn and Saetang, 2021). The number of court cases around wastewater dumping has also increased in the past three years, although it remains relatively low. One major driver occurred in January 2018: after a quarter century of processing nearly half of the world's recyclable waste, China enacted its 'National Sword' policy, which banned the import of most plastics and other materials used by the nation's recycling processors (Katz, 2019). In response, Thailand struggled to expand its domestic capacity in order to keep pace with the surge in waste imports that had previously been absorbed by China (Marks et al., 2020). In 2018 alone, Thailand received 481,000 tons of plastic waste imports, compared with 70,000 tons in 2016 (Macan-Markar, 2019). According to this same NGO official, many of these recycling firms were discharging untreated wastewater. In 2018, for example, police raided Dexin Industries in Samut Prakarn after the government found that this Chinese company had been illegally dumping wastewater from its waste recycling process; the operators had already fled (Nanuam, 2018).

Regulatory structure and political economy of the EBMR's wastewater

Besides increasing population and urbanisation in the areas upstream of the EBMR, there are a number of underlying political-economic drivers to this wastewater problem. First, there is the politics of position (upstream versus downstream) (Lebel et al., 2005). Similar to those who build floodwalls, upstream actors such as local governments, industries and fish farmers do not have strong incentives to reduce their wastewater because, flowing downstream, it does not affect them or their area. As a PCD officer declared, "When we talk about percent of wastewater, it varies from downstream to upstream. For downstream areas, they always have a problem of a higher pollution load". A local farmer in BKT concurred, saying that, "It is not fair. All the wastewater comes here from Bangkok before going in the ocean because we are south of Bangkok. The Bangkok government should control the water and improve sewage before it flows into the sea".

The second political-economic driver is that, like many regulatory structures in Thailand, that of wastewater is fragmented both horizontally and vertically, weak and unclear. The major agencies involved in governing wastewater are:

1. The Pollution Control Department (PCD), Ministry of Natural Resources and Environment (MONRE); this agency identifies wastewater sources, sets standards such as those on wastewater treatment plants (WWTPs) and building effluent standards, and monitors quality;
2. The Department of Industrial Works (DIW), Ministry of Industry; this department is responsible for overseeing wastewater from factories and can fine violators;
3. Local government organisations, such as provincial bodies and municipalities; these are responsible for treating municipal wastewater from buildings such as hotels and residencies, and constructing WWTPs;

4. The Office of Natural Resources and Environmental Policy and Planning (ONEP), MONRE; this agency administers the Environmental Impact Assessment (EIA) process, including wastewater;
5. The Ministry of Agriculture; this ministry is responsible for governing wastewater generated by aquaculture farmers;
6. The Wastewater Management Authority (WMA), Ministry of Interior; the WMA provides technical assistance to municipalities in constructing and running WWTPs and manages 15 WWTPs in the Lower Chao Phraya River Basin (Netherlands Embassy in Bangkok, 2016).

The 1999 Decentralisation Act handed local administrative organisations (LAOs) such as municipalities additional responsibilities and power; this included the responsibility to safely dispose of wastewater. The central government has subsequently transferred funds to LAOs, including those in the EBMR, for the construction and monitoring of WWTPs (Tevapitak and Helmsing, 2019). Constituents elect local government leaders, including the mayors of Bangkok and Pattaya, while, at the same time, provincial-level bodies are under the control of the national government (see Marks and Lebel, 2016). LAOs oversee 86 WWTPs and the WMA oversees 15 (Netherlands Embassy in Bangkok, 2016).

Each of the numerous agencies at the central, provincial and local levels has its own interests, and they rarely work together. Each ministry and department operates as a small kingdom, trying to control the issues and projects under its jurisdiction (Reynolds et al., 2012). This fragmentation is particularly stark in the state's water management sector, where at least 31 departments in 10 ministries have overlapping and unintegrated responsibilities (Marks, 2019a). To make matters worse, 36 primary and 2000 secondary laws, some of which contradict each other, regulate water (OECD, 2018). This high degree of fragmentation has caused conflicts of interest and interagency clashes over who should be responsible for wastewater. The PCD, for example, sets wastewater policies for factories but it is the DIW that is supposed to enforce it. However, the latter's mandate is to expand industrial growth rather than curb it through environmental regulations. The national government also focuses its policy on improving solid waste management while neglecting wastewater (ibid). As a BKT community leader stated, "This problem is too big for the community to address. But the national government is not doing anything". Because of the lack of cooperation and differing incentive structures, as a senior PCD official declared, "It is a finger pointing game. Everybody is blaming each other [for the wastewater]".

Third, the country's incomplete decentralisation has weakened governance in the wastewater sector. While Thailand began decentralising and devolving power to LAOs in the 1990s, this process has been incomplete due to the retention of power and resources by central bureaucrats and the continued weakness of LAOs (see Marks and Lebel, 2016). LAOs in the Lower Chao Phraya Basin thus have a limited capacity to manage wastewater. As a PCD senior official explained, "Working on wastewater is too technical for local governments to do on their own". The Bangkok Metropolitan Administration (BMA)[2] also has a limited mandate to address industrial wastewater. If BMA officials find, for example, that factories within the BMA's jurisdiction are releasing wastewater, they cannot directly order the factory to stop. Instead, they have to ask the DIW to do this, but often this department does not heed their requests. As a BMA officer stated, "So far BMA has no authority to order everything directly. So many agencies obstruct BMA". Within the BMA, some district offices, such as that of BKT, seek to help but have limited power. As a BKT community leader said, "the district office helps the most but it has little power and not much budget". The BKT District Assistant Director added that, "We are at the bottom of the hierarchy. The district has to send issues to BMA and then to the national government (…). The country is only partially decentralized. This means there are not clear solutions to address problems". When LAOs build WWTPs, it is difficult for them to raise enough capital to actually operate the plants. One reason for

[2] A single metro-wide Bangkok Metropolitan Administration (BMA) was created in 1972; it replaced the Bangkok Municipality which administratively unified Bangkok and Thonburi.

this is that none of them charge wastewater fees. The BMA, for example, approved a regulation to collect a treatment fee, but the policy has not yet been implemented (Mrozik et al., 2019).

