City profile

**Medan City: Development and Governance under the Decentralisation Era**

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Abstract:
Over the last 30 years, Medan’s economy has grown rapidly and has been the driver of the regional development in North Sumatra Province as well as the northern part of Sumatra region. The recent adoption of decentralised public policies in Indonesia, to some extent, has significantly influenced urban development transformation in Medan and also contributed to several governance challenges. Related to that, the city has suffered from corruption in its urban management practices. This study elaborates on the city’s historical background, urban characteristics, key challenges and future outlook. The study also offers directions for further improvements to support sustainable urban development and management for the city.
1. Introduction

With a population of 2.2 million, Medan is the fourth most populated city in Indonesia—after Jakarta, Surabaya, and Bandung—which makes it the country’s biggest city outside Java Island (BPS Indonesia, 2015). Located on the northern coast of Sumatra Island by the Strait of Malacca, which connects the Indian Ocean and South China Sea (see Fig. 1), Medan has emerged as one of the most important and busiest shipping lanes in the world. The city serves as the capital of North Sumatra Province and it has significantly evolved over the past few decades in terms of urban economy and spatial expansion (Archer, 1992; RTRW Kota Medan, 2011). The development of the Medan Industrial Region and its shipping and logistic industry are among the most important sectors that support its economic activities. With an economic growth rate of 6.4%, which is higher than the national’s average (BPS Indonesia, 2015; BPS Kota Medan, 2015), the city has established its reputation as one of the most important industrial and businesses centres in Indonesia as well as the Malacca Strait region.

Medan City is an essential part of Mebidangro Metropolitan Area (which consists of Medan City, Binjai City, Deli Serdang Regency and some parts of Karo Regency). With the enactment of Government Regulation No 28/2008, this metropolitan area has been recognised as one of the Indonesian National Strategic Regions (in Indonesian: Kawasan Strategis Nasional or KSN). Since then, Medan City has continued to support a large portion of regional trade and logistic flow across the municipalities within this particular KSN as well as across most of the western part of Indonesia (RTR Metropolitan Mebidangro, 2012). Currently, Medan is the centre point for crop trading for different commodities produced in the region such as rubber, palm oil, cinnamon, tobacco, tea, and coffee, a great portion of which have been exported to Europe, North America, and Middle East. In the global context, Medan’s geographical advantages have also played important parts within a triangle alliance with Malaysia and Thailand (known as the Indonesia–Malaysia–Thailand Growth Triangle or IMT-GT), that enables mutual partnerships in tourism, commerce, culture, health, and education among the three countries. For instance, Medan and Penang (an urban area that locates in the northwest coast of Peninsular Malaysia) have agreed to partner under the sister city program, in order to attract certain opportunities in business and culture for both cities. Penang currently has been the main destination for Medan residents who are seeking alternatives for overseas-based healthcare treatment. On the other hand, for Penang residents and business stakeholders, Medan has been one of the destinations for
leisure and trading. In parallel, different forms of mutual collaboration have been formed between Medan and Kuala Lumpur, Singapore, and Bangkok.

Following the economic and political crisis that hit Indonesia in 1997 (Forrester and May, 1999), some reforms in urban development and governance have taken place in the country. One of the important changes was the enactment of Law no. 22/1999 (later on, this law was renewed with the enactment of Law no. 32/2004) that reduced the centralization of authority in the national government and gave considerably greater autonomy to local governments. After several stages of debate and campaign throughout the country, the governance decentralisation law was fully implemented in 2001. This new political scheme was expected to support and improve local innovations and initiatives, especially related to the bureaucracy process in public service delivery. As argued by Fisman and Gatti (2002) and also Arikan (2004), decentralisation could enhance inter-regional competition, which would strengthen the accountability of (local) bureaucrats and therefore reduce the rent-seeking behaviour and corruption level of public officials. It has been widely agreed in scientific and public debates that corruption is one of the most serious obstacles to sustainable economic development. Since decentralisation could be expected to reduce corruption—which is an important issue in many Indonesian cities (Server, 1999) including Medan, it could, therefore, be expected to significantly improve local development in the country. However, it is surprising that, along the great improvement of infrastructure and economy, the issue of corruption in various aspects of urban management still exists in Medan City during the post-decentralisation era. The fiscal decentralisation from the state to the local government is not also smoothly implemented due to the challenge of the local government officials to allocate and control the budget utilisation that is relevant with the public needs. The lack of capability to manage the budget transfer from the central government and ability to seek other potential revenues has suffered the local government during the adoption process of fiscal decentralisation.

In the study reported in the present paper, the profile of Medan City, a growing city in the Sumatra region, which until now still has received little attention in urban research, will be critically observed and reviewed. Most of scientific literatures regarding urban development in
Indonesia were studied based on cases from cities in Java region (e.g. see Firman, 2003; 2009; 2013; Hudalah and Firman, 2012; Hudalah, Winarso and Woltjer 2014), while very little is reported based on evidence from emerging cities outside Java region like Medan. Thus, this study focuses on Medan’s development and progress over time as well as challenges related to decentralisation and corruption issues in its urban management. It also discusses how Medan interprets its disaster governance, taking flood mitigation and adaptation as a case. The data in this study were collected from a variety of sources, including archival reviews, field observation, and in-depth interviews with key informants such as government officials from both central and local levels (12 respondents), local politicians (2), academicians (3), urban planners (3) and activists, (4). The study was conducted between autumn 2014 and summer 2016. The key informants were recruited based on the snowball method, meaning that the next respondents were selected based on a recommendation from previous respondents. They were chosen due to their professional role, seniority, and understanding as well as direct experience with the given issues. We adopted theories in urban planning, public policy, and infrastructure engineering as our guidance to systemise the discussions with the respondents during the interview stage.

