



Residential Solid Waste Management in Semarang:
***The Question of Geographical
Environmental Justice***

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Residential Solid Waste Management in Semarang: The Question of Geographical Environmental Justice

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Indonesian words and phrases

Adipura Award	Award for a city in Indonesia which succeed to realize cleanness and urban management
Bappenas	National Development Planning Agency
Ewuh pekewuh	An attitude of Javanese people to be reticent when interacting with others to avoid a conflict between neighbors.
<i>Kecamatan</i>	District
<i>Kelurahan</i>	Sub-district
<i>Kelompok Swadaya Masyarakat (KSM)</i>	Community self-help group
<i>Kementerian Koordinator Bidang Kemaritiman</i>	Coordinator Ministry of Maritime Affairs
<i>Kerja Bakti</i>	Work together (in the community)
<i>Kota</i>	Municipality
<i>Kota Hijau</i>	Green city

<i>Lingkungan Hidup</i>	Environmental
<i>Resik-resik Kuto</i>	Annual neighborhood cleanliness contest in Semarang
Kampong	Traditional village

Abbreviations

BANANA	built absolutely nothing anywhere near anyone
FDS	final disposal site
GEJ	geographical environmental justice
ISWM	integrated solid waste management
ITDS	integrated temporary disposal sites
LULUs	locally unwanted land uses
NGO	non-government organization
NIMBY	not in my backyard
RSWM	residential solid waste management
RT (<i>Rukun Tetangga</i>)	a community which consists of some households in the district
RW (<i>Rukun Warga</i>)	a neighborhood which consists of some communities in the district one level above RT
SNI	Indonesia national standard
TDS	temporary disposal site

Glossary

better-off areas	An area where the rich people live.
environmental justice	The fair distribution of environmental benefits and risks between inhabitants who are affected by an environmental activity, a policy, and a regulation implementation. The first content of environmental justice is always related to the second content which is commonly called by procedural justice. The last explains the process to decide the fair distribution of environmental benefits and risks. The fair process should involve and provide lessons to as many relevant parties.
end of the pipe system	The method used to remove wastes and directly throw them into the environment.
geographical environmental justice	A fair distribution of risks and advantages of an environmental policy and activity with respect to geographical aspects such as areas, places and locations.

geographical environmental justice movement	A form of defense of people's geographical space, to achieve a healthy environment by minimizing the negative impact of activities of the government and/or powerful social groups.
lower-middle class	<p>A group of people in research areas who has the following characteristic:</p> <ol style="list-style-type: none"> a. The size of the property is between 90 –120 m². They have houses which are built from cheap material with a simple type and contained-one or two small bedrooms b. They have a monthly income in between IDR 1 – 3,5 million or equivalent to USD 69 – 241
locally unwanted land use (LULU)	The social response to unwanted facilities which have negative environmental and health impacts such as waste or industrial facilities.
middle-upper class	<p>(in this research) a group of people with the following characteristics:</p> <ol style="list-style-type: none"> a. They have the type of houses, which are big and expensive b. The width of the main road in front of the houses are in between 10–15 meters and is asphalted and paved c. The size of the properties is between 150–200 m²

not in my backyard (NIMBY)	Arguments or actions to shift activities that are perceived or experienced to have negative effects on the lining environment to other places.
politics of place	A strategy of a community to allocate most benefits to the specific elite classes and most of the burdens to a poor class.
politics of resistance	Typically associated with small-scale communities of resistance, marginalized groups, deviant discourses.
procedural justice	The process to decide the fair distribution of environmental benefits and risks. The fair process should involve and provide lessons to as many relevant parties such as the community and the settlement.
substantive justice	The equal material distribution (benefits and risks) among the community.
urban social movement	The efforts of a community in attaining their rights to a healthy and clean environment.

PART I

Introduction, Theoretical Background, Methodology and Research Area

CHAPTER 1

Introduction

1.1 Introduction

Human activities unavoidably produce waste. The amount of this waste is primarily dependent on the population size and state of the economic welfare of a society. Generally, society's consumption increases as population and wealth increase. However, the Earth's capacity to handle the waste produced by humans, who like to consume is limited. Because of this, poor waste management will have a negative effect on human life. The effects could be felt through environmental destruction and the creation of health problems.

Data which are collected from all over the world proved that the pathway of solid waste management is inextricably linked to environmental outcomes and their subsequent economic consequences. Onyanta (2016) and Kaza (2018) explain that at local and regional levels, inadequate waste collection, improper disposal, and inappropriate siting of facilities can have negative impacts on the environment and public health. At a global scale, "solid waste contributes to climate change and is one of the largest sources of pollution in oceans" (Kaza, 2018, p. 116).

Especially in urban areas, waste management is a problem that needs much attention to ensure the protection of the environment and conservation of natural resources. Many urban municipalities have experienced improper waste management causing social, environmental, economic and geographical problems. Many developed countries have increased their attention on waste management and try to apply a sustainable approach toward tackling these problems, however, in less and least developed countries there is still a failure in managing urban waste (Bhuiyan, 2010; Bundhoo, 2018; Castells, 1983; Munawar, 2018; Halpert, 2001; Hasan, 1998; Onyanta, 2016; Pasang, 2007; Kaza, 2018; Seik, 1997).

There are many cases in Indonesia that provide evidence of this failure (Munawar, 2018; Pasang, 2007; Rahardjo, 2017). In November 2005, there was an unexpected explosion from within the waste at the final disposal site (FDS) Leuwigajah, Bandung (Lavigne et al, 2014) that triggered the sliding of waste heaps. Subsequent analysis of these piles of untreated waste indicated that methane produced by the decaying waste had reached uncontrollable levels resulting in a massive explosion. The explosion occurred in the middle of the night, killing tens of people while they were sleeping. Therefore, it is not surprising that many people resist having rubbish dumps in their localities.

Several months prior to the Leuwigajah tragedy in Bojong, Bandung (Lavigne et al, 2014, p. 3) residents rioted against a temporary disposal site (TDS) placed near their residential area. Many were injured or arrested by the police for opposing the local government's decision on allowing the building of the site. This case was blown up by the media since the incident was quite massive. Similar oppositions to waste sites have occurred also in Semarang. In Sub districts Candisari (2004) and Gajahmungkur (2008), residents have protested by burning the disposal

facilities placed in their neighborhoods¹. Such incidents do not occur without reason and indicate that social aspects must be considered when dealing with waste management. Consequently, waste management programs and treatment techniques must consider social aspects such as public communication, public acceptance, social compatibility, and public participation, which consider both the planning and implementation of a TDS. This is necessary as it will affect consumer behavior, and the changing value system of the community (Morrissey, 2004, p. 304).

Resistance from inhabitants of areas surrounding TDSs or an FDS is understandable. They are the first ones to experience the disadvantages of the location of disposal sites. The extent of the burdens and negative environmental effects of the site vary according to its location and size. Within a specific population group, people are unequally exposed to the burdens. Those who live in the worst environmental conditions are frequently from poor communities.

To further explain why the above phenomena occurred, the following section contains the concepts used to analyze the effects of deficient waste management, especially with regard to the locational aspects of TDSs and their associated problems. Next are the aims, research questions, and the structure of this study.

1.2 Waste and location: geographical environmental justice in waste disposal

1.2.1 The concept of geographical environmental justice

Discussions about environmental justice cannot be separated from geographical aspects. Broadly speaking, this concept explains the just distribution of social services between places of those

¹ Those cases were not published in any media when they happened, but they became known to the researcher since the areas were research locations for this study.

being in the same region (Curtis, 1989, p. 102). Activities that have negative effects on the environment, for example, landfills, are usually placed on land that is deemed as less valuable such as near the residential areas of poor or marginalized communities. With regard to the choice of land for waste, poor people are generally less powerful in a society and thus, have less say over what takes place in their community. Frequently, the 'not in my backyard' (NIMBY) response is employed by those with the power to decide where certain activities will be located. This means that geographical injustices are not only linked to the physical location but also political decision making.

The process to decide where such a waste facility should be located, in geographical terms, is an important aspect of the decision-making process because the material conditions very often comprise urban matters which are controlled and manipulated by the interests of an elite. Most of the time, the elite's decision is based at the expense of the marginal people's areas (Swyngedouw, 2003 p. 902). David Harvey also argues that environmental activities always take place in the context of fundamental's underlying social processes that are associated with power structures, social relations, institutional configurations, discourses and belief systems (Harvey, 1996, p. 401). Yet, the decision to locate a waste site at a certain place is not independent of these social, political and economic processes and cultural constructions (Heynen, 2006, p. 6).

Often poor communities are not able to deal with urban authorities to obtain better services of, for example, water provision, sanitation, and waste disposal facilities when compared to the needs of the middle- and upper-class communities. Most of the underlying reasons for poor communities' loss of aspiration is caused by their lack of strength, knowledge, and social relations to promote their self-interests. Therefore, the imbalance in

environmental health facilities between communities should be addressed and society needs tools to balance and equally distribute the benefits and risks that emerge from conflicting interests. Geography offers a perspective that emphasizes the spatial context within which social and physical environmental processes may occur (Blowers, 1992, pp. 228-229). Based on this background, this research is thus important as it will elaborate on how to deal with the geographical dimensions of environmental justice, such as evident in the TDS case.

Bloomley (1988) believes that justice issues in a geographical context emerge when environmental policies are interpreted differently within the same. In addition to justice issues, geographical justice, which is defined as the fairness of the geographical benefits of publicly provided goods (Boyne, 1991; Hay, 1996; Johnson, 1994, p. 300), distribution of social services and distribution of social needs (Hay, 1996), is also necessary for finding a solution to the TDS problem. The choice of a TDS location may occur either accidentally or with intention (Hay, 1996). If those who live in a particular area are excluded from the compensation solely on the grounds of location, this would breach formal equality (Hay, 1996). However, as informed above, the marginal communities are usually excluded from the decision making, hence, inequality occurs.

In a public decision on the urban environment, two issues usually come up which are related to one another: (1) the benefits and burdens of urban activities and (2) impacts on the area used. Disposal site placement is one form of a public decision that has these two sides of the coin. The first is environmental justice and the second geographical justice. Because of this, this study aims to elaborate on the concept of geographical environmental justice (GEJ) which combines factors proposed to examine and analyze the distribution of risks and advantages of geographical aspects

of an environmental policy and activity. The policy and activity should be fairly distributed regarding social class, age, gender, ethnic group, and other human aspects. The GEJ approach should describe the spatially distributed impact of risks and advantages of disposal site placement in different locations. More arguments about the proposed GEJ approach will follow, hereafter, in the theoretical framework chapter.

1.2.2 The policies of locating waste

Waste can pose serious environmental pollution and health risks (Blowers, 1992, p. 228). The location of waste is often an important issue since waste contains unwanted or unused residues of organic and inorganic material. This is especially relevant if waste is treated without any proper management. The choice of a location is not absent from political and local opinions that are frequently used to reject a location near the community. Resistance by local communities to “locally unwanted land uses” (LULU) as waste sites according to Blowers is often successful, with the communities showing “not in my backyard” (NIMBY) feelings (Blowers, 1992, p. 230) as a response towards their community being used as a dump or landfill area.

LULUs can be defined as a social response to unwanted facilities which have negative environmental and health impacts such as waste or industrial facilities. In this case, NIMBY can be considered as a response to LULUs (Schively, 2007, p. 255). The term NIMBY was created to describe the reaction of citizens and local communities to actual, or even potential, infrastructure or facility siting when they are supposed to be dangerous for the environment and therefore to their interest (Massa, 2019, p. 5).

Urban planners and decision-makers should have considered these feelings by taking into consideration the fairness and

community involvement in the public project planning and implementation. To minimize the rejection and to ensure the acceptance of the society, “the standard of social justice should be adopted as a blueprint for the design of a fair sitting/ placement policy” (Davy, 1996). Today, a BANANA (built absolutely nothing anywhere near anyone) approach (Schively, 2007) is considered as an idea to achieve a more fair policy for urban societies.

Many scholars have noticed an unjust geographical distribution of LULUs concentrated mainly in poor inner-city neighborhoods, and are arguing for corrective policy mechanisms, that are often in the form of controlled planning to ensure a more uniform sharing of the LULUs burden (Low, 1998, p. 115). Indeed, there is a relationship between the residential structures, which includes race and class characteristics, and the patterns of accessibility to land uses (Knox, 1982, 1995). Other geographic analyses focusing on the location patterns of “noxious facilities”, which generate negative externalities for surrounding communities, have also shown similar geographic site distributions (Low, 1998, p. 105).

Through the LULU process objection and NIMBY response to such waste facilities, people want to show their disagreement to dumps or landfill placement that would be temporarily or permanently built in their community. Unreasonable dump or landfill areas will cause public health problems and environmental concerns. Van Naerssen and Barten (2002) explain waste in the urban areas of the South as follows:

An estimated 30-50 percent of the solid waste generated in the urban areas of the South is left uncollected. Refuse heaps accumulate in streets and open spaces, providing excellent breeding grounds for rodents, flies and other disease vectors.

Children who are often on the wasteland amongst the rubbish are usually the first affected (p. 6).

Van Naerssen and Barten especially mention children, since they use public spaces as playgrounds and are often in contact with waste and in this way become the first victims suffering illnesses obtained from waste. An unsanitary area is, of course, of no benefit to the people who live or conduct activities near the area. As a consequence, waste sites are often placed in low-income areas or disempowered and marginalized communities. Unfortunately, poor or powerless people will be victims of an unjust policy of the more powerful parties who reject disposal sites in their neighborhood. In regions where there is less political organization as well as in areas of weak political resistance, the symbolic, political and economic logic for the location of noxious facilities works in the way to the detriment of the people who live there (Harvey, 1973, p. 81).

1.2.3 Urban waste management in Indonesia

There are two types of urban solid waste treatment systems: the first is the end of a pipe system, which functions as a disposal passageway and the second is an environmental method that uses a sort of recycling system. The systems are based on two different approaches. The first focuses on the removal of waste from its origin and to dispose of this elsewhere, whereas the second one is based on the principles of reducing, reusing, and recycling the reproduction of waste. The last method is now commonly used in many developed countries to protect the environment.

Cities that use a waste disposal system usually use the sanitary landfill method to treat urban wastes in final disposal sites. The sanitary landfill method has several weaknesses. As long as the population density is low, sufficient area for waste sites is

available, and there are no vital ground water and surface water sources near the landfill site, the sanitary landfill can be implied. However, sanitary landfills still cannot be considered as an appropriate system to process urban waste, when considering the environmental and social problems it creates.

Although Indonesia already has a regulation on urban waste management by enacting the Law No. 18/2008, up till now most cities still use the end of pipe system to treat their urban waste. The regulation rules three types of disposal sites, the first concerns a temporary disposal site, which is a place for waste before being transferred to a final disposal site. The second is an integrated waste management site (ITDS), and the third is a final disposal site. ITDS is the place where wastes are environmentally being managed. Even though this regulation aims to organize urban waste management, for the time being, TDS and FDS are still mostly used.

In addition to the national regulation, each municipality has a specific local regulation to organize urban waste management. The national regulation is implemented uniformly. To facilitate specific characteristics of each municipality in dealing with urban waste, some local regulations are still required.

Commonly, the problem of rejection is the main aspect that follows the placement of a disposal site. There are some aspects such as the system of localization, the power relations that influence the placement of TDSs, and the causes and consequences of the placement that will be discussed in chapters 5 to 7 of this study.

Looking at the unsatisfactory condition of TDSs and the treatment of residential waste to reach a just and fair consideration is important. People will (unreasonably) try to refuse the placement of a TDS in their immediate environment to protect themselves from negative impacts. The NIMBY

concept is a type of environmental behavior and attitude that is often used in attempting to reject the placement of a proposed TDS. The politics surrounding the location can also be manipulated in such a way that certain groups can receive the benefits but not the burdens. Therefore, the issue of geographical justice in residential solid waste management (RSWM) is critical to determine whether the current urban waste treatment is already accommodating the interests of all residents or, on the contrary, only benefits some residents at the cost of others.

1.3 Aims of the study, relevance, and research questions

1.3.1 Aims of the study

This project aims to analyze the geographical environmental justice in the RSWM system in Semarang. This will be carried out by combining the concepts of environmental justice and geographical justice in order to emphasize the important discussion of the space and location of the TDSs. The idea of geographical environmental justice will be discussed in terms of Semarang's waste placement in the residential areas.

The analysis will focus on four aspects. The first is the specific location of the TDSs and their environmental impact on both the benefits and burdens of the community. The second is the system that has resulted in the current locations of TDSs. Third, is the causes and consequences of TDSs' distribution in the community, and fourth, is the level of community power in attempting to achieve a more equal and just distribution of the TDSs.

1.3.2 Research questions

To fulfill the aims of this study, the current level of geographical justice in RSWM in Semarang needs to be determined. Analysis of TDS distribution will be used for this purpose. This research will also describe how the system has led to the current TDS locations in residential Semarang. Several factors influence the TDS distribution patterns in Semarang and indicators of these will be collected and reported. This will include the politics and strategies of the local government and society employed in the decisions of locations resulting in the associated environmental and geographical benefits and risks. Finally, and of greatest significance to this study, it will be explained how communities took initiatives towards achieving a more equal distribution of the risks associated with a TDS in a residential area.

Thus, the central question in this research concerns the situation of geographical environmental justice in residential solid waste management in Semarang. To answer the central question, the three main research sub-questions are as follows:

The research questions for this study are:

1. What is the system of policies and regulations that determines the location of TDSs implemented by the local government of Semarang?
2. What are the causes and consequences of the current distribution of TDSs in the sub-districts of Semarang?
3. What strategies did the communities follow to successfully redress TDSs proposals made by the municipality of Semarang in acquiring a better TDSs location?

To answer the above research questions, an analysis of the geographical environmental justice in TDS locations requires the mapping out of the locations in the selected research areas of Semarang. This mapping allows a detailed description of the

entire TDS distribution system in the areas. In addition, it is also necessary to gather data concerning the social status, and economic condition of the inhabitants in the research areas. The social status and economic conditions are factors that can explain the situation of the members of the community. To map out the social factors, gender and age are recorded to identify how these have influenced the power amongst the inhabitants in the decision-making process of the TDS location. To map out the economic conditions, the level of income, number of members in the household, property ownership, and the condition of the house and community in general can be taken into consideration. The information gathered is vital for the investigation of how different groups of people may unequally be affected by the placement of a TDS.

Urban management policies often result in allocating more burdens on marginal groups instead of those who are more affluent. This happens because the government rarely consults the affected groups of people when deciding upon urban policies with the assumption that the process will become costly and timely with less additional benefit. Poor communities are rarely considered as the relevant actors who must be involved in the public project.

As a result of this way of thinking, many urban policies are influenced by the specific interests of certain social groups and therefore benefit these groups by creating discrimination within the urban community. In locating waste sites in Indonesia, there would be a potential injustice when the relevant actors do not become parties in the decision-making process in the urban policies. A lack of policy enforcement has allowed local governments to establish waste sites without making considerations the urban justice of the communities affected by the plan for TDSs. The system that allows the policies to be

influenced by certain parties, therefore, needs to be analyzed to understand better what factors have led to the choice of Semarang TDSs locations.

The disposal process can be divided into two stages: from the household to a TDS, and from the TDS to an FDS. This study will specifically focus on the effects of TDS placement since the TDS is still being used at the end of pipe system and most of the TDSs are very close to the households. In addition, this study will also investigate the types of benefits and burdens or risks, felt by various members of the community as a consequence of the distribution processes of TDSs.

To cope with this aspect, the relative power of an individual or groups of communities needs to be established. This was achieved in two steps. First, the RSWM regulation was analyzed including its implementation. Through this, the strengths and the weaknesses of existing regulations can be identified and importantly, the obstacles to appropriate implementation can be described. In doing so, the policy analysis is crucial to formulate and re-design the regulations and policies for RSWM in Semarang. Second, the community movements toward achieving a more equal distribution of the risks associated with TDSs were traced through documents and interview analysis. In this case, local wisdom is taken into account as it is important to minimize the impacts of the waste, and the unequal distribution of the burdens.

1.3.3 Research relevance

Research on environmental and geographical justice needs interdisciplinary work, which includes the aspects of law, space, and power. For this reason, an interdisciplinary perspective between law and geography is needed. The way in which power

and law use space in the decision to locate a waste site indicates that the legal aspects cannot stand alone as a discipline. Law is no longer autonomous and objective because law is relational. Law acquires meaning only through social action. To this extent, law is viewed as a social construction and is analytically inseparable from social and political relations (Bloomley, 1988, p. xv).

Law should define the ruling of waste sites because the sites are usually affected or interfered with by the interests of different groups of people. Reasons for choosing a particular waste site usually only incorporate the interests of the proponents. For example, a group of affluent people may reject the placement of waste facilities in their community based on aesthetics, whereas less affluent neighborhoods are forced to receive the waste site because of economic reasons. Different people have different interests depending on their perception of space and place. It is for this reason, that Bloomley sees legal discourses made to serve certain social categories and distinctions for people, places, and events (1988, p. xx).

1.3.4 Research benefits

This study will be valuable to both the local government and the urban society. To the Semarang local government, it will bring the focus back to the policies on the treatment of urban waste and the placement of waste facilities. The result of the research analysis will provide a basis for the local government to evaluate the existing policy on urban waste management in Semarang. By carrying out waste land research that considers the factors for geographical environmental justice, better waste management that is fair and just for all in Semarang can be reached.

Consequently, this study becomes beneficial also in forming the strategies of the communities via a GEJ movement, which

strives for a more equal distribution of benefits and risks of the geographically managed TDS.

1.4 Thesis structure

This thesis will be systematically structured around the discussion of geographical environmental justice by having three parts. The first part of the thesis will contain chapters 1, 2, and 3 which provide the background of the study, the theoretical framework, and the methods used for the study.

The second part will consist of chapters 4 and 5, which focus on the system of TDS localization. Chapter 4 will specifically discuss the system that leads to the current location of TDSs in residential Semarang while chapter 5 will provide the politics and power relations between the local government, urban poor communities and the better-off ones in influencing the placement of TDSs.

The third part will consist of chapters 6, 7, and 8, which discuss respectively the location of TDSs, how they were located, the causes, the consequences and the responses to the challenge of the urban environmental movement to achieve a more equal distribution of TDS placements. The last chapter of this part will conclude the questions about GEJ in urban Semarang solid waste treatment and presents the answers to the three research questions of this study.

Chapter 1 (**Introduction**) presents the Introduction to the problem of this study that consists of the background to the problems, the research question, the aim of the study, the research questions, the research relevance, the research benefits, and the thesis structures.

Chapter 2 (**Theoretical framework: A model to approach geographical environmental justice**) presents the theoretical

framework which is used to answer the central question in this study. The literature review on environmental justice and the geographical aspects are presented to formulate the model to approach geographical environmental justice (GEJ). GEJ is analyzed by looking at three kinds of processes, namely the causes, the consequences, and the responses with regard to environmental change in a specific location. Firstly, the influencing factors can be considered as causes. They can be analyzed primarily through social classes and political power. Secondly, the location can produce consequences that impact both the environment quality and the influencing factors. The consequences will describe the spatial distribution of environmental quality which comprises benefits and burdens. Specific discussions on urban solid waste treatment and management are elaborated in GEJ.

Chapter 3 (**Methodology and research areas**) discusses the research strategy to describe the situation of geographical environmental justice in residential solid waste management in Semarang. To describe how the conflict between classes occurs, the criteria of selected research locations are (a) the neighborhoods consist of different social classes who send their solid wastes to a TDS and (b) the occurrence of a TDS rejection by a community (part of a neighborhood).

Chapter 4 (**The system of temporary disposal site placement in Semarang**) aims to explain the system of temporary disposal site (TDS) placement in Semarang. To understand the system, this chapter is divided into two main discussions, first the explanation of residential solid waste management and second the description of the Indonesian policy and regulation on residential urban waste management, which consists of the definition of residential urban waste and waste management, the aim of waste

management, and government's tasks and the public involvement on urban waste management.

Chapter 5 (**Factors in temporary disposal site location**) discusses both national and local regulations as part of the regular framework as explicated in five sections. They are the factors belonging to the contextual practice, the characteristics of a place, the social considerations, and the characteristics of the urban waste treatment facilities. The regular framework refers to the urban waste regulation system while policies concern the contextual practice and the procedures of the policy implementation.

Chapter 6 (**Poor neighborhoods as the targeted places for temporary disposal sites**) describes the current distribution of TDSs in five different neighborhoods (RW) and sub-districts (*Kelurahan*) in Semarang. The chapter consists of the introduction to TDSs in Semarang and the description of each TDS in each selected neighborhood. The three aspects that are explained to describe the TDS are the history of the (re) placement, the TDS and community condition and the causal factors for the (re)placement.

Chapter 7 (**Causes and consequences of geographical environmental justice in Semarang residential solid waste management**) presents a comprehensive analysis of the geographical environmental (in)justice (GEJ) in the residential solid waste management (RSWM) in Semarang. The analysis is carried out by way of three interrelated groups of discussions. Firstly, this chapter starts with an explanation of the causes in locating the TDS from social power and policy perspectives. Secondly, there are discussions on the consequences of GEJ; and thirdly, there is also a discussion on the spatial distribution of benefits and risks of TDSs.

Chapter 8 (**Towards an urban environmental movement in Indonesia**) deals with the conditions and possibilities of the coming into existence of a social movement which has two issues related to the urban and the environment based on the TDS placement cases in Semarang. This chapter is divided into three parts. First is the notion of an urban environmental movement and its condition in Semarang, which specifically dealt with the TDS placement. Second is the situation in Indonesia concerning waste regulations. The third is the challenge for an urban environmental movement in Indonesia.

Chapter 9 (**Geographical environmental justice in residential solid waste management in Semarang**) presents a synopsis of the concluding remarks made in chapters 2 to 8, which describe the situation of geographical environmental justice of waste management in Semarang. This study proves that there are both environmental and geographical aspects that are intertwined with each other in the process of TDS placement. The geographical aspect is not only important to explain the location of waste but also to determine the people who are vulnerable to the environmental impact of waste. This study also provides a critical contribution to affirming that there is an interrelation between justice and geography. The description of how regulations and policies can decide a location of waste proves that justice as a concern of legal aspects cannot stand alone, because justice is a product of power both by regulations, policies and social power relations. Elaboration on the geographical dimensions of environmental justice can explain the context that emerges when public policies of TDS placement are understood differently in the jurisdiction of Semarang. This concept can be labeled as geographical environmental justice (GEJ). Some aspects in sequence can lead to an understanding that GEJ is the cause, consequence and response of TDS placement.

Chapter 2

Theoretical Framework: A Model to Approach Geographical Environmental Justice

2.1 Introduction

Improper municipal waste management is the root of urban environmental problems. Geographically, the exposure to the negative effects of waste treatment facilities and activities is often distributed unevenly between communities. The concepts and theories concerning environmental and geographical justice can guide us to a better understanding of this unjust situation.

In forming a theoretical framework for this study, the researcher will apply several theories and concepts related to spatial and environmental justice. The chapter will contain two main parts. The first part is the discussions on environmental justice, whereas the second part is on the spatial or geographical aspects and the core concept of geographical environmental justice (GEJ). Specific discussions on urban solid waste treatment and management are elaborated in GEJ.

2.2 The concept of environmental justice

The problem of justice or injustice in distributing resources commonly occurs in scarcity conditions. The problem will not occur if there are plenty of resources, because people can take and receive whatever they need. Scarcity of natural or other resources, as explained by Rawls inherent to “the circumstances of justice” under which human cooperation is both possible and necessary (1999, p. 126-7). Regarding environmental matters, Katzner explains in detail how the relative scarcity of common goods resources such as clean water and healthy air, have raised the problems of (in)justice (1980, p. 45).

In the case of a disposal placement, the scarcity condition could not be interpreted directly in terms of the quantity or quality of water and air resources, but the existence of a disposal site will influence the quantity and quality of soil, water and air surrounding. Improper management of a disposal site will create odor, leachate, and scattered waste, and invite a crowd of vermin such as flies, and other insects or mice. These unmanaged disposal site circumstances could affect the quality of air and water in the nearby area and decrease the economic value of its land and buildings.

The use of renewable and non-renewable resources usually provides many benefits to some groups of people. Those, unfortunately, only benefits the wealthy people, who have easier access to natural resources than the poor. In Indonesia, most natural resources are often exploited for economic purposes such as mining, logging, palm estates, tourism, real estate and the like, and result in environmental damage and other negative impacts. Through such activities, it is increasingly realized that the economic principles used to fulfill human needs have often neglected the sustainability of the natural environment and

the interests of the next generations. To gain more profit, many industries do not treat their waste properly. Some even have no waste installation and directly throw the industrial garbage into the open environment. The research on environmental justice, especially in the US, is often oriented to explore and investigate the burdens that are received by current human victims but not in a broader context, where the victims receive the burden of experiencing the degradation of the environment.

Harvey (1996) defines environmental justice in the wider context not only for humans but also for non-human beings, and not limited to localities but also valid at the global level. A good environment is one in which the needs of the human and non-human beings are met and where they can optimally flourish in some form of activity (Harvey, 1996 (c), p. 28). The definition of environmental justice according to Harvey is, in fact, the distribution of environmental quality and risk. It is inescapably spatial, given both the materiality of nature and environmental diversity at the local, regional and global scale (Harvey, 1996 (c), p. 102). Harvey continues to explain that the environmental quality is:

...a central aspect of well-being for individuals and communities, and it is therefore a critical question for justice. Like any other dimension of well-being, environmental quality comprises both of 'good' and 'bad' elements, which are distributed across communities, nations, and the globe (Harvey, 1996, pp. 102-3).