The fourth political-economic driver is lack of electoral pressure and representation, which contributes to the problem. BKT farmers have voiced complaints about wastewater to the BMA and have requested its assistance. As one community representative lamented, however, the BMA had not taken any action thus far. According to a Mahidol University Professor and BMA consultant, the BMA's inaction is because "[it] does not care about voters in the coastal zone; it only cares about voters in the inner city", the latter being much more densely populated and wealthier than the BKT. The BMA thus devotes its policy attention and budget to other problems facing its residents.

Overall, the fragmented and weak governance of wastewater in the EBMR, combined with the lack of representation and the low priority placed on wastewater by national leaders, makes this sector more conducive to corruption.

CORRUPTION IN THE EBMR'S WASTEWATER SECTOR

Integrity failures play a key role in the increasing problem of the EBMR's wastewater and in the failure of all levels of the Thai government to tackle this problem. Government officials, NGO officials, and community leaders all agreed with this. For example, a PAO officer in Pathum Thani declared that, regarding wastewater, "[t]here is corruption at the highest level". A Samut Prakarn PAO officer agreed, commenting that, "[t]he corruption issue is stopping solutions from being implemented". This section goes on to describe the three major types of corruption in the sector and examines their underlying drivers.

Bribes to avoid paying wastewater fees or to enable illegal wastewater dumping

A major source of corruption is at the citizen-institution interface; this includes bribes to government officials in order to obtain factory licenses or to avoiding paying fines or fees related to wastewater. According to Penchom Saetang, director of the local NGO, Ecological Alert and Recovery Thailand, it is also related to the rise of imported waste in Thailand, particularly in the EBMR. In June 2019, she raised the question, "What does Thailand want with this kind of waste?", and then herself answered that, "corruption has a lot to do with it" (quoted in Rojanaphruk, 2019). A Thai NGO official added that in June 2020 she interviewed a recycling factory owner who told her that, according to the law, the licensing fee to operate that type of factory was around 10,000 baht. She added, however, that to obtain the license he had to pay one million baht to provincial DIW officers. One benefit he received in exchange for the bribe was that he would not be fined for discharging wastewater from his factory. She called this process a "vicious cycle" because it leads to a steady increase in corruption and wastewater dumping.

Another alleged licensing case occurred in Rayong. As mentioned, farmers there complained that wastewater was destroying their crops. According to a local NGO official, at first this factory did not process waste and there was no wastewater problem. Problems arose, however, when the company Win Process took over the factory. The company obtained three factory licenses for operating different types of industrial activities: 1) Type 40, for sorting unusable materials, compressing paper, metal and plastic scraps; 2) Type 60, for smelting and casting metals; and 3) Type 106, for recycling used fuel oil and for container-cleaning with solvents (Pawa, 2020). The NGO official pointed out, however, that the owner should not have received the last two licenses because the factory is located in the middle of an agricultural community, not an industrial area, and it is illegal to operate those types of industrial processes in such areas. He raised the questions, "How could the company obtain the Type 60 and 106 licenses if not for corruption? The [Win Process] owner is a politician in this province so he has very good connections. Is this why he can operate the company here?" His answer to these questions was that, "provincial [DIW] officers just ignored the [wastewater] problem"; they also ignored the complaints of the farmers and the NGO. As he further elaborated:

> We tried to close this company for a long time but because the owner is a politician and the provincial office supported him by issuing the two licenses, the government closed their eyes when the people informed them that the factory was dumping wastewater into paddy fields.