The content of this article is structured as follows. Section 2 outlines a brief history of Medan City’s development. In section 3 the decentralisation policy in Indonesia is briefly examined together with its impact on the development of Medan City. Section 4 and 5 discusses the problem of corruption within the city’s management practices and future challenges for the city to establish a sustainable urban development. Lastly, section 6 presents the concluding remarks.

2. A brief history of Medan City

It is not really obvious how the name of Medan was adopted. Tom Pires, a 16th-century apothecary who visited Sumatra and documented much information on the Malay-Indonesia archipelago, referred Medan in his report as Medina (Cortesão, 1990). Some scholars argued that the name could, therefore, derive from the Tamil word Maidhan or Maidhāyam, which means a ground or large field, since fishermen from Tamil Nadu and other regions of India often visited the coastal side of the Medan area. It could also derive from the Islamic holy city Medina in Saudi Arabia, as Muslim travellers from the Middle East often visited and traded along the northern coast of North Sumatra (Meuraxa, 1975). Others have claimed that Medan
could also derive from the Karonese language\(^1\), in which it literally means “a better and promising land for all” (Prinst, 2002).

According to Pelly (1983) and Bappeda (2012), Medan used to be a small village located at the confluence of the Deli and Babura river in the eastern part of what is now Medan Petisah district, and it was founded in the late 16\(^{th}\) century by Guru Patimpus, a spiritual leader who originally migrated from the neighbouring Karo highland.\(^2\) Guru Patimpus named this village *Kampong Medan Putri*. The first native residents of this village comprised a mix of two ethnicities: Karo and Melayu (Volker, 1928). Karo is an indigenous ethnicity, originally from the area which today is the Karo Regency in North Sumatra Province, about 77 km from Medan City, while Melayu (called Malay in Malaysia) is another indigenous ethnicity, originally living along the east coast of Sumatra and the Malay Peninsula (Malaysia). During its first phase of settlement, most of the Karo community lived in the vicinity of the southern part of Medan while the Melayu community lived between the centre and the northern part of Medan (Pelly, 1983).

In the early 17\(^{th}\) century, Sultan Iskandar Muda, who was the ruler of Aceh Sultanate at that time, sent one of his commanders, Muhammad Dalik—a descendant of a nobleman from India who assumed the title of Sri Paduka Tuanku Gocah Pahlawan—to invade the areas along the east coast of Sumatra, including Medan (Sinar, 2007). Then, in 1632, Gocah Pahlawan was appointed to become the ruler of the area on behalf of the Sultan of Aceh. This area was then named Deli. After Gocah Pahlawan passed away in 1641, control over Deli was handed over to his son, Tuanku Panglima Perunggit, who assumed the title of Panglima Deli (Poesponegoro and Notosusanto, 1982). With the weakening of Aceh Sultanate, Tuanku Panglima Perunggit declared the independence of Deli in 1669 from the Aceh Sultanate, which officially established the Sultanate of Deli (Sinar, 2006).

In the mid-19\(^{th}\) century, an envoy of Sultan Deli invited several Europeans planters in Java to open plantations in Deli (Sinar 2007). After several attempts, a Dutch planter named Jacob Nienhuys succeeded in harvesting high-quality tobacco from Deli soil and in 1863 he obtained a

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\(^1\) Karonese language has been used by Karonese community who originally settled in Karo highland (*Tanah Karo*).

\(^2\) Some historical sources mentioned that at that time, some settlements or villages existed in the northern part of Medan, such as Pulo Brayan village and Sunggal village, to which Guru Patimpus established a good relationship with their leaders, for instance, through a marriage between Guru Patimpus and a daughter of the leader of Pulo Brayan village, and also by sending the sons of Guru Patimpus to learn about Islam with the leader of Sunggal village (see Sinar, [2007]).
concession from the Sultan of Deli to open several large tobacco estates in the area (Zadoks, 2014). In 1869 Nienhuys established a tobacco company called Deli Matschapaij together with a Dutch entrepreneur named Peter Wilhelm Janssen (Holthuis, 2011). A year later, the headquarter office of the company was built just across the river from the location of Kampong Medan Putri (Pelly, 1983; Kipp, 1990).

Tobacco in Deli had afterwards become a booming business and numerous companies mainly from the Netherlands, were soon also coming to invest in the area to open many different plantations including, for instance, rubber and palm oil plantations. These investments subsequently generated a high influx of immigrant workers from China, India, and Java to fulfil the labour demands. This situation made an instant impact on the socio-demographic makeup in the area since those migrant workers still established their own identity through different forms which can be seen today. For example, a small neighbourhood with a large number of Indian people, now called Kampung Keling (Figure 2), has emerged in central Medan. Although the majority of the residents are no longer individuals with an Indian background, some traditional remnants and housing designs still exist in Kampung Keling. Similarly, some remnants of Chinese culture such as temples, shops and houses with Chinese architecture can still be found in several spots in the city (Figure 3).