Since the concept of justice is critical to study and may vary according to time, place, society and the individuals concerned (Harvey, 1996 (c)) it is important to learn why the concept of environmental justice is a contested and problematic concept (Agyeman and Evans, 2004). In 2012, there were at least 37 countries and states all over the world that apply the specific term

of environmental justice for indigenous environmental studies (Walker, 2012, pp. 23-24). The following scholars interpret environmental justice as a country-based problem. For instance, in the US, the Commonwealth of Massachusetts uses the following definition for its environmental justice policy:

Environmental Justice is based on the principle that all people have a right to be protected from environmental pollution and to live in and enjoy a clean and healthful environment. Environmental justice is the equal protection and meaningful involvement of all people with respect to the development, implementation and enforcement of environmental laws, regulations and policies and the equitable distribution of environmental benefits (2002, p. 2)

In other words, the Commonwealth of Massachusetts regulates environmental justice pursuant to the citizen's right to a clean and healthful environment. This positive regulation would have strong implications if it were accompanied by sanctions.

At the US federal level, the Environmental Protection Agency (EPA) stresses how environmental justice should be obeyed by a detailed explanation of a fair treatment and a meaningful involvement of people as follows:

Fair treatment means that no group of people, including a racial, ethnic, or socioeconomic group, should bear a disproportionate share of the negative environmental consequences resulting from industrial, municipal, and commercial operations or the execution of federal, state, local and tribal programs and policies.²

² Code 40 of The Federal Regulation Parts 7 and 12 – Non-discrimination in Programs Receiving Federal Assistance from the Environmental Protection Agency, U.S. Environmental Protection Agency on Environmental Justice is found at <https://www.epa.gov/environmentaljustice/> last visited on 12th February 2019.

As explicitly stated in the regulation above, the recognition of environmental rights is regardless of social and economic status. Every citizen is, in other words, guaranteed not to receive any negative disproportionate share of negative environmental impact.

Environmental justice is, thus, indicated as the right of a citizen to obtain a good and healthy environment. People or industries that neglect this right, should be responsible for giving compensation for the detriment and repair of a damaged environment.

It is important to note that both definitions from the US, have stressed the protection of humans who now lives in a damaged environment. It is clear that those regulations are not intended to protect the next generations or nature in general, but they are meant for the people of today. The alignment for humanity in these regulations was the result of the environmental justice movement that was initiated by the victims and their supporters of what was known as “The Love Canal Tragedy” (The United Church of Christ Commission for Racial Justice, 1987; Dobson, 1998).

The Love Canal Tragedy was an environmental disaster that occurred in Love Canal, a neighborhood near Niagara Falls, New York. By the 1940s, Hooker Electrochemical Company (later known as Hooker Chemical Company) began searching for a place to dump the rampant amount of chemical waste it produced. Hooker was granted permission by the Niagara Power and Development Company to dump wastes in the Love Canal in 1942. The canal was drained and lined with thick clay. At this site, Hooker began placing 55 gallons of metal or fiber barrels. The City of Niagara Falls and the army also used these for dumping garbage. The dumpsite was in operation until 1953. During this time, 21,000 tons of chemicals such as caustics,

alkaline, fatty acids, and chlorinated hydrocarbons from the manufacturing of dyes, perfumes, and solvents for rubber and synthetic resins were dumped. These chemicals were buried at a depth of twenty to twenty-five feet. In 1947, Hooker bought the canal and the 70-foot-wide (21 m) banks on either side of the canal. After 1953, the canal was covered with soil, and vegetation began to grow at the dumpsite.

In its development, in 1957, the City of Niagara Falls constructed a sewerage system for a mixture of low-income and single-family residences on lands adjacent to the landfill site. While building the gravel sewer beds, construction crews broke through the clay seal, by breaching the canal walls. From 1976 on, media reporters investigated the potential health effects for the inhabitants after they found a dozen of human birth defects, miscarriages, and a strange odor in the land of the residents. Their investigations became the basis for the residents, which sympathizers and environmental organizations show their protests. They pointed out that the waste buried by Hooker Chemical was the source of the situation. They sued Hooker Chemical demanding that it should take responsibility for the health problems of local residents. The Federal District Judge decided that the industry had been negligent. The residents' lawsuit was then settled some years later (see; the report from the United Church of Christ Commission for Racial Justice, 1987; and Dobson, 1998).

One can interpret that the origin of the environmental justice movement in the US was the reaction to the environmental detriments borne by residents, who were from the working and lower-middle classes. This movement became an important lesson learned and a model for other communities to start and develop environmental justice movements. This

movement resulted in an act called Environmental Protection Act (EPA) for environmental protection and justice in the US.

It is worthwhile to compare the environmental justice concept used by the US in comparison with the UK. The latter applies the regulation on environmental justice by considering the needs of people not only for the current generation but also for future ones, and not just for local or country citizens but also in the broad sense for the needs of humanity. The former one considers the victims in the present time. From both ideas, it becomes clear to consider that the predicted victims are also both human and non-human, which is the key to achieving justice.

The UK accommodated the environmental justice concept in its sustainable development policy by the late 1990s “through incorporating the interaction between the social and the environmental dimension of sustainability, it was seen to readily accommodate [the] question of social difference and inequality” (Walker, 2012, p. 28). The revised article is ruled as follows: “Everyone should share the benefits of increased prosperity and a clean and safe environment...Our needs must not be met by treating others, including future generations and people elsewhere in the world, unfairly” (UK Government, 1999).

There are some differences in how both countries conceive and regulate environmental justice. In the US, the regulation was a result of social movements evoked by environmental cases. The pressure of society is an important aspect that influences the enactment of that regulation. EPA obtains the idea to rule environmental justice as the effect of chemical dumpsite exploded in Love Canal. Although the idea of environmental justice comes up from the case, the EPA is a top-down nationwide political regulation (Lange, 1999, p. 86).

This is quite different from what occurred in the UK, where the environmental justice regulation is the response

to the environmental sustainability problem. Therefore, the characteristic of law regulation is on a case-by-case base. The specific act sometimes is regulated as a response “to the empirical realities and real-life complexities of disputes which happen to come before the courts” (Lange, 1999, p. 65). The UK is one of the countries that have a common law system that does not use compilation and unification of law. This country issues one regulation based on a need to respond to a specific case.

Sustainability is an entry to regulate the idea of environmental justice in the UK. The goal of sustainability is to guarantee the quantity and the quality of the environment so that at least the next generation will receive the same environmental benefits as the current population. In guaranteeing the availability of a good future in environment quality, creating a good goal for sustainability is the right way to do (Agyeman & Evans, 2004, pp. 156-157).

From the discussion above, it becomes clear that the concept of environmental justice may differ between places and social groups. However, two common features are often found in most of the regulations of environmental justice worldwide. First, environmental justice always concerns the distribution of environmental quality comprising both benefits as ‘good’ and burdens or risks as ‘bad’ effects. Second, environmental justice also encompasses the procedural aspects of how the distribution of environmental quality is done.

Environmental justice focuses on the distribution of benefits and burdens among all of those affected by environmentally related decisions and actions (Wenz, 1988, p. 4). Fair distribution can be achieved only by policies without any intention to disadvantage specific groups. Considerations to distribute the benefits and burdens in a community always consist of several guidelines (Dobson, 1998, pp. 73-83):

1. the principles of distribution
2. the notions of benefits and burdens
3. the politics of the community

Two similar notions are commonly used by different scholars to describe environmental justice, namely distributive or substantive and procedural justice. Walker claims that environmental justice includes different elements or components and defines *substantive justice* as "...a framework to evaluate the inequality based on a normative position that select priorities among these components" (2012, pp. 7-8).

Meanwhile, Agyeman and Evans (2004) define other aspects of environmental justice which is called procedural justice. According to them, the environmental justice condition is only achieved if it has both procedural and substantive conditions. The realization of only one of them will result in injustice for some groups of people. The right to live in and enjoy a healthy environment can only be attained by the involvement of all relevant actors.

Walker explains that there are three elements of environmental justice which can be implemented to evaluate a just distribution of resources. First is justice at the normative level, thus, justice is a principle that explains, "how things ought to be". The second element is evidence. Evidence is a description that explains 'how things are'. Then, the third is a process that can explain "why things are" (Walker, 2012, p. 40) involving strategy and power.

From the policy point of view, the definition of environmental justice deals with "how the policy process of agenda-setting and policy formulation takes place, and how costs and benefits are distributed amongst the rich and the poor" (Anand, 2006, p. 10). This definition guides us to understand that

governments are also the responsible institutions and actors to support the enforcement of environmental justice.

In summary, environmental justice is the fair distribution of environmental benefits and risks between inhabitants who are affected by an environmental activity, a policy, and a regulation implementation. The first content of environmental justice is always related to the second content which is commonly called procedural justice. The last explains the process to decide the fair distribution of environmental benefits and risks. The fair process should involve and provide lessons to as many relevant parties.

2.3 Inequality in environmental justice

Many social factors can influence the concrete manifestations of environmental justice. These factors can be understood as belonging to personal characteristics such as income, occupation, educational level, age, gender, sex, group affiliation, community, and race. Many studies prove that more than one of these interrelated characteristics influences environmental justice (see Baden & Coursey, 2002, Been, 1994, Bolin et al., 2000, Boone, 1999, Quan, 2002, United Church of Christ, 1987, Walker, 2012, Wenz, 1988). The different characteristics of individuals are often a reason to discriminate against others. On the other hand, corresponding characteristics bring people together in social groups.

Amartya Sen argues that the condition of a person or a group influences the freedom to participate in social, political, and economic life of the community. He further says,

The relation between individual freedom and the achievement of social development goes well beyond the constitutive connection - important as it is. What people can positively achieve is influenced by economic

opportunities, political liberties, social powers, and the enabling conditions of good health, basic education, and the encouragement and cultivation of initiatives. The institutional arrangements for these opportunities are also influenced by the exercise of people's freedoms, through the liberty to participate in social choice and in the making of public decisions that impel the progress of these opportunities (1999, pp. 4-5).

His opinion informs that income is not only the indicator to explain the level of social class, but also that "... individual capabilities can have close links with the lowness of income level: (1) low income can be the major reason for illiteracy and ill health as well as hunger and undernourishment, and (2) conversely, better education and health help in the earning of higher incomes. According to Sen, income and capability deprivations often have considerable co-relational linkages" (Sen, 1999, pp. 19-20).

Occupation and educational level are indicators of an individual's capability to obtain an income. People are often classified as poor by referring to their lower income. These lower-income people usually work in an informal sector that does not require a high educational level. According to Bourdieu (2000), an occupation groups an individual to a particular class, which has to do with access to production and relations to the production. He defines social class as,

a class or class fraction is defined not only by its position in the relation of production, as identified through indices such as occupation, income or even educational level, but also by a certain sex-ratio (2000, p. 102).

Meanwhile, Sharma defines a class as a "grouping of people based on common economic and occupational interest" (2013, pp. 722-727). He continues to explain that class and politics are

closely interrelated since the richer classes can use capital and money as power. In other words, money can be transformed into political power and vice versa.

Unequal power relations are the cause of many unjust policies. Low income groups are usually in a difficult bargaining position when they face higher income groups in that they can be excluded in the negotiation and bargaining game by institutional barriers or by the manoeuvres of other groups (Harvey, 1973, p. 78). Small groups who win the negotiation are usually from the high income-groups and are likely to be more influential in the urban political decision-making process. As exclaimed by Harvey, this infers that the decision of location will disproportionately reflect the desires of small pressure groups as opposed to the mass of the population (1973, p. 77).

With regards to power relations, Foucault refers to it as follows:

Power relations are exercised, to an exceedingly important extent, through the production and exchange of signs; and they are scarcely separable from goal-directed that permit the exercise of a power (such as...processes of domination, the means by which obedience of power..."(2002, p. 338).

Power relations are, thus, a factor that leads people to some kind of unjust policy.

Much of the insights into environmental justice come from the US, which has many social problems related to race. It is very common that race is found as a major influencing factor by scholars who study the social consequences of environmental change and deterioration. Race is commonly being used as a reason to discriminate. This is why, people of color are much more vulnerable to environmental hazards even when controlling for social status and class (Bullard, 2001, p. 157). The

Commission for Racial Justice of the United Church of Christ in the US, states in its National Report on the Racial and Socio-Economic Characteristics of Communities with Hazardous Wastes Sites as follows:

Although socio-economic status appeared to play an important role in the location of commercial hazardous waste facilities, race still proved to be more significant... Three out of the five largest commercial hazardous waste landfills in the United States were located in predominantly Black or Hispanic communities. (United Church of Christ, 1987, pp. xiii-xv).

The environmental justice movement which firstly emerged in the US is acknowledged as the most influential insight to analyze environmental cases worldwide. This different treatment of races and ethnic communities gives an insight to understand how environmental injustice occurs. Many scholars (Cutler, 1995; Bullard, 2001; Maantay, 2002) use race as an indicator to define the social group that bears the burdens of environmental injustice.

Other scholars such as Clapp (2001) and Anand (2006) refer to the different conditions between countries in the world to evaluate a different understanding of justice. In societies with a dominant patriarchal system, women and children usually suffer more from the negative effects of specific environmental conditions than men. Environmental justice is not gender blind, because women are more profoundly affected by environmental degradation. This is probably because of factors such as multiple social and cultural roles and also gender-based discrimination (Steady, 2009, p. 60).

Cutter even can categorize three sources of hazards which are used to illustrate the specific vulnerability of women and

children to environmental changes. They are environmental contaminants, environmental degradation and unequal rights for women (Cutter, 2006, pp. 57-64). In many cases of an environmental justice movement, women are actively protesting against the environmental risks they face, since they are not the only victims but also their families (Krauss, 2009, p. 68), (Dobson, 1998, p. 21). They are concerned since they are caretakers of their children, families, community, and environment. Women have to face multi-faceted injustice: for themselves, their children, and their community. It is not an exaggeration if Krauss defines environmental justice as a women's issue (2009, pp. 72-75).

Women and children receive more substantial environmental injustice as they do not have equal access to power and the decision-making process in environmental policy. In other words, this is the problem due to procedural justice. They are seldom involved in environmental decision-making processes as they are considered unimportant and second-class citizens who do not need to be heard. Without their representation, the public decisions will definitely express their interests less on them. Therefore, in cases of environmental justice one has to consider social matters such as class, ethnicity and gender.

2.4 The Geographical environmental justice debate

The discussion of environmental justice which focuses on equal distribution of environmental quality and risks is intricately connected with a discussion of geographical distribution. This distributive question is inescapably spatial, given both the materiality of nature and environmental diversity at local, regional and global scales (1996 (c), p. 102). The inequitable environmental distribution which disadvantages particular

social groups is also explained by the fact that there are politics that discriminate or differentiate between one place to another. The interrelationship between geographical and environmental aspects is a major factor for urban geographers in planning or assessing the social services in one city. Geographers must be aware that justice should be realized within concrete environmental settings (Harvey, 1996 (c), p. 105).

Hay examines well how to contextualize the geographical dimension of environmental justice into equity, fairness, and justice (EFJ) terms. He conceives two relations: the first one is that these concepts will be considered in a trivial sense, as only a matter of geography; and the second is that none of these concepts is essentially geographical. The former argument is based on the fact that all individuals or groups are benefiting from (or suffering under) a particular form of justice (or injustice) as residents of a specific geographical location. On the other hand, the latter argument applies because each of the EFJ concepts could be defined in an imaginary world in which there is no geographic space or differentiation between places (Hay, 1996, p. 503). Geography is not only an imaginary concept, empty without meaning but geography can be formed following the desire of the planner.

The implication of these arguments in urban environmental policy is that there should not exist injustice effects between places. Hay calls influence factors that determine whether the result of urban environmental policy becomes just or unjust 'spatial jurisdiction' (Hay, 1996). A notion that will also be used in this study. This is because Hay's argument lays a foundation for the understanding that the geographical and environmental injustice between places in a city is always related to its urban environmental policy and regulations as well.

If geographical injustice still occurs, it means there is something wrong with the implementation of urban environmental policy. At the government level, ideally, no public action should disproportionately disadvantage any particular social group. The relevant policies should be critically examined, analyzed and assessed, whether it is only reactive to environmental 'bad' or proactive in the distribution and achievement of environmental 'goods' (a higher quality of life and a sustainable community) (Agyeman & Evans, 2004, p. 156).

But in practice, we cannot ignore that there are still many policies that disadvantage particular social groups. Usually, the kind of policies that relates to waste facility placement, industrial hazardous location and industrial disposal are policies that have negative impacts on particular social groups. Unequal power relations are the cause of many unjust policies. Low-income groups are usually in a difficult bargaining position when they face higher income groups and they can even effectively be excluded from the negotiation and bargaining game by institutional barriers or by the maneuvers of other groups (Harvey, 1973 (a), p. 78). Small groups who win the negotiation, which are usually high-income groups, are likely to be more influential in the urban political decision-making process.

In managing municipal urban waste, a local government needs to decide on locations to 'store' the waste before it will be processed. Even if a city practices a modern and environmentally waste management system, the location of the disposal site will always raise the problem of justice. The justice issue becomes even more crucial if waste treatment is lacking or done improperly, as it will cause more social and environmental problems.

Nobody wants his or her house near a TDS or FDS. Every household wants to enjoy a pleasant home site. The placement of a TDS or FDS will decrease the well-being of the environment

and the value of the land. Moreover, in a city that uses an open dumping system to manage its municipal waste, problems are always at the cost of particular social groups. We can imagine people who are living near a disposal place will face the environmental effects of waste such as unpleasant odor, a crowd of flies and contamination of land and water. The geographical proximity of a community to a TDS tends to impose certain costs upon the households related to the effect of TDS (Harvey, 1973 (a), pp. 39, 57). People, if not forced to do so, will not buy property land near a TDS or FDS. People will avoid living near a TDS or FDS. Since the detrimental effects of their location are spatially spread unequally, this has consequences for their geographic relevance.

From a geographical point of view, there is always the question of where a facility should be located (Blowers, 1992, p. 228). If the decision on where to locate the facilities comes after a residential area has been established, usually, the interests of the elite or a powerful social group will prevail. In this way, power becomes a major location factor. Moreover, the material conditions that comprise urban environments are controlled and manipulated by the interests of the elite³ at the expense of some groups of communities (Swyngedouw, E. & Heynen, N.C. 2003, Harvey, 1973 (a) , (Harvey, 2008 (d)) . According to Davis, the spatial and locational processes occur in the realms of power in which social actors strive to defend and create their own environments in a context of class, ethnicity, race and/or gender conflicts (Davis, 1996).

Place, space, and politics are factors that need to be taken into consideration in discussing geographical justice related to a

³ Elite here can be defined as persons or a group of people who are most powerful to influence the policy decision in society. Many factors can cause persons or social groups to be categorized as elite in a community or society such as, age, race, social class, gender, political, and religious orientation.

waste facilities placement. The decision to locate a waste site in a certain place is independent of what Heynen et al. call “...social, political and economic processes and cultural construction” (2006, p. 6). Local governments that have to decide on the location of waste disposal sites are involved in this kind of power struggles. As Foucault remarks, “...most of the time the state is envisioned as a kind of political power which ignores individuals, looking only at the interests of the totality, or of a class or a group among the citizen” (1982, p. 782). This becomes the reason why, through regulation and policies, governments often ignore the rights of particular groups of residents.

In exploring the influential factors of geographical environmental justice (GEJ) in Semarang waste disposal location, it is useful to look at discussions in other countries that deal with issues of inequality and power in urban areas. First, in the US the debate on the impact of social status on GEJ focuses on race and class (the latter defined by income level). The environmental injustice experience in Love Canal gave an early understanding that the victims of toxic waste dumps are usually poor people from the working class. Another environmental injustice experience in the US demonstrated that African American and Hispanic communities bore the effects of uncontrolled toxic waste and hazardous waste facilities. Factors that put them in that position were related to race and poor economic conditions. These conditions put them in the position of having less power to access the policies which could benefit them (Dobson, 1998, pp. 17-20). The incidents show that race and income level can influence political decision-making with consequences for particular sites and environmental justice. In places where race and income do not play a role, environmental injustice can occur due to social vulnerability such as gender and age (see above),

educational level, political position, occupation, and the homeless (Cutter et al., 2006, pp. 117-120).

In 1983, the US Government Accounting Office released a report that found three of four major hazardous waste facilities in the South Eastern States that were located in areas primarily occupied by African Americans (Mealy 1990, cited in Baden & Coursey, 2002, p. 54)). The United Church of Christ (UCC) Commission for Racial Justice (1987) identified similar inequality patterns in the siting of hazardous waste facilities related to race, income level and property value. In this study, it was concluded that communities with great percentages of minority populations were more likely to become sites of commercial hazardous waste facilities. The inordinate concentration of uncontrolled toxic waste sites for the African American and Hispanic communities were particularly in urban areas (Baden & Coursey, 2002, p. 54)⁴. Baden & Coursey, 2002, pp. 83-85) suggest that to analyze environmental injustice we need to understand the history of demographic distribution and the relationship between minorities and hazardous waste. This understanding can be used in deciding what parts of environmental public policy should receive primary attention.

Even though many researchers found that hazard allocation always complies with the pattern that lower-income groups and ethnic minorities are likely to live near facilities emitting, storing, or disposing of hazardous substances, there is still a second pattern which might be called 'sunbelt justice'. This pattern is produced by the relatively recent establishment of 'clean' high-technology industries, which are permitted to release varying quantities of often highly toxic substances in predominantly

⁴ Yandle and Burton (1996) analyzed waste disposal sites in Texas and found that they were more likely to be sited in poor, low population density areas, but however, that the minority populations were not disproportionately exposed.

white, middle-class suburban locations, producing what appears when mapped as toxic emissions 'hot spots' (B. Bolin et al; 2000).

In another research, Bowman and Crews-Meyer (1997) show that evidence of racial and ethnic inequity in the location of hazardous waste facilities is almost non-existent. Most victims of hazardous waste facilities in industrial areas are people employed in the manufacturing industries. Thus, according to them, race and class are not the primary determinants of environmental 'bad'. The location of LULUs seems to follow the population.

Nevertheless, the issue of environmental racism remains the main discussion in the GEJ discourse in the US. Boone & Modarres (1999) present an interesting opinion about this contradiction:

One of the enduring questions of environmental equity, especially environmental racism, is whether hazardous sites were located in a settled minority or low-income area or whether the presence of a hazardous site drove down residential values and subsequently attracted low-income and minority groups (p. 164).

A similar opinion is given by Ikeme who argues that some researchers have found that in some instances, ...the preponderance of the poor around toxic facilities are not (only) the result of deliberate marginalization, but a consequence of the impersonal forces of the market economics by devaluing properties near contaminated neighborhoods, making them cheaper and thus more economically attractive to the poor, the emergent scenario is still considered unjust because of the skewed outcome (2003, p. 198).

Therefore, historical analysis is needed to make a distinction between injustice in outcome (ex-post) and injustice in intent (ex-ante), which could be defined following the definition as follows: injustice in outcome is what most research has

investigated; ...Injustice in intent is much harder to prove; efforts to do so are hampered by the paucity of data that extends back in time to sitting decisions (Baden & Coursey, 2002, p. 58).

Therefore, the idea of environmental justice refers to the idea that human activities, such as polluting production activities, consumption or technology use, can have unequal consequences for racial and class defined groups, and that geographical locations can markedly diverge in their exposure to risks or ecological and health impacts (Low & Gleeson, 1998). In this view, the aspect of consequences focuses that will be analyzed and criticized. Broadly defined, adverse consequences and the way to prevent them could be defined in several stages beginning with the place where the productive activities take place till the last stage, i.e., the place where the product is distributed.

In decisions on waste sites, two issues always emerge, i.e., the environmental problems that may occur and their geographical (spatial) distribution. Both are related to the issue of justice. This study will elaborate them on one concept as geographical environmental justice (GEJ), which concerns the equal geographical distribution of environmental burden and risk. These two aspects are combined in the model below (figure 2.1) that will be used in examining justice between places in this study.

GEJ can be defined as a fair distribution of risks and advantages of an environmental policy and activity among geographical aspects such as places and locations regardless of social class, age, gender, ethnic group and other human aspects. The GEJ approach will describe the spatially distributed impact of risks and benefits of urban waste treatment for people living in different locations. The location choice is a game played by members of the society to select where the benefits and the burdens will be distributed. People use their social influences, power, and politics to decide what spaces will be advantageous

for life and which will be detrimental. Geographically, actions separating benefits and risks will distinguish places as good or bad places to live.

2.5 Geographical environmental justice (GEJ): the question of resistance

In an urban context, the process of locally unwanted land uses (LULUs) or the response to LULUs which is called “not in my back yard” (NIMBY) is used to avoid the negative effects of the urban activities such as waste production and/or waste location near a residential site or community. It is also used to shift risks to other places where people are not in a bargaining or protesting position to reject the urban activities. If they do, we can interpret this as a situation where a power game emerges. Keyes (1968) called this a “land use planning game” (cited by (Harvey, 1973 (a), p. 77). By this, we can understand how a group of people perform strategies to reject unwanted projects in their neighborhood.

The power game can take the form of negotiation. To unite different justice understandings in society, Peter Wenz proposes a form of social arrangement, which he calls the voluntary cooperation concept, which he explains as follows:

Voluntary cooperation is especially necessary if the social order is to be maintained in a relatively open society where authoritarian measures are the exception rather than the rule. Thus, because social solidarity and the maintenance of order in a relatively free society require that people consider their sacrifices to be justified in relation to the sacrifices of others, environmental public policies will have to embody principles of environmental justice that the vast majority of people consider reasonable (1988, p. 21).

Even though in liberal and democratic societies, the practice of full societal cooperation is a utopia, the idea can become a guide to solving societal problems, to minimizing environmental problems due to waste disposal sites. In a later chapter, we will refer to this concept of voluntary cooperation in the context of societal cooperation in Indonesia.

However, we have to keep in mind that, learning from what Foucault explains about subject and power, no consensus will be reached without any involvement of the relationship of power, which is regarded as "...the exercise of power [that] can produce as much acceptance as may be wished for" (Foucault, 1982, p. 789). Even though poor people can form a strong group to protest, they perform it as a reaction against the hegemonic power of others. The reaction is done after receiving the oppressive acts from others. Harvey (1993) calls the reaction of the oppressed the politics of resistance. Harvey explains that these are typically associated with small-scale communities of resistance, marginalized groups, deviant discourses, or simply to that zone of personal life sometimes termed "the life-world" which can be identified as distinct from and potentially resistant to penetration by the rationalizing, commodified, technocratic and hence the alienating organization of contemporary capitalism (Harvey, 1993 (b), p. 54).

The politics of place are implemented in land use planning. They, commonly, represent the hegemony power of the dominant groups in the community. They put efforts to allocate most benefits to specific elite classes and most of the burdens to the poor class. This politics of place also denies the right of poor groups to achieve the benefits of urban environmental activities. Intentionally, land use planning is used for weakening the power of poor social classes. Space is by its very nature "full of power

and symbolism, a complex web of relations of domination and subordination” (Massey, 1993, p. 156).

The politics of place play an important role in the process of environmental quality distribution. The fact of divergent individual and communal values means that environmental justice cannot be seen as a simple, a-historical ideal that concerns the quality of an environment. Social value is the measurement of external costs and benefits as the impact of environmental change upon an individual or a social group (Harvey, 1973 (a), p. 79). The justice of its distribution can be evaluated in different ways, which depend on the social value of a specific area, region, or country (Harvey, 1996 (c), p.103).

Besides political and social values, economic processes influence environmental injustice:

The economic, political, and cultural processes that manifest through the dominance of capitalism within urban areas have substantial power to create, shape and, maintain highly uneven urban environments and to produce environmental injustice (Heynen, 2003, p. 993).

This concept framed by Heynen above is an important insight to know how communities imply their interest in distributing benefits or burdens of a TDS between groups in their neighborhood.

To analyze what kind of strategies of communities are proposed for the TDS placement, two wide concepts will be used, namely, the struggle of community and the urban social movement.

When explaining how to resist forms of power domination, Foucault (1982) defines three types of struggles as follows:

1. against forms of domination (ethnic, social and religious)
2. against forms of exploitation that separate individuals from what they produce

3. against forms of subjectivity and submission (pp. 781-782)

Furthermore, the aim of community struggle commonly consists of some ideas such as the struggles will influence not limited to only one country. It creates power effects and immediate impact both on the actors and others (ibid., p. 780). In the context of a city, Soja explains that “the struggle over the right to the city aimed in part at a fair and equitable distribution of resources but even more so at obtaining the power over producing unjust urban geographies” (2010, p. 83). The right to the city is also the right of inhabitants to change themselves by changing the city (Harvey, 2008 (d), p. 23). Those ideas are similar to the ones from Cable & Benson and also to Castells’ definition of an urban social movement, which has two kinds of indicators to analyze. Firstly, there are the efforts of a community in attaining their rights to a healthy and clean environment. Secondly, there is the action that a local government does apply to enforce environmental standards in a specific case (Cable & Benson, 1993, pp. 464-477). Specifically, as the environmental movement, in the case of dumping utilities, Castells explains two questions by the community movement. On the one hand, it is “the bias of location of undesirable materials or activities toward low-income communities and areas inhabited by minorities”, and, on the other, “a lack of transparency and participation in decision-making about the uses of space” (2004, p. 173).

Low-income people can form a strong and cohesive group with the aim to defend their interests. The group is usually used to lobby and pressure the decision-makers. Only a strong and cohesive group will be able to overcome such barriers and get around the problem of what is called “non-decision making” (Harvey, 1973 (a), p. 78).

The strategy to reject the negative environmental effects of an activity is not only conceived within a physical space but also as an active constitutive component of hegemonic power an element in the fragmentation, dislocation and weakening of class power (Harvey, 1996 (c), pp. 80, 102-103). Hegemonic power, therefore, plays a dominant role to control who will suffer or benefit from the social and environmental activities experienced by the communities. The idea of social space (Lefebvre, 2014, pp. 77) can also be used to analyze the community actions to respond to the TDS placement. According to Lefebvre social space is produced and reproduced in connection with the forces of production and with the relations of production.

2.6 A model to approach geographical environmental justice

GEJ can be analyzed by looking at three kinds of processes, namely the causes, the consequences, and the responses with regard to environmental change in a specific location. Firstly, the influencing factors can be considered as causes. They can be analyzed primarily through social class and political power. Secondly, the location can produce consequences that impact on both the environmental quality and the influencing factors. The consequences will describe the spatial distribution of environmental quality which comprises benefits and burdens. We can find more benefits than burdens on specific places. Those influencing factors can be used to analyze the spatial jurisdiction (Hay, 1996) to explain the geographical environmental injustice of TDS placement between places. The placement of benefits and burdens is not solely decided for physical reasons but primarily the result of social, political and/or power considerations which is implemented in policy and regulation. Meanwhile, responses will

be analyzed through strategies of communities to establish GEJ which consists of coping and resisting strategies, and the urban social movement as a response to geographical environmental injustice in TDS placement.