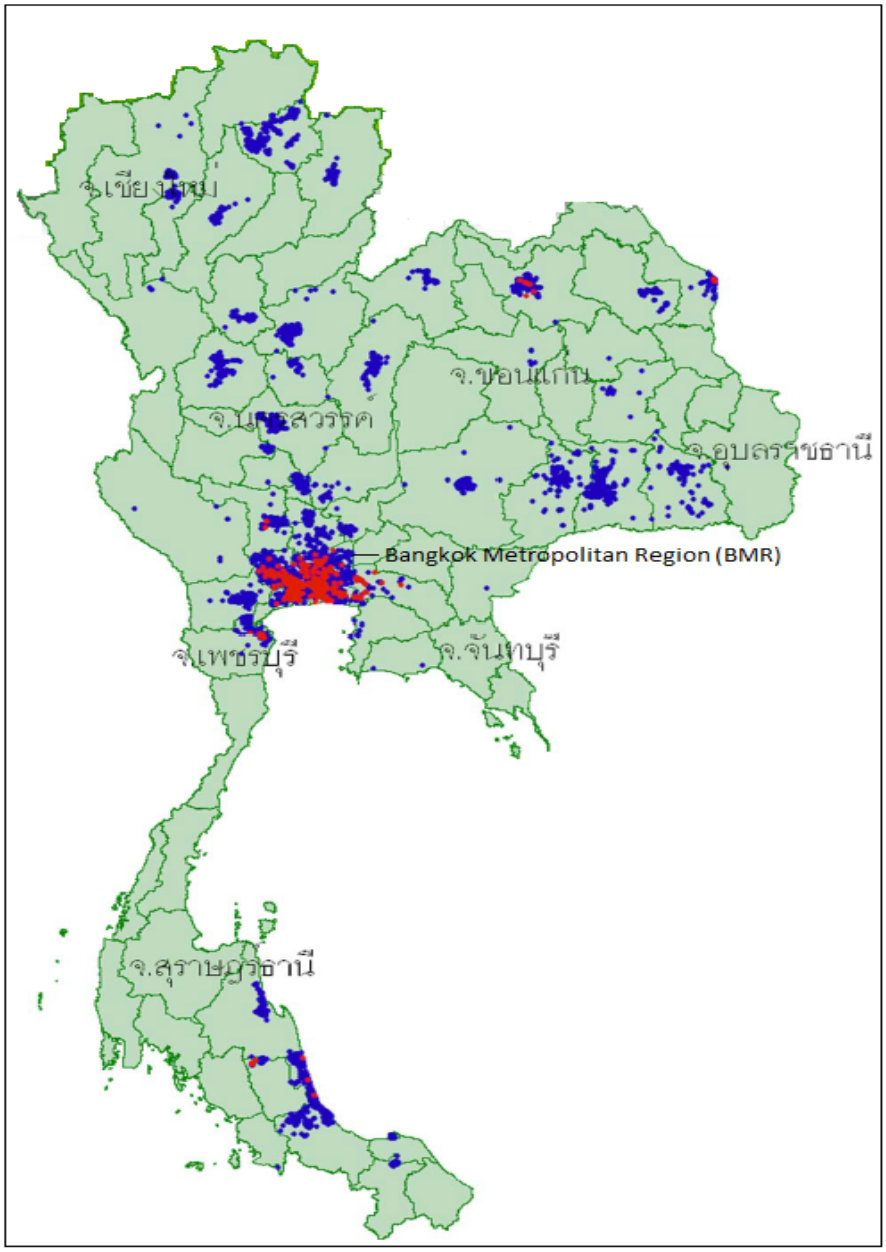
A former provincial officer of Chonburi Province, where the tourist city of Pattaya is located, stated that according to EIA regulations, if somebody wants to build a hotel of 80 rooms or more in Pattaya, before he or she can build the hotel the owner must submit an EIA report and receive approval from the provincial MONRE office. The EIA report must include a plan to treat wastewater, such as installing septic tanks and pipes which will connect the hotels to wastewater plants. To successfully obtain an EIA, however, the cost of the necessary equipment and technology and the inspection fees can amount to as much as 10 million baht and the process can take a long time. Therefore, according to the officer, "so many owners build only 79 rooms or pay the local offices a bribe to receive approval. About 70-80% of owners can build [hotels] without an EIA". Once officers receive the bribe, they do not monitor the wastewater from these hotels, even though some of the hotels directly drain their wastewater into public pipes. He said that this was the case not only in Pattaya but also in other tourist destinations such as Phuket and Koh Samui. Another NGO official added that when there are EIA hearings, officials sometimes receive bribes from company owners who hope to receive an EIA and, in exchange, "they let the EIA pass".

Another example is from Om Yai municipality in Nakhon Pathom, which is about 35 km from Central Bangkok. A municipal officer told us that wastewater is a major problem here, with a major source being households. The municipality tries to force householders to install a septic tank to treat wastewater but, without enough municipal staff to monitor the situation, many households just release their wastewater directly into public waterways. The second major source of wastewater in Om Yai municipality is from factories. While some factories have built pipes which connect their wastewater to nearby WWTPs, others have installed pipes which illegally drain their wastewater into waterways. The municipal officer declared that most of the latter "have connections with politicians and decision-makers so the municipality cannot do anything". She also added that these factories often financially support municipal activities.

Overall, many factories in the EBMR are not concerned about violating environmental laws regarding waste disposal, including wastewater. This is because, as a Thai NGO official opined, "provincial officers do not fulfil their duties in monitoring, regulating, and enforcing the laws. So the factories are not afraid anymore. They can just pay some money to the officers". In return, officials will respond more slowly or ignore complaints, avoid law enforcement, or warn polluting factories before inspections (Tevapitak and Helmsing, 2019). Bribery is therefore one key reason why the EBMR has the highest concentration of factories that do not comply with effluent standards (Figure 4). Other reasons – as already discussed – are the lack of inspectors and Thailand's fragmented wastewater governance.

Although interviewees did not give underlying reasons for extensive bribery, we suggest a few. Officials in this sector – as throughout the Thai bureaucracy – are poorly paid and they therefore have an incentive to supplement their incomes from bribe. Also, as discussed earlier – and again as is prevalent throughout the Thai bureaucracy – these agencies have a subculture of accepting bribes. The Om Yai and Rayong examples point to yet another driver, the prevalence of patron-client relationships. Patrons (politicians) protect their clients (factories) so that the latter can flout laws and evade fines. A final reason is the lack of transparency, which is discussed below.

Figure 4. Location of factories in Thailand; those with the blue dots comply with wastewater effluent standards and those with red dots do not.



Source: Wangcharoenrung (2017).