[Figure 2 about here]

[Figure 3 about here]

Along with the rapid increase of the tobacco business, Medan experienced growing developments. New roads, railways, train stations, hospitals, banks, post offices, hotels, and other facilities were built in Medan and it has become one of the important economic centres in the region (see Figure 4). Because of this, the Dutch Indies administration—which occupied Indonesia from the 19th until the mid-20th century—moved the capital of the Residency of Sumatra's East Coast (Residentie Oostkust van Sumatra) from Bengkalis (in Riau region) to Medan in 1887. In the same year, the construction of the new palace of the Sultanate of Deli, Maimun Palace (Fig. 5), began in Medan. It was completed and became the residence of the
Sultan of Deli in 1891. Several years later, the Grand Mosque of Medan was also built. Those events marked the relocation of the centre of the Deli Sultanate to this area.

Given its rapid growth and the escalating power of the Dutch administration in Medan, the Dutch Indies government granted a municipality status (Gementee) to the city and Daniël Mackay was appointed as the first mayor (Pelly, 1983). At that time, Medan had been transformed from a small village into a modern city of about 44,000 inhabitants with an administration territory covered an area of 18 km\(^2\). During this time, many new multi-ethnic and multinational neighbourhoods were formed, with big open squares to enable social interaction among the citizens. One of the best-known open squares in the city was *de Esplanade* which still exists until today, and it is now called as Lapangan Merdeka (Figure 6).

Medan City was instrumental during the occupation and post-occupation of the Netherlands and Japan in Indonesia, between 1890s and 1940s. Influenced by the global conflict during World War II, Medan became the military and administrative base for the Dutch Indies (the Netherlands) and Japan to control North Sumatera Province and its surrounding regions. During this period, urban planning in Medan was predominantly influenced by military and security purposes, where the government offices and expatriate residents were completely separated with local neighbourhoods. The role of Belawan port was not only to transport agricultural products from Medan to Batavia (capital Jakarta) and Europe during this phase of time, but also to deliver military logistics and troops from Batavia to the city. Economic activities in the city were quite stagnant due to security unrest. Medan’s city centre and some parts of the districts (e.g. Medan Perjuangan, Medan Deli, and Medan Marel) even transformed as the battle zone during 1940s, causing some historical buildings, residential areas, and public infrastructures were bombed and demolished.
After Indonesian independence on 17 August 1945, Medan city has returned and even continued to grow, becoming the primary regional metropolis of Sumatra and the biggest city in Indonesia outside Java since the 1960s (Withington, 1962). The city landscape and spatial pattern have also changed significantly. The main economic activity of the city has gradually shifted from tobacco-based agriculture to manufacturing and services. Consequently, the city administrative boundary was later expanded twice, first expanding to a total area of 51 km$^2$ divided into 4 districts in 1951, and then in 1973 to a total area of 265 km$^2$, divided into 11 districts.

In order to manage the increased development of the city, Medan municipal authority developed the city’s first formal master plan in 1974. The city has been continuously growing with the emergence of new industrial activities. For instance, in 1988 the city launched an integrated industrial cluster area in the southern part of the city, called the Medan Industrial Cluster development or *Kawasan Industri Medan* (KIM). KIM covers an area of about 650 ha and it is owned by a consortium of the central government (60%), the provincial government (20%), and the city government (10%). Currently, KIM houses 17 foreign and more than 50 national and local companies with a total of 15,000 workers. The types of industries operating in the cluster are varied, including construction, building materials, mechanical, pharmaceutical, chemical, petrochemical, textile, agro-food and others. In order to manage and accommodate those growing activities as well as those in the satellite cities and the need for dwellings for both low and middle-high income groups, the master plan was renewed in 1995 with the creation of several new districts, increasing the number of districts in the city to 21.

Another change to the master plan of Medan City took place in 2005, to accommodate the changes of the governance system in Indonesia related to the implementation of the decentralisation policy that was introduced by the national government in 1999 (RUTR Kota Medan, 2005). The latest version of the spatial plan of Medan City was enacted in 2011 as a revision to the 2005 master plan. According to this new master plan, Medan will have two main service centres (Figure 7). The first service centre is in the central area of Medan city with the main functions as the service and activity centre for business, economy, and government at both the municipal and provincial level. The second centre is located in the northern part of the city. Besides the two main city centres, eight sub-centres were also established in the master plan, each with specific functions. The sub-centres include Medan Belawan, Medan Labuhan, Medan
Marelan, Medan Perjuangan, Medan Area, Medan Helvetia, Medan Selayang, and Medan Timur (see Figure 7).

Presently, Medan is predominantly inhabited by young and productive population, mostly with age range between 25 and 40 years old (BPS Kota Medan, 2015). This figure is fundamental to demonstrate the future driver of human resources in the city. Medan has contributed to 17% of the total population in North Sumatera Province, despite the fact that the size of its administrative area is only 4% of the total area in the province. This therefore makes the city has the highest population density in the province (about 8000 people per km²). For the regional context, the total population of Mebidangro Metropolitan Area was about 4.6 million people in 2014 and it may increase until 5.5 million people in 2029. This means that almost half of the total inhabitants in Mebidangro located in Medan (RTR Metropolitan Mebidangro, 2012). According to the Regional Planning Board of North Sumatera Province, the rapid increase of population density in Mebidangro has existed over the past twenty years, especially along the regional roads of Medan-Deli Serdang area (see Fig. 9). The study further predicted the significant change of Mebidangro’s population density at least until 2029. The Mebidangro Metropolitan Area may transform as a regional city in the future, where its huge number of population will act as the engine of the urban development.