Systematically, the theoretical scheme of thinking is as follows:

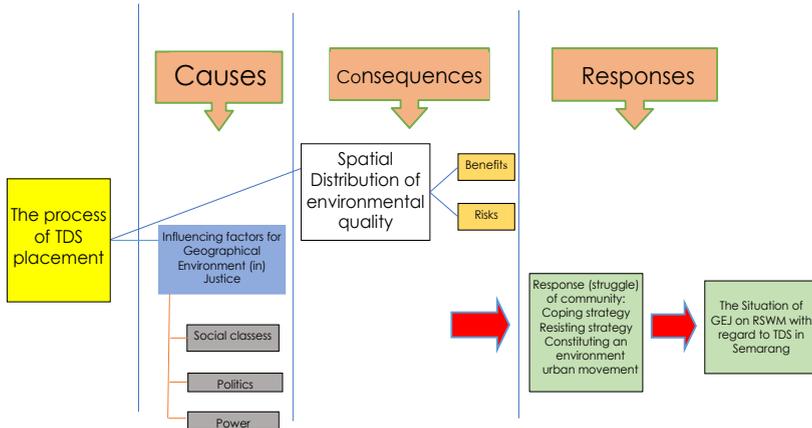


Figure 2.1 A theoretical framework to approach geographical environmental justice

Each column (causes, consequences and responses) in the scheme above explains the sequence of occurrence that leads to geographical environmental justice of TDS placement. The cause factors will have consequences and will be followed by a (social) response either to reject or to cope with the TDS situation. Those community responses will be used to analyze the challenges for environment urban movement to geographical environmental injustice in TDS placement specifically in Semarang and generally in Indonesia.

Chapter 3

Methodology and Research Area

3.1 Introduction

This chapter explains how the methodology is employed in the research strategy, how the questions in this research are answered, the method of how research locations are selected, and how appropriate respondents are chosen for the study. The processes of gathering and analyzing data are explained step by step. The detailed processes are made systematic, thus, enabling the researcher to find the exact information for answering each of the research questions given for this study.

An introduction to Semarang is also provided in this chapter. This helps to explain the current conditions of city waste and urban waste management in Semarang. This chapter further explains the reasons and considerations for the selected five research locations.

3.2 Research areas and Semarang Municipal waste collection

3.2.1 Research areas

Semarang, as the research area, is the capital city of Central Java Province. It covers approximately 375 km². This area is divided into 16 districts and 177 sub-districts. A district (*kecamatan* in Bahasa Indonesia) is an administrative region in a municipality that is further divided into a minimum of 5 sub-districts (*kelurahan*). A district has a minimum of 8000 inhabitants or 1600 households⁵. Within each *kelurahan* there is the lowest community institution which is called *Rukun tetangga* (or RT as it is mentioned in the sequel). RT consists of households that live close together in a small area, which is sometimes divided by alleys. RT aims to preserve the living values which are based on kinship and mutual cooperation known as *gotong royong*, in order to help implement government tasks, develop and to enhance public participation⁶.

One level above it is *Rukun Warga* (or RW). This institution aims to coordinate the activities of some RT(s). Both RT and RW are formed based on proximity. There is no requirement of size and minimum number to establish both RT and RW. It can be understood, therefore, since both are community institutions that a government cannot interfere with them before having some acknowledgments or approvals from the RTs and RWs.

RT and RW are the lowest level of the implemented public services for this study. The success of a local government program

⁵ The Indonesian Government Regulation No. 17 Year 2018 on District regulates the requirements to establish a district specifically on Java Island.

⁶ The Community Institution Establishment for a district is regulated in article 1 (8), Semarang Local Act No. 4 Year 2019 about The Community Institution Establishment in District.

is usually dependent on the ability of how the local government involves the participation of both of these parties. Because residential solid waste management is part of a public service activity that should be provided at the *kecamatan*, *kelurahan*, and RW and RT levels, it is important to involve residents from the RT and functionaries from the RW. This is necessary because urban waste management usually impacts them first. The issues such as the type of waste collection service, the frequency of waste collecting and transferring, the provision and location of storage containers and the charges that are paid for various levels of waste service (UN-HABITAT, 2011, p. 7), are needed to be consulted with them to guarantee the successful implementation of the local program.

3.2.2 Semarang Municipal Waste Collection

Domestic wastes generally account for 60 to 80% of the totality of municipal solid waste in developing countries (UNCHS-HABITAT, 1996, p. 271). The large percentage originating from domestic activities is a common characteristic of developing countries. The United Nations has reported that precisely many of these countries still use an end of pipe system to manage their urban wastes. There are six methods commonly applied by households to treat domestic wastes, i.e., collected by garbage men (23.4%); buried (4.2%); composited (1.1%); burned (32.1%); disposed into sewers, rivers, and sea (10.2%); and littered (9%) (Office of Special Envoy of the Indonesia President for the MDGs, 2012). The United Nation Development Program (UNDP) in Indonesia (2017) recorded that every Indonesian generates an average of 0,7 kg of waste per day amounting to 62 million tons of waste generated annually with nearly 70% of the generated waste going to landfills. This number can be

accumulated into 184,8 million kg of waste generated per day for the entire population in the country. In fact, according to the Indonesian Ministry of Environment (Environmental Statistics, 2017), quite a high number of garbage production is found on Java Island, especially in three cities: Jakarta, Surabaya, and Semarang. More than 50% of that amount is produced by households (Ministry of Environment Republic Indonesia, 2013, p. 168).

At the local level such as Semarang city, statistics show that the volume of garbage was 4998 tons per day in 2015⁷. In 2012, 67% of the waste volume was produced by households⁸. The remaining came from other sources such as market activities (1120 tons = 15%), commercial activities (336 tons = 4%), public facility activities (192 tons = 3%), street sweeping (224 tons = 3%), industrial activities producing non-hazardous waste (512 tons = 7%) and from the drainage systems (96 tons = 1%). The major components of household waste in Semarang were organics and compostable materials. 78% was made up of organic waste, and the remaining consisted of plastics (13%), papers (5%), clothes (2%), and some small amounts of other materials such as rubber, metal and glass.

The operational pattern of waste treatment in Semarang consisted of the following 3 steps: (1) collection, (2) deposition at a TDS or at an ITDS to be managed, and (3) transfer from a TDS to a Final Disposal Site (FDS). The following is a description of the location and condition of a TDS community.

A TDS in every RW was available as a temporary place to hold household wastes before being transferred to the FDS. This requirement had been regulated by the Semarang Local Act No.

⁷ BPS-Statistic of Semarang Municipality, 2016, (Semarang dalam Angka, 2016) - Semarang Municipality in Figures, 2016, p. 73-75

⁸ BPS-Statistic of Semarang Municipality, 2012, (Semarang dalam Angka, 2012) - Semarang Municipality in Figures, 2012, p. 95

14 Year 2011, which stated the Semarang Urban Planning for the time frame of 2011–2031. In reality, there were, unfortunately, still many neighborhoods that had no place to discard their waste. In some poor neighborhoods, the reason for having no TDS was because there were limited empty areas available for a TDS. Besides, lower-income families preferred to pay other family expenses rather than pay waste service costs. Therefore, ‘throw away garbage’ behavior was a common condition found in these areas. Besides financial reasons, low levels of education and indifference towards the environment were factors contributing to this behavior. Many wealthy settlements had no TDS since their inhabitants did not like waste sites nearby. The existing TDSs, as already mentioned, were found in poor neighborhoods. Rarely were TDSs found in the middle- and higher-class settlements, the direction of waste disposal flew inevitably to the poor settlements only.

Empty spaces such as plains of riverbanks, public streets, and uncultivated land quickly became large garbage bins. People needed a place to put their waste before being brought to the FDS. This behavior was for example observable in the sub-district of Bendan Ngisor, along the riverbanks of Kali Garang. It must be noted that not all poor neighborhoods showed such approaches to dealing with their waste. In several slums or poor neighborhoods, waste management practiced composting domestic waste and recycling plastic materials. Economic gains were usually a driving force for these practices, such as acquiring payment from an exchange of recyclable bottles or other valuable things at recycling centers.

At the time the research took place, there were no specific activities conducted by the government to anticipate and minimize the environmental effects of inappropriate waste treatment. No priority had been given to handling urban waste.

The poor environmental condition of low-income neighborhoods was often deemed as their own burden to bear because of their ignorance in the treatment of their waste.

This idea led to differing burdens for households. Households that were located further away from main roads or a TDS may incur additional fees to transfer their waste to that TDS. Unfortunately, poor neighborhoods with no TDS may not be in a financial position to cover these costs. On the other hand, those residing near a TDS faced the detrimental environmental effects of the intermediate open dumping site. Those on the main roads tended to avoid both situations. The streets had ready access to facilities and, as is common in Indonesia, the main streets of each city were the clean faces of the city. Concern for the cleanliness of these frequently used main streets of a city often resulted in the neglect of services for the not so visible areas.

3.3 The method to select research locations

To set research locations, a preliminary study was conducted to find the sub-districts which fulfilled the criteria of this study. The sub-district needed for this study consisted of residents of different social classes who send their solid wastes to the TDS located in selected poor neighborhood areas of that sub-district. The intention of doing this was to describe how the conflict was between the classes, in the neighborhood of disposal sites. This preliminary study involved observing and collecting information about all TDSs. The research locations were then narrowed to 5 TDSs out of that Semarang had in 2007 and the claimed 278 sites by the Semarang City Environmental Services Agency provided in 2017⁹. Overall, it was learned here that most TDSs were in a similar condition and each of the TDS employed the

⁹ Semarang Municipality in Figure 2018

same method to treat solid wastes. Thus, the condition was not an appropriate basis for the selection.

To simplify the research location's selection, indicators appropriate to the aims of the research were used as a guide. The TDS locations were tracked from maps of TDS distributed in each district of Semarang. The maps were easily accessed as the researcher was a jury member in "*Resik-Resik Kuto*"¹⁰ in 2006, an annual neighborhood cleanliness contest in Semarang. In fact, most members of the jury team were from local government institutions, such as the Semarang Municipal Cleanliness Service Office and the Department of Local Environment Management, who are well informed on urban cleanliness matters, thus, mapping the TDS condition was attained from them, too.

As well as receiving a complete map of the location, the evaluation of cleanliness required visiting each neighborhood, especially the sites of the TDSs. This allowed a first-hand observation of the TDSs that were located in poor neighborhoods. Information was also collected at this time from key members of the Department of Local Environment Management on which grounds the TDSs were opposed by the communities.

For this research, five research locations were selected out of the TDSs that Semarang had. In these five locations, TDS were rejected by the neighborhood. There were two criteria to choose the selected research locations, i.e. (1) the phase of a TDS rejection; and (2) the politics of resistance involved, such as LULUs objections and NIMBYs responses. Before explaining further how the research locations were chosen, in the next paragraphs, I explain the administration region of Semarang, the condition of urban waste treatment in the city, and the

¹⁰ *Resik-Resik Kuto* is the annual event in Semarang, which invites all residents to clean together their neighborhoods.

administrative institution which is responsible for urban waste management.

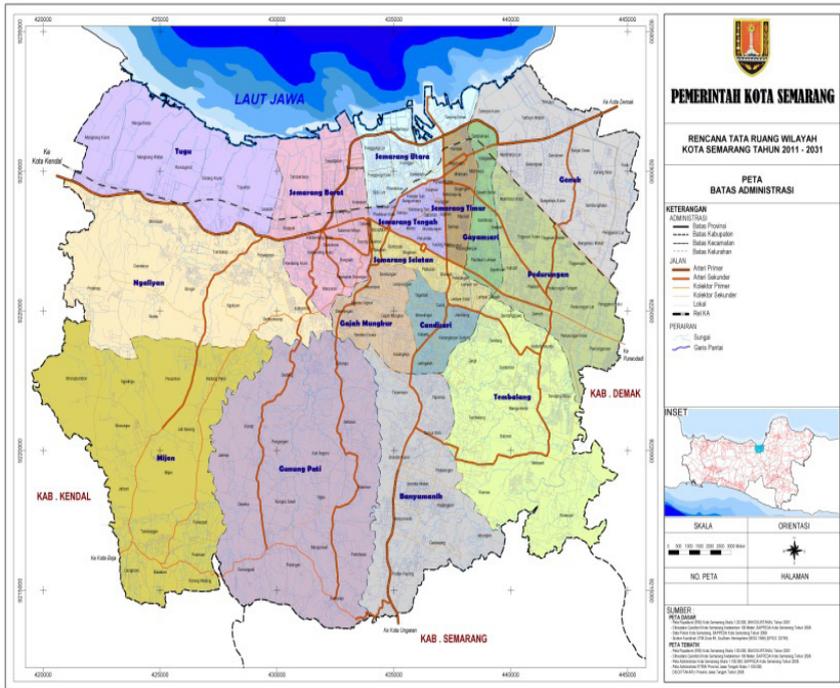


Figure 3.1 Map of Semarang

Reasons for rejection included the belief of many residents that waste placement is an uncomplicated problem that is not related to a specific strategy of space and place. From the aspect of place, the location of a disposal site was often refused since it gave direct visible negative impacts, which became even more negative when the place was not treated well. Rejection could have occurred before or after the placement of the site. In addition, rejection could have happened at some different points in time, either during the site identification process or after the establishment of disposal facilities and across several years when after the initial operation people had received and experienced negative impacts. Lastly, rejection could also occur earlier during

the planning process. This usually happened if the residents had learned from others' experiences about the impacts of a disposal site.

There were three TDSs that were selected because of rejection after their installation. Those were (1) the TDS of Muktihardjo Kidul-Pedurungan, (2) the TDS of Pasar Tradisional Candi in Candisari, and (3) the TDS of Jalan Gaharu Raya in Sronдол Wetan, Banyumanik. Two research places were selected because of rejection during a planning process. They were (4) the TDSs of Gebang Sari in Genuk Sari and (5) the proposed site in RT 02 RW 01, which were in the sub-district of Bendan Dhuwur in Gajah Mungkur. The other consideration to select these five research locations was that there have been no objections, which involved LULUs and NIMBY responses. Other than that, the poor condition of the TDS also came into consideration.

There were two TDSs located in poor neighborhoods. Within three neighborhoods, namely Candisari, Muktiharjo, and Sronдол Wetan there were a variety of social classes ranging from the higher, middle, and lower classes. The placement of a TDS was often done in the poorest area of the neighborhood. The characterization of 'poor' was derived from the condition of the street access and houses, and the level of education, the status of property rights, occupation, and income of the residents. In Sronдол Wetan, a neighborhood with a low-income type of houses was signified by the small plots of land that ranged in between 60-72 m². The houses were simple buildings, which were built near the located TDS. Households who live nearby TDS Muktiharjo Kidul-Pedurungan built their houses on land which belonged to Soegijapranata Foundation. People living in this area understood that they could be expelled anytime from the land. Because of their expected temporary stay, they built their

houses in a simple way, i.e., with clapboard and without cement basement.

Property rights were also considered as a reason to select the research location. While Bendan Dhuwur is a *kampong* with middle- to lower-class residents, most households lived side by side with the Kali Garang River, where its river flow could endanger the inhabitants because there was no distance between the riverside and the houses. Unfortunately, most inhabitants had built their houses very close to the riverside, so they were most likely prone to experiencing an immediate disaster.

Previous conflicts regarding the placement of TDSs in several locations were readily found such as the intimidation of waste truck drivers and the burning of TDSs. They gave information regarding the rejections of several sub-districts and examples of negative and positive actions by the residents in *Kelurahan Candisari*, *Kelurahan Bendan Dhuwur*, and *Kelurahan Srandol Wetan*. Rejection of an operational disposal site has often been done after an unsuccessful attempt to refuse the placement site in the beginning. Tracking the history of rejection attempts (or successes) was very helpful in revealing the geographical environmental justices or injustices of the TDSs in Semarang.

By investigating the history of the TDS rejection in the five different locations, the connection between the location of and the strategy to place the TDSs was proof of how geographically, the TDS was placed in the poor neighborhood. The findings have also given proof of the following two problems:

1. the different benefits and burdens which were received among the residents
2. the conflicting interests between the different classes which were used to analyze some causal factors

Since all TDSs in all research locations were replacements of original (intended or realized) TDSs, a description of each former TDSs is provided in the next table. The description includes the history of the rejections as given by the residents and assists in determining the influential factors that are still dominantly influential in the replacement and operation of the TDSs

To have an overview of the five research locations, below is the table which presents information about the TDS location, the geographical situation, the condition of the neighborhood, and some information about the former TDS.

Table 3.1 Characteristics of the five research locations

No.	Location of TDS	The geographical situation	The condition of the neighborhood	information former TDS
1.	Gaharu Raya Street, <i>Kelurahan</i> Sronдол Wetan, Banyumanik	<ul style="list-style-type: none"> a. located in the property of the Semarang Municipality b. has three side divider walls, two containers, and a basement c. there is no separate container d. the nearest distance of households to TDS is 50 meters. e. serves 7 neighborhoods f. located on the roadside of Jalan Gaharu Raya and in front of three elementary schools. 	<ul style="list-style-type: none"> a. lower and middle-class neighborhoods b. narrow size of property right in between 60–72 for the lowest type of houses and 90–120 m² for the middle-class neighborhoods c. simple type of houses 	<ul style="list-style-type: none"> a. located 500 meters from the existing TDS b. terminated in 1990 c. serves only limited settlements
2.	<i>Rukun Warga</i> (RW10), <i>Kelurahan</i> Candi, Candisari	<ul style="list-style-type: none"> a. located at the back of Pasar Tradisional Candisari b. has two side divider walls, one 	<ul style="list-style-type: none"> a. three kinds of social class neighborhoods b. The TDS is located near a poor group of people 	<ul style="list-style-type: none"> a. located in Jalan Siblat Raya (upper class settlement)

No.	Location of TDS	The geographical situation	The condition of the neighborhood	information former TDS
		<ul style="list-style-type: none"> container, and a basement c. the nearest distance to households is 5 meters d. serves RW 10 and the solid waste of the market e. located in a densely populated area f. located 50 meters away from the roadside of Jalan Sisingamangaraja 		<ul style="list-style-type: none"> b. burned by inhabitants in 2004
3.	<p><i>Kelurahan</i> Muktiharjo Kidul, Pedurungan</p>	<ul style="list-style-type: none"> a. located in the property land of Semarang Municipality b. the nearest distance to households is 50-100 meters c. has three side divider walls, two containers, and a basement d. has no containers e. trishaws are the place bins before being transferred to FDS f. serves <i>Kelurahan</i> Muktihardjo Kidul and Grahamukti Settlement g. located at the corner of <i>Kelurahan</i> in between of RT 05 and RT 06 	<ul style="list-style-type: none"> a. poor class neighborhood b. one of the nearest settlements was established in other's property right c. narrow size of property right - in between 40-100 m² d. the access to the neighborhood has no asphalt yet 	<ul style="list-style-type: none"> a. located in Grahamukti Settlement (middle- and upper-class settlement) b. closed in 2004

No.	Location of TDS	The geographical situation	The condition of the neighborhood	information former TDS
4.	<i>Kelurahan</i> Gebangsari, Genuk	<p>a. located in the road site in between industrial and settlement</p> <p>b. the nearest distance to households is 50-100 meters</p> <p>c. has no divider wall and basement. Waste is placed in one container only</p> <p>d. serves Padi settlement and industries surrounding</p>	<p>a. poor neighborhood and near to workplace</p> <p>b. narrow size of property right in between 10–40 m²</p> <p>c. the access to the neighborhood has no asphalt yet</p>	<p>a. during 1993-1994 the first TDS was placed at the corner of Jalan Kapas Raya. The first replacement was done in 1994 and TDS was placed near the neighborhood's mosque. But in 2003 TDS was replaced again near to a grave. It operated until 2013 and is now placed in its current location.</p>
5	Kelurahan Bendan Dhuwur, Gajahmungkur	<p>a. the planned TDS location was in RT 1 RW 4, which is on the riverside of Kali Garang</p> <p>b. it was rejected in its planning process</p> <p>c. it planned to serves RW 4 <i>Kelurahan</i> Bendan Dhuwur</p>	<p>a. the planned location was in a poor condition of an unregistered disposal site on the riverside of Kali Garang</p>	<p>a. the first TDS was placed at the corner of Jalan Tugu Suharto in 2000</p> <p>b. the first replacement was done in 2002 around 100 meters from the first TDS</p>

3.4 Research methods

3.4.1 The method to describe the current distribution of TDSs

For a clear understanding of the distribution of TDSs in Semarang the following question needs to be answered “How can the current distribution of TDSs in Semarang be evaluated in terms of the benefits and risks for the selected neighborhoods”? To describe the current distribution of TDSs in Semarang, some steps need to be done.

First, respondents were selected based on their geographical proximity to a TDS. The respondents who lived and worked nearby a TDS would be categorized based on their houses and workplaces’ distance to a TDS. There are three categories of proximities as follows: (1) those who resided less than 100 meters from the TDS, (2) those who lived between 100-500 meters, and (3) those who lived more than 500 meters to a TDS. Of the three proximities, those of less than 100 meters were expected to suffer the worst negative impacts.

In addition to these respondents, some people who worked daily at the TDS were included as informants since they sometimes had more information about the management of a TDS. These respondents were waste tricycles or rickshaw drivers, scavengers, container truck drivers, and food sellers in the TDS.

Key respondents or informants who gave further information related to the history of TDS and the specific incident of TDS rejection were identified via snowball sampling. The snowball sampling procedure, in this case, involved the access of informants that were provided by other informants. This process was, by necessity, repetitive, whereby informants would give reference to the researcher about other informants. When these informants were contacted by the researcher, they would refer to yet other informants for the researcher to contact, and so on

(Noy, 2008). Because in all research locations, the time of the TDS rejection was quite recent, most key informants could be interviewed and give their inputs for this study.

To ensure that the sub-districts chosen were representatives for the core issues of this study, neighborhoods were revisited to further collect information with regards to the more recent condition of the neighborhood, which may attempt to reject the TDS. Meanwhile, historical data was collected on those opposing the TDS. Each visit began with a meeting with the head of the *kelurahan* and the heads of smaller divisions of neighborhoods. Besides the information which was received from the key informants above, historical data were rechecked with data from each chief of the neighborhoods. Fortunately, heads of the neighborhoods were cooperative and provided much information, including names of relevant individuals or groups who may know more about the opposition of the TDS and related incidents. Through this process, many key informants and witnesses were approached and interviewed.

In total, 126 persons became selected as respondents for the research locations. All respondents were approached directly by visiting their houses or workplaces. The initial information guided the formulation of the questionnaire for the people who lived in the areas surrounding the TDSs.

Initially, residents were hesitant to be involved in surveys as they were suspicious that the researcher was a representative of the local government who searched for a new site for a waste facility. However, upon clarification, residents were enthusiastic to assist and provided information regarding the rejection of disposal facilities. Finding respondents and informants was not a difficult task except for the wealthy group of households as already explained above. Interviews were conducted by a team that consisted of the researcher and five students from

the Department of Environmental and Urban Studies, of Soegijapranata Catholic University¹¹. The field research was done for almost 18 months in the years of 2009-2011. Although the research was done some years ago, the TDSs management has not changed much. The visual comparison of the two different times (2008 and 2019/2020) is described in the table below:

Table 3.2 Comparison of research locations in different years

	Location	2008/2009	2019/2020
1.	TDS in Gaharu Raya		
2.	TDS in Genuksari		
3.	TDS in Muktihardjo Kidul		
4.	TDS behind the Traditional Market Candisari		

¹¹ One of these students conducted related research on the consciousness of women in treating household waste, so data obtained was useful for both the researcher and her student.

	Location	2008/2009	2019/2020
5.	Neighborhood in Bendan Dhuwur and Sampangan		

To explain the geographical environmental justice, some variables were defined to identify the predicting factors for both geographical and environmental justice. Some variables were categorized into social class and geographical proximity. The factors of the social class selected dealt with income, occupation, property rights status, the condition of the houses and accessibility. Other factors were added, such as ethnicity, gender, and age, when they were found to be influential in a specific district. The question that dealt with the social class factors was included in the questionnaire.

For the geographical proximity, there were two predictors used for this study: (1) the distance between the household and the TDS and (2) the radius of the affected area of the TDS. The information was taken from an existing map of disposal sites in each neighborhood. The conditions of the houses and surrounding areas were determined through observations. The proximity of the TDS to the neighboring household was mapped¹² in each location.

¹² This research will use the term 'geographical proximity' rather than distance to explain the effects of those residents who felt to be too close to the TDS. According to Harvey (1973, pp. 39, 57) distance is related only to accessibility, whereas 'proximity' refers to a rather different phenomenon which can

From the information collected, the distribution of TDSs could then be displayed using simple geographical data which joined together the map of the TDSs, with maps of the district location and the socio-economic surrounding of the TDS of each sub-district. Detailed mapping of the disposal sites was crucial to this study because it depicted the physical aspects of the GEJ issues related to urban solid waste disposal placement. The maps also allowed easy identification of the persons or groups important for the interview process. The initial maps were used for the determination of the TDSs location in each sub-district.

With the TDS distribution established, the benefits and risks associated with each site could be analyzed. The analysis provided answers to the second question: “How can the current distribution of TDSs in Semarang be evaluated in terms of the benefits and risks for the selected neighborhoods?” The term ‘injustice’ was used rather than ‘justice’ to explain the situation of substantial and procedural inequities in the TDS placement of each of the five sub-districts.

3.4.2 The method to determine the system that results in the current localization of temporary disposal sites

After identifying geographical environmental justice in TDSs, to answer research question number 1, the answer to question number 2 is explained by the system that resulted in the current determination of the TDSs. To determine the system, two questions were asked concerning respectively the how and where. The ‘how’ was answered by:

explain the effects of being close to something. A household may thus, find itself proximate to a source of pollution, to a source of noise, or to a run-down environment. This proximity tends to impose certain costs upon the household.

1. the regulation and policy determining the TDS placement
2. how a TDS was located
3. which parties were involved in the location

The 'where' was answered by:

1. where a TDS was located
2. the influencing factors to place the TDS
3. the pattern of the TDS placement

To establish the data to describe the system of TDS placement, the following steps were employed:

1. The regulation and policy on urban waste management in Indonesia from both the national and local areas were used to describe in general the regulation system of the TDS placement at the residential level.
2. The question of the location of the TDS emerged from the assumption that TDS was always placed in a poor area rather than on the other opposite classes.

Note that:

- to define how poor the neighborhood was, data concerning social status were used, i.e., the economic condition, property rights ownership, the number of occupants in a household, and the condition of the house, and
 - to describe the second indicator for the system, the analyses applied the same data that was found to answer question number
3. The analysis of the TDS's location was related to the social status of the inhabitants, to prove the assumption that the TDS was addressed in the neighborhood for a specific group of people.

Interviews with respondents and key informants were the main instruments to determine the influencing factors of

the TDS distribution patterns. Key informants for this study included the heads of RT, RW, kelurahan, and people in charge of urban waste services in the municipality of Semarang, non-government organizations, and other important actors in each area. Data was gathered personally (face-to-face) through an in-depth interview. Then it was compared with the data collected from focus group discussions (FGDs). The FGDs were held with heads of the RT, RW, kelurahan, and other stakeholders. The inclusion of the discussion provided a more complete description of the influencing factors. This way was also done to answer what became the possible influential factors for the TDS placement.

The interviews with residents and parties involved in social and formal institutions were also used to explore the strategy, politics, and power used by the society when they were distributed to the environmental and geographical benefits and burdens. The interview sessions allowed the inhabitants who were not directly involved in the formal and decision-making institutions to give their opinions about the RSWM.

The issue of 'strategy, politics and power' in this case became the determination and exploration of variables and indicators that described all the existing strategies, politics, and power relevant for the distribution of the RSWM's benefits and risks amongst residents. Data was procured from three sources: (1) local RSWM policy, (2) social aspects, and (3) the environmental consciousness of residents. Power relationships, the participation of the residents, and urban waste governance were some indicators to analyze those aspects. These indicators were observed in several places and situations where public/societal discussions usually took place. To complete the interview data, selected household meetings were attended. More formal public gatherings such as those of the RT, RW, *kelurahan*, *kecamatan*, and city council where decisions regarding neighborhood and city

problems were discussed were also attended by the researcher for this study. Here, the process of the decision-making process on residential solid waste management was observed, formally, and informally.

Along with exploring the social class as an influencing factor in TDS placement, this chapter also explored other local factors that were influential in each particular area. Each aspect had been analyzed to describe the pattern of distribution in each location.

The method used to find the data regarding the factors in the distribution pattern of TDS is as follows:

1. Several social class indicators were used to identify and categorize the social status of the respondents. These indicators were household income, occupation, size and type of house, property rights and titles, gender, and age.
2. The geographical proximity was the specific distance between the TDS and each household. This measurement was used to identify the victims presumed to be exposed to some of the negative effects of a specific TDS area, which bears the greater proportion of the burdens.
3. The data gathered from all interviews were then compared to the whole description of the influential factors to prove the hypotheses of the influential factors of the distribution patterns of disposal sites. Thus, the predicted situation could be compared to what is in practice in the community.

3.4.3 The method for finding data regarding distributive and procedural injustice

From the information on the current distribution of TDSs as explained in section 3.3.1, data on both substantive/distributive and procedural injustices suffered by residents due to their locations to the TDS could be explained as follows.

First, the environmental justice analysis used some analytical tools which were called procedural and substantive or distributive justice to describe GEJ. Procedural justice was examined as the involvement of communities and the system of the decision-making process, so a TDS could be placed in a specific location. Substantive/distributive justice was identified using two aspects, i.e., the benefits and burdens which were received by residents as a resulting impact of the TDS placement.