Corruption related to WWTPs

The second major source of corruption is fraud within public financial management, specifically that of WWTPs. In July 2012, PCD Secretary General Wichien Jungrungruang stated that, nationwide, 83 billion baht (US$ 2.64 billion) had been spent on 101 WWTPs, 91 of which were fully completed. He then admitted that almost half of the country's wastewater treatment facilities had serious operational problems and that, consequently, the country had only 43 'good' WWTPs (Bangkok Post, 2013). Unfortunately, this problem has not only continued but worsened. A Thai NGO official reported that as

of 2020 approximately 80% of wastewater treatment facilities were unusable or functioned poorly after they were constructed. Another Thai NGO official concurred, saying that,

> Many municipalities borrowed money from the [central government's] environmental fund to build wastewater treatment plants but did not operate these plants very well because they could not afford the electricity costs. This is because they did not include this cost in their budgets. When they set their budget, they always request funding for hard equipment for construction, but not for the plants' operations.[3]

He added that they did this because these plants presented an easy opportunity for government officials to make money from bribes. He said that for local construction projects, including wastewater plants, "it is well-known that the central government takes 12%, the provincial government takes 7%, the middle level takes 5% and the lowest level takes a 3% commission. So in total 25% already of the costs" are fraudulent. Another Thai NGO official whom we interviewed confirmed this, commenting that, "There is a lot corruption in the procurement process. For example, a construction company might charge 40 million baht for the plant, but really they spend 30 million baht on its construction". The head of a construction company agreed, telling us that,

> Normally we have to budget in at least an additional 30% [for corruption costs] (…). It starts from the time the government lists which companies can bid for the project. If you want to be on the list you have to pay (…). In the city there are many committees so we also need to pay those committees as well.

As a result, contractors often overcharge for the plant's construction materials and technology and often use those of poor quality. An NGO official asserted that land also plays an important role in the corruption process of wastewater plants, such as in site selection. The Khlong Dan example discussed below vividly illustrates this linkage. The NGO official further added that,

> We only have reliable evidence for one case: Khlong Dan. There are so many cases regarding wastewater plants not only in Bangkok but throughout Thailand but we don't have enough reliable evidence on those cases. Most facilities are not usable or do not function well.

A municipal officer of Pattaya, which has large population inflows from tourism, also suspects that corruption could have played a role in the poor performance of one of the city's two wastewater plants, Soi Wat Boon. She said that a contractor was hired to build the plant for 125 million baht (US$ 3.8 million). She explained, however, that,

> [t]he plant did not operate properly during the test run period. The project was already finished too late and so the contractor's contract had finished. Some said that the Pattaya mayor supported the contract and let the contract end so the municipality could not test what went wrong. There was likely under-the-table money given by the contractor to the Pattaya city staff. That is why the plant did not function well and there was no monitoring. As of now, the plant is not operating yet.

In May 2018, Pattaya netizens complained to the national government and shared pictures online of visibly polluted wastewater being released on Pattaya beach; they also reported a foul smell. This was not the first time that such an incident had been reported in Pattaya (Pupattanapong, 2018). Wastewater from houses and businesses is channelled to the city's wastewater plants. However, the city's first plant, according to a municipal official, does not have sufficient capacity to treat the rapidly increasing volume of wastewater. Soi Wat Boon is the city's second plant, which is supposed to enable the city to fully treat all of its wastewater. Corruption related to this plant is therefore likely contributing to the problem. The head of a construction company believes that corruption is worsening; he told us that, "Ten years ago, the government officials hesitated to ask for money, but now they ask for money like it is normal".

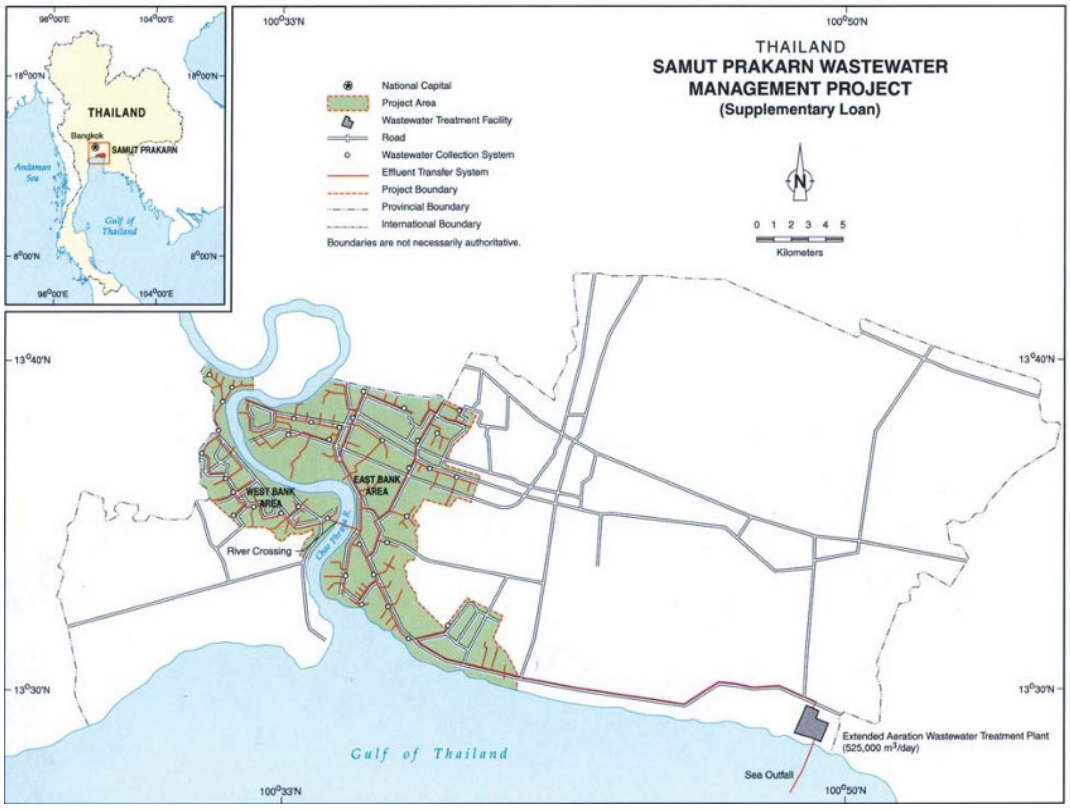
[3] While there is no official data to back up this claim, a senior official of the Wastewater Management Authority stated that at least 35% of plants were not working well.