3. Decentralisation and Urban Development

As mentioned earlier, in 1999 Indonesia embarked on a decentralisation policy that initiated a restructuring of authority by giving considerably greater autonomy to local governments through the enactment of Law no. 22/1999 which later was replaced by Law no. 32/2004. This decentralisation of power is accompanied by fiscal decentralisation, which was established by another Law. It is believed that decentralisation will bring the government closer to the people,
improve public service delivery, and foster democracy after more than four decades of authoritarian rule (Carnage, 2008). Fiscal decentralisation also impacts to the greater power of local governments to allocate local budget and spending in public sector. At the same time, this new scheme has induced local governments to be flexible to seek additional income from different resources. Lastly, fiscal decentralisation has benefited local governments to receive a greater share of revenue from natural resources that locate in their administrative areas.

Nevertheless, as argued by Firman (2003), decentralisation in Indonesia has also tended to lead to new problems, especially those related to the spatial pattern of disparity among different regions in the country. It later created difficulty in encouraging inter-municipal and inter-provincial cooperation for urban and regional development purposes (Firman, 2003; Hudalah and Firman, 2012; Rukmana, 2015). However, at the same time, decentralisation has induced innovation by some local leaders to manage their own natural and human resources. For example, Balikpapan is one of the few Indonesian cities that has set up strategies and actions to diversify its local economy in directions that promise sustainability and the achievement of long-term goals (Tarigan, Samsura, Sagala, & Wimbardana, 2017).

With regard to Medan City, the decentralisation policy has brought both some positive impacts to the city’s urban development as well as challenges, especially in the regional partnership context. A number of conflicts existed between Medan and other surrounding cities and regencies due to the divergent needs and interests of each administrative area. For instance, regarding the ecological management of natural forests, there is an urgent need to protect several natural forest zones surrounding Karo and Deli Serdang Regency, due to its ecological function as a water catchment area, and the natural heritage along forest and river areas. For many years, the Medan authority has negotiated with these two regencies to preserve and protect the zones; otherwise, Medan could face flood disasters especially during rainy season. However, economic motives have partly caused these regencies to still issue permits that allow land conversion from natural forests to farmland, hotels, villas and other real-estate developments. These regencies also suffer illegal logging practices by irresponsible residents as well as government officers that harm the local ecosystem. Surprisingly, there were arguments from leaders of these regencies that this approach is very critical for local residents and somehow informally approved; in order to increase the region’s attractiveness and competitiveness with other established cities. They also argued that the level of development and land conversion was still within an acceptable
level. However, the fact is that these rapid activities obviously contributed to an increase in the magnitude and risk of floods in Medan over the past few years. This issue will be elaborated on more in the next section.

Similar issues also exist regarding the development of regional roads, clean water, and solid waste stations where the negotiations have been difficult, and often end up with no exact solutions. For example, a long process of negotiation has taken place regarding road and transportation management to control traffic flow between Medan and Karo Regency. These two local governments and the national authority have tried to reduce the acute traffic congestion along the regional road that takes place during weekends and sometimes during weekdays. The main road network between Medan and Karo Regency has been very busy because, while Medan has been the centre of economic activities for the neighbouring cities, Karo Regency has been the destination for tourism and agricultural industries. Thus, the most realistic proposals are expanding the existing road’s capacity and developing new roads that connect these two areas. However, the two regencies have no win-win solution regarding how they should solve this issue, especially in seeking the necessary financial contributions and land clearance. According to interviews with local road authorities and urban planners, it has been a big challenge to find an acceptable alternative route that can connect the two areas due to fragmented interests of the two local authorities. At the same time, the main financial source to fund the project was expected to be the central government, but the central government has responded that this road construction project for Medan–Karo Regency was not categorised as a top priority in the country. The central government further suggested the two regencies to solve this issue through their innovative ideas, but the two regencies seem to be not really responsive to overcome this challenge.

Regarding fiscal decentralisation, the new governance law allows a greater power for the Medan city government to direct the allocation and the utilisation of the development fund for some public-based activities and infrastructure projects. In parallel, this scheme enables the transfer of some tax revenues from the central government to the Medan city government as well as opens wider possibilities to expand additional revenues through innovative ways such as property, business, leisure, and industrial taxes. Lastly, fiscal decentralisation supports the authorisation of the Medan city government to borrow financial loans from foreign investors, including international donors. For example, Metropolitan Medan Urban Development (MMUDP) for road infrastructures and Medan Industrial Park (Kawasan Industri Medan – KIM)
for industrial cluster constructions were two projects that were partly funded from the foreign loan scheme. These projects have played a crucial role to generate revenues for the city.