Second, there were some impacts, which were identified differently by the residents due to the location in relation to the TDS, i.e., the health impact of the TDS and the cost that should be paid by each household to transfer their waste and urban waste service. In dealing with the TDS, there were some environmental disadvantages, which were indicated through geographical distribution because not many people wanted to buy a property nearby a TDS. In this study, 'physical' observations were used to find the environmental impacts among the different geographical areas.

Third, experiences of impact on health, financial burdens, and other matters of inconvenience were investigated through the interview process. Respondents were also questioned on the kinds of benefits they received throughout the process of the TDS's placement. Questioning on the process of TDS decision making, the involvement of the community, the understanding and memory of the TDS placement process, and the understanding of the decision-making structures were used to explain the procedural justice of the TDS placement.

The different urban waste public service costs between residents in the same administration area were compared to Semarang's local regulations on urban waste service charges and that of any specific agreements arranged through the RT, RW or

kelurahan levels. Information from each head of the sub-district was required to complete the data for this study.

Problems were encountered when trying to collect information from affluent people in the Candi Sari neighborhood. Most of them refused to be interviewed. On occasions, only a maid of the house was met, that was not able to provide adequate answers to questions, especially those of a personal nature such as occupation, income, and the residents' involvement in the TDS placement process. Several times, high-security fences were encountered and people inside were fearful of talking to a stranger even after presenting formal research permission from the head of Kelurahan Candisari and university identification. As a result, not much information was obtained from the affluent residents of this neighborhood.

The information regarding the cost that has to be paid and the policy to decide the disposal site was collected during inhabitants gathering and from the sub-districts office. The information on how they treated their solid waste was received from household maids, in addition to garbage rickshaw drivers. For the Candisari area, the social class status could be identified from the condition of their property rights. The location and the size of the property rights became the factors that could be used to indicate social status.

To complete the aims of the second research question "How can the current distribution of TDSs in Semarang be evaluated in terms of the benefits and risks for the selected neighborhoods?", all information gathered in the previous steps was categorized, formatted and divided into two kinds of indicators, i.e., justice, and distributive and procedural justice. This was comprehensively compiled to describe the geographical environmental justice related to RSWM.

The system of analysis used to categorize the indicators of justice is displayed schematically in the scheme below:

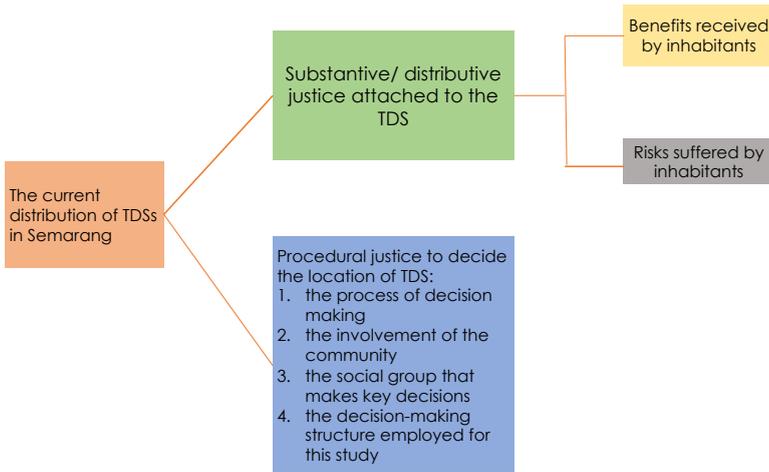


Figure 3.2 Analysis of Environmental Justice Indicators

The differences between the burdens and benefits received by residents were used as indicators to define environmental injustice. Besides improper management of solid waste, injustices in the decision-making process were the other causal factor of unjust distribution of environmental effects. These two kinds of justice were analyzed together to create a clear description of the condition of environmental justice in the residential solid waste management for the five researched neighborhoods.

Some variables of substantive justice were divided into two categories, benefit and burden. Each set of the variables had the same indicators: health impact, cost incurred by the household, and geographical apportion. An observation technique was used to determine the environmental impacts of the TDS, which was seen from a geographical perspective.

The interviews in the study depicted the experience of the respondents in each TDS neighborhood. Respondents described their experiences in relation to health impact, financial burden,

and any other burdens which they felt were the result of the disposal site.

A financial burden was one of the aspects that were analyzed as the differentiating cost between households. Residents paid a certain amount to the Semarang Local Government for urban waste services. This paid for the solid waste transferred from the TDS to the FDS, and also for the urban waste management services. This charge was regulated by the Semarang Local Act No. 6/1993 and its replacement, Semarang Local Act No. 14 Year 2016 about the Urban Waste Management, and the Semarang Mayor Regulation No. 18 Year 2018.

The central regulation analysed for urban waste management was The National Act No. 18 Year 2008. Due to this government task, which was directly related to the residents, the local government could regulate a local act, which both rules the management of tasks and charges the residents for the urban waste management services. Meanwhile, the mayor's regulation was aimed to technically regulate the implementation of the local act. If the residents' houses were quite far from the TDS, an additional transportation cost was incurred. This payment was arranged at the neighborhood level. Information regarding this cost was found at the RT and RW level, whereas the urban waste services costs were found at the Semarang Municipal regulation level.

After explaining the method to explore environmental justice, the next method to describe was the geographical justice of TDS placement. The geographical justices or injustices were identified using three indicators:

1. the distribution of TDSs related to the geographical proximity of residents to a TDS
2. the distribution of environmental benefits and burdens related to geographical proximity

3. the public responses to a TDS, which both rejected and accepted the TDS

These indicators were dependent on some influencing factors and together created a geographical justice or the lack of it. The influencing factors were with regards to power relations, social class, and the politics of TDS placement.

Previous research has been proposed to analyze the following outcomes in GEJ:

1. geographically, the TDS was always placed in a poor neighborhood
2. geographically, the environmental risks of the TDS were suffered by the poor people in the area surrounding the TDS

The first argument was very helpful to depict how the distribution of the TDS condition was in Semarang. The placement of a TDS in a low-income area directly exposed the residents to some immediate environmental risks of the waste site. Meanwhile, the second argument is used to identify some factors and politics of resistance that were present and used by the community or government to distribute the benefits and burdens that were unequal among the residents of Semarang. These two arguments would not be proved separately, but in combination, to address the aims of this study.

3.4.4 The method to explain the strategy to improve the living conditions and more equally distributed risks from the TDSs

To answer question number three: “What strategies did the communities follow to successfully redress TDSs proposals made by the municipality of Semarang in acquiring better TDSs location?”, there were three kinds of information gathered,

namely the causes, consequences, and responses of inhabitants related to the TDS placement.

The causal factors that led to the GEJ were categorized into two groups, related to respectively the policy aspect and the power-related aspect. Some information on policy and regulation of a fair TDS placement was needed. The GEJ was explained by analyzing whether there were any different TDS placement policy implementations for the same jurisdiction of Semarang. To analyze the power relations between the inhabitants some factors were used, i.e., wealth, social class, income, property rights, age, and gender.

Combining the topics for investigation and the variables led to a conceptual model of geographical environmental justice (or injustices) like that shown by the influence of the relative levels of power held by different groups of people and factors such as social status, gender, age, occupation, education, and property rights. In addition, the politics of resistance caused consequences and responses, which were incorporated into the model.

3.4.5 Additional information regarding the research practices used

In addition to the methods meant to answer the three main research questions specifically, in general, also the following practices were used to gather and check the information. They concern:

a. The checking and re-checking of information

All data collected was compiled comprehensively. The 'check and re-check' method was used in the FGDs. First, each of the stakeholders of each sub-district was invited to a small meeting to discuss the information that had already been gathered. Second, opinions and criticisms on this

information were recorded for the 'check and re-check' data. Then, data gathered during the interview process in step 1 were compared and added to data collected from the FGDs, which were held at the RW, RT, sub-district, and stakeholder level forums. In the process, triangulation was applied to get a more complete description of the influencing factors used by both the individual and the community.

b. Time of interview.

Household respondents were interviewed at slightly varied times. Housewives were mostly interviewed during their resting time, which is between 12:00–5:00 pm, whereas the men of the house were often interviewed after 5:00 pm when they had returned home from work. Many preferred to be interviewed after the evening *Isya* prayer (one of the Muslims 5 times prayer). Thus, the time to interview the residents was from 5:00-8:00 pm. That time range was selected with the assumption that the interviewees would be more willing to cooperate after they had already returned home from their daily activities.

The respondents who worked (formally or informally) nearby or at the TDS, for example, scavengers, rickshaw waste drivers, food sellers (such as those working at the traditional market of Candisari), motorcycle drivers, dump trucks and other kinds of drivers, were interviewed on several different times depending on their activities. Generally, food sellers and motorcycle drivers were interviewed during the active hours of the traditional market, i.e., between, 8:00 am until 5:00 pm. Specific times were required to interview the scavengers, rickshaw waste, and dump truck drivers because their working time was

dependent on the waste intake time. Some rickshaw drivers were, nevertheless, interviewed at their houses because they could not be found at the TDS location. The location of their houses was easily sought from other members of the neighborhood because the drivers were responsible to remove the waste from each household and they were generally already working for a long time in a neighborhood. If the researcher needed to dig out further information, it was arranged with an appointment with the respondents. The interview sessions were averaged between 30-90 minutes per respondent. As informed by some respondents, when they felt comfortable already with those who took their solid waste, it was customary to give a little extra money directly to the drivers as a way of expressing their gratitude.

c. Observation

Observation was the method used to gain detailed information about (1) the waste treatment performed by the cleaning personnel, (2) the risks at certain points in time about the waste site in the neighborhood, and (3) the parties susceptible to the associated burdens and those who are likely to benefit from the TDS location.

PART II

System of Localisation and Environmental Justice

Chapter 4

The System of Temporary Disposal Site Placement in Semarang

4.1 Introduction

This chapter aims to explain the system of temporary disposal site (TDS) placement in Semarang. To understand the system, this chapter is divided into two main discussions, first the explanation of residential solid waste management, and second the description of the Indonesian policy and regulation on residential urban waste management, which consists of the definition of residential urban waste and waste management, the aim of waste management, and government's tasks and the public involvement on urban waste management.

4.2 Approaches to residential solid waste management

The operational pattern of solid waste management in urban areas is determined by the sources of waste production. Most human and urban activities result in waste. Especially for solid waste, some urban activities are commonly recorded statistically to

residential, market, commercial (hotel, restaurant, and shopping complex) and public facilities street sweeping, industrial and drainage systems. From all of those sources, residential activities are the largest producer of urban solid waste. According to the United Nations (UN-HABITAT, 1996, p. 271) residential activity contributes 60-80% of urban solid waste. This is why the concern to change the residential solid waste system to be more environmentally friendly is increasing in many municipalities in the world.

Worldwide, two different systems can be indicated as practices for treating urban solid waste. They are the end of pipe system and the recycling method. The first method is commonly found as a practice in many cities in developing countries of the South (van Naerssen & Barten, 2002). In many developed countries, however, the disposal method of waste reduction from the origin until the end is using the recycling method. This solid waste management is concerned with the generation, on-site storage, collection, transfer, transportation, processing and recovery, and ultimate disposal of solid wastes (Pichtel, 2014, p. 15).

Morrissey and Brown categorized several models of solid waste management based on the time that they were developed in the 1970s up to the early 1990s (2004). The first model that was developed in the 1970s is the optimization model and deals with specific aspects of the waste problem for example vehicle routing and transfer stations (Morrissey & Browne, 2004, p. 298). A transfer station is a building or processing site for the temporary deposition of waste. It is often used as a place where local waste collection vehicles will deposit waste before recycling or transferring the waste to the end point of disposal in an incinerator, landfill, or hazardous waste facility. Transfer stations are sometimes perceived by the public as contributing

to noise, odor, dust, increased traffic, rats, flies, and litter. Next to health problems, the alleged result of this environmental deterioration is lower property values. Most of the concerns can be alleviated through prudent site selection, good design and in operation and public education. Locating sites in proximity to main haul routes is critical to both public acceptance and economics. The acceptance for transfer station location included the following criteria (Schaper, 1986, p. 196);

1. near the area served
2. accessible to major haul routes
3. adequate land area to provide for isolation
4. suitable zoning area
5. served by waste utilities

This model took recycling rarely into account, having only one processing option of each type, or by having a single generating source (Berger et al., 1999, p. 285). In its subsequent developments, this model was not able to overcome many environmental and human health problems, caused by the increase in waste and improper management. The weakness of this model was motivated by city managers in many countries who developed the model into one that aimed at minimizing the costs of mixed waste management in the 1980s. Recycling was included in some of them (Englehardt & Lund, 1990).

During the 1990s, recycling was included in most models developed for the planning of residential solid waste management. The approach reflected a change in policy from the disposal method, towards a wider range of waste management techniques that are based on the principle of integrated solid waste management (ISMW) (Morrissey & Browne, 2004, p. 298)

Integrated solid waste management programs involve the reduction, recycling and reprocessing processes of waste. Nowadays, many developed countries implement this model to

overcome their waste problem. Marsh & Grossa claim that almost 30-45% of solid waste in some developed countries is recycled (2002, p. 305). There are several reasons for using ISWM (2002, p. 305):

1. The handling and management procedures are simpler and the solid waste risks are less.
2. Less processing, especially since advanced technology is required.
3. The municipal garbage collection system provides ready access to large volumes of solid waste in accessible local disposal sites.

These three advantages have to be considered by every municipality so that the ISMW model in connection with the effort to create a sustainable environment for now and the future can be implemented. Even though there are some management problems concerning cost (the cost of managing waste includes handling, transportation, disposal and treatment), an economic loss is represented by the resources (energy, raw materials and labor) spent on the substances, and the impact of waste effect both to the environment and human health (Marsh & Grossa, 2002, p. 309). The recycling purpose model is a promising model to achieve a sustainable environment. The application and implementation of ISMW can occur with the government policies that aim to be environmentally sound.

4.2.1 The Involvement of Manufacturing Industries

Next to disposal and recycling, the last method is the Green Concerns which involves the owners or managers of industries themselves. Nowadays, it is acknowledged that the responsibility of municipal solid waste management is not only a local government's task. Participation of industrial and public actors

is needed to cope with the waste problems. Industries can participate by:

1. using environment-friendly raw material
2. implementing environmentally friendly processes
3. producing environmentally friendly products
4. recycling the production package after consumption.

The government can support the actions in several ways by government regulation, using tax policy and forcing polluters or resource users to pay for the exploitation of resources and the damages that are caused by their activities. When firms are responsible for paying for those costs, it will encourage the residents to adjust their behavior to avoid paying the tax. This shifting of object and subject of tax policy could have positive effects on economic benefit and also for environmental sustainability. In other words, urban environmental sustainability can be achieved through waste management (Blowers, 1992, p. 244).

On implementing this in Germany for example, it is learned that the government has regulated the obligation and incentives for the industry to treat their product packaging. This is called *the "take-back" principle* (Halpert, 2001, p. 144). In 1994 the German government required retailers to take back the packaging for reuse and recycle them independently. Government can give an incentive to motivate industry to use eco-friendly methods in their production. Theoretically, the cost of recycling can be incorporated into the price of packaging (Fishbein, 1994, p. 48). Germany succeeded to implement the 'polluter pays' principle through regulations that shift the financial responsibility for residential waste from the public sector (funded by user fees and taxes) to industry. Germany was also consistent to give incentives to industries that were responsible to implement green

production (Fishbein, 1994, pp. 110-111). The coordination of these two principles (polluter pays and environmentally friendly principles) in the waste management policy is a good example in showing how to overcome packaging waste and demonstrating the involvement of industries in urban waste management systems.

If every industrial company would use packaging material that can be processed/composted by nature, the waste problem can be minimized easily. Indirectly, environmentally friendly products will reduce costs and environmental impacts associated with solid and hazardous waste treatment. To reduce the cost of environmental degradation, which is caused by production, the important action that has to be undertaken is to reduce and minimize waste production. To achieve this objective, some ways can be followed such as resource recovery systems in manufacturing; reduced rates of public consumption; improvement of packaging design; bulk shipping and sales; and reduced use of disposable products such as baby diapers, plastics, glass and newspapers (Marsh & Grossa, 2002, p. 305).

The participation of industrial actors is thus important, because most of the inorganic waste such as plastic, is produced by industries. Plastic is still considered as cheap raw material for product packaging. As the cost for production becomes cheaper, the higher the profit will be received by the owners of the factories. There are many considerations in environmental sustainability which did not become a main aspect implemented in the production process. Nevertheless, the participation of industry is a major aspect of creating a sustainable waste management system. In addition to command and control arranged by governments through regulation, the industry should have its own ethics of care to protect the environment.

The municipality's responsibility to recycle urban solid waste is a form of public service but it can appoint a company to take over this task. This aims not only to maximize the economic efficiency but also to achieve 'comprehensive efficiency' for society, the economy and the environment (Dong Suocheng, 2001, p. 7-11) which is "utilized by producers and consumers with the waste treated and returned to the environment."

Environmental considerations for economic activities in waste management programs, according to Bruckner and Wiecher actually emphasize economic and environmental interests that do not need to contradict each other, and moreover appeal to the cooperation of all actors concerned (Haverland, 1999, p. 85).

Industries are also the parties that must be involved in municipal waste management. In Indonesia industries rarely take responsibility for recycling their products' packaging as it will decrease their benefits. They have to spend more money to prepare eco-friendly raw materials and use technology to produce eco-friendly packaging. Instead, they allow consumers to decide whether the packages will be recycled or simply thrown away. Unfortunately, the latter choice is common because it is easy and gives more benefits to entrepreneurs. Discarding the packaging requires no thought or effort towards recycling the waste materials.

The amount of packaging waste will increase every year as consumption increases. This condition is aggravated by the weak law enforcement on environment policy. Government still allows irresponsible industries to continue producing un-eco-friendly packaging. They are still unpunished. Similarly, there is a lack of support or acknowledgment for those responsible industries that are implementing eco-friendly practices. Plastic packaging comprises the second-largest amount of industrial

waste in Indonesia (Environment, 2009, p. 5). In 2010, among 20 countries that polluted the ocean with plastic, Indonesia became the second country after China. There are an estimated 0.5–1.3 million metric tons of waste plastics leaked into the ocean annually (Jambeck et al., 2015, p. 769). 5.4 million tons of plastic waste were produced annually, equating to 14% of the annual total waste¹³.

4.2.2 Public participation

Public participation by urban inhabitants is another important aspect of creating sustainable waste management. The reason is that, as we have seen at the beginning of this chapter, the size of waste generated by households is usually substantial and more important than other sources such as industries and markets. This is why the waste management system must be accepted by the population. The most effective waste management system must take social aspects into consideration which include communication, public acceptance (NIMBY/social compatibility), public participation in planning and implementation, consumer behavior, intergenerational factors and changing the value systems (Morrissey & Browne, 2004, p. 304).

Public consciousness and participation are the main keys to guaranteeing successful sustainable waste management. Public participation can be categorized using some steps of waste management, the separation process, the treatment plants, the recycling process and the re-use process. For example, in the

¹³ Article 1 (7) Indonesia Law Number 18 Year 2008 about Waste Management gives the definition of integrated TDS as a place for collecting, separating, recycling, reusing, waste treatment and last processing. This place is quite different with TDS which is usually used as a waste temporary place without any environmental treatment. World bank defines integrated TDS as “Indonesian Intermediate Transfer Facilities” which I consider is not suitable with that article. The World Bank definition does not describe the aim of integrated TDS but more like TDS.

separation waste process, the role of individuals and households to separate organic and inorganic waste is crucial to realizing sustainability in waste treatment. The success of this first step can influence the success of the next steps, such as treatment plants for organic material, sanitary landfills, and recycling plants for inorganic material.

Public participation provides an understanding that social aspects are very important when considering and devising a sustainable waste management strategy. The non-involved people who generate waste (i.e., the general public) in the decision-making process on urban waste management is often a major shortcoming of the following models: risk assessment, environmental impact assessment, cost-benefit analysis, multi-criteria decision-making and life cycle analysis. As a result, it is contended that none of the models can thus be considered to be fully sustainable. Morrissey and Browne clearly explain that all relevant stakeholders should be involved in an exemplary waste management policy, which involves the local authorities, technical experts, and the communities. The successful implementation of a waste management strategy will not only be based on economic criteria, or diversion rates from landfills but also on stakeholder inclusion, intergenerational equity and the satisfaction of social needs (Morrissey & Browne, 2004, pp. 297-298).

Participation is particularly important because the general public is increasingly becoming exposed to the activities of disposal plants as is occurring in Semarang. Improper waste treatment, such as an open dumping system, will cause the inhabitants in the surrounding areas to be the first victims of a dirty area, wastewater intrusion and air pollution, which are all negatively impacting people's health. The problem of geographical environmental justice is thus closely connected to both waste

treatment and its location, which ultimately focused on the question: “who will bear the negative effects of a deteriorating environment and who will receive the benefits”?

It should be noted that a willingness to receive placement of a disposal site in a specific neighborhood when the waste treatment project is introduced, cannot become a warranty that communities are willing to receive negative impacts of the disposal site later on. Public participation is an important requirement to allow residents to be active actors who can contribute to proper urban waste management.

4.3 The policy of urban solid waste treatment in Indonesia

4.3.1 Urban solid waste treatment policy at the national level

The most recent regulation on waste management in Indonesia enacted is called *National Act No. 18 Year 2008*. Some considerations to enact this national act were:

- a. The realization that the population growth and a change of consumption patterns cause an increase in volume and diversity of waste.
- b. The realization that the existing waste management had no environmental perspective and generated negative impacts on public health and the environment.
- c. The conscience that urban waste was turned into a national concern and thus needed a comprehensive and integrated management from upstream until downstream to create economic and health benefits and safety for the environment.

The above regulation, thus, defines the meaning of waste in article 1 (1) which explains that waste is the solid residue of

human daily activities and natural processes. As this regulation rules waste management, it defines waste management as a systematic, integrated and sustainable activity that consists of reducing and handling waste. This definition, hence, requires management as an appropriate way to handle urban waste.

Many regulations in Indonesia, either at the national or local level, require the orientation of urban solid waste treatment to reduce, recycle, and reproduce. Several regulations explicitly regulate this orientation.

At the national level, there are two articles, 1(5), and 19 which define that aim. Technically, this regulation is strengthened by Indonesia National Standard/SNI No. 03-3242-1994 which obligates households to:

1. separate organic and inorganic waste
2. implement reducing, recycling and reproducing waste from its origin to the TDS

According to article 5 National Act on Waste Management, both national and local governments are the parties who are responsible for guaranteeing the establishment of good waste management, which is environmentally friendly oriented. Specifically, in article 9 the authority of local government is ruled as follows:

- a. to provide the policy and strategy of waste management based on national and provincial policy
- b. to perform waste management in urban areas according to the norms, standards, procedures, and criteria which are defined by the National Government
- c. to coach and control the performance of waste management done by other parties (the private parties that is appointed by the local government)

- d. to determine the location of the TDS, Integrated TDS¹⁴, and/or FDS
- e. to monitor and make a periodic evaluation every 6 months during 20 years of an FDS with an open landfill method
- f. to compile and establish early warning systems for waste management.

Besides the government, each inhabitant also has a responsibility to reduce and manage waste in an environmentally friendly manner, as regulated in article 12. In parallel with the responsibility, every inhabitant is entitled to some rights, such as regulated in article 11 as follows:

- a. to get good and environmentally responsible service of waste management from the national government, local government and other parties that are responsible for that task
- b. to participate in the public decision, implementation, and evaluation of the waste management process
- c. to get a right to accurate and timely information on waste management
- d. to get protection and compensation for the negative impact of an FDS activity
- e. to obtain guidance in doing good and environmentally healthy waste management

At the national level, waste management becomes the task and the concern of some ministries. The synthesis report of Indonesia Marine Debris Hotspot from 2018 specifies the task

¹⁴ Article 1 (7) Indonesia Law Number 18 Year 2008 about Waste Management gives the definition of integrated TDS as a place for collecting, separating, recycling, reusing, waste treatment and last processing. This place is quite different from a TDS which is usually used as a waste temporary place without any environmental treatment. The World Bank defines an integrated TDS as “Indonesian Intermediate Transfer Facilities” which I consider not suitable with that article. The World Bank definition does not describe the aim of integrated TDS but more one of a TDS in general.

of each ministry and the overlapping role and responsibilities between them.

“The Ministry of Environment and Forestry (MoEF) has the responsibility for developing policies, formulating regulations, and coordinating efforts in pollution control (waste collection and recycling). The tasks of The Ministry of Public Works and Housing (MPWH) is generally limited to providing technical advice, promoting pilot projects, and constructing/ supervising large-scale off-site solid waste facilities (landfills). Although the ministries offer sectoral interlinkages across departments, persistent overlaps in their roles and responsibilities adversely affect the efficiency and effectiveness of the execution of mandates and institutional responsibilities. There is limited monitoring of local government performance (i.e., Adipura awards, Green Cities Index (*Bappenas, Kota Hijau* (MPWH). Enforcement is largely absent, both at the community level and management of waste facilities” (World Bank Group et al., 2018, p. 9).

4.3.2 Residential and urban solid waste policy in Semarang

Even though, the orientation of the new Indonesian policy on urban waste management, as regulated in article 19 Law No. 18/2008, is towards reduction and management of waste, in many cities including Semarang we still find the practice in urban waste management of removing waste disposals from residential and other activities in an area to a TDS and later to an FDS. A TDS is a common facility found in settlements and other human activities places such as markets and industrial areas. The integrated TDS as a waste management system comprising activities such as waste collection, waste separation, reuse,

recycle, and reprocess, is limited to some places only. From 2012 until now, there are less than 10 integrated TDSs in the whole municipality.-

The common practice of urban waste management in Semarang differs from cities in developed countries, which use a proper management such as recycling, re-use, and environmentally friendly techniques to treat their urban waste. In Semarang, solid waste is treated by using landfill technique in FDS. That will say, removal of garbage is done from the origin and TDS to the FDS as terminal. Like in many cities in Indonesia, solid waste at FDSs, is only being piled up without any significant treatment. Actually, the term urban waste management is not properly suitable for the practice that Semarang uses to process its urban waste. It is still in the waste disposal stage and end-of-pipe oriented with a sanitary landfill. It only emphasizes removing wastes from their origin in settlements rather than reducing, recycling and reprocessing waste. But it is true that the municipality has planned to manage waste in the FDS and change it into a source of energy. The project, called “From Waste to Energy” started at the beginning of 2019.

The aim of waste management as regulated at the national level, indeed, is affirmed in Semarang Local Act on Urban Waste Management. The emphasis of this aim is found in article 1 (15) Local Act No. 06 Year 2012 on Waste Management. Specifically, Semarang urban waste management aims to manage urban waste by environmentally responsible methods and at the same time to enhance public health and the quality of the environment.

4.3.3 Regulations and policies on TDS location

In the context of a planned settlement, besides the government, there is another party who is also responsible for providing

facilities for residential waste management. The Minister of Public Works Regulation No. 03/PRT/M/2013 about Waste Infrastructure Management in Handling Household Waste and Similar Waste, rules that a municipality and a developer of a residential area have the obligation to provide a site for waste separation and a container for public utilities. Table 4.1 below shows the disposal facilities requirements that have to be fulfilled in the residential areas at each municipal administrative unit.

There are some data needed to plan a type of waste management and a TDS in a residential area. These data are divided into two categories. First, the local administrator needs to know the condition of the area. This can be identified through:

- the map of houses distribution and the coverage area
- the population based on income classifications
- the number of houses based on the type
- the number of public facilities
- the physical condition of the public road
- the topographic and environmental conditions
- the space availability for building a TDS

Second, data about waste such as the volume of waste and the characteristics of the waste becomes a consideration as well. The amount of waste, in this case, is based on some data such as the size of the population, the sources of waste, and the volume of waste.

Different coverage service areas need different types of TDSs. Therefore, three types of TDSs are formulated as follows:

a. TDS type 1

This type of TDS should have a separate room for the garbage; a warehouse for its waste treatment; a land area with a cement foundation for containers; the whole area should be in between 10–50 m².

b. TDS type 2

This type of TDS should have a room for its garbage place with a minimum of 10 m² land area; a place for its organic composting with a minimum of 200 m² land area; a warehouse for waste treatment with minimum a minimum of a 50 m²; a minimum 60 m² area with a cement foundation for garbage containers that are within the area should cover between 60–200 m².

c. TDS type 3

This type of TDS should have a room for its garbage place with a minimum of 30 m² land area; a place for organic composting with a minimum of 800 m² land; a warehouse for its waste treatment with a minimum of 100 m² land; a minimum area with 60 m² land onto which a cement foundation is available for containers; and should cover an area more than 200 m².

SNI 03-3242-1994 regulates that waste management in a TDS must have some of the following conditions:

- a. a facility to separate the organic and inorganic wastes
- b. a tool to composite organic waste
- c. a facility to separate inorganic waste based on their types
- d. a selling station for the economic garbage to meet appointed buyers
- e. a system to manage the poisonous and dangerous garbage by using a predetermined procedure
- f. a system to collect some residues of the wastes to later transfer them to the FDS

Table 4.1 explains the requirements of disposal facilities that have to be fulfilled in each household, community, neighborhood, sub-district, district, and municipality of different economic levels. The bigger the scope of an area, the larger and more complex become the disposal facilities.

The availability of the TDS settlement depends on how the settlement is built. For the settlement built by a private developer, the disposal facilities are required for a building permit. The developer has to accomplish some requirements below in relation to the settlement of a disposal plan.

1. preparation of a specific area for composting and recycling the settlement's garbage
2. planning facilities to collect the settlement's garbage
3. disposal facilities during the construction time

Conversely, a settlement that is built without any integrated area planning, has to have a solid waste removal facility from its origin to a TDS which is done by a specific private institution. This institution is appointed by the community.