As stated by the Thai NGO official, the only clearly publicly documented case of corruption regarding WWTPs in the EBMR is Khlong Dan, which was supposed to treat the wastewater of 1.2 million residents and about 4000 factories. Although this case occurred more than five years ago, it is still worthwhile including in this report. Not only is it the only documented case of corruption, but its failure to be constructed due to fraud still contributes to insufficient wastewater treatment capacity in the EBMR. A Samut Prakarn provincial official stated that, "We do not have enough plants here. However, we have one at Khlong Dan but it still has not opened yet".

Case Study: Khlong Dan wastewater plant

Khlong Dan has been widely dubbed the "mother of all corruption cases" in Thailand. This mega-fraud project wasted around 23 billion baht (US$ 730.8 million) of public funds and was halted in 2003 due to corruption charges. The Supreme Administrative Court found widespread fraud in the land acquisitions for the project. The project was initiated in 1995 when the Thai cabinet first approved two wastewater plants in Samut Prakarn. In 1997, the project's contract was signed between the Thai government and the NVPSKG[4] consortium; the latter was led at the time by Vattana Asavahame, former Deputy Minister of Interior. By this time, the project site had been moved 20 km to Khlong Dan, located on the eastern edge of Samut Prakarn and about 20 km from Bangkok (Prateepchaikul, 2014) (Figure 5). The new joint venture plan proposed by the PCD was to build a centralised plant which would be one of the region's largest WWTPs and would process 525,000 m^3 a day (Mekong Watch, 2010).

Figure 5. Map of Khlong Dan Wastewater Project.



Source: Sohn (2007: 34).

[4] NVPSKG stands for North West Water International Co, Vichitphan Construction, Prayoonviskarnchang Co, Seesaeng Karn Yotha Co, and Krungthon Engineering Co Group.

This change caused the construction costs to balloon from 13.6 billion baht to 22.9 billion baht, mainly due to the inflated cost of 1900-rai of land in Khlong Dan. Law enforcement authorities later found that PCD officials, executives of the joint venture, and the owners of the Khlong Dan property had conspired to inflate the purchase price of land parcels by as much as 1000% (Sohn, 2007). The authorities also concluded that the land purchased by the PCD included publicly-owned land, including canals, which had been illegally titled through corrupt dealings with the Land Ministry. Corrupt land officials had issued duplicate land rights documents for the same land plots owned by villagers who had refused to sell, causing legal disputes which never favoured the real owners (ibid). Furthermore, the Vattana-owned Muang Rai Lan Thong Company bought land from villagers at about 20,000 baht a rai. Subsequently, Palm Beach Development, whose directors included Vattana's family members, bought the land at 100,000 baht per rai; Khlong Dan Marine and Fishery then bought the land for 260,000 baht per rai. Throughout these transactions, no money was actually spent because the companies were all affiliated. The PCD then bought 1900 rai of land at about one million baht per rai. PCD officials also unfairly changed the terms of reference. This disqualified the other contender for the project, Marubeni Co, and singled out the land offered by Khlong Dan Marine and Fishery Co as the only available site. The NVPSKG consortium controlled this land (Prateepchaikul, 2014).

Community members in Khlong Dan were upset about the project. They had not been consulted, were concerned that an EIA was never conducted, and felt that the land deals were unfair and crooked. They raised their concerns with the Asia Development Bank, which had provided a loan for the project, and with the new Prime Minister Thaksin Shinawatra. Thaksin visited Khlong Dan in 2002 and said in front of the villagers that "[t]his project is not transparent" (Mekong Watch, 2010). Subsequently in 2004, PCD filed criminal charges against 19 private firms and individuals, including Vattana. That same year, the Land Department revoked the deeds of Khlong Dan Marine and Fishery Co's 1358 rai of land. This invalidated the joint venture with NVPSKG that the government had signed off on. In 2007, the National Counter Corruption Commission, NACC's predecessor, concluded that nine government officials, including Mr. Vattana, were involved in illegal land deed acquisitions. They then forwarded the case to the Supreme Court. The Supreme Administrative Court ruled that Vattana was guilty of bribing officials to obtain illegal land titles and sentenced him to 10 years. However, he fled the country before his conviction (Prateepchaikul, 2014). In 2015, the lengthy investigation also led to 20-year jail sentences for three former PCD officials (*Bangkok Post*, 2018). The PCD was also ordered to pay compensation for violating the terms of the project's contract (which in the end was paid by taxpayers).

As a result of the fraud, the plant was never built. This presumably means that much of the wastewater of the thousands of factories and residences which the plant was supposed to treat remains untreated or insufficiently treated. It also means that the Thai state lost 23 billion baht. More positively, this is the only publicly proven case of corruption related to WWTPs in Thailand and the only one that has led to criminal convictions of state officials, including a former Deputy Minister. This case also suggests that Thai communities can successfully expose and stop corrupt projects (Sohn, 2007).