The issue however is that the existing revenues from local resources are still weak, whilst the dependence on subsidies from the central government to the Medan city government is still dominant. Furthermore, although fiscal decentralisation requires effective and transparent mechanisms to monitor the budget distribution at local level, evidence indicates that accountability is the major problem for Medan’s good governance as most data and information about the utilisation of the development fund in Medan is extremely difficult to access.

Decentralisation policy seems to have made local governments ‘a little king’ for their administrative territory (Hudalah et al., 2014). It should be admitted that the formalisation of Mebidangro Metropolitan Region has been somewhat helpful in minimising conflicts and egos across local governments. However, the overall trend is that the local governments tend to implement policies that maximise benefits for their own interests, while often neglecting win-win solutions for the region (Firman, 2009; Firman, 2013; Rukmana, 2015). According to the interviews, as well as in line with the findings reported by Rukmana (2015), this situation was not really an issue before the decentralisation era, because the central government had a great deal of power to force local governments to collaborate when meeting cross-municipality interests.

4. Corruption in Urban Management

Many scholars have argued that decentralisation could strengthen the accountability of (local) bureaucrats and therefore would reduce the corruption level of public officials which eventually would also improve local development (see e.g. Fisman and Gatti, 2002; Arikan, 2004). In the case of Indonesia, however, a wave of corruption cases invisibly existed since the Soeharto era (1965-1998), but they became much more visible and increased across the country shortly after the decentralisation law entered into force in 2001. Allegations of corruption emerged in almost all regions and the cases do not merely involve local executive governments but also legislative bodies. Only five years after the law came into effect, there were 265 corruption cases involving local legislative bodies, with almost 1,000 suspects handled by local prosecutor’s offices across Indonesia. In the same year, the same offices had 46 corruption cases implicating 61 provincial Governors or the heads of municipal authorities (Rinaldi, Purnomo, &
Concerning Medan City, two of its sitting mayors for the last two periods have been found guilty in corruption cases (Adam, 2016). During the same period, a number of local government officers and business people were found to be involved in bribery and other misconduct. Moreover, according to Transparency International Indonesia, a think-tank and social movement organisation that is committed to the creation of a transparent and accountable government in Indonesia, Medan was ranked as the city with the highest index of corrupt practices in the Sumatra Region and the fifth highest in the country (Parlina, 2015).

As argued by Rinaldi, Purnomo, & Damayanti (2007), the increase of corrupt practices during the decentralisation era is influenced by the shifting power relations between the centre and the regions, as well as between the branches of government at the local level, which eventually makes all sides of the government tempted to embezzle funds for self-enrichment. Moreover, Rinaldi, Purnomo, & Damayanti (2007) found that opportunities for corruption have been opened up further by the enactment of inconsistent regulations governing local budgets without any clear control in local governance. With this regard, fiscal decentralisation seems to induce the increase of corrupt practices, especially when the institutional arrangements of bureaucracy in Medan City are not really accountable, transparent and well organised.

According to Chiodelli and Moroni (2015), there are three main types of corruption that can be found in urban management. The first is legislative and regulatory corruption, which refers to the bribery of legislators by individuals or interest groups to introduce or revise regulations that can change the economic benefits associated with certain situations. The second is bureaucratic corruption, which refers to corrupt acts of the appointed bureaucrats in their dealings with the public. The last is public works-related corruption, which is the systemic graft involved in building public infrastructure and services.

Those three types can also be recognised in Medan City. Related to legislative corruption, it might occur in three main forms: 1) markup of budget lines; 2) channelling the government budget to fictitious institutions; and 3) manipulating official trips for personal gain (Rinaldi, Purnomo, & Damayanti, 2007). As an example, there was an indication that the official trips of some local parliament members for several events were in fact conducted not by them but by others who did not have any capacity to attend such events, and were not even members of parliament (Bangun, 2015). With regard to bureaucratic corruption in the city, one example can be recognised from the case of two previous mayors of Medan City who were proven guilty of
corruption that was mentioned earlier. For the last type of corruption which is related to public works, the examples can be found in several forms, two of which are described as follow.

One form is bribery to get construction permits (Berita Sumut, 2016). As in all municipalities in Indonesia, any construction, whether new or a modification of existing construction, must have a permit (in Indonesian: *Ijin Mendirikan Bangunan*—IMB). A construction permit would be given if a real estate developer and/or contractor could ensure that the building project would meet the building and environmental standards. However, there were some cases where construction projects on private property were built under incomplete permits and/or were not compliance with the given guidance. Some striking cases that happened recently were the on-going development of a superblock on a 5.2 Ha area in Medan Barat District featuring condominiums, apartments, office towers, and a luxurious shopping mall (Tazli, 2016). There is also a similar case related to a shopping mall development in Medan Timur District which at the moment is the biggest one in the city (Leandha, 2013). According to the interviews with some practitioners, one of the reasons underlying such behaviour is because the approval process of IMB permits usually takes a long process with complicated procedures. At the same time, such real estate developers face the reality that there are many players involved in the local construction business without clear regulation and protection from the authorities. As a result, some developers bribe irresponsible officers as a ‘short-cut’ approach to gain permits within a short period of time, which is arguably evitable in order to maintain the project execution can be completed in line with the initial schedule (Server, 1996), as well as to win the competition with other real estate developers. A few other practices were related to how real estate developers violated the restricted land-use regulation and planned for green and public zones issued by the authority, by developing housing and business properties within the zones. Such kind of violation naturally trigger different forms of illegal transaction between both private sector and public authority.