Table 4.1 The disposal facilities requirement in residential areas and municipality

Scale of area	Disposal Facilities		Distance and transferring activities	
	Required facilities	Dimension		
Household (5 persons)	Trash bin	-	Waste transferring to TDS is once a day or once in two days	
Neighbourhood/ RW (2500 persons = ± 500 houses)	TDS with Wheeled bins and	2 m ³	The free minimum delivery distance from the residential area is 30 m	Waste transferring to FDS is once a day
	Small garbage containers	6 m ³		
Kelurahan (30.000 persons = ± 6.000 houses)	TDS with Wheeled bin and	2 m ³		
	Big garbage container	12 m ³		
Kecamatan (120.000 persons = ± 24.000 houses)	TDS with garbage truck and	-		
	Big garbage container	25 m ³		
Municipality (> 480.000 persons)	Disposal facilities for waste management	-		

Source: Standard National Indonesia (SNI) 19-2454-2002: the Procedure for the Operational Technique of Urban Waste Management

According to article number 9 Law no.18/2008 on Waste Management and the Semarang Local Act No. 6/2012 on Semarang Urban Waste Management, the local government is the responsible party who decides about a place for a TDS. However, the decision-making on the arrangement of TDS placement and the model of waste management of a certain area is entrusted to the inhabitants, RT, RW, and the Kelurahan. A TDS will

be acknowledged and registered by the local government by placing some disposal facilities and arranging some facilities. The facilities must at least consist of a container to hold solid garbage. Furthermore, there should be a concrete basement and wall divider with a frequent intake and transfer to FDS. The process to decide on a TDS placement which is done by the inhabitants and other stakeholders will always involve a strategy of placement. The most influential interest groups, however, will become dominant in the placement of a TDS in a neighborhood.

Even though many tasks need implementation by the local government, the common urban waste service by the municipal government in Semarang only concerns the transfer of waste from a TDS to a FDS and the management of some residues of waste which cannot be recycled in the FDS. Therefore, the solid waste disposal operation in a residential area can be drawn in a schema like shown in figure 4.1.

Officially, the regulation on SNI 19-2454-2002 and some additional regulations require the operation of urban solid waste management like shown in figure 4.2. The arrows explain the flow of waste treatment and management. But the implementation will depend on the capacity of each municipality. Many factors can influence the success of its implementation.

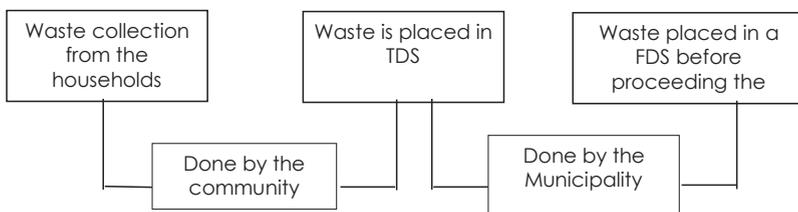


Figure 4.1 Division of tasks of residential solid waste treatment

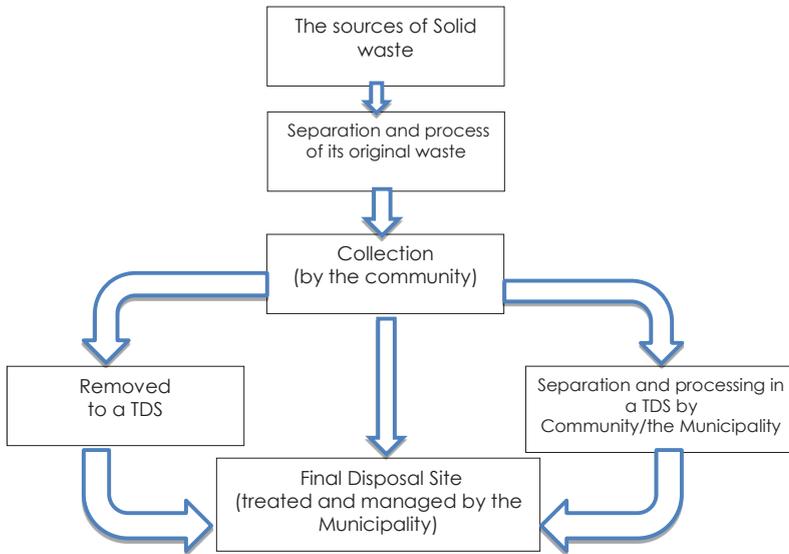


Figure 4.2 The operation of the urban waste management system

4.3.4 Semarang urban solid waste management condition

The municipality treats urban waste based on its sources. Each source is treated differently, but all methods are still aimed to only remove waste from the original sites and transferring it to the FDS in Jatibarang. There is no significant waste management implemented in this phase. In detail, the process is as follows:

- a. Waste or garbage from main roads and street sides is collected by street sweepers. They usually come from community groups (KSM = *Kelompok Swadaya Masyarakat*) which are coordinated and organized by the kelurahan. Their job is to sweep and collect solid garbage alongside the main street and put it into the garbage bins before it is taken to the FDS. At government request, a private company removes the garbage directly to the FDS.
- b. Solid wastes from residential areas are collected by cleaning officials who are employed by the lower local authority such

as the *kelurahan*, the RW or RT. They collect the garbage from household to household by using a garbage tricycle or rickshaw and remove it to TDSs. Not all residents in Semarang use a waste treatment as already explained previously. Some of the wealthy residents pay district cleaning officials or a third party to collect and remove their garbage directly to the FDS.

- c. Waste or garbage from traditional marketplaces is collected and swept by the Market Service Officials. They put it into a TDS that is specifically built and placed in the markets. The garbage removal from TDS to an FDS is done by the local authority cleaning service.

To manage its urban solid waste, the Semarang Local Government divides its area of services based on district divisions. There are 16 *kecamatan* with 177 *kelurahan* in Semarang. To facilitate the operation of waste management services, these districts are clustered in three service areas, the East, West, and South regions. The East region consists of 6 *kecamatan* (Semarang Tengah, Semarang Utara, Semarang Timur, Gayamsari, Genuk and Pedurungan). The South region also consists of 6 *kecamatan* (Semarang Selatan, Candisari, Gajahmungkur, Tembalang and Banyumanik) while the West region comprises of 4 *kecamatan* (Semarang Barat, Mijen, Tugu and Ngaliyan).

To serve the whole area of about 373, km², Semarang only has 278 TDS, which spreads out sub-districts. The average number of TDS compared to the total population was 1:695. During a day one TDS will on average store 4232 kg of waste. In each TDS there are usually two or three waste containers, but in a few cases, only one container can be found. This condition occurs because there are limited numbers of containers and disposal facilities available. Usually, waste removal from a TDS to the FDS is carried out once a day. If the waste is not removed from

the TDSs within a day, immediately environmental problems will arise. Those problems are unpleasant odor flies, and heaps of waste and have to be dealt with afterwards.

Most of TDSs are open dump facilities and located in places not far away from the neighborhood. Considering the limited number of local government waste containers and trucks, the waste removal activity from the TDS to the FDS can only be done once a day. As a consequence, waste will stay in the TDS for quite long which results in some negative effects.

Table 4.2 Semarang disposal facilities, 2015

No.	List of Facilities	Number
1.	Hydraulic Trucks/arm roll	90
2.	Waste dump trucks	28
3.	Road sweepers	2
4.	Trucks for Feces	4
5.	Track dozer	5
6.	Crane	2
7.	Wheel loader	1
8.	Swamp dozer	1
9.	Shovel loader	1
10.	Excavator/backhoe	2
11.	Urinal Trailer	4
12.	Bulldozer	4
13.	Garbage containers	448
14.	Garbage Trishaw	284
15.	Garbage bins	1585
16.	Temporary Disposal Sites	261
17.	Installation for Integrated Waste Treatment	1 (\pm 5 Hectares)
18.	Final Disposal Site	1 (\pm 46 Hectares)

Source: (BPS-Semarang, 2016, p. 74)

Besides the registered TDS, there are many unregistered sites surrounding the neighborhoods which are used for the disposal of garbage. The waste in these locations is not treated as waste in an

official TDS. Commonly, the unregistered sites function as small final open dump sites for their respective areas. In many places, it is easy to find garbage scattered in river plains, cemeteries, empty areas and property rights on unbuilt land.

The information on disposal facilities shown in the next table described how the Semarang municipality took an effort in treating its urban waste instead of only managing them. The limitedness of disposal facilities can influence the quality of waste treatment applied in Semarang.

4.4 Solid waste service taxes

The sources of the waste management budget are the local public service and the waste service charges. As prescribed in the Semarang Local Act No. 6/1993 and its regulation regarding the finance of transfer of waste from TDSs to the FDS and the municipality waste treatment, the local government can levy a cleaning charge. Each household must pay the charge for the public waste service every month. There are differences in the amount to be paid. This difference is based on the width of the main road in front of each household. The payment categories can be seen in the following table:

Table 4.3 Semarang waste charge categories for households per month in 2012

No.	House types	Street width classification	Contribution per month
1.	Household I classification	Located in a street with 10 m and up in width	IDR 10.000 = USD 0.7
2.	Household II classification	Located in a street with 810 m in width	IDR 10.000 = USD 0.7
3.	Household III classification	Located in a street with 68 m in width	IDR 6.000 = USD 0.4

No.	House types	Street width classification	Contribution per month
4.	Household IV classification	Located in a street with 4-6 m in width	IDR 6.000 = USD 0.4
5.	Household V classification	Located in a street with less than 4 in width	IDR 2.000 = USD 0.1

Sources: Article No. 10, Semarang Local Act No. 6/2012 on Public Service Charge

In July 2018, the urban service charges were changed by the Semarang Mayor Regulation No. 18 Year 2018 on Urban Waste and Retribution Tariff Change. The urban waste service became as follows:

Table 4.4 Semarang waste charge categories for households per month in 2018

No.	House type	Street width classification	Contribution per month
1.	Household II classification	Located in a settlement with a street access width in between 8-10 m	IDR 12.000 = USD 0.8
2.	Household III and IV classification	Located in a settlement with a street access width between 4-6 m and 6-8 m	IDR 9.000 = USD 0.6
3.	Household V classification	Located in a settlement with a street access width of less than 4 m	IDR 3.000 = USD 0.2

Sources: Semarang Mayor Regulation on Urban Waste and Retribution Tariff Change

Concerning the residential charges categorization, the first reasoning is that there is a difference service received by each household based on the amount retribution. Based on field observations during the research, however, there are several differences in the quality of the service. The width of street access facilitates the dump truck to enter and remove solid waste from a TDS. Households living in houses that face directly to a main road of at least 10 meters away or near the TDS enjoy:

1. a direct removal service from the garbage bin in front of their house
2. free waste removal to a TDS or FDS

A public service charge is used to finance the collection of garbage from a TDS or from a main street to the FDS. But there are other costs involved too. Among them are the external costs due to the negative effects caused by landfill/disposal sites that residents still need to pay (Sasao, 2004, p. 756). Some of the inhabitants nearby a TDS admit that they have added costs to minimize the environmental burden that they receive from a TDS. Some spend money to build a high wall or to plant several trees opposite to the TDS. Some give added money to the scavengers or cleaners to clean the TDS and its surroundings. Meanwhile, the inhabitants who live quite far from the TDS have extra costs for removing their garbage. First, they pay for the waste removal service and waste transfer from a TDS to a FDS and the municipal waste treatment cost in a FDS. Second, they pay for the waste removal from their houses to a TDS and waste treatment costs in a TDS. They are obliged to bear these burdens because this will influence the kind of urban waste treatment that is chosen by the different social groups and the organization that is requested to handle it. In practice, the financial burden of people differs according to the area where they live in.

4.5 Concluding remarks

It is learned that the Semarang Local Government still fails to effectively manage and dispose of its area's urban waste. Ineffective management is the result of many factors including the limited institutional capability and finances, the 'throw away' culture which still exists across broad layers of society, and

industries that do not consider the external cost of excessive packaging.

Presently, Semarang still uses disposal as a method of dealing with urban waste. The process aims to move the waste from residential and other activity areas to a TDS and then further to the FDS in Jatibarang. In 2002, Semarang decided to use the sanitary landfill method to minimize the quantity of waste at the FDS. However, this is not an effective approach to decrease the amount of waste. The problem has been aggravated by a lack of separation of organic and inorganic wastes. From the origin to the TDS and further to the FDS, different types of waste remain to be combined.

The waste is still in its 'disposal' state when it reaches its final destination and has not been dealt with in any environmentally friendly way. There should be an emphasis on the reduction, reproduction, and recycling of waste ever since the throwing of waste at the household level. Unfortunately, the daily volume of urban waste has already exceeded the rate at which it can be buried at a landfill. At the FDS in Jatibarang waste is treated according to the sanitary landfill method. As long as the population density is low, land for a waste site is available, and there are no vital groundwater and surface water sources near the landfill site, a sanitary landfill is clearly appropriate (Neal, 1987, p. 76). In Semarang sanitary landfill is still used in FDS. The Local Government still considers this method suitable because Semarang still has enough open areas for dumping. This method is also considered cheaper than environmentally waste management. But in the future, FDS Jatibarang will create an environmental problem if it is not treated well.

Semarang has not implemented waste management in an environmentally friendly and sustainable way. The concepts of sustainable waste management or integrated waste management

are not terms used in the waste management models of this city.

There are three main reasons for this situation. These are:

- the limited institutional capacity and finance
- the weak responsibility of the industry
- the throw away cultural attitude

The failure of waste management can be viewed daily in several parts of the city. Examples are how trash is scattered through the streets and rivers, and how drainage systems are full of trash. Most TDSs and the FDS still need to be improved. Public trash bins are limited in both quantity and quality and in the capability to separate organic and inorganic waste. Consequently, there are problems such as flooding during the rainy season, which is caused by blocked public drainage systems, enhanced pathogens breeding in pools of stagnant water, and increased incidences of environmental and social health problems.

Chapter 5

Factors in Temporary Disposal Site Location

5.1 Introduction

The main question that emerges in disposal site placement is “Where should the waste be placed?” Following that question, the issues of place and location are the main concerns of this study. To cope with them, it must be very clear to understand how temporary disposal sites (TDSs) are located by figuring out the factors leading to their distribution patterns. These factors can also explain the reasons why communities reject a disposal site.

The factors that influence TDS distribution patterns are the result of on the one side the regulatory framework and policies of the location of TDSs and on the other side, specific place characteristics such as the physical features of land, land ownership, population density, and the social features of the population of a neighborhood or community. The regular framework refers to the *urban waste regulation system* while policies concern the contextual *practice* and the procedures of the policy implementation.

This chapter will discuss both national and local regulations as part of the regulatory framework as explicated in section 5.2. The factors belonging to the contextual practice are treated in section 5.3. Place characteristics are the subject of section 5.4. That discusses in more detail the social considerations. The final section (5.5) discusses the characteristics of the urban waste treatment facilities.

5.2 The regulatory framework of temporary disposal site location

The regulatory framework of TDS location deals with the regulations at the national and the local level. At the national level, the regulations deemed relevant for this study are the Indonesia National Act No. 18 the Year 2008 on Urban Management, the Government Regulation No. 81/2012 on Household Waste Management, and the Minister of Public Works Regulation No. 03/PRT/M/2013, which deals with the Waste Infrastructure Management in Handling Household Waste and Similar Waste.

Thus, every household should be urged to treat their rubbish, otherwise, they will receive a negative impact from the rubbish itself. Most of the time, the nearby TDS community receives negative impacts, especially when the disposal facility is in an open dump location. Actually, this condition could be avoided because the Indonesia National Act No. 18 the Year 2008 article 12 (1) obligates everyone to minimize and manage his/ her own garbage.

The management of urban waste is related to the location of waste that is both temporarily and finally placed. Therefore, in the context of the TDS *kelurahan* zone regulation, the Semarang Local Act No. 14/2011 and Semarang Spatial

Planning 2011-2031 are the principle regulations that will be discussed in this chapter. As explained earlier, the TDSs are one of the facilities to treat urban solid waste in Semarang. However, none of the articles in that Local Act regulates TDSs as part of Semarang's urban planning. This local regulation rules the spatial arrangement, including that TDSs should be found in each neighborhood (RW), market, and industrial area. There are only two urban waste systems found and regulated in Semarang's spatial planning, namely FDS and Integrated TDS, whereby the waste is sorted out by kind. Only those two urban waste facilities are planned in the whole spatial planning regulation, so the 'traditional' TDS is not included.

According to Article 7 of Semarang Local Act No. 6/2012, and also Government Regulation No. 81/2012 about Household Waste Management, the local government has the authority to decide the placement of TDS and its facilities. It, thereby, means that the consideration to choose a particular place for a disposal site is entirely dependent on the policy of the local government.

The Minister of Public Works regulates the technical conditions to select the place of TDS as found in article 20 (4), Minister of Public Works Regulation No. 03/PRT/M/2013 about Waste Infrastructure Management in Handling Household Waste and Similar Waste. Some conditions which are related to the placement of a TDS were ruled as follows:

1. The size of the TDS area is up to 200 m².
The size of the land is sized up in this way to keep enough distance between a TDS and a household. Enough space and distance are necessary for proper treatment in the future. The size and capacity of the TDS depend on the necessity of the neighborhood.
2. The TDS location is comfortably accessible.

3. The placement of the TDS follows an aesthetic manner and is not causing a traffic jam.

5.3 Policy practices regarding the location of temporary disposal sites

What is the current practice on TDS location? The subsequent discussion deals with the way of waste management, urban space allocation, spending of local income and procedural matters. However, before making an overview of the research area, the following argument of financial limitations can better clarify the perceptions of TDSs.

Limited technology and urban financial support¹⁵ often become the black sheep in justifying improper public service. The latter reason, in fact, is often found not valid when paying close attention to the amount of revenue that the local governments receive from urban sanitation charges.

For example, in July 2006, the expense of Semarang's urban waste treatment was IDR 15 billion (or approximately USD 1 million). There were IDR 5 billion (or approximately USD 350.000) received from households as a sanitation service charge for urban waste. The remaining IDR 10 billion was paid by the government. Considering the huge amount of expenses, the community expected a proper treatment of urban waste conditions. However, in practice, the urban waste service still needs improvement.

¹⁵ This statement was explained by *Cahyo Bintarum*, The Chief of Semarang City Department of Sanitation in Radio Interactive Session (Smart Radio FM) that host by PMLP Unika Soegijapranata Semarang, Semarang, April 2006.

5.3.1 Urban waste management

Urban waste management is not a priority in Semarang, although it should be essential both for aesthetic and healthy environmental reasons. When a local government considers waste as a slight problem, it will induce other problems that are not easily solved.

In 2016, the Semarang Local Government enacted Local Regulation No. 14 from Year 2016 about Urban Waste Management. In article 8, the Semarang City Environmental Services Agency is regulated to manage urban waste. Previously, this public service was managed by the Semarang City Cleanness and Landscape Gardening. The change occurred, however, after the Central Government of Indonesia enacted the new regulation Law No. 23, in 2014 about the Local Government regulating the distribution of authority for government affairs amongst the central government, province, and municipality. The regulation pinpoints that urban waste is a public affair that the municipality has to carry out since this matter is directly experienced by inhabitants from the lower level of administration.

Within two years of transition after the enactment of that national regulation, the Semarang City Environmental Services Agency adjusted the concept and program, infrastructure, and human resources of the urban waste management. The Agency recruited many experts to plan how the Semarang urban waste should be managed. Experts were supporting policymakers and municipality leaders who make the decision on the management of the urban waste.

As described in the previous chapter, most of the neighborhoods in Semarang still use the end of pipe system to treat urban waste. Even though the Integrated TDS concept is already implemented, the actual number is still limited.

Moreover, most households still use the traditional way of not sorting out their waste. This happens because there is no system yet to do so. Even though some inhabitants had a separation system in their houses, when the waste is transported and treated in the TDS and FDS the originally separated organic and inorganic waste are mixed again. This study does not focus on the way the waste is commonly treated by some form of eco-friendly method. Instead, the analysis is done on the stages of a solid waste removal system in a settlement.

The unsuccessful waste treatment program is due to inadequate urban treatment facilities. For example, in 2015¹⁶, the Semarang Office of Cleaning and Landscaping had only 90 units of hydraulic trucks, 28 dump trucks and 448 solid waste containers. This number is only 50% of the ideal number of facilities needed by the city. As many as 180 hydraulic trucks should be serving waste removals for the 220 TDSs available. Of the 488 solid waste containers for temporary storage before transferring to FDS there are only 37% of them available in a damaged condition¹⁷ (see chapter 6). Therefore, in some TDSs, sometimes solid wastes are scattered everywhere, in addition to having a long wait for their transfer to a nearby FDS. It is not astonishing, henceforth, that there are negative impacts of TDS on the surrounding inhabitants.

The increasing population and the consequent increased production of waste cause difficulties in selecting disposal sites. If this continues, by 2040, the 2 million Semarang inhabitants will produce 1.938 tons of waste per day¹⁸. Considering this

¹⁶ Semarang Municipality in Figure 2016

¹⁷ Kompas, Saturday 27 October 2007.

¹⁸ COWI-Denmark, 2018, *Laporan I Proyek: Revisi Rencana Induk Pengelolaan Sampah Kota Semarang dan Kajian Kelayakan Strategi Pembuangan Sampah Termasuk Pengolahan Sampah Menjadi Energi*, http://www.esp3.org/images/Library/PapersReports/Laporan-Akhir_Semarang-SWM-Master-Plan-IND.pdf

condition, a proper and eco-friendly policy on urban waste management is, thus, essential.

Efforts are going in that direction. The Semarang Local Government planned some programs since 2014 to upgrade the urban waste service, which is divided into the following three periods:

1. The Short-Term (2014-2018) program consisted of upgrading 39% to 47% of the area by building 4 additional TDSs from the already 254 in Semarang by providing:
 - a. substituting and increasing the already 370 vehicles to collect solid waste
 - b. provisioning 70 new arm roll trucks
 - c. repairing and maintaining the TDSs by building waste container basements and expanding the area for the 101 TDSs and changing the 344 unit waste containers
 - d. optimizing the existing four Integrated TDSs (ITDSs) and building five more units
 - e. establishing a waste bank¹⁹ and community composting programs for 12 sub-districts
2. The Medium-Term (2019-2023) programs consist of upgrading 49% to 57% of the area by
 - a. provisioning a total of 8.856 vehicles to collect solid waste
 - b. provisioning the substitution of 73 arm roll trucks
 - c. building 3 additional TDS and improving the existing 61 TDSs
 - d. provisioning 316 solid waste containers to substitute the damaged containers, so they can function as backup containers

¹⁹ Based on the Regulation of the Minister of Environment of the Republic of Indonesia No. 13 of 2020 concerning Guidelines for Implementing Reduce Reuse Recycle Through Waste Banks, waste bank is a place for sorting and collecting waste that can be recycled and / or reused that has economic value

- e. establishing 5 new Integrated TDS (ITDS)
 - f. establishing 10 waste banks and community composting programs
3. Long-Term (2024-2033) programs consist of upgrading 59% to 76% of the area by
- a. provisioning a total of 3.288 vehicles to collect solid waste
 - b. provisioning the substitution of 205 arm roll trucks
 - c. building 15 additional TDSs and improving the existing 63 TDSs
 - d. substituting 797 solid waste containers to the newly established 11 Integrated TDSs (ITDSs)
 - e. establishing 20 waste banks and community composting programs

Besides these programs, the Semarang Local Government also planned a “waste turning to energy” project in the FDS that is covered by local and national budgets and technical support from Denmark. The obligation to implement this program is regulated in Government Regulation No. 35/2018 about the Acceleration Development on Waste Management Installation of Electricity Energy Based on Eco-Friendly Technology.

In the three planning periods mentioned above, the Semarang Local Government intends to build ITDSs, which can manage waste in an environmentally friendly way. The ITDS is quite different from the existing TDS already discussed in this study. Even though the ITDS is already running in some places, the conventional TDS still dominates.

To ensure the program’s success, the Mayor of Semarang set the tariff of urban waste through the Semarang Mayor Regulation Number 18, Year 2018. In it is regulated an urban waste tariff increase between IDR 3.000-12.000 (USD 0.2-

0.8) per household depending on the width of the street in the front of their houses (see tables 4.3 and 4.4). This amount was implemented on July 1st, 2018. In support of this, the Semarang Local Government also added a local finance for urban waste treatment for up to IDR 83 billion (USD 5.5 million in 2018).

Notwithstanding much money is put aside for urban waste control, most neighborhoods in Semarang still use the conventional technique of using the end-of-the-pipe system treatment for their urban waste.

5.3.2 Urban space allocation

There is still a bureaucracy and community mindset in which empty areas can be places to dispose of waste. Although year by year, the Semarang Government is lacking areas to replace inappropriate TDSs. Thus, it faces difficulties finding suitable and responsible disposal places for new TDSs.

Space for human activities is considered more important than a place for waste. Thus, in some populated areas, it is difficult to find an area for a TDS. Besides that, there is limited space, and other problems such as the access to enter and hilly areas of Semarang also become a problem that needs a solution. In some residential areas, developers do not provide TDS. Households prefer either to pay an organizer of a dump truck to take directly waste from their houses and transfer them directly to FDS, or pay someone to remove their waste to another TDS which is not located in their neighborhood. Whereas Article 16 of the Minister of Public Works Regulation No. 03/PRT/M/2013 about Waste Infrastructure Management in Handling Household Waste and Similar Waste, rules that a developer of a residential area has the obligation of providing a site for waste separation and waste container public utilities. If each residential area

is equipped with a TDS site, then no solid waste placement problems would occur. Each settlement should have its disposal site. However, the attitude of building as many houses as possible sometimes beats the obligation to provide a TDS. An aesthetic argument is also commonly employed, which induces a practice of building TDSs in slum areas or marginalized or poor neighborhoods.

When a developer applies for a Building Permit, he/she should submit a design of the residential area which shows a disposal site and its waste management plan. This obligation is ruled in Article 10 of Semarang Local Act No. 14/211 on Urban Waste Management. However, because law enforcement and government control are weak, information about a planned TDS is rarely found. This situation is different with a planned residential area such as that in most *kampong* and other common neighborhoods. These planned areas follow the regulation on Household Waste Management as regulated in Article 18 Government Regulation No. 81/2012. Even though the municipality is planning to build some TDSs in the upcoming years, the method to manage solid waste, the availability of space for a landfill, and some social problems which follow the placement are still issues that need solutions.

5.3.3 Local income-expenditure

The local government considers the cleanness charge as solely a local revenue rather than a public service-oriented one. The public service which is supposed to be received by residents has never been considered a repayment right of residents.

After the decentralization era of Presidents Habibie and Abdulrahman Wahid, since 1999 in Indonesia many local governments collect local revenues from taxes and charges to

finance local expenses. The added revenue is, unfortunately, not followed by an increase in public services. The argumentation is, that the revenue from specific sources should be used to improve the public services for what it is collected by the government. Thus, the revenue that resulted from sanitation charges should be used to improve sanitation services. Unfortunately, the finance system in Semarang mixes all revenues without calculating which income refers to what service and department, by applying a cross-subsidy system. The departments that earn much have the responsibility to support the others that earn less. However, this should not have been to the detriment of the services of the profitable departments. Thus, the reference to limited financial resources is not entirely correct as to the reason for a decrease in the quality of public services. The yield of collection should be fetched out through a specific service. It is quite different from tax, whereby the taxpayer does not receive any public service privately in return for what he/she already pays for. Instead, they receive the yield through public service that is used together with others.

The placement of TDS often, relates to the interest of local government revenue achievement. The type of revenue links to the neighborhood's aesthetic condition for urban cleanness. Using a cross-subsidy system, the wealthy neighborhoods are required to pay five times the cost of the normal waste service charge, in comparison to the lowest category which is classified by type of house and the width of the street located in front of the house (see chapter 4). Even though this condition is argued as an infringement of the "justice" that refers to the benefit and burden argument of "who pays more will get more," it does not mean that the local government can disregard the proper treatment of its urban solid waste. A healthy environment is a right for every

resident²⁰, so the government must strive to fulfill the right to a healthy environment without any discrimination.

For example, in 2018, IDR 17 billion (USD 1150 million) is noted as a revenue of the Semarang City of Environmental Service Agency. From that amount, there is IDR 14 billion (USD 950 million) that is provided for Semarang waste treatment both in TDSs and FDS. However, only IDR 3 billion (USD 200.000) or 22% of that amount is provided to improve TDSs. The amount is approximately the same as the budget which is used to finance other expenditures such as salary, investments, and routine expenditures.

The funds provided have been slashed to a very low amount. Furthermore, the government's revenue is still at risk due to the chronic abuse of the bureaucracy circles in committing corruption. The fund that is intended to increase the quality of urban waste services is often used for an individual or group's interest. There were many corruption cases in the urban waste treatment sector which have been revealed and judged in Indonesia.²¹

5.3.4 Shortcomings in the procedural process

Spatially, the TDSs are unevenly distributed over the city since some places are considered not suitable for a TDS. Consequently, TDSs are usually located at a distance from the economically prosperous areas such as business districts, estates, and government office areas, places where the better-off people live.

²⁰ Article number 28H Indonesia Constitution ensures that everyone has a right to a healthy environment. That article gives an obligatory to Indonesian Government to do relevant actions to achieve the highest fulfilment of it.

²¹ Based on the report of The Jejaring news.com, on 12th December 2012, in some areas of Semarang, residents have to pay extra cost illegally for transferring waste from TDSs to FDS, although this task is supposed to be the local government responsibility. A similar condition also occurred in waste equipment supplying in Municipalities Jembrana in Bali and Sindrap in Sulawesi Selatan. Both cases already were judged in court as corruption cases.

Since the environmental effects of TDS location are quite small even though its consequences are directly felt by the residents, direct participation is important to put in place. However, involving representatives does not guarantee that the wish of the majority of the inhabitants will be expressed. Several ideas and interests from dominant groups will be overriding the less dominant and as consequence interests of some groups will be neglected.

The same situation also occurs in higher levels of government practice, i.e., the existence of heterogeneous interests is not accepted as a common idea. For instance, the interest of housewives who have spent almost their whole lives inside their houses is foreshadowed by the aesthetic aspects of TDS placement.