We argue that WWTP fraud is consistent with several aspects of the political economy of the EBMR's wastewater. The country's decentralisation led to additional financial resources apportioned to LAOs and consequently also increased opportunities for fraud at the local level (Shatkin, 2004). Since the majority of WWTPs are the responsibility of LAOs, they present local politicians with an enticing opportunity for profiteering. At the same time, as the example of Khlong Dan shows, at the national level Thailand's political system of "competitive clientelism" (Doner and Ramsay, 1997) – in which political factions compete incessantly for rent-seeking opportunities for their group of business allies – can lead to hugely corrupt projects. Finally, although the community was able to expose corruption in the Khlong Dan case, it is an exception. Most perpetrators of corruption related to WWTP projects remain unpunished. Due to the hidden nature of wastewater and the limited ability of the public to monitor the performance of WWTPs, there are minimal "public outcries over high-profile failures" (Smith and Walker, 2019: 227). This means that WWTP construction lends itself readily to the embezzlement of funds.

Wider integrity failures

There are a number of wider integrity failures which also significantly exacerbate wastewater problems and which enable the persistence of the first two types of corruption. First, to return to the issue of WWTPs, according to a Pattaya municipal officer, local politicians in the EBMR, particularly mayors, prefer to spend their budgets on the construction of more lucrative and politically advantageous projects, rather than on building WWTPs and obtaining EIA licenses. The officer explained that in 2010 the national government identified Pattaya as a special area for environmental protection. This meant that if the Pattaya municipality wanted to build a WWTP with a capacity of more than 3000 m^3 per day, which is what Pattaya needs, the city needs to receive an EIA approval before any expansion can occur. The problems, however, are not only that obtaining an EIA approval requires a lengthy approval process, but also that the Pattaya municipal government did not prepare a budget for this project. Budget allocation depends on local politicians such as the Pattaya mayor, but these politicians prefer to spend money on roads, floodwalls and buildings. The official reckoned that this is because such projects still present lucrative opportunities for procurement corruption and can also boost these politicians' re-election prospects. As Larkin argues (2013: 333), these projects are not merely technical; "[they] also operate on the level of fantasy and desire". Voters can more easily see projects that produce roads and other visible infrastructure and can more readily gauge their potential benefits; meanwhile, as the Pattaya municipal official also stated, wastewater treatment "is hidden underground so voters will not care about it unless it affects their lives".

A second failure of integrity occurred in April 2019, when the National Legislative Assembly under the military government revised the country's 1992 Factory Act. According to a local Thai NGO, this case is a strong example of business groups lobbying to weaken regulations through exerting pressure and influence. Supant Mongkolsuthree, chair of the Federation of Thai Industries, supported the new amendment, stating that, "More than 80% of factories are SMEs [Small and Medium Enterprises], and they need support from the government more than large factories do" (quoted from Apisitniran and Maikaew, 2018). Under the new law, only industrial companies with more than 50 employees which have machinery exceeding 50 horsepower are subject to monitoring for waste discharge, including wastewater and anti-pollution measures. Analysts project that over 40% of the country's factories will benefit from the looser regulations, including companies with licenses to import electronic waste for recycling (Macan-Markar, 2019). Furthermore, factory licenses will no longer be subjected to a renewal process, instead allowing companies to extend their operation licenses without undergoing the verifications which had previously been required (Roberts-Davis and Saetang, 2019). Consequently, as Penchom Saetang argues, "not only will these small factories pop up everywhere, they will also not be subjected to regular inspections" (quoted from Rujivanarom, 2019).

Various NGOs, however, believe that this new law is unfair and that it is designed to satisfy business groups. They feel, in particular, that the law will increase pollution and corruption and will facilitate an increase in waste imports. "The new Factory Act opens the doors for companies to invest in factories and plants that will result in the country becoming more polluted", said Supaporn Malailoy, manager of the local NGO Enlaw Foundation. As Penchom also stated, the new law "will increase non-transparency and corruption" and will cause "worse environmental problems" to "pop up" (quoted from Macan-Markar, 2019). This amendment to the Factory Act followed another law which had disappointed environmentalists: Order Number 4/2559. Passed by the military government in 2016 without any consultation, this order suspended town and city planning laws that had previously prevented the opening of toxic and polluting waste processing projects in areas upstream of, or near, where people live and farm. Somnuck Jongmeewasin, an academic at Silpakorn University International College, argued that the order has increased the number of waste processing factories across the country because a new plant or factory "only needs permission from local authorities". But, as Somnuck asserted, this order also led to "corruption between the local government officials and the companies" (quoted in Macan-Markar, 2019).

The third failure of integrity occurs when government officials laxly enforce regulations regarding wastewater and when they monitor wastewater pollution in such a way as to conform to the government's priority of supporting factories and other businesses. A PCD official stated that the PCD, which cannot bring the law to bear in instances of non-compliance, will inform the DIW that factories are illegally dumping wastewater and will then send them the test results. When this occurs, however, the DIW does not fine these factories; instead, it informs them in advance of its visit. Consequently, "when [DIW] staff visits, the factory will have already temporarily improved its water quality, so DIW will not find anything" and, after the DIW visit, the factory will revert to its old practice of secretly dumping wastewater. Another PCD official stated that government officials from other agencies, including PCD and the police, knew that factories were illegally dumping wastewater but turned a blind eye to the problem; he stated that, "us officers know that something is wrong but we just ignore it". He called this practice "not my business corruption". Despite the two agencies' delineation of responsibilities, they rarely conduct joint inspections or systematically corroborate findings (Roberts-Davis and Saetang, 2019). Relatedly, a third PCD official stated that farmers' feeding of river fish is illegal and is polluting the rivers due to the fish farms' release of untreated wastewater into those rivers (Sampantamit et al., 2020). Many farmers continue to do so, however, as the Ministry of Agriculture secretly allows it to happen. This is because, according to the same official, Ministry officials prioritise the interests of farmers over those of the wider public.