There is also a form of public service corruption that relates to land governance, which can be associated with unresponsive, unaccountable and frequently ineffective land management. In Medan City, some practitioners have also related this issue with the occurrence of the so-called ‘land mafia’ (*mafia tanah*) (Nebby, 2015). Many of the land transactions in Indonesia, including in Medan, have been conducted for speculative purpose. There was an expectation that future development in the area would increase the land price after a certain period of time (Struyk,
The land mafia is those who collectively and purposefully seek many vacant and occupied land parcels with small values and keep them as if to create a ‘land bank’, and then re-sell the parcels in segregated and smaller pieces at much higher prices to residents, private sectors or other land speculators. Some public officials and some members of local parliament are allegedly also involved in this type of practices (Argus, 2016; Kamal, 2017). Interesting, our informants note that, suppose, once the local government has made internal and unofficial decisions to develop a new infrastructure in a less developed area or in any other areas, normally, all critical information regarding this plan would be fastly collected by land mafia groups. The land speculators then quickly attempt to purchase vacant and non-vacant land surrounding the area where the new infrastructure will be built up, in order to control the land price surrounding the area where the infrastructure will be built up. Surprisingly, in some cases, a few local civil society and youth organisations (Indonesian: Organisasi Massa or Ormas) also participated to create verbal and physical pressures or terrors to original land owners to push them selling their land ownership to such land mafia groups.

5. Critical challenges

As a result of the issues that were discussed previously, Medan City is clearly facing several critical challenges to establishing sustainable urban development and management. One important example is related to the provision of public services and infrastructure. Although our respondents argue that some physical developments of public infrastructure have been actively made, the progress is very slow and the supply is still not yet optimal. Table 1 demonstrates our Strength-Weakness-Opportunity-Threat (SWOT) analysis about Medan’s public infrastructures.

[Table 1 about here]

One of the biggest issues is the current power crisis and energy shortage in which households and industries suffer from sudden power cuts, voltage fluctuations, and frequent blackouts (Levon, 2016). According to the Director of the State Electricity Company for the North Sumatra branch, at the moment, the reserve margin for backup electrical power for North Sumatra, including Medan City, is only 6%, which is too small compared to the ideal level of reserve
margin which should be at least 30% of the peak load (Agustine, 2017). Obviously, sudden power cuts commonly exist in Medan until now, especially in the neighbourhoods where common and low-income people settle.

Another important issue is related to the transportation sector. Medan demonstrates a strong dependency on private autos and motorcycles. In 2011, there were about 2.7 million cars and motorcycles in the area, with motorcycles consisting of about 86% of all vehicles with motorcycle purchases in Medan growing at about 31% per year. Without any comprehensive transportation plan (Fatih, 2017), this condition will obviously increase the current traffic congestion and other transport as well as mobility and accessibility problems in the city. Although according to the interviews with local public officials, the municipality has made several efforts to improve the traffic flow, the solutions mostly involved adding to the capacity of road networks and creating new roads without any sustainable and innovative solutions that could control car and motorcycle purchase as well as encourage the usage of non-motorised vehicles. According to Bappeda (2013), the city government attempts to develop their first monorail system, to follow Great Jakarta and Palembang. This mega project is named as Metro Millennium Medan (M3), while the basic blueprint including its basic route plan was produced (see Fig. 10) (Bappeda, 2013). However, the pathway to implementation, engineering, as well as the financial mechanism is not clear yet.

[Figure 10 about here]

Medan City also experiences challenges in the provision of clean water. The local clean water provider which is owned by the municipality can only serve about 30% of the total household demands, while the rest still rely on clean water from private sources such as pumped water, offspring, and rainwater (BPS Kota Medan, 2015). With the increase in demand due to the growing rate of population and activity, the problem would certainly become more complicated without any serious change in the clean water management of the city.

Apart from the aforementioned problems, solid waste management is also an important issue in Medan City. With a total of 1800-2000 tonnes of solid waste on a daily basis and a collection capacity of 1500 tonnes per day, the city clearly has a serious problem (Muamar, 2015). At the moment, Medan uses two disposal facilities for its solid waste last treatment in two
districts: Terjun solid waste station (Medan) and Namo Bintang station (Deli Serdang Regency). In order to increase the capacity of facilities, the municipality has attempted to increase the existing capacity of the solid waste station in Deli Serdang Regency as well as the possibility to rent additional vacant land at any suitable locations for new open dumping sites (RTR Metropolitan Mebidangro, 2008). The negotiation process is, however, delayed because both authorities have different opinions regarding rental fees for vacant land, maintenance procedures and health impact to local communities surrounding the new solid waste station.

As Muis, Guneralp, Jongman, Aerts and Ward (2015) observed, many Indonesian cities have seen urban expansion as the main driver of future flood risk, and flood disasters are often found to be an inevitable part of urban challenges. According to World Bank records (2017), Medan is one of the major cities in Indonesia that has been exposed to a high risk of flood disasters. At 20 m above mean sea level, Medan City is prone to flooding, partly because this city is a meeting point of three main rivers: the Deli, Belawan and Percut rivers. The worst floods in Medan according to the municipality’s records were in 1956, 1990, 2002 and 2011. Annual flooding has occurred due to increasing run-off, drainage conditions and river narrowing. While there have been a number of plans for improving flood control in Medan, the implementation is still lacking.