If only men have the chance to express their wishes to the government, who will then represent the housewives' interests? In the general Indonesian patriarchal tradition, men are often outside of their houses to earn money. Thus, unlike the women, who experience the consequences of TDS, men most often do not bear the negative impact of TDS. In other words, a solution to TDS problems felt by housewives may not be expressed appropriately by the men who attend meetings that deal with the TDS placement proposals. Considering the condition above, it becomes understandable why in the interviews carried out during the research fieldwork (see next chapter), most inhabitants said that they had never been asked nor had been involved in the decision process of TDS placement that was planned in their neighborhoods.

It is, generally, found that the process only involves persons based on their function or position in the neighborhood. The chief of a community (RT), a neighborhood (RW) and community or religious figures are the persons who usually are asked

to represent their inhabitants. Unfortunately, a representation system like this is not an appropriate tool to gather public opinion from relevant actors. There are no guarantees that the representatives will express the inhabitants' wishes. This representation system also does not give the same chance for each inhabitant to express her/his opinion about a specific condition that relates to her/his interest. Yet, the opinion or the vote of the representative becomes the opinion or the vote of everyone.

To fulfill the necessity of TDS and to anticipate objections from inhabitants, the local government sometimes offers a promise in order to receive the agreement from the inhabitants. The secretary of RW 8²², *Kelurahan Muktihardjo* explains:

The TDS project started in 2006, during a meeting at Bapak Suwarno's house. It was attended by some represented residents and the representatives of *Kelurahan Muktihardjo Kidul* and the Cleaness Department of Semarang. In that meeting, the local government requested permission from the inhabitants to place a TDS in the neighborhood. The local government guaranteed that the placement would only be temporary while they were trying to find another one for permanent placement. However, for years, the Semarang Local Government did not succeed to find a place for a permanent TDS. The place which at first was planned as a non-permanent TDS, finally, became the real TDS. In other words, the Local Government did not fulfill their initial agreement.

Practical realities in neighborhoods such as described above, prove that the decision of the local government to place a TDS in a particular place is not always positively received or accepted

²² Subki is the 42 year old secretary of RW 8, *Kelurahan Muktihardjo*. He has been living in the neighborhood since 1991. He is one of the key persons, who can inform about the history of the TDS placement and the agreement that was reached between the residents and the local government representatives. The interview took place on 17 May 2007 and lasted for 17 minutes.

by the community, because the local government often neglects to operate the TDS properly. As a consequence, there are many cases of resistance by residents who disagree with TDS replacements.

5.4 Characteristics of the temporary disposal site location

5.4.1 Population density

Particularly in the central areas of Semarang, the problem of open space is a serious problem. Semarang has 374 km², while the number of its inhabitants in 2017 was 1.753.092. This ratio causes a population density per km² of 4.628²³. The inhabitants are concentrated in the central area of the city. The placement area is 142 km², with only 15,2 km² for a state forest with a total area of 374 km². The density of the urban population will influence the decision to place a TDS in a neighborhood. If the TDS placement policy is still used as part of the urban management system, the injustice problem in the placement process will keep on continuing as a problem. The policy referred to is the sacrifice of a marginalized group, who will bear the burden of the TDS's negative impacts. The vulnerable group that cannot succeed to resist the TDS placement will always become the unlucky party. In other words, the limited availability of land and the population density will force a particular group of inhabitants to receive unfavorable conditions due to living nearby the TDS.

5.4.2 Employment and legal rights considerations

The inadequate knowledge about the healthy environment is the main cause that marginalized (poor) people have no choice but to

²³ Source, Semarang City Population Projection 2010 - 2020, in Semarang Municipality in Figures 2018

accept the placement of a TDS in their neighborhood. However, next to this lack of knowledge, there are also good reasons for members of the poor community, such as the scavengers, food sellers, dump truck drivers and rickshaw pullers to accept a TDS location.

In several locations, TDS provides employment for these people. The necessity to get income to pay for their family's expenses is considered more vital than their health. The local Semarang government considers that the TDS will benefit poor people rather than burden them. The government argues TDSs bring advantages for unemployed people. Because of this, the injustice felt by the residents of living in an unhealthy environment due to TDS placement is no longer judged as an urgent matter, and thus no guilty feelings have been expressed by the government, as it has also the problem to provide employment.

In reality, not only did the TDS cause an unhealthy environment, but it also caused some other negative impacts such as the low price of the property right and the view of scattered waste. Motorcycle drivers (*ojek*), and market sellers of nearby Pasar Tadisional Candi Sari, and the Primary School SD 03 located at Gaharu Raya Street, all work and have activities nearby the TDS and become the first who receive the negative impact of TDS.

The illegal occupants who live nearby the TDS in Muktihardjo Kidul belong to a group that is considered by the local government as 'the other'. They are referred to 'the other' because they stay on land that does not belong to them, so they are considered to have no right to express their opinion in public matters.

Below is the expression of some respondents who said that they were afraid to reject the TDS and were forced to receive the negative TDS impacts:

Respondent S, (female, 47 years) says:

“I am afraid to reject the TDS because I do not stay in my property. Residents consider us as illegal inhabitants, so I have no right to argue about the TDS placement”.

Respondent Su, (female, 34 years) states a similar expression as follows:

“I do not want to be expelled from this location as my family and I have not enough money to buy or hire a house. Although my family has to face the negative impact of TDS daily, I can do nothing else but cope with the situation”.

Respondent M, (female, 39 years), and Respondent Mu, (male, 45 years) express their fears as a form of showing their vulnerability of being powerless to the lack of land and housing rights.

Respondent St, (female, 40 years) says:

“I better keep silent and not protest against the negative impact of TDS as I am not a permanent resident of this neighborhood”.

Respondent Ma, (male, 40 years) says that he is afraid to object to the placement of TDS as he is also a non-resident and has no right to stay on the land.

Commonly, the reasons to accept a TDS and its negative impact of it are:

1. the TDS is a place to work
2. the TDS is the facility that is located nearby the workplaces
3. a lack of the feeling of being citizens of the neighborhood (RW)

5.5 Social factors

Next to regulation and policy practices, some factors are based on the acceptance of people to have TDS placement in their location. Even though they realize the negative impacts of TDS, some factors make them consider twice rejecting the placement of TDS. Three factors that describe the individual and community base's situation are as follow:

5.5.1 Culture of tolerance

The Javanese people are known for their '*ewuh pekewuh*' or '*sungkan*'²⁴ attitude. They are reluctant to refuse action from others, even though they do not agree with that action. They prefer to say 'yes', although, in reality, they do not want to do that specific kind of action. They do this as a consideration of maintaining a good relationship between individuals and the group's community.

This attitude influences individuals and community decisions to do or not do something, especially when it involves people who have a higher position or class than them. This culture of tolerance also influences the individual or community's decision to accept one disposal site placement. Below is an example of an FGD (focus group discussion) result.

A FGD between representatives of a small community (RT in the RW14, Kelurahan Sronдол Wetan, Banyumanik was held on 7 June 2007. The discussion was intended to gather information about a TDS placement in their neighborhood. They inform that they could not deny that the TDS in Gaharu

²⁴ *Ewuh pekewuh* or *sungkan* is the politeness way of Javanese people to agree with the people even though they actually do not agree with other's idea. To keep a good relationship between people sometimes people cannot reject directly the opinion of others. Pretending to agree but actually is not in favour with others is a form of *ewuh pekewuh*. Because people were not in favour for the project, the TDS cannot implemented wholeheartedly.

Raya Street resulted in geographical environmental injustice for their neighborhood, but they could not deny the fact that the local government needs a TDS. If they rejected or asked the government to move and close the TDS, they realized that there would be difficulties to find another place to hold their wastes. They also could not forbid other neighborhoods to place their wastes in that location. They were assured that the *kelurahan* gave permission for them to throw their waste in this TDS. Although in disagreement with the TDS placement, they did what they can to assist the government in the efforts needed to make the city better. This kind of tolerance culture is actually a coping strategy (see chapter 6) to adapt to the negative impact and the environmental injustices caused by the TDSs.

5.5.2 Community considerations

There are some community considerations of accepting TDS placements in the neighborhood. Mostly the reason is the need of the community to have a TDS. For example, in the RW14, *Kelurahan* Srandol Wetan, Kecamatan Banyumanik, the community realized that they had to have a TDS otherwise their neighborhood will be dirty because waste could be placed anywhere. As a consequence, the community arranged some regular actions together such as *gotong royong* and *kerjabakti* to clean up the TDS and its surrounding. The experience of the community in Candisari began with the need for the Pasar Tradisional Candisari to put the waste of market somewhere before being transferred to a FDS. That is the reason that the place of TDS in this neighborhood is behind the traditional market's location. Since then, the TDS of this neighborhood is in that place, although there was a rejection from nearby households. Sometimes a whole community or a large part of the

people of a neighborhood is involved in the process of a TDS location. In the next chapter, we will present several examples.

5.6 Conclusion

Besides regulations at the national and local level, other factors such as local policies and social considerations influence the distribution pattern of TDS location. The regulations rule the ideal condition for TDS setting as the normative aspect. These, of course, aim to protect inhabitants from the negative impacts of a TDS. However, the implementation of TDS placement according to the regulation is not easy to do. The limited open space causes a lack of options to select a proper place for a TDS, thus leading to locations that are close to settlements. Unfortunately, policy makers have reinforced the decision to unequally place TDSs in poor communities, which experience the burden of TDS waste rather than TDS benefits.

The Semarang Municipality has limited resources and fund allocation to implement urban waste management in an environmentally sustainable way. This condition causes TDSs to run improperly and produce negative impacts on inhabitants. To avoid rejection, the placement of a TDS is often done by less than desirable consultation of involved inhabitants.

A common characteristic of TDS location is that they will be placed in a poor and marginalized community. Social factors on both the individual and community level also lead to the distribution pattern of TDS. Two personal reasons to accept TDS are related to the place of work. First, the TDS is used as a place of work and second, the TDS is a facility nearby the workplace. As came from interviewing residents, some feel that they have no property rights due to being a temporal citizen. Because of this, they also feel that they have no choice but to

accept the TDS placement. The Javanese culture of tolerance has been a media used to accept the TDS placement in a neighborhood.

PART III

Location, Causes and Consequences of and Responses to TDSs

Chapter 6

Poor Neighborhoods as the Targeted Places for Temporary Disposal Sites

6.1 Introduction

As mentioned, urban waste management in Semarang is not fully applied. The practice that is mostly used is just dumping and mixing all kinds of waste together. The common view of temporary disposal sites (TDSs) in the city is still poor. Particularly, poor people suffer from the environmental effects of disposal facilities in their neighborhood because of their incapability to reject the placement. Although some of them succeed to reject a TDS and replace it after the initial location, most lack the power to do that. Thus, poor communities are mostly the ones suffering from the open TDS.

This chapter aims to describe the current distribution of TDSs in five different neighborhoods (RW) and sub-districts (*kelurahan*) in Semarang. This current TDSs distribution will be used to evaluate the distributive, geographical and procedural justice as the consequences of TDS placement. The chapter

consists of the introduction to TDSs in Semarang and the description of the selected TDS in each neighborhood. The three aspects that will be explained to describe the TDS are the history of the (re)placement, the TDS and community condition and the causal factors for the (re)placement.

6.2 The temporary disposal sites in Semarang

As mentioned before, Semarang has a policy that requires each neighborhood (RW) to have a minimum of one TDS. This policy is applied to minimize an unfair distribution of TDS and to optimize geographical justice since each neighborhood will bear the same adverse effects of the waste in a TDS. This policy should be applied in each neighborhood, whether from poor-, middle- or upper-class status, without any exceptions. However, the reality is different. In 2016, there were only 261 TDSs serving the 1449 neighborhoods (RW). According to the Semarang City Environmental Agency, this number increased to 278 in 2018 and it will be increased more up to 2031 through the implementation of Semarang urban waste management planning. The imbalance in the number of TDSs compared to the number of neighborhoods, demonstrates that a proper service of urban waste management is not easy to be realized.

If the government transfers the waste to the final disposal site (FDS) once or twice a day, as the regulation prescribes, the pile-up of garbage in the city would be minimal. It would save the residents near a TDS from a continued negative impact of waste, from the dirt caused by scattered garbage and from other adverse effects of the waste.

The data is presented in table 6.1 below show the increasing number of containers in each district. A TDS can have more than one container, but some containers are put alone without

any other facilities such as a concrete basement and wall divider. Based on waste containers' data from the year 2011, until 2015 the trend is increasing. From 2015 to 2018 we do see a decline. According to the Semarang City Environmental Agency, the decreasing number is caused by damaged waste containers, which have not been replaced by new ones.

In 2012, Semarang Municipality enacted the Semarang Local Act No. 14/2012 which rules Semarang Spatial Planning for 2011–2031. Since then, the focus to maintain and developing urban solid waste facilities is on the most densely populated districts (*kecamatan*), such as demonstrated in the higher number of TDSs (see figure 6.1). This policy was developed because of the high number of urban waste originating from densely populated districts.

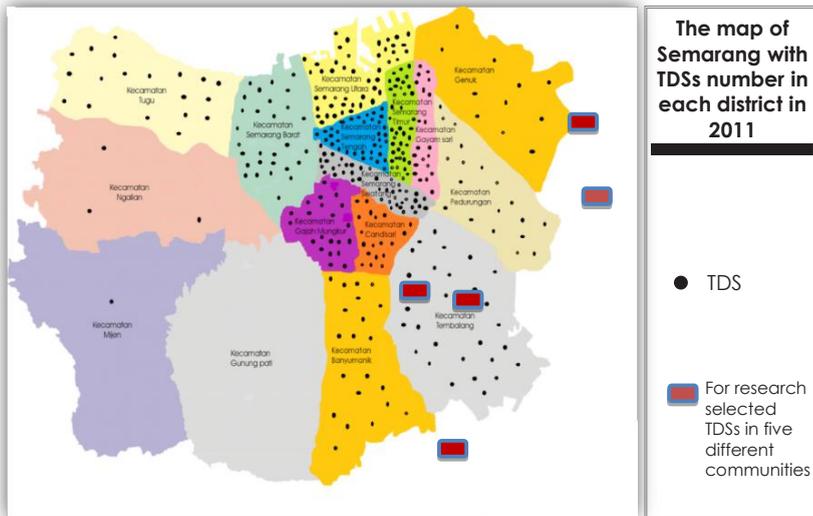


Figure 6.1 Map of TDSs distribution in Semarang in 2011

Table 6.1 Waste containers²⁵⁾ and TDS distribution²⁶⁾ by district 2011-2018

No.	DISTRICT OF SEMARANG	Waste containers distribution by district based on year				TDS distribution
		2011	2014	2015	2018	2018
1	Mijen	1	1	4	3	3
2	GunungPati	0	0	5	7	5
3	Banyumanik	21	29	34	30	25
4	Gajahmungkur	21	26	28	23	14
5	Semarang Selatan	43	41	45	44	24
6	Candisari	19	19	21	24	15
7	Tembalang	29	31	34	23	24
8	Pedurungan	19	20	23	21	16
9	Genuk	12	16	20	15	22
10	Gayamsari	21	24	24	24	22
11	Semarang Timur	39	30	30	29	16
12	Semarang Utara	46	47	47	42	19
13	Semarang Tengah	38	43	44	46	14
14	Semarang Barat	29	39	39	39	26
15	Tugu	20	14	16	11	21
16	Ngaliyan	3	13	16	9	12
	Total	337	392	448	409	278

The two maps of respectively the existing Semarang solid waste service network (figure 6.2) and the Semarang urban waste planning (2011-2031) (figure 6.3), clearly show that the municipality mainly focuses on the work and planning of TDSs in the center of Semarang city (see figure 3.1) and in districts with the highest population density. Semarang has greater disposal facilities and TDSs which are located in the most populated districts of Semarang such as in Semarang Utara, Semarang Timur, Semarang Barat, Semarang Tengah, Semarang

²⁵ Data are processed from Kota Semarang Dalam Angka 2011 and 2014.

²⁶ Statistic of facilities and infrastructure of Semarang waste management on 2018, Semarang Environment Agency,

Selatan, Pedurungan, Gajah Mungkur, Candisari, Genuk and Banyumanik. Five of them are the focus of this study.

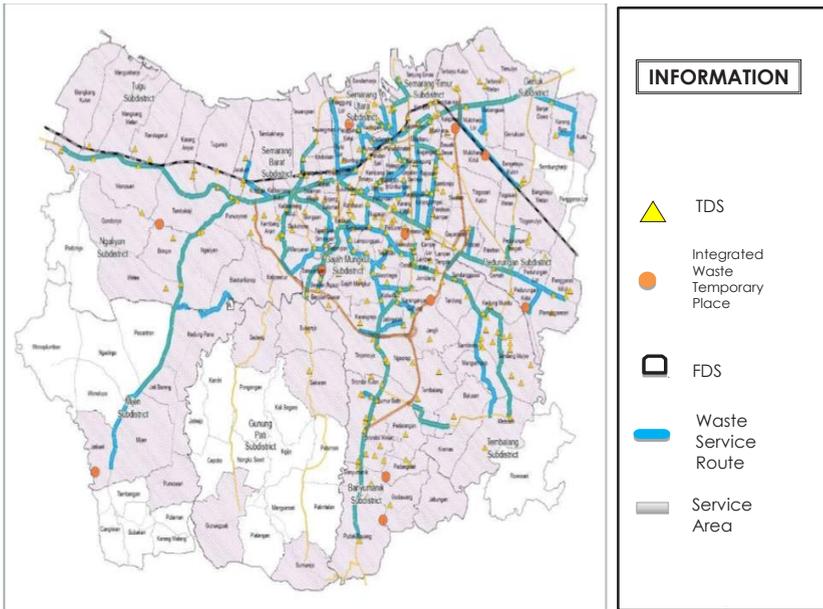


Figure 6.2 Distribution of solid waste services in Semarang, 2016

6.3 The TDSs: (re)placement, conditions and causal factors

There are five TDSs as the focus of this research. The following is a brief explanation of each selected TDS.

- The first TDS is in Jalan Gaharu Raya, which is in Kelurahan Sronдол Wetan, of Kecamatan Banyumanik. It is located in the southern part of Semarang. This planned settlement comprised various classes of households.
- The second TDS location is in Pasar Tradisional Candi, which is located in Kelurahan Candi, Kecamatan Candisari. The location is also in the southern part of Semarang. Candi is a combination of both *kampung* and planned settlements.

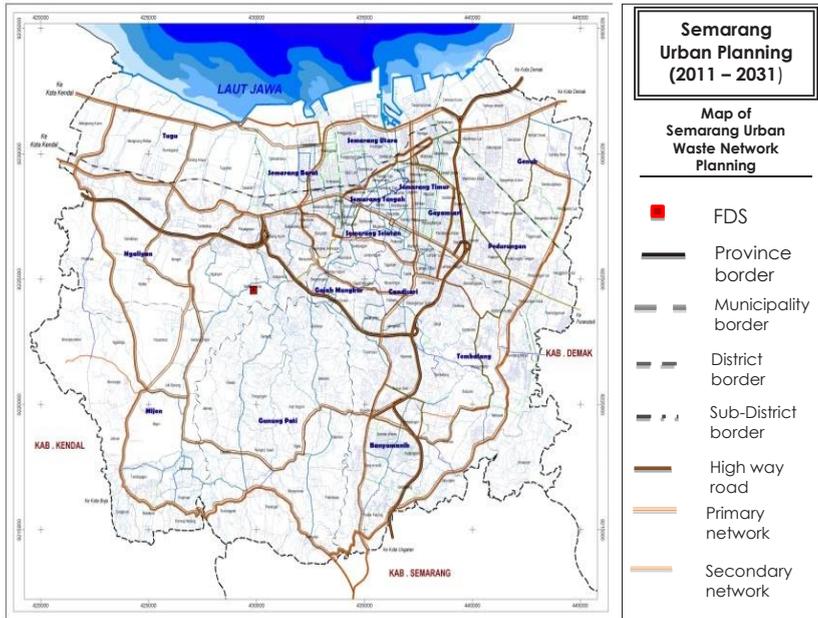


Figure 6.3 The map of Semarang urban waste network planning (2011-2031)

- The location of the third TDS is in Kelurahan Muktihardjo Kidul, Kecamatan Pedurungan, which is in the eastern part of Semarang. It has the largest population of all sub-districts in Semarang. There are two kinds of settlements in this area, *kampung* and various planned settlements, which are differentiated based on the type of house and access street.
- The fourth TDS location is in Kelurahan Gebangsari, Kecamatan Genuk Sari which is in the eastern part of Semarang. The settlement in this area is one of the oldest planned ones in Semarang together with a planned settlement in Kecamatan Banyumanik.
- The fifth is the rejected planned TDS in Kelurahan Bendan Dhuwur, Kecamatan Gajah Mungkur which is in the southern part of Semarang. Some parts of the sub-district are along the river of Kali Garang and are vulnerable to river erosion.

An extensive description concerning the geographical situation, the condition of the neighborhoods TDS and the causal factors of TDS (re)placement will be discussed in chapter 7.

As explained in chapter 2, the type of houses, the property rights, the access to the area, the average monthly income, gender, and age are indicators that describe the condition of households and communities. To obtain the whole picture of all locations, the condition of the public access, the houses, and the physical condition of the neighborhood will be described for each location. The causal factors of TDSs' placement and replacement in each location are also described to trace the factors which influence the TDSs' (re)placement. Visual photographs such as the condition of the TDSs and the condition of the neighborhood surrounding the TDSs will be added as supplements to the explanation. There are different years of data used to explain the number of inhabitants, households, the number of TDSs and the waste production due to the (un)available data in the Semarang Statistic Bureau.

6.3.1 The temporary disposal site in Jalan Gaharu Raya, *Rukun Warga 11*, Kelurahan Srandol Wetan, Kecamatan Banyumanik

The condition of the neighborhood

Compared with other settlements, this area was resided by upper-middle and lower-class households. This situation could easily be indicated by some characteristics such as the size of the property which in this area was commonly between 90–120 m², whereas in other neighborhoods the size of the property is between 170–250 m² meters. The houses, built from cheap material, were of a simple type and contained one or two small

bedrooms. Commonly, houses and settlements of this type are only bought by a middle- and lower-class group of people with a monthly income between IDR 1–3,5 million or equivalent to USD 69–241. To maximize the number of houses, the developer commonly arranges a narrow public street in this type of settlement. Meanwhile, the upper classes enjoyed wide public access streets, good public space and other comfortable facilities that cannot be found in lower and middle classes neighborhoods. The generalized and schematized map of the neighborhood is presented in figure 6.5.



Figure 6.4 TDS situation in Gaharu Raya, Spondol Wetan, Banyumanik (2005/2006)

General Condition of TDS

There were 34 disposal containers which were located in 37 TDSs in Kecamatan Banyumanik. They handled 358 m³ of solid waste before being transferred to the FDS. This number was out of the total volume of 405 m³ garbage produced daily by the 37.620 households²⁷. As already explained in chapter 4, there were

²⁷ Source: Semarang Office of Cleaning and Landscaping, Semarang Municipality in Figures. 2015

probably some other ways to treat the waste, such as collected by the garbage men²⁸, buried, composited, burned, disposed into sewers, and littered.

The selected TDS was in the most populated area of the district and located on the property of the Municipality of Semarang. Even though the size of the property was reasonably large, the TDS was located near the roadside of Jalan Gaharu Raya, which was exactly opposite the public elementary schools (No. 03). The TDS had two containers with a permanent concrete basement, and on the front side, it was walled permanently with a three meters high fence. There was no separate container for inorganic and organic garbage. All waste was mixed together.

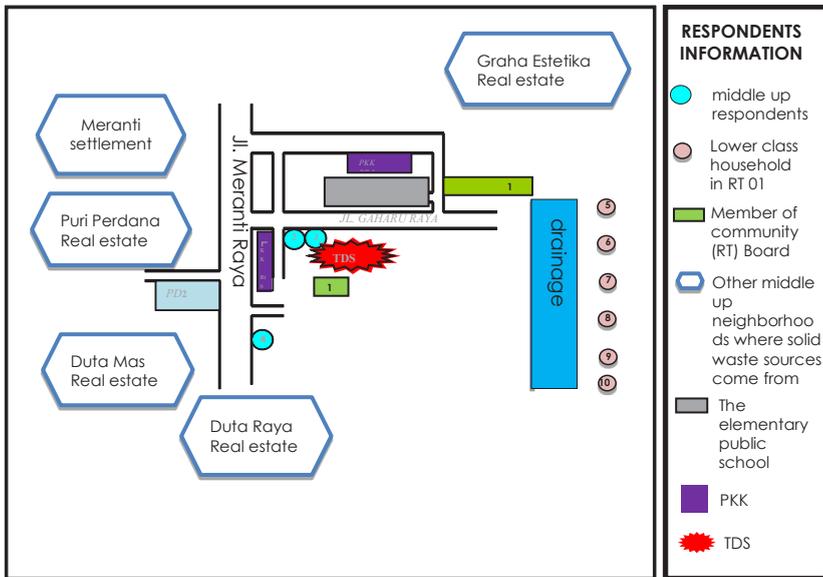


Figure 6.5 The map of the proximity of households to the existing TDS and social-economic classes of inhabitants in Jalan Gaharu Raya, *Kelurahan Srandol Wetan, Kecamatan Banyumanik*

²⁸ A garbage man differs from a scavenger. The latter looks for waste matters that he can re-use and sell, but a garbage man is someone who is hired by a community to remove solid waste from each household and transfer it to the nearest TDS in the neighborhood.

As this neighborhood was a densely populated area, there was not enough space for a TDS with sufficient distance from the residential area. The shortest distance of household to the TDS was only around 50 meters. Settlement drainage and a five-meter flood plain wall separated the TDS from the nearest households. This TDS served seven neighborhoods in the surrounding area (see Figure 6.5). At the time of the research, ten garbage rickshaw drivers transferred the solid waste daily from the settlements to the TDS. The TDS covered a large area, and the volume of waste was considerable. Due to the interval of garbage intake from TDS being more than one day, more scavengers came to this TDS.

The influential factors of TDS (re) placement and responses by the inhabitants

The first TDS was built in 1990 and intended to hold the solid waste for inhabitants in the RW 11. Over time, this TDS did not only hold the garbage from neighborhood RW 11 but became the TDS for many other neighborhoods in the sub-district. In the beginning, according to inhabitants, its size was very small because it only served a limited community. Later on, it expanded. Besides this TDS, there were also two other small TDSs in RW 11, covering two communities namely the RT 04 and RT 01.

In 1991, the residents of the RW 11 extended the TDS with their funds to accommodate the increasing amount of garbage but the extension did not solve the entire waste problem. One of the causes was due to other communities that did not have TDSs and sometimes disposed of their solid wastes to the TDS without much care. These people threw their garbage just anywhere without considering healthy sanitation. The unorganized waste has caused traffic activities on Jalan Gaharu Raya. Unfortunately,

the local government was not supportive either by only taking garbage every three or five days instead of the daily routine.

Those conditions triggered some rejection from the inhabitants. Some inhabitants closed the TDS in RW 11 unilaterally by nailing the cover of the container to avoid people throwing their solid waste there. Even some inhabitants nearby scolded persons who were caught throwing away their waste there. Several times the plan to close the TDS was discussed on the neighborhood level. Because of the continuing problems and on demand of inhabitants to replace the TDS, the Semarang Office of Cleaning and Landscaping prepared a new TDS in 1995. It was built on a permanent concrete basement and had two containers.

Practically, the new TDS substituting Gaharu Raya TDS was situated around 500 meters from the old one. At the beginning of 1995, the condition of the TDS was better compared with its initial condition, but at the time of the research (2008), the situation was again unsatisfactory. The cause was the increase of service areas which at the beginning only concerned two *Kelurahans* (Banyumanik and Padang Sari) but later dealt with four *kelurahans* (Sronдол Wetan, Padang Sari, Banyumanik and Tembalang). The increase in the service areas caused an increase in the amount of uncontrolled waste. Unfortunately, the increase in waste was not followed by more frequent waste transfer to the FDS. The waste transfer was only done once a day (around 8–10 am).

The problems of unhealthy sanitation were also due to the bad treatment of the garbage itself, which did not separate waste based organic and non-organic waste. The complexity of the TDS problem increased by a weak understanding of the scavengers when treating the remaining waste. They often burned the rest of the garbage, such as leaves, branches, and other organic domestic

wastes, which produced smoke. This smoke polluted the air and interfered with the inhabitants' and students' activities, who were in a secondary school, located directly opposite the TDS. Besides that, due to the open TDS condition, in the dry season, the wind would easily blow the light garbage anywhere. In 2003, the municipality has built three divider walls as a response to the complaint of residents and principal of the Public Elementary School. Unfortunately, in 2019-2020 the situation has not changed.

6.3.2 TDS in *Rukun Warga* (RW 10), Kelurahan Candi, Kecamatan Candisari

The neighborhood condition

Kecamatan Candisari is one of the smallest districts in Semarang. It is only 6.54 km² equivalent to 1.4% of the whole area of Semarang. Candisari also is one of the most densely populated areas with a population density of 12,059 per square kilometer in 2017. Most of this district is hilly, and the flat spaces are used for housing, offices, and profit-making activities. Only a few flat areas are left for public space services, among others for TDS placement.

The *Kelurahan* Candi is known as an elite area in Semarang. Along Sisingamangaraja street, there are many fancy restaurants, hotels, and many elite houses. Even though it is known as an elite area, there are poor areas and kampongs in the hilly part behind Pasar Tradisional Candisari. Most households in *kampung* have a monthly income of around IDR 500.000–2.500.000 per month. These low-income people are experiencing unfavorable conditions. First, their houses are in the hilly part and can only be reached by walking or biking. Second, their houses are too close

to the TDS. Third, some of them who work inside and nearby Pasar Tradisional Candisari are drivers of hired motorcycles (*ojeks*), food sellers, and buyers who are vulnerable to the negative impact of the TDS. Fourth, most of them are women and they have little influence to change the situation.

The general condition of TDS

In 2018, 24 disposal containers were distributed in 15 TDSs, with a capacity to store 259 m³ of garbage before delivering to the FDS. They served 14,774 households in 2016²⁹. Yet, there were only 225 m³ that can be brought to the FDS. The rest was treated by other means such as by burning, piling up, recycling, burying, or disposing into sewers or littering them in any place.