These integrity failures have arisen due to the undue influence of business groups on the policy-making process that has risen since the 2014 coup (see Kanchoochat et al., 2021); it is also due to intergovernmental fragmentation and conflicts of interest. The politics of visibility play their part as well; that is, groundwater resources such as treated wastewater, being less visible, receive less attention from the public and the press (Colven, 2020) and thus are a lower priority for political leaders.

Current and past attempts at, and barriers to, reducing integrity failures

There have been only a few successes so far in terms of curbing illegal wastewater dumping. First, victims of pollution can sue polluters in court, though such cases are rare. Under Thai civil law the burden of proof lies with the party that is making the complaint; this can be difficult to prove given the often multiple potential sources of wastewater. Two exceptions to this were Khlong Dan and a 2009 case in Bangkok. In the latter case, a restaurant and fish farm owner successfully sued a vehicle spare parts company for releasing untreated wastewater into a public waterway and thereby damaging his property and assets (Lebel et al., 2019).

The second success was the aforementioned case in Rayong. A group of local farmers, with the support of a local environmental watchdog NGO, brought the case to the media and sent complaints to government agencies at multiple levels. They then filed a complaint in Thailand's administrative court (Kongrut, 2020b). In May 2020, the Rayong Provincial Industry Office issued three orders to Win Process Company, ordering the Type 60 and 106 factories to shut down because their operations broke the law, and directing the Type 40 factory to more accurately redefine its territory. The PCD also collected samples of soil and of surface and underground water for further investigations and potential actions against Win Process. The DIW also threatened to shut the company down if it did not comply with the law (Pawa, 2020). The local NGO hopes that these actions will lead to the company's closure.

Another example of a successful community group is the We Love Tha Chin River Club (ชมรมเรารักแม่น้ำท่าจีน) which was formed in Nakhon Pathom in 1998. After receiving a little funding, this group raised awareness about the problem of wastewater dumping and acted as a communal watchdog, reporting those in the community who were dumping wastewater and then asking them to stop. If they continued to do so, the group reported them to officials. A Bangkok-based NGO official cautioned, however, that these cases are rare and that it "depends on whether local people and communities can

organise themselves to file a lawsuit or conduct a campaign to exert pressure on the local government. The problem will just grow if there is no pressure".

One reason why there have only been a handful of successful cases is that the freedom of information (FOI) law has been weakly implemented. The Thai constitution guarantees citizens' right to access information from the government before the approval or implementation of activities that may have adverse environmental or health impacts on their communities. About a decade ago, the Thai government also created rules under its FOI law that require officials to proactively disclose environmental and health information to the public. This means that state officials are obliged to release companies' permission documents, information on the amount of pollutants they release, and explanations of public health impacts (Excell and Moses, 2017). In theory, such legislation should enable victims to access water pollution information, including that related to wastewater; however, the feeble implementation of these laws, the gaps in the law, and the limited investment in information disclosure systems have undermined this legislation (ibid). Under Thai law, there is no legally specified time period in which information requests about industrial facilities must be acknowledged, and no deadline for officials to respond. Community members may thus only obtain information after several calls, or they may receive responses months after the request has been submitted (Roberts-Davis and Saetang, 2019). A 2017 study found that although Thai government officials responded to about 75% of information requests, they took over 60 days to respond. Moreover, they often released data that was only tangentially related to the citizens' queries (Excell and Moses, 2017).

UNEVEN LOSSES AND GAINS IN THE WASTEWATER SECTOR

The effects of corruption have clearly worsened water quality in the EBMR. One group that has suffered from the increase in wastewater is smallholder farmers in BKT and Samut Prakarn. They told us that the incomes they generated from aquaculture production have dropped precipitously in recent years. Some had stopped farming and had sold their plots of land, retired, switched to becoming handymen, or migrated to Bangkok to find a new source of income. They pointed to wastewater intrusion and the outbreaks of disease that it caused as being a major reason for the vulnerability of their livelihoods.

Farmers stated that wastewater became a serious problem about a decade ago, around 2010/2011.[5] Wastewater entered the farmers' aquaculture farms, causing the aquatic life to die. Many interviewees stated that the wastewater problem is worst between October and December, the end of the rainy season. The percentage of productivity (and thus income) losses ranged from 30 to 90%. The incursion of wastewater was a major factor pushing one farmer to sell his land. Various farmers stated that,

- "I lose about 90% from wastewater. I have to buy small shrimp and crabs to grow instead of obtaining it from nature and sea. In the past, didn't have to buy; it grew in nature".
- "Wastewater caused 80% reduction in my income. Before I could get 30,000 baht per day, now only 300-500 baht. I'm scared that my children's generation will need to move".
- "I was a shrimp farmer before but now am retired. I sold my land because in the past shrimp grew naturally but now they don't and the quantity has decreased. Wastewater is a big problem".
- "Previously locals were quite rich and prosperous. Now we have lost more than three-quarter (75%) of our production due to wastewater. Nothing is left, only debt".

[5] While farmers did not mention why wastewater became worse during these years, in 2010 flooding damaged 15 wastewater plants, worsening water quality in the Chao Phraya River Basin (Pollution Control Department, 2011). In 2011, Thailand suffered its worst floods in many years, including in many industrial areas (Marks, 2019a); once the floodwater reached BKT, it thus included high levels of wastewater.