The current local regulations on planning and flood control as shown in Local Regulation No 2/2015 on Detailed Spatial Plan and Zoning Regulation of Medan City 2015-2035 indicate that the city has to have a polder system, retention pond, city lake, canal system and normalization of primary water channels (Perda Kota Medan, 2015). However, there has been very little implementation of these regulations. Our interviews with local officials can confirm that the Medan city government was not able to tackle the flood challenges due to its budget constraints. At the same time, governance decentralization has limited the authorisation of the central government to directly fund and control the flood management process in Medan City. Therefore, collaboration with the central government has been proposed as one of the solutions, particularly seeking the financial support. However, our conclusion based on interviews with

3 http://sdwebx.worldbank.org/climateportalb/home.cfm?page=country_profile&CCode=IDN&ThisTab=NaturalHazards

officials from Planning and Development Authority of Medan City is that flood control through collaboration with the central government can only begin in 2018, but this will entirely rely on the initiative from the national ministry of public works.\textsuperscript{5} This findings indicates that under the decentralisation policy, the central government still controls the allocation of funds for many major infrastructure projects throughout the country, including Medan. On the other side, the local government has shown limited innovations to seek alternatives to finance some critical projects of urban development.

As a matter of fact, the situation that Medan faces is similar to what happens in many Indonesian cities, including Jakarta, Semarang and Makassar (Gunawan, Sagala, Amin, Zawani, & Mangunsong, 2015). Public infrastructure has not really been developed to tackle disaster challenges as it should, and somehow, is lagging behind the need for it due to dependency on the central government. For the case of Medan, the increasing run-off over the years has made it difficult for the current urban drainage system to contain water. According to BPDAS Wampu Sei Ulau (2011), Medan City can only absorb about 45% of rainwater.\textsuperscript{6} Thus, one of the effective solutions is to provide structural measures, even though they might be very costly. The structural measures under consideration involve civil engineering approaches involving physical construction procedures that can help prevent or minimise some impacts of flooding hazards, through the application of multiple engineering techniques or technologies.

The current level of flood control near Kualanamu Airport in North Sumatra illustrates that there is a problem due to the high demand from the citizenry for land acquisition.\textsuperscript{7} A combination of structural measures and non-structural measures such as institutional and governance innovation that may govern flood and disaster preparedness, better planning and comprehensive climate adaptation policies will be necessary (Sagala, Lassa, Yasaditama, & Hudalah, 2013). Without considering such a combination approach, Medan will still suffer from long term flooding.

\textsuperscript{5}https://beritasumut.com/politik-pemerintahan/Atasi-Banjir-di-Medan-Utara--Pembangunan-Tanggul-Rob-Direncanakan-Pada-2018

\textsuperscript{6} http://www.kompasiana.com/onrizal/membentengi-Sumatra-utara-dari-banjir-berulang_55109b5c8133115334bc6b93

\textsuperscript{7} http://industri.bisnis.com/read/20160328/45/531968/penanganan-banjir-di-sumut-masih-terkendala-pembebasan-lahan
6. Concluding remarks

Medan’s urban development has undergone a gradual transformation, from a small agricultural village to a growing metropolitan city, and lately has become the third largest urban centre in Indonesia with more than 2 million inhabitants. Thanks also to its business and service activities, Medan is enjoying a high rate of economic growth which is higher than the national average. The improvement of basic urban infrastructures and public utilities has been the main agenda that contributes to the overall development of the city. Although some challenges have been found such as what we have reported in the SWOT analysis, there are still promising possibilities for future improvements, aimed at delivering better public services to urban residents.

This study has shown that the decentralisation policy in Indonesia may create tensions among different local authorities—in this case, it is between Medan and the neighbouring municipalities—which eventually could make it difficult for them to cooperate in strengthening local and regional development. The study also reports that some cities and regencies are not really able to anticipate the financial consequence of decentralisation policy. The case of Medan has demonstrated that while the local government has ambitions to construct new infrastructure projects, the ability to self finance such projects is still lacking.

We might argue that the decentralisation policy can still bring opportunities to create innovative solutions for urban as well as regional issues. Obviously, these opportunities need to be supported by a good governance mechanism with capable and responsible urban managers. As the city suffered from corruption in its urban management processes, the creation of a good governance mechanism in Medan City may be problematic. All those problems in some ways have influenced the provision of public services and infrastructure which is important to develop and maintain sustainable urban development.

The establishment of Corruption Eradication Commission (Indonesian: Komisi Pemberantasan Korupsi – KPK) in 2002, has brought some improvements in handling and dealing with corruption cases through persecutions of the corruptors. Nevertheless, with the increasing cases of corruption, relying only on prosecution will not be enough to eliminate corruption, especially within urban management processes. Serious attempts to prevent the practice of corruption are also needed. Some suggestions can be made to support the prevention
attempts. For instance by implementing an e-planning and e-budgeting system in which information, guidance, and services related to urban planning and public budgeting are facilitated by a transparent and reliable electronic system. Recently, the capital Jakarta and the city of Surabaya have innovatively introduced e-budgeting system for their five-year program plan that can be easily accessed, reviewed, and audited. Thus, their experiences in managing the public budget plan and spending can be replicated and adopted to some extent for the city of Medan.