The characteristic of TDS in this neighborhood differs from the other four TDSs since it is located in a district market, named Pasar Tradisional Candisari. The initial intention was only to serve the market activities, but over time, it has also been used by inhabitants living in the surrounding area. This was possible because the TDS is an open container for which anyone passing by can easily dump the trash. To border the container from direct contact with the shops, the market contractor built a border wall of two meters in height. The contractor also built a permanent concrete floor for the ground, but this basement was already damaged at the time of the research. From personal observation, it was clear that the permanent concrete floor was damaged, so it could not prevent the leaking wastewater. As a result, the TDS was dirty (see Figure 6.6), and the open dumping situation for mixed waste caused an unpleasant odor.

²⁹ Department of Population and Family Planning Control of Semarang Municipality in Semarang Municipality in Figures 2016



Figure 6.6 The condition of Candisari TDS, 2005/2006

According to the residents, the negative side effects of the disposal site have already become a daily phenomenon. Their acceptance of the current situation is a sign of their lack of power in the decision-making process to possibly reject the placement. On the other hand, it should be admitted that their acceptance is a form of adaptation. Since this area is densely populated, it is quite difficult to find space to put a TDS in a more suitable place. That is one of the reasons why the residents are very permissive to accept the burdens of TDS rather than reject its location. There is no other option than to accept.

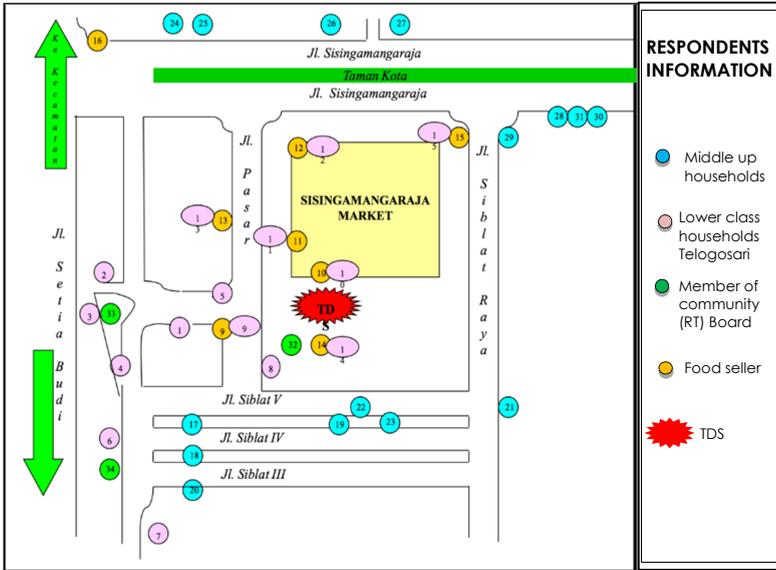


Figure 6. 7 Proximity of the TDS to the Pasar Candisari, *Kelurahan* Candisari and inhabitants according to their social-economic mapping

The map above shows the proximity of the TDS to the households. Some different colors indicate the social classes of households and inhabitants who live and work nearby the TDS. From the social status information of each household, we can detect which kinds of households are near to the TDS. This information is essential to analyze which group of residents will the most receive the negative impact of TDS.

The statement of Wgm (45 years)³⁰ describes the permissive feeling of the TDS:

“I realize it is quite difficult to find free space in our neighborhood. We live in the hilly part of Semarang City, and it is very populated. The access to some of the communities in this neighborhood is quite small, only enough for walking and biking. The only place which has relatively open space than others is Pasar Tradisional

³⁰ Wgmn (man, 45 years) is the inhabitants who lives close to the TDS.

Candisari where I live nearby and, in some communities, where the upper-class households live such as in Siblat Raya and along Jalan Sisingamangaraja. This neighborhood ever had TDS in Siblat Raya, but it was burnt, and the only available space for a TDS is at the back part of Pasar Candisari at Jalan Siblat Raya, but it was burnt down. I live quite close to that TDS. What I could say, if there is no TDS, garbage will be anywhere. It will make the neighborhood dirty because garbage is thrown everywhere.

The influential factors of TDS (re)placement and responses by the inhabitants

Several years ago, there was a container burning incident in 2004, located at Jalan Siblat Raya³¹. The incident was proof of poor people's dissatisfaction with the TDS and the unprofessional treatment of solid waste. The rejection action was done by inhabitants who lived and worked closely with the TDS. The triggering factor was the irregular transfer of waste by the Semarang Office of Cleaning and Landscaping. For almost five days, the pile of waste was not taken from the TDS, and it produced a strong unpleasant odor. The inhabitants complained to the market authority, but no proper action was taken to overcome the pile of garbage. Out of protest, they were burning the waste container. Their action was answered by the Semarang Office of Cleaning and Landscaping. After the incident, the frequency of waste intake and transfer to FDS Jatibarang improved. However, even though the neighborhood (RW 10) inhabitants have also moved the night patrol post, which was located right in front of the TDS, at about 100 meters distance, the persons who did the night patrol felt uncomfortable with the

³¹ It was difficult to gather information about the incident, because people who were interviewed did not want to be blamed as participants of the resistance action.

still experienced unpleasant odor. For this reason, the TDS patrol post has been moved again. The building is now used as a storage place for the neighborhood inventory. These events, indeed, are evidence that there are many forms of objections to a TDS placement.

The existing TDS was built around 1980 simultaneously with the establishment of a district market that stands on publicly owned land. The decision to place the TDS in the backyard of the market was taken by the local government, aiming to find a place to store the market waste before being transferred to the FDS. However, the decision was done without consultation and the involvement of the inhabitants. Considering the distance between this TDS to the closest household is only between 5 to 10 meters, inhabitants were clearly not the primary consideration for its establishment.

The density of population was an important reason to place the TDS at the back side of the market. As earlier said earlier, the population density did not leave enough space to build the TDS replacement further away from the settlement. The TDS replacement, which was positioned on the edge of the main road of Jalan Sisingamangaraja (see Figure 6.7) was also not possible because there was direct and indirect rejection from the residents of the luxury buildings. Commonly, TDS locations in Semarang are located on the edge of the main streets since this condition will facilitate the dump truck to take garbage easily away from the TDS. However, in this community, the TDS was located 50 meters away from the main street since a location along the Jalan Sisingamangaraja and its side streets gave negative side effects to the affluent households. Besides the TDS rejection from the affluent and middle-class groups for environmental reasons, the aesthetic aspect is also a reason to propose a different TDS

location. The nearness of a TDS is considered to reduce the image of an elite settlement.

6.3.3 TDS in Kelurahan Muktiharjo Kidul, Kecamatan Pedurungan

The condition of the neighborhood

Neighborhoods where the waste in this TDS often came from (Telogosari Kulon, Grahamukti and Muktihardjo's) are middle-upper-class settlements (see Figure 6.8). The neighborhoods consisted of several types of houses ranging from big to medium and small size, where the property size ranged from 90 to 160 m². These differences in house and land size are indications of the owner's social status.

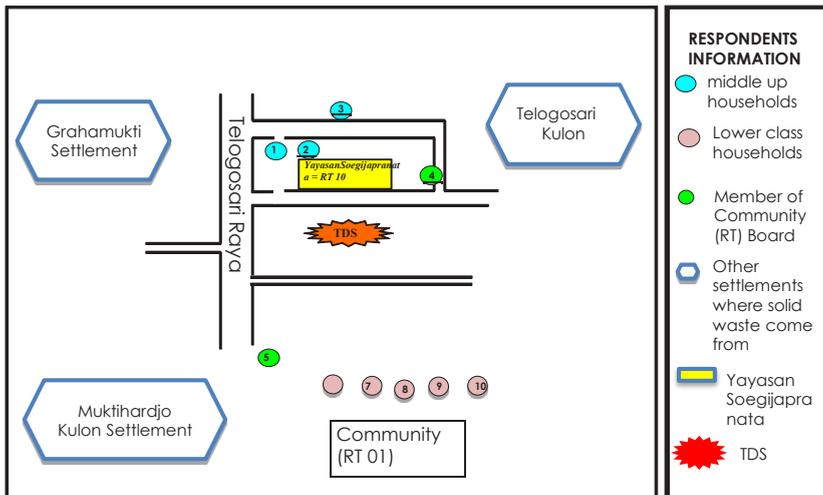


Figure 6.8 The information about the proximity of the TDS with the social-economic conditions of the inhabitants in RW 8, Kelurahan Muktiharjo Kidul, Kecamatan Pedurungan

However, in the surrounding neighborhoods, the residents were less prosperous. They were regular or day workers, washerwomen, and the like. Their income commonly ranged

from IDR 300.000–500.000 per month, which at the time of the research was equivalent to USD 20–35. Their levels of education, generally, were elementary or junior high school. Only some had finished their senior high school education.

Many houses were permanent buildings, others were semi-permanent houses, and several houses still had soil floors. Part of the population was living together with their parents, and some households even consisted of two or more families living together in one house. The average size of property rights was between 40–100 m². Out of 31 respondents, 67.5% owned the houses, while 17.5% rented their houses from private landowners, and the rest, 15% occupied the land of a catholic foundation, namely Yayasan Soegijapranata³². This foundation had given permission for the inhabitants to live on the land, but they were forbidden to build permanent houses. Since they have no property rights in the neighborhood, they are excluded from public decision making.

The general condition of TDS

In Kecamatan Pedurungan, *Kelurahan* Muktiharjo Kidul is the second most populated consisting of 32,595 inhabitants and 7,417 households in 2017³³. There were only 21 disposal containers that were distributed in 16 TDSs in the whole district for the temporary storage of 564 m³ garbage in 2014-2015. The TDS in Muktiharjo Kidul is one of them. The location of this TDS is at the corner of the *Kelurahan*, on the border with the RT 05 and the RT 06 neighborhoods. Most of the inhabitants of these RTs did not bring their domestic waste to this TDS, but they did receive the negative impact, due to burning or burying their waste in their yard. At the time of the research, some parts of the access road to the location were not yet asphalted, and

³² See the yellow rectangle in the map 6.8

³³ Semarang Statistics Bureau, 2017: Profile of Semarang Population 2017, p. 23

as a consequence, the road was very muddy in the rainy season. The container truck sometimes faced problems with taking the garbage.³⁴

The TDS was 18 m² large and bordered by three sides with concrete walls (see Figure 6.9). Its base consisted of soil. It had no container as in other TDSs. The dump truck usually takes the garbage from around 12.00 to 13.00 every day. There were ten rickshaws available as the temporary containers for the waste before being taken by a dump truck to FDS.



Figure 6.9 The condition of TDS in Muktihardjo Kidul, 2005/2006

The influential factors of TDS (re)placement and responses by the inhabitants

Since the chief of the neighborhood managed the land, initially the placement of the TDS did not receive any complaints. In the beginning, the TDS was built without any wall divider, but in

³⁴ On the last visit on February 2019, the entrance streets to this neighborhood were asphalted.

2004, Semarang Municipality built the three sides as a response to the demand of two RT 01 and RT 10 in RW 8. According to the Chiefs of RT 01 and RT 10³⁵, this demand was a form of inhabitants' objection to the TDS from the beginning of its planning and placement. The local government or the chief of *kelurahan* negated the objection after having a discussion in a limited circle of stakeholders³⁶.

According to S, (a 40-year-old man)³⁷:

In the beginning, the representatives of the *kelurahan* promised that the TDS was temporary until they found a suitable place for a permanent TDS. [This is why] the RT and RW representations received by the local government [and understood that the government] should fulfill the placement of TDS with some specific requirements.

According to the information of some inhabitants³⁸, the placement of the TDS was done by the involvement of some of them, RT 01 and RT 10 represent RW 08; and RT 05 and RT 06 represent RW 07. They informed that the output of the meeting was the decision that inhabitants agreed with the placement of the TDS in their neighborhood under an agreement which obliged the local government (the Chief of *Kelurahan Muktiharjo Kidul*);

1. to build the border walls which separates the TDS from their community
2. to build an absorbing wastewater system

³⁵ MR (man, a 45 year old man) and SBIS (a 40 year old man).

³⁶ The meeting were attended by the Chiefs of the nearest communities, RT 01 and RT 10, the Chief of RW 8, Lurah as a Chief of *Kelurahan*, a representative of the Cleaning Service Department and a representative of CV Andhika, the private company which was paid by the Local Government to take the waste from the TDS and remove it to the FDS at Jatibarang.

³⁷ S, man, is a 45 year old resident and inhabitant of RT 01

³⁸ The information was received from most of the inhabitants who attended the focus group discussion in RT 01, on Friday, 3rd October 2008.

3. to give IDR 20.000 every month to RT 05 and RT 06 as funding for neighborhood activities³⁹.

However, based on the statement of two community functionaries of RT 01 and RT 10⁴⁰ who attended the meeting, the agreement to build an absorbing waste water system is not realized yet. The compensation money was always paid late.

Even though some inhabitants were involved in that meeting, based on their statements, the dominant actors in the meeting were the representatives of *Kelurahan* Muktiharjo Kidul and the Semarang Local Government. These inhabitants also stated that among the factors that influenced the domination of the local government was that the idea of the TDS placement came from the local government and that the site of the TDS was on public property.

Most of the inhabitants⁴¹ stated that at the beginning of the TDS operation, there was not much nuisance, but six years after the placement in 2014, some negative effects emerged. Even in the last field visit in 2020, the situation was quite the same. The irregularity of waste transfer causes an unpleasant odor to stay for a long time. Moreover, the waste truck takes the waste up as early as in the afternoon. They also said that the open dump condition made the light garbage easy to be blown away by the wind into the households' yards. The access road to their community is getting worse because every day, dump trucks pass by. Up till now the Semarang Local Government has not realized the absorbing water system of the TDS. The condition of the basement is still soil grounded. The following statement from one of the

³⁹ According to the functionaries of the communities, although the payment is paid but is always late. They often accumulate the payment every 6 months.

⁴⁰ Muh R. (man, 44 years) and BIS (man, 47 years) are the Chief of RT 10 and RT 01, RW 08, *Kelurahan* Muktihardjo Kidul.

⁴¹ The information was received from most of the inhabitants who attended the focus group discussion in RT 01, on Friday, 3rd October 2008.

inhabitants' expresses the disappointment with the TDS. The inhabitant⁴² (a 40-year-old man) says:

At the beginning of TDS placement, the negative impact of the TDS was not as bad as what we experience now. In the rainy season, waste produces an unpleasant odor, especially when waste is not transferred for more than one day. The activity of the dump truck causes the street to be muddy. In the dry season, we face another problem, when the wind flies the light garbage to our yard, so we have to clean it and bring it back to the TDS”.

6.3.4 TDS in Kelurahan Gebangsari, Kecamatan Genuk

The condition of the neighborhood

Kelurahan Gebangsari is a part of Kecamatan Genuk which is in the eastern part of Semarang. Besides designing Gebangsari for a settlement, this area was designated as an industrial area. There are four industrial zones, Industrial Zona LIK Bugangan Baru, Industrial Zona Terboyo, Industrial Zona Terboyo Megah, and Industrial Zona along Jalan Kaligawe. This district has 25.82 km² equivalent to 7% of 373.7 km² that Semarang has.

There are two residential areas here. The first is built by a developer and called Genuk Indah Real Estate. It is one of the oldest planned settlements in Semarang. It was built in 1990, therefore most of the inhabitants are retired persons who are living there for up to 30 years. The settlement consists of three types of social classes, the poor-, middle- and upper-class households. Most of the households have property rights.

This first one is occupied by a better-off social group of households, while the second residential area is a *kampung*

⁴² Eksa (a 40 year old man) is the inhabitant of RT 01.

inhabited by a community composed of a variety of social classes, but most are lower to middle-class people. People in the *kampong* live nearby the existing TDS and the size of their houses is small. The houses are between 10–40 m² and very small compared to the houses inside the estate. The streets in front of their houses are not asphalted and are usually very muddy in the rainy season. Some inhabitants had opened small food stalls and a food store to serve the need of the industrial workers around the area. In this way, the inhabitants are benefitting from the workers. The different kinds of classes between two of those settlements influence the placement of the TDS which will be explained further on.

The general condition of TDS

Kecamatan Genuk has 13 *kelurahan*, with a population of 110,556 and 30,545 households in 2017. Gebangsari has a population of 6,745 and 2,083 households. The total production of garbage in this area in 2015 was 194 m³. From that number, 145 m³ could be transferred to the FDS. Compared to the population, the size of the district and the production of garbage, the number of 22 TDS in 2018 was not sufficient.

The variation of the existing settlements and the allotment of land for industrial purposes indicate that there are two kinds of solid waste types, industrial and domestic wastes. Generally, the residue of industrial activities is inorganic solid waste. It is different from domestic waste which consists of both inorganic and organic waste. Considering the two kinds of sources, *Kelurahan* Gebangsari has to have two different sites for the TDSs. In the area where households and industrial buildings are bordering, there is a TDS that serves both wastes from the industrial and residential areas. Those two kinds of waste are

treated together without any separation method in the TDS and also at the Jatibarang FDS.

The TDS under study consisted of only two containers without clear boundaries such as concrete walls or other facilities. Even though the location is in front of two companies, it does not mean that the location is far away from the residential area. In fact, only about 50 to 100 meters from the TDS, there are many houses. Besides the lower-income industrial workers from the factories' surroundings, the nearest households are from the middle and poor groups. As they explain the unpleasant odor and flies are the main annoyance of the TDS. Besides the inhabitants, the workers become the susceptible party to TDS negative effects because their places of work are around 50–100 meters from the TDS.

The influential factors of TDS (re)placement and responses by the inhabitants

Previously in the year 1993-1994, this RW 2 (see Figure 6.10) had a TDS which was located at the corner of Kapas Raya Street, which is side by side with the Kaligawe sewage system and located 50 meters from a district mosque. The location on the roadside was meant to facilitate the dump truck taking and removing garbage. The facility of the TDS consisted of three containers with concrete walls as the boundary. Compared to the previous TDS, the now existing TDS is very simple, only having one container, and having no wall boundary and concrete basement.

Since the board of the mosque (*Majelis Takmir*) protested against the annoying impact of TDS, it was replaced by a new one. This TDS placement has been agreed upon by the inhabitants. According to the respondents, there were two primary considerations to choose the place of this TDS. Firstly,

the place was quite far away from the residential area and, secondly, the place was on uncultivated land. In the beginning, the distance of the old TDS to the mosque was not an issue until people realized that the unpleasant odor was very disturbing when they were praying.

The community surrounding the mosque consisted of middle- and upper-class households (see Figure 6.10), as shown by the type of houses, which are big and expensive (see figure 6.11). The width of the main road in front of the houses is between 10–15 meters and they are paved. The size of the properties is between 150–200 m². This indicates that this area is not a poor RT.

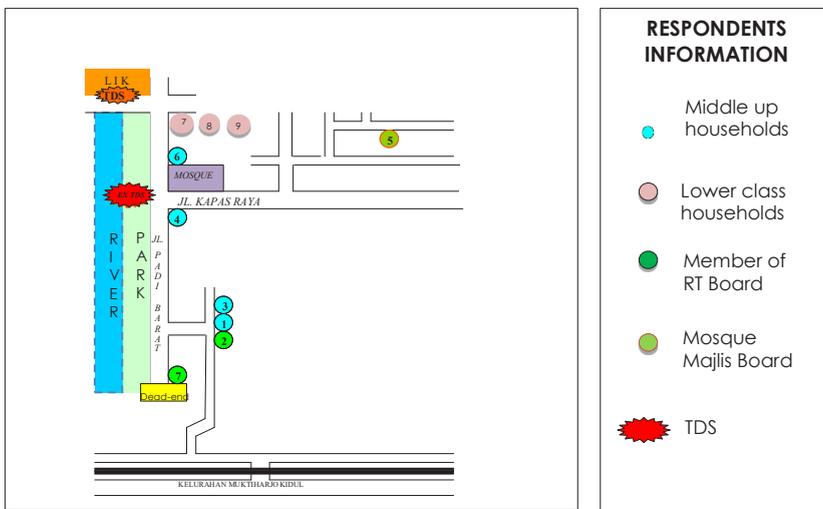


Figure 6.10 Proximity of the TDS and socio-economic status of the inhabitants in *Kelurahan* Gebangsari, Kecamatan Genuk



Figure 6.11 Neighborhood surrounding the previous TDS in *Kelurahan* Gebangsari, Kecamatan Genuk

The rejection of the mosque community became an essential factor in shifting the TDS to another place. Several alternative locations were proposed. The Chief of the *Kelurahan* suggested a place at the corner of the Jalan Padi Raya, which was quite far from the residential area and could facilitate the dump truck to access the TDS. Unfortunately, the inhabitants did not accept this suggestion for aesthetic reasons. According to them, that proposed position was precisely at the entrance of their RW and would give it a dirty impression. Another place was proposed at the border of *Kelurahan* Muktiharjo Lor. Inhabitants proposed that *Kelurahan* Gebangsari could arrange a managed partnership of the TDS with this *kelurahan*, but this suggestion failed to be implemented. In 2003, before the current location, residents built a replacement TDS near the district graveyard to minimize some adverse effects. They also planted plants to minimize the odor and flies. This TDS was only in operation until 2013.

Residents proposed to minimize the adverse effects of the TDS and agreed to put only inorganic waste in the TDS and place the organic waste on uncultivated land beside an elementary public school opposite the *kelurahan* office. Another reason for this separation was the intention to composite the waste. However, the proximity to the residential area made it challenging to be realized. The compositing plan was unsuccessful, yet this place became the new unplanned TDS for the inhabitants

in the surrounding area. Organic waste, for example, leaves, and branches, was often disposed of by burning. In 2013 the TDS was moved to a roadside of a public street in between the industrial areas. The third TDS is still on this site nowadays.

6.3.5 TDS in Kelurahan Bendan Dhuwur, Kecamatan Gajahmungkur

The neighborhood condition neighborhood of the former and the planned TDS

The *Kelurahan* Bendan Dhuwur was selected as a suitable research area since there have been objections against the TDS both when it was planned and after the placement.

Most of the inhabitants in this area are from the poor class. The average level of the household's income was not more than IDR 1 million per month (equivalent to USD 71). Many had even only a monthly income, in between IDR 400.000–600.000 (equivalent to USD 28–43). Commonly, they had responsibility for 4–5 persons per household. So, for them, the garbage cleaning cost, including the waste transfer cost from the house to the TDS, which range in between IDR 10.000–20.000 per month (equivalent to USD 0.7–1.4), is substantial and could go at the cost of the provision of their primary daily needs. For them, buying food was a higher priority than paying a cleaning area cost. So, most of the residents in this area reacted to the placement of TDS.

The surrounding area of the TDS also became the public transportation terminal, which provides services for the Rejomulyo–Sampang traffic lane. To support the needs of the drivers, in this location, small food stalls and small auto repair shops were found. Other inhabitants of the surrounding area

worked in informal sectors, as day-workers, building coolies, stone breakers, and free workers.

The general condition of the former and the planned TDS

In 2017⁴³, there were 15,098 households with a population of 69,510 in Kecamatan Gajahmungkur. The production of solid waste was 205 m³ per day, of which 87% or 178 m³ was placed in 23 containers, which were distributed over 14 TDSs, and later transferred to the FDS. Since the area was densely populated and the decision to select the location of a TDS should consider the proximity of a public street to facilitate the dump truck to take the garbage, most of the locations of TDSs in this district were very near to households. Figure 6.11 shows a map with the location of the previous objected TDS, the proximity of respondents to the former TDS and the social class of each household. From the map, we can identify the distance of each household to the TDS. As can be seen in the figure, the left part of the area is used for an illegal TDS, which is 5 –100 meters away from the nearest household area. The farthest household is 500 meters away. This was the house of the community chief. Since the TDS was an open dumping site, it produced an unpleasant odor, flies, and an unfavorable view of the waste pile.

The causal factors of TDS re-(placement) responses by the inhabitants

In the year 2000, the Chief of RW 4, *Kelurahan Sampangan*⁴⁴ proposed the placement of a container in this neighborhood to be a TDS. The residents agreed that the TDS would be placed at the corner of Jalan Tugu Suharto (see Figure 6.12). For almost

⁴³ Semarang Statistics Bureau, 2017: Profile of Semarang Population 2017, p. 23

⁴⁴ BS, 40 year old, the Chief of RW 4, interview was done on Sunday 27th July 2008, 18.30–19.00 p.m.

one year the TDS functioned well. However, during the second year, an accumulation of problems occurred. The problems were caused by improper waste treatment since the waste was not taken every day. So the container was often full. People littered waste carelessly in the surroundings of the TDS. This situation triggered the anger of several inhabitants, and they forced a dump truck driver to take the container away, out of the neighborhood. After that incident, the container was never brought back to this exact location (it was put in *Kelurahan* Bendan Dhuwur nearby the Tujuh Belas Agustus University).

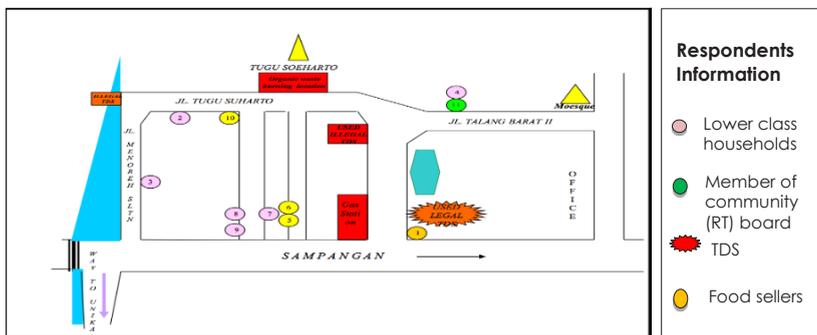


Figure 6.12 Households' proximity to the previous TDS and social economic status of inhabitants in RW 4 neighborhood, *Kelurahan* Bendan Dhuwur, Kecamatan Gajahmungkur.

According to the Chief of RW4⁴⁵, one of the inhabitants who threatened the truck driver was a religious figure from the neighborhood. Even though according to him, inhabitants expelled this person from their neighborhood because of his fundamentalist background, we cannot close our eyes that the rejection was a form of disapproval of the TDS in this neighborhood.

For a couple of years, the lack of a TDS formed a problem for the neighborhood. The distance to the new location of the

⁴⁵ BS, 40 year old, the Chief of RW 4, the interview was done on Sunday 27th July 2008, 18.30–19.00 p.m.

in *Kelurahan* Bendan Dhuwur is quite far, approximately 2 km. In 2002, based on the formal agreement of seventy families, the container was placed again in the same street but located around 100 meters from the first and original location.

For almost two years, the second TDS functioned. Unfortunately, a similar incident happened again. When the dump truck driver would take the container, the people⁴⁶ threatened him. According to the Chief of RW4⁴⁷, “People did it for reasons to remove the container from that place”. He did not take the container at that time but at midnight and never came back. Since that night, this neighborhood had no TDS up till now. Several times, the request for a new TDS from the chief of the neighborhood was rejected by the Semarang Cleanliness Department with the argument that all residents of the neighborhood should approve a new permanent location of the TDS to avoid a third rejection. The problem is that since this neighborhood is very densely populated, it does not have any uncultivated land to locate a TDS and up till now,⁴⁸ the local government is still looking for the appropriate place for a TDS.

As a consequence of the absence of a TDS in this Bendan Dhuwur neighborhood, the inhabitants treated their domestic waste in several ways. Since the area bordered the Kali Garang River, some threw their solid waste directly away into the river. This was a common practice before the TDS was built⁴⁹. Inhabitants consider this as the easiest way to get rid of their garbage while saving money since they do not have to pay for the urban waste service. Besides the distance factor, and the lack of consciousness to protect the environment, the cost to transfer

⁴⁶ From BS's information, they were the drivers of small public transportation and the owner of small food stalls who live near by the TDS.

⁴⁷ BS, *40 year olds*, the Chief of RW 4, *interview* was done on Sunday 27th July 2008, 18.30–19.00 p.m.

⁴⁸ January 2019.

⁴⁹ Even though the frequency of garbage disposal to the river decreased after the TDS was built, in some places, even now this habit still exists.

and remove the waste and garbage from the house to the TDS was also an important reason why people preferred to litter the garbage instead of treating it in a more environmentally friendly way. Commonly, people who live near the river are poor and their houses, or rather shelters, often measure only 10-20 m². We found only two families with a property of more than 100 m² each.

An unregistered TDS

The map below (Figure 6.13) presents an overview of the neighborhood with a newly proposed TDS location in RT 1, RW 2. The residents rejected the proposal for protection reasons. The TDS was planned to be built on the side of the river. For years, inhabitants had thrown their solid waste in and along the river. They argued that the compactness of the waste prevents erosion caused by the flow of the river, particularly during the wet season.

So far, the processes that occurred in five formal TDSs in five neighborhoods were explained. This sixth one concerns the unregistered TDS in RT 2, RW 1, and *Kelurahan* Bendan Dhuwur. The local inhabitants' initiative led to the placement of an informal TDS in this area. The consideration of the neighborhood to place the TDS along the Kali Garang River is to set the unstable condition of the land.

The neighborhood is located on the edge of the Kali Garang River. The river has experienced years of erosion. Inhabitants believe that throwing their solid waste along the Kali Garang River will prevent erosion. They claim that since they began throwing their waste in this site, they experienced that the erosion from the river has decelerated. According to them, the pile of solid waste could prevent erosion. They do not realize that to manage erosion, they need a more technical method.

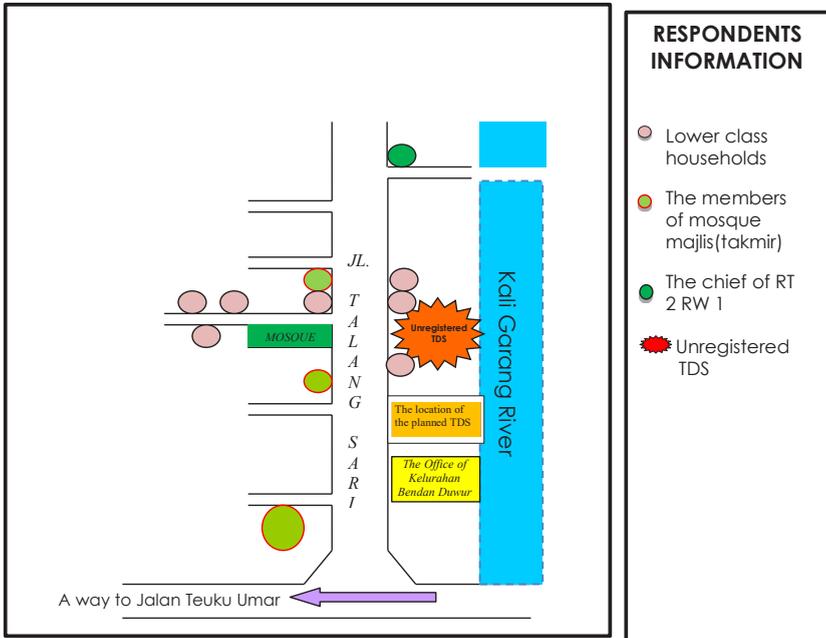


Figure 6. 13 Households’ proximity to the planned TDS and the socio-economic status of inhabitants in RW 1, Kelurahan Bendan Dhuwur, Kecamatan Gajah Mungkur

All respondents explained the same reason for the justification of their actions. Although practically, this consciousness disregards the interest of the households who live nearby to be free from the negative impact, they consider preventing erosion is the crucial thing to do rather than preventing the adverse impact of pollution. One of the explanations is given by The Chief⁵⁰ of *Ummah Takmir Al-Fajar* Mosque, who says:

The inhabitants have the initiative to place the unregistered disposal site in that location with the consideration that garbage can prevent the sinking of land and erosion. The households nearby the location have to receive the impact, for instance, the unpleasant odor. They have to accept this condition; otherwise, we will bear the other massive effect, whereby, the erosion can sink our neighborhood.

⁵⁰ Jm, man, 56 year old, The Chief of *Ummah Takmir Al-Fajar* Mosque in Kelurahan Bendan Dhuwur.

A similar statement was explained by the Chief of RT 2 in RW 1⁵¹ who lives only 20 meters from the disposal site.

He says:

The waste can prevent damage to the kampong streets and the bridge that connects our neighborhood to the main street. I am not annoyed by the waste, but I gain the benefit because the kampong street is precisely in front of my house. The inhabitants have to pay by themselves for the street and bridge construction. The waste pile can prevent erosion, and we do not have to pay for the reconstruction fund.

They said up till now; there is no significant action from the local government to limit the erosion from the river. Even though they had already done several things for years; for instance, even though they laid permanent cement to eliminate the erosion, and they piled up the soil to make the location stable, the erosion still happened. Everything sinks and disappears in a short time. They believe that the disposal site is the only way to prevent massive erosion.

6.4 Conclusion

This chapter started with a discussion on each selected TDS and its area, presenting aspects such as the number of the population and households, the size of solid waste production and the proximity of households to the TDS. After that, the TDS locations and the factors that led to their TDS (re)placements are described.

This chapter finds that most TDSs were in densely populated areas. That is why they were located near households, at distances between 5 and 20 meters, although the regulation requires that 30 meters should be the minimum distance. All

⁵¹ Ag, man, 40 year old, The Chief of RT 2 RW 1, *Kelurahan* Bendan Dhuwur.

five TDSs were in open dumping conditions and only had three-sided divided walls. Of four existing TDS locations, only three had a proper concrete basement and containers. The number of containers varied between one or two, depending on the estimated amount of solid waste production. The TDS in Genuk, which had only one container, even had no wall divider and concrete basement. One TDS (in Muktihardjo Kidul) had no container, and some discarded rickshaws functioned as a kind of container before the waste was transferred by a dump truck to the FDS. Even though solid waste was put in a container, the container was not covered and was left in an open condition.

The Semarang Local Government built five TDSs which were located on land owned by the government, and only one was on the roadside. The building of a TDS near the roadside was to facilitate the dump truck to take the garbage out of the FDS. All residents living around a TDS were poor compared with other residents in the same neighborhood. In principle, a TDS was intended to facilitate a limited number of households, but in practice, the TDSs in the four research locations also served other communities of which the most were middle-upper class residents.

Besides being located in a poor community, five TDS placements described three different groups that received more negative impact than others.

1. Children from the public elementary school experienced a more negative impact from the Jalan Gaharu Raya TDS.
2. Inhabitants with no property rights received more negative impact, in comparison to the other inhabitants in Muktihardjo Kidul. These poor residents had no courage to object to the TDS placement because they felt they had no rights to be heard due to their non-permanent residency.

3. Women who are the sellers in Pasar Tradisional Candisari were the group who received the most negative impacts.

Another complaint and reason to reject the TDS were because of negative environmental health reasons such as experiencing the odor, disturbing views, and flies. The aesthetic reason was also common to object to the TDS placement. In all places, commonly parties who objected to TDS placements were influencing inhabitants of the community, such as the member of *majelis takmir* of the mosque, and the member of the community board. This group was commonly the representative of inhabitants to propose the improvement of TDSs in Semarang Municipality. Specifically, the member of school board has also used the negative impact experience of the TDS to request funding for school activities and other compensation.

Chapter 7

Causes and Consequences of Geographical Environmental (in) Justice in Semarang Residential Solid Waste Management

7.1 Introduction

Using Semarang as a case study, this chapter examines how the location of a temporary disposal site (TDS) reflects the policies and power relations between the local government, poor urban communities, and the better-off ones. Two opposing tendencies result in the forms of policies and power experienced by society. People use strategies such as “locally unwanted land use” (LULU) objections and other resisting actions to pressure the local government to place the TDSs outside their communities. The better-off ones or the rich and influential people sometimes use their positions to influence public policies. They protest against the placement of a TDS in their community and propose other locations that are far away from their living places.

This strategy, however, can trigger other communities to reject a TDS, especially when they live near that TDS. Usually, the communities that protest are the poorer, less educated ones since their access to the decision-making bodies is weak. They lack financial resources and are usually not well informed about local government decisions.

The rejection of a TDS can originate from individuals or groups of communities. It may occur either during the planning process or after a TDS is in operation. In the latter case, the rejection is not directly done because people may only decide to oppose the TDS placement after they have experienced some negative impacts. Their rejection demonstrates a geographical consciousness in dealing with waste treatment. The Lulus' objection to a TDS usually creates a "not (putting a TDS) in my backyard" (NIMBY) response. The response is usually influenced by a difference in power relations that leads to an uneven distribution of TDSs in Semarang, thus creating geographical, and environmental injustice. To minimize the rejection and to ensure acceptance from a community, a government standard of geographical justice should be considered to achieve a fairer policy for the disposal placement.

There are sometimes positive sides to this matter. The acceptance of a TDS by communities could be an option to present the communities' concerns to settlement waste treatment. To minimize some negative impacts of a TDS, communities in *Kelurahan* Srandol Wetan, for instance, took several actions such as planting trees around the TDS and working together to clean it. In this way, they will not only protect themselves but also improve the environment. Although poor communities are forced to receive the placement of a TDS, they can use those positive actions as a strategy to bargain the fulfillment of some public facilities such as road and TDS improvement in their

areas. This study proves that this strategy happened in *Kelurahan Muktihardjo Kidul*.

This chapter aims to present a comprehensive analysis of the geographical environmental (in)justice (GEJ) in the residential solid waste treatment (RSWM) system in Semarang. The analysis was carried out by way of three interrelated groups of discussions. Firstly, this chapter starts with an explanation of the causes of locating a TDS from the perspective of social power and policy (see section 7.2.). Secondly, there follows a discussion on the consequences of GEJ; and thirdly, there is also a discussion on the spatial distribution of benefits and risks of TDSs (see section 7.3.).

7.2 Causal factors of temporary disposal site placement

There are two groups of causal factors which influence a TDS placement, namely the policy and power-related aspects. The policy aspect comprises the regulation and a fair TDS placement process. GEJ can be explained by the difference in TDS placement policy implementation in the same jurisdictions of Semarang. The power-related aspects of TDS placement in this study are wealth, social class, income, property, and gender. The following sections will discuss the two groups of causal matters.

7.2.1 Policy aspects in geographical environmental (in) justice

The responsibility for waste treatment is stated explicitly in article number 1 (f) of the Semarang Local Act No. 6/2012. This article states that society is responsible for waste treatment, but it does not sufficiently explain the specific persons, groups, or institutions that should do the job. This regulation is not clear enough on which party can be punished for a violation.

The article only stipulates that the placement and the legality of a TDS is the authority of the Semarang Local Government. Even though residents can choose the place of a TDS by themselves, it cannot become a legal TDS as long as the local government does not acknowledge it as a TDS. The acknowledgment requires the local government to provide facilities to support TDSs by placing containers and by building a concrete base to avoid the leachate polluting the soil. This acknowledgment is also the main requirement for the cleanliness department of the local government, to frequently transfer solid waste from a TDS to a final disposal site (FDS).

As part of public service, the regulation of a TDS is public policy. Like a public policy, it should aim to establish a balanced order to benefit all citizens. The word 'public' indicates this aim. Although public policy is the authority of the government, it should reflect the inhabitants' needs and interests. Therefore, in its formation and decision process, the government should consider all residents' input. Unfortunately, there are many cases where during the decision-making processes of TDS placements the voices and interests of marginalized or poor people are disregarded.

Actually, in a TDS placement process meeting, the chiefs of the neighborhoods, religious figures, and community leaders should represent the inhabitants' needs. Due to their positions, they are considered representatives of the neighborhood. This condition occurs because Indonesia applies the representation method in its legislation and government policy as already stated in the Preamble of the Indonesia Constitution 1945. In this way, the voices of influential people - commonly indicated as political and economic elites - are considered to be the voice of all by the municipal bureaucracy. They are considered to represent others which in a democratic system with regular

elections is logical to do. However, in a specific location with a limited number of people and households, a decision to place a TDS should involve all affected people, and thus do not need the chiefs as an intermediary for the meeting, although it is true that at many spatial levels, democracy implies a representative under the condition that their citizens are too many for direct democracy. Moreover, there is no possibility to inquire about the people's opinion due to a specific public problem except for holding referendums that are foreseen under conditions in the constitution. When the number of inhabitants is limited, such as is the case in many Indonesian neighborhoods, however, direct participatory democracy is a recommended method because each person can be inquired directly. Therefore, the method of a public hearing and the involvement of relevant residents in policy decisions is a minimum pre-requisite condition that can reflect people's interests.

However, sometimes, the diversity of ideas is considered as obstructing a public decision made either by the local government or a specific group of people, such as entrepreneurs who have specific interests to utilize a specific area where the dispute of TDS placement occurs. This is because the interests and needs of people can differ and any generalization will fail to identify the specific need of a particular group of people. This can also easily drive policy to become unjust and to the detriment of one or more groups of people. In other words, hegemonic power is used by a specific, powerful group to imply a specific interest. As already explained in chapter 5, many interests are prioritized to be implemented when relating to the placement of a TDS. These interests may be in the form of an aesthetic reason, local income orientation and urban space allocation.

In conducting a public policy, governments should be independent of self-serving policies that benefit only the

bureaucratic apparatus or a particular group of people. The policy that results in conflicting social pressure will cause different services between groups of inhabitants. Thus, a TDS policy that considers the interest of a specific group will mainly benefit that group, but, at the cost of other groups of residents and the detriment of the society as a whole. This is so since the poor communities' interests do not often have any chances to be heard directly by the government.

A decision-making process that does not involve all relevant actors will easily lead to an unfair public decision. This condition, unfortunately, often occurs in the TDS placement in Semarang (see chapter 6). As a consequence, poor neighborhoods, which have no or less power to bargain with the local government of Semarang compared to other social classes, run a great risk of becoming the targeted places for the TDSs.

Some factors are deliberately or accidentally used to influence the policy in placing a TDS in a poor neighborhood as already explained in chapter 5. Those factors include the urban waste regulation system, the procedure of the policy implementation, the non-environmentally friendly orientation to manage urban waste, the urban space allocation problem, the spending of local income, the shortcoming on the procedural practice, place characteristics and social factors of TDS location acceptance.

Even though the function of TDSs is to facilitate residential wastes in each settlement, in reality, as this research demonstrates in chapter 6, they are located and distributed mostly in poor and marginalized neighborhoods. Politically, the non-involvement of a targeted group is intended to relieve the process of TDS placement from their rejection as they will be the group that will be disadvantaged. However, procedurally, the non-involvement of the relevant actors in TDS placement can lead to distributive

injustice of TDS between the location of their neighborhood to another.

7.2.2 Social power relations in geographical environmental (in) justice

Decisions on the place of waste always involve some kind of placement strategy. Studies from the US show successful resistance of LULUs and the evocation of NIMBY feelings by people whose neighborhoods are close to dump or landfill areas. These discourses have noted the inequitable geographical distribution of LULUs and have thus argued for corrective policy and planning mechanisms.

The NIMBY response to object LULU is the easiest strategy applied by communities to avoid some effects of unwanted activities on their lands. LULUs is the common objection of some parties to avoid the placement of a specific activity in their neighborhood. They commonly consider that the placement of the specific activity will be risky for them. For this reason, the communities will imply a specific land use strategy to liberate them from negative impacts. Some even do not take any responsibility to minimize the externalities of their activities.

In the five TDS locations for this research, some groups are found to have used aesthetic and cleanness reasons as arguments to reject the placement or removal of a TDS. The communities have proposed to place domestic garbage away from their houses and neighborhood. They objected to the condition of having the garbage near them before finally having them transferred to an FDS. In trying to move a disposal site to other places, they have often used their social class advantages and power to ascertain a TDS placement. Taxes and other economic advantages received from the affluent communities are some of the reasons

to influence the local policy to move a TDS out of their neighborhood. This social class power can lead to an unequal distribution of the burdens and benefits of the waste management system.

In TDS placements, poor people are commonly the party who will bear more burdens than benefits. Conversely, in the wealthier community, people receive more benefits than burdens. As already explained in chapter 6, many households in the affluent community just put their garbage in bins and place them in front of their houses. They arrange to pay someone to remove and bring waste to TDSs or directly to the FDS. Based on the research's observation and interview, many even do not want to know or do not care where the place of waste will be, and how people nearby will experience the burdens of the TDS. Their practical concern is based on sanitary and aesthetic reasons, thereby giving the responsibility to other parties to throw their waste away.

A poor community usually lives in an unattractive place both for living and commercial purposes. In contrast, the upper class who have sufficient income usually buy properties in comfortable areas where they can gain profit from the land value. This is why developers often use an attractive advertisement to attract the upper class. The advertisements would contain information such as; 'The most comfortable neighborhood and living' or 'The promising site to promote your product'⁵². For example, in figure 7.1 housing developers in Semarang uses appealing words to attract buyers. These words contain information about a strategic location, which is easy to access. Other luring information is about the house's modern style, which is located in a commercialized well-off area.

⁵² Those advertisements were displayed at the junction of Jalan Dr. Wahidin, Jalan Teuku Umar and Jalan Sultan Agung on 17th June 2014.



Figure 7.1 Advertisement billboard of attractive properties in two locations in Semarang

TDSs are barely found in areas where luxury modern lifestyle buildings are built. This is because developers and households believe that the existence of a TDS will reduce the value of land and the aesthetics of the settlement. Even though some related regulations (see chapter 4) oblige developers to provide and manage their own residential solid waste, the treatment of both solid and liquid urban waste is still considered the government's responsibility. Article 10 Local Act No. 6/2012 obliges housing developers to provide a TDS within one year after the regulation is enacted. However, up till now, the number of TDSs does not increase significantly. The weakness lies in the enactment of law enforcement.

Commonly, communities such as Setia Budi Indah, BSB City in Semarang, and Graha Golf Candy treat their waste by directly removing it to an FDS by paying or sending the solid

waste to other TDSs in other neighborhoods. The non-existence of TDSs in well-off settlements can cause a heavier burden of TDS in other neighborhoods because ideally a TDS is set up only for one community. Considering the frequent solid waste removal of only once or twice a day, and the TDS location in an open landfill, the TDS can cause some negative impacts on nearby residents. The focus of GEJ is then to explain the two different conditions experienced in the different conditions of neighborhoods located in the same jurisdiction of Semarang.

This research finds that the lack of power prevents inhabitants near a TDS to reject the placement of a TDS. Poverty in income and property ownership, as indicated by social class, and gender conditions are two important power factors that influence the placement decision of TDS. Gender, in this case, is intersecting with wealth. In poor urban areas, women, mothers, and wives stay at home much longer than their male partners. As consequence, they become directly disadvantaged by TDSs' nuisances. Based on data launched by the Semarang Statistics Bureau in 2018, there are 201.539⁵³ women, who stay at home and do housework. This is because Indonesian society believes in a patriarchal ideology, which situates men as the leading persons who should earn the family's income. Meanwhile, women are responsible for handling all domestic matters. Men's space is in the public area, whereas women's space is mainly at home. Those two distinguished roles result in gender inequality which discriminates against women (Walby, 1986, pp. 33-37).

The form of inequality resulting from this belief is varied depending on the social class found in a range of specific spaces and cultures. Mostly women and children are the first victims who suffer from geographical environmental injustice because

⁵³ Semarang Badan Pusat Statistik Kota Semarang Statistical Office, 2018, Semarang Municipality in Figure, 2018. Housework is a definition used by the Statistical Office to determine the number.

they are attached to the negative impacts of the TDSs for a long time since they spent more time in the house rather than the adult men who work outside. These women also have the risk to become victims of public decisions. Their interests are not considered important because their interests are judged the same as that of their husbands, fathers, or brothers, who commonly represent them in public meetings.

Women's experiences with nature and the environment are different from men. If we analyze the experience of housewives who deal with household waste much longer than men, it means that the voices of these women are important to be heard before deciding on the kind of system for urban waste management. Because these women are also the managers of domestic waste, they can easily understand what their domestic waste consists of, as they are the persons who are responsible for domestic matters.

The discussion above shows that men cannot represent housewives in expressing and referring to adverse impacts of TDS, because they are often working outside of their homes and are detached from the real condition. It is the women who work at home, who experience most of the negative impacts of TDS. They are the first victims who experience odors, the view of scattered waste, smoke from burning waste, etc. The experience of women can be described from the confession of four women interviewees in RT 1 RW 2 *Kelurahan* Bendan Dhuwur, which among others informed us that they knew about the matter of solid waste treatment and the rejection of a new planned TDS from their husbands. One lady who lived only 10 meters from the disposal site did not know the process of TDS placement since she was a widow. This status positioned her as one of the 'not important persons' in her community. With no husband, she, therefore, received no TDS information. Generally, women in this area confessed that they were not involved in the process of

TDS placement planning. According to them, it is related to the social common and Muslims believe that women are second class citizens. So, their opinion is covered by men's opinion.

In the policy subsystem of TDS placement and its process, the group of victims, in this case, women, children, scavengers, and other concerned parties, are the relevant actors who can discuss TDS policy issues, in addition to persuading and bargain in pursuit of their interests for a healthy environment. This is supported by Howlett and Ramesh who say, "...a policy subsystem which includes both actors who are intimately involved in a policy process as well as others who are only marginally so" (Howlett & Ramesh, 2003, pp. 84, 53 - 54). Howlett and Rames continue to inform that policy subsystems are constructed from this universe, involving both state and societal actors in complex systems of interaction. Constitutional and legal provisions are the essential determinants of subsystem membership, while the power and knowledge resources of subsystem actors critically affect the nature of their activities and interactions. Thus, the involvement of relevant actors in public policy is the important condition to form the justice policy for all.

In the 'battle' for a TDS placement, poor people are often overruled and marginalized by powerful groups. Marginalized people have to face the negative impact of urban policy whereas the affluent do not. Sometimes, in the practice of a corrupted government, they are considered a burden since the government has to spend local revenue to enhance their living standard, whereas affluent people are considered as the source of many benefits to the government through their taxes, charges, and investments. This consideration often disregards the rights of marginalized residents to good public facilities. In this way, the idea of 'a city for all', only becomes an empty word without meaning. The efforts to create a 'city for all' require more

significant opportunities for communities to participate in urban development processes and to initiate improvements in their living environment. Hence, community participation is another crucial notion of urban policy. It requires both the organization of urban communities and better access to decision-making institutions (Van Naerssen, 1989, p. 7). However, it seems that the mere organization of urban communities is not enough. Nowadays, residents know their rights well, yet most of the respondents in the five research locations stated that they felt they should be involved more in the public process decision of TDS placements.

In the field, it is found that most of the decision-makers locate a TDS for their own benefit and do not take account of the interests of the whole community. This condition occurs in all five locations for this research. There is no TDS found near the house of the neighborhood and community functionaries or some representative of residents such as the key person of the community and religious leader (see all the maps of TDS in chapter 6).

Here is the fact that explains how people consider the garbage as their concern to differentiate who deserves to receive the burden. For instance, food sellers are specific victims because of their gender and social class, which shows them as a marginalized group, making them potential people who receive burdens of the TDS in Semarang's traditional markets. Most of the food sellers in traditional markets in Semarang are women. They are often confronted with the adverse effects of TDSs because they work nearby that disposal place. Thus, the workplace is an important aspect that forces them to keep on staying and receiving some TDS burdens.

A similar condition occurs in *Kelurahan Srandol Wetan*. The TDS in this area is on the opposite side of the public

elementary school. In this area, the pupils are vulnerable to some impacts of waste. Unfortunately, decision-makers did not involve them in the TDS placement decision process. Children are rarely considered the relevant actors in a TDS placement process. Teachers and the board of school are considered adult people who can represent the children's voices and interests.

So, it is not an excessive requirement that women, children, and people surrounding TDS must be involved in TDS placement decision processes. Their knowledge can complete the forming of a good and just policy. The relevant actors of the TDS placement policy, in fact, already can be predicted during the planning process and after the policy process of TDS placement is done. No one else can explain better the experience of negative impacts of waste except people who experience the impacts themselves. Unfortunately, in the practice of a TDS placement process, women, children and poor people are rarely considered the relevant actors.

Mostly, the policies to place TDSs (including the research TDSs) were done without any direct involvement of the relevant actors. Their ideas, voices, and opinions were considered the same as the voice of their representatives. These representatives are usually the social elites at the lower levels such as the chiefs of neighborhoods from the smallest or the lowest informal group, such as RT up to the highest or the largest neighborhood such as the RW, religion and community leaders. Because these people come in as representatives, it is only these groups, who know the planning of the placement and the ongoing public decisions on TDS. Therefore, the representative has the obligation to share the result of the meeting with the residents. In this process, the opinion of the representative becomes the opinion of those he is representing.

The quotes below illustrate how communities became involved in the cases of TDS placement that were discussed earlier:

The Manager⁵⁴ of Pasar Candisari said:

“This TDS was built only to throw in market waste. Residents can use this TDS without any cost. This is why residents did not become the persons or parties that had to be involved. The TDS did not detriment residents, in fact, it became a place to throw the community’s waste”.

The Secretary⁵⁵ of Kecamatan Candisari stated:

“There was only the traditional market which had enough space for a TDS; actually, residents were already asked to find a place for TDS, but they did not respond to the request. Only the functionaries of *Kelurahan*, RW and RT were involved in the meeting to decide the location of TDS”.

Meanwhile, in *Kelurahan* Gebangsari, Kecamatan Genuk religious leaders were appointed to represent their community. The following is the testimony of an Ummah Mosque leader’s⁵⁶ rejection:

“I asked for the replacement of the previous TDS through the chief of the *Kelurahan*, Mr. Suad at that time, because there was an unpleasant odor, that caused flies and scattered view disturbing the Ummah religious activities. I asked him to arrange a special meeting to discuss this matter. The parties who were involved at that time were the chief of the *Kelurahan*, the chiefs of RT and RW and Majelis Takmir. All of the participants [at that time] signed the agreement

⁵⁴ Paim, a 45 year old man, the Manager of Pasar Candisari

⁵⁵ Pon, a 40 year old man, the Secretary of Kecamatan Candisari

⁵⁶ Hj. Sy, a 68 year old man, the Leader of *Al-Muhajirin* Ummah Mosque (*Majelis Takmir Mesjid Al-Muhajirin*)

to replace the TDS to what became the current TDS location.”

The practice to involve the principal of the public school in *Kelurahan* Srandol Wetan on behalf of the elementary school pupils also explains that the relevant actors of TDS placement are rarely involved. Jk⁵⁷, an ordinary inhabitant, explained:

“Some years ago, there was a meeting which was arranged by the *Kelurahan*, but the persons who were involved were only the functionaries of the RT and RW and the Principal of the Public Secondary School located in front of the TDS. According to a functionary of the RW who attended the meeting they were informed about the function of the TDS only as a place for the neighborhood, RW 14. However, in its progress, the TDS does not only serve the domestic waste from this neighborhood but also from other neighborhoods.”

Jk added some other information that explained the powerlessness of representatives to reject the placement because of seniority reasons and the domination of the representatives from the local government. The powerlessness in Jk’s explanation was influenced by the location where the meeting was set.

“When the meeting was set in the *Kelurahan* actually there was an inhabitant who wanted to reject this placement, but he felt not comfortable because he was younger than the others, but he did not want to be considered acting as a teacher for others. He also informed that the parties who were dominant in that meeting were the representatives from the *Kelurahan* and Semarang City Department of Sanitation. Most other participants in the meeting only agreed and did not give any comment.”

⁵⁷ Jk, a 45 year old man, inhabitant of RW 14 *Kelurahan* Srandol Wetan

The plan to place and build the disposal facilities always comes from the *Kelurahan* and Semarang Local Government. However, most of the interviewees stated that they have never been involved or asked for the planning, placement, and replacement of the TDS. Only a few people were involved and selected because of their position as neighborhood functionaries such as being the chief, secretary, treasurer of the RT and RW, or as a public leader and religious leader.

Commonly, the placement of a TDS is decided by the Semarang Local Government. TDS placement which is decided by the community should be reported to the government, so they can acknowledge the TDS by providing the disposal site facilities such as containers and other facilities. This system becomes the facilitating medium for various interests involved in the decision-making process. In this condition, it means that the more influential parties will dominate the interest of the weak and a conflict between classes can play a role in the decision for the placement of the TDS.

7.3 Community responses as consequences of geographical environmental (in) justice in temporary disposal site placement

Unfair TDS placement has negative consequences for the inhabitants surrounding the TDS. Geographically, there is a condition of unequal apportion of environmental risks. In the same spatial jurisdiction of Semarang, there is a different apportionment of benefits and risks for a different allocation of public services and different charges related to urban waste management.

This section discusses the response of the community to the GEJ which emerges from the TDS placement. The responses

vary by individual and group. The analysis is done both from the perspective of temporary actions and those actions potentially aiming for or stemming from an urban and social movement for the fulfillment of the human rights of living in a healthy and pleasant environment. The urban and social movement aims to make the opportunities to achieve a healthy and clean environment more equal for residents.

Most TDSs are situated in an open dumping condition and located at near distances to settlements. Geographically, the proximity of the TDS will determine what kind of environmental risks will be received. The closer the people live near a TDS, the more vulnerable they are to environmental disadvantages. Besides these, there is also the factor of different waste expenses that have to be paid by the inhabitants. In this case, an inhabitant, who lives quite far from a TDS, has to spend more money than those living nearer because of the extra miles the registered TDS pick-up staff has to go to transfer the waste to a nearby FDS. Inhabitants have the burden to pay more costs as the local government only transfers wastes from registered TDSs to the FDS. In doing the waste disposal duty, the government does not take solid wastes from each house. In some neighborhoods where there is not any TDS, an additional cost, even more, has to be paid by inhabitants to transfer waste from their houses to a nearby TDS, which later goes to a nearby FDS.

The different kinds of burdens above indicate that there are unequal benefits and burdens among residents in one jurisdiction area. This unequal condition refers to the concept of geographical environmental justice (GEJ) and shows the existence of double standards due to the effect of power relations in the processes of dealing with environmental conditions in one jurisdiction, resulting in unequal treatment among the inhabitants (see chapters 5 and 6).

People who live near a TDS make several efforts to resist the environmental risks that they may bear. They use community resistance as a strategy to minimize or even eliminate their burdens. Individuals or groups use the resisting strategy to act against other groups and the local government who have a dominant influence in the TDS placement.

In contrast and quite different from the resisting strategy, the coping strategy is not used against the government and other social classes. This strategy is often considered as "negotiated" (Harvey, 1996 (c), p. 54). People restrain their resistance to the TDS placement until they have an appropriate opportunity to present their opinions and appeals. According to Carver, Scheier, & Weintraub:

This is an active coping strategy in the sense that the person's behavior is focused on dealing effectively with the stressor, but it is also a passive strategy in the sense that using restraint means not acting. Another coping response that can be considered as relevant to problem-focused coping is the seeking out of social support. People can seek social support for either of two reasons [coping and resisting], which differ in the degree to which they imply problem focus. Seeking social support for instrumental reasons is seeking advice, assistance, or information (1989, p. 269).

The coping strategy emerges as an alternative action if the replacement of a TDS fails to be realized. In the process, people try to find a way to cope with the TDS instead of resisting it. They shape their actions to cope with the situation. This strategy then, of course, cannot eradicate the domination of the powerful on the powerless, and the domination of the affluent on the poor.

7.3.1 Resistance against the negative impact of temporary disposal site placement

Although in daily social life, the poor usually do not have the bargaining power to stand facing the affluent, this does not mean that they cannot do anything. They often protest against TDS placement which is a form of resistance. They use resistance strategies intending to reject the placement of a TDS in their communities. The resisting strategy is a more negative reaction compared to the coping strategy. The resistance to TDS placement commonly starts with pessimistic feelings of the inhabitants such as: 'There is no reason to keep the TDS', 'It only results in negative impacts', and 'So why don't we close or remove it'?

In four of the analyzed locations, rejections were done some years after the TDSs were built (see the case for the four neighborhoods in Srandol Wetan, Genuk, Candisari, and Muktihardjo Kidul). In one location the rejection was shaped when the TDS was planned (see Bendan Dhuwur's case). The experience with the negative impacts of the TDS was the factor that pushed them to urge the local government to remove the TDS. The actions done by the inhabitants varied from persuasion to anarchy. The persuasive