The frequency of polluted water entering their aquaculture ponds has also increased in recent years. As one community leader explained, "Since 2011, the situation has become worse. First wastewater came three times per year. Now it is more than four to five times per year. But nobody knows why".

Both farmers and government officials unanimously agreed that wastewater was a bigger problem than the more widely reported issue of coastal erosion (see, for example, Marks, 2019b) because it affected all farmers regardless of whether they lived along the coast or inland. As one community leader asserted, "Wastewater affects everybody who does aquaculture – water is most important for us. In previous times, the priority was coastal erosion but now coastal erosion only affects those who live along the coast" (see also Lebel et al., 2019).

It is not only in Bangkok and Samut Prakarn that smallholder farmers suffer from wastewater intrusion; it is throughout the EBMR. In June 2020, for example, smallholders in the Ban Khai District of Rayong Province complained to the media that wastewater had leaked into a local rubber plantation and ruined 10 rai of crops (Kongrut, 2020b).

The environmental problems suffered by these farmers – which they themselves did not create – reflect a politics of position that most affects those downstream and on the urban periphery of Bangkok. Om Yai municipality, for example, is upstream of BKT. BKT has also been a low priority of BMA's leaders, while government departments at different scales, such as the PCD and DIW, are fragmented and sometimes in conflict with each other. Farmers in Samut Prakarn face worse wastewater because the nearby Khlong Dan project was never built. Overall, wastewater quality in the EBMR has worsened because of bureaucratic fragmentation, low prioritisation, and lack of electoral pressure to address this issue. Livelihoods downstream were also adversely affected. Not only farmers, however, suffer from corruption in this sector. The wider public does as well, including those living in Pattaya and other places where WWTPs are not fully operational. The public also must pay taxes that fund overly inflated, poor quality WWTPs. Due to limited accountability and transparency, those affected have little ability to correct these injustices.

A small group of actors have, on the other hand, personally benefitted from this corruption. These include local-level politicians who receive bribes from construction companies as part of the procurement process of funding WWTPs, and bureaucrats such as those from the DIW who receive under-the-table payments in return for factory licences or for turning a blind eye to factories and hotels discharging illegal wastewater. Bureaucrats ignore illegal wastewater dumping in order to further their own careers and fulfil their agencies' mandates. Wealthier and better-connected business owners such as those owning hotels and factories are, in turn, able to discharge as much wastewater as they want without being punished. Corruption in this sector thus contributes to inequality in a country already ranked as one of the most unequal in the world (Lindsay, 2019).

CONCLUSION

In this paper, we analyse the political economy of corruption in the EBMR's wastewater sector, including the regulatory landscape and identification of key actors. We also offer a comprehensive overview of the different types of integrity failures that are occurring. We find that horizontal and vertical fragmentation, weak oversight of corruption, deregulation of environmental requirements, and perverse incentive structures among state agencies have facilitated widely spread corrupt behaviour in the sector.

Corruption in this sector is significant in a number of ways. As Adam et al. (2020: 11) argue, "corruption corrodes public institutions and causes the loss of legitimacy and credibility of the State in the eyes of citizens". Thailand has been experiencing widespread protests in 2020 and 2021, partially due to the erosion of the state's credibility in the minds of the nation's youths (Bandow, 2020). As this paper also shows, corruption in the wastewater sector worsens inequality. It benefits government officials and

business owners while at the same time hurting the livelihoods of the poor such as smallholder farmers, and worsening the quality of the water which is vital to their livelihoods.

This study reveals three important insights that contribute to a broader understanding of the political economy of corruption in the wastewater sector. First, echoing Colven's (2020) argument about land subsidence in Jakarta, wastewater's inherently limited visibility draws less attention to it and makes it easier for corruption to arise and more difficult for it to be addressed. Second, it has been argued that decentralisation, by bringing management closer to service recipients, can reduce corruption (McGuire, 2010). Our findings suggest, however, that decentralisation is no silver bullet for improving wastewater management and reducing corruption. The third insight is that, as Goel and Nelson (2011) found in the US, more fragmented horizontal and vertical governance structures can heighten corruption activities. In the wastewater sector, fragmentation creates more opportunities for rent generation and reduces accountability and transparency.

A number of policy implications can also be drawn from our findings. In order to reduce integrity failures in the wastewater sector, the Thai government should revise the Factory Act based on public input. New facilities should be subjected to public hearings, EIAs, and emissions inventories; discharge permits should be required; and pollution data (including that of wastewater) should be released to the public. All information should be easy for the public to access and should be clearly readable in order to increase transparency (Roberts-Davis and Saetang, 2019). Another related suggestion for reducing integrity failures is improvement in the implementation of its Freedom of Information law. The Thai government should mandate a specific timeframe within which officials must release information about polluting industries to those who request it. It should also revise laws regarding the authority to fine and charge those who illegally discharge wastewater. The PCD's authority should be expanded to cover more sources of wastewater, including industrial, agricultural and residential. Other agencies, such as the DIW, which has been deemed corrupt, should be stripped of their authority. This would also reduce intergovernmental fragmentation related to wastewater governance. Finally, as suggested by an NGO interviewee, the PCD and other actors should raise the capacity of local watchdogs such as the *We Love Tha Chin River Club* by providing them with additional funding and helping them network with government officials and other watchdogs.

ACKNOWLEDGEMENTS

We would like to acknowledge the financial support of the Water Integrity Network (WIN) and would like to thank Kittima Leeruttanawisut for her assistance with the research. We are also grateful to François Molle for helping improve the manuscript.

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