At the same time, public or community control on urban management process should be improved. Apart from that, a local leader with a strong will, visionary, and capability to create a good governance is evidently also important. The influence of transparent, open, and open-minded recruitment processes to select potential mayors made by political parties in Medan is substantial to establish the implementation of good urban governance.

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Figure 1. Location of Medan City in North Sumatra Province, Indonesia

Figure 2. *Kampung Keling* in early 20th century (left) and now (right).

*Source:* Tropen Museum and author’s collection.
Figure 3. Chinese architecture in Medan.

Sources: Pratyeka under Creative Commons license.
Figure 4. Remnants of Public Services and facilities buildings from Colonial Era

*Sources: Various under Creative Commons license.*
Figure 5. Maimun Palace

Source: Author’s private collection
Figure 6. Grand Mosque of Medan

Source: A.R. Taim under Creative Commons license
Figure 7. de Esplanade and now Lapangan Merdeka Medan

Source: Tropen Museum under Creative Commons license
Figure 8. Medan’s spatial structure.

Source: RTRW Kota Medan, 2011; with authors’ modification.
Figure 9 Population growth in the Mebidangro Metropolitan Area. Note: *Forecasting.

Population density:

- = 100 – 275 person/hectar (ha)
- = 80 – 100 person/ha
- = 60 – 80 person/ha
- = 40 – 60 person/ha
- = < 40 person/ha

Figure 10. Population density in Metropolitan Mebidangro area, 1991-2029.

Source: RTR Metropolitan Mebidangro (2012); *Forecasting.
Figure 11. Design illustration of M3 – Metro Millennium Medan

*Source: Study Kelayakan Pembangunan Monorail Kota Medan, Bappeda Medan, 2013*
Table 1 SWOT analysis of infrastructure developments and challenges in Medan

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<thead>
<tr>
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<th>Strength</th>
<th>Weakness</th>
<th>Opportunity</th>
<th>Threat</th>
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<tbody>
<tr>
<td><strong>Electricity</strong></td>
<td>• Rich solar and hydropower energy sources.</td>
<td>• Voltage fluctuation and sudden power cut.</td>
<td>• The national plan to target the supply of 35,000 MW.</td>
<td>• Electric theft made by irresponsible households and industries.</td>
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<td></td>
<td>• Development of diesel-based power plant in Medan Belawan district.</td>
<td>• The market was monopolised by the central government.</td>
<td>• The national interest to develop renewable energy technologies.</td>
<td>• Most of electric technologies are imported from overseas.</td>
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<td>• 60%-80% of households are accessible to electricity.</td>
<td>• Inefficient cost maintenance.</td>
<td>• Power plant expansion in the neighbouring regencies.</td>
<td>• Unstable global economy that hits the electric prices.</td>
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<td><strong>Clean water</strong></td>
<td>• Water supply from Babura and Deli rivers.</td>
<td>• Untreated boreholes.</td>
<td>• The recent national plan to provide clean water to major cities of Indonesia.</td>
<td>• River contamination in upstream.</td>
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<td>• Good groundwater and borehole development in several villages.</td>
<td>• Pipe leakages and cracks were reported in different locations.</td>
<td>• International supports to develop the existing clean water system.</td>
<td>• Illegal logging activities in Karo regency that harm ground water quality.</td>
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<td></td>
<td>• Constant and heavy rainfall.</td>
<td>• Complicated procedure faced by households to apply new access to clean water.</td>
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<td>• Polluted rainwater.</td>
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<td><strong>Solid waste</strong></td>
<td>• The existing stations can only manage 75% of the total supply.</td>
<td>• Open dumping station that causes serious health challenges.</td>
<td>• Potential areas that can be used as the new stations.</td>
<td>• Certain amount of solid waste from the neighbouring regencies was illegally transported to Medan’s solid waste stations.</td>
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<td>• The use of mobile solid waste station was introduced in the city.</td>
<td>• Difficult to find suitable locations for the new expansion.</td>
<td>• Good willingness of pay by most of local residents for the contribution of solid waste treatment.</td>
<td>• The lack of support from the central government to subsidize the infrastructure improvement.</td>
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<td><strong>Urban transport</strong></td>
<td>• Most of main roads were asphalted already.</td>
<td>• The lack of public understanding and knowledge to recycle solid waste.</td>
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<td></td>
<td>• Constructions of some new expressways.</td>
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<td></td>
<td>• Monorail construction plan.</td>
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<tr>
<td><strong>Drainage and sewerage</strong></td>
<td>• Most of areas with high dense population have drainage and sewerage systems.</td>
<td>• Cracks and holes were found along some collector and local roads.</td>
<td>• The strong local initiative to develop the monorail system.</td>
<td>• The central government plans to provide cheap cars, this might prevent the use of public transport.</td>
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<td></td>
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<td>• Poor public transport service.</td>
<td>• Local residents have been encouraged to use public transport</td>
<td>• The lack of subsidy support from the central government.</td>
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<td></td>
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<td>• High dependency on private autos.</td>
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<td>• Lack of law enforcement towards traffic violations.</td>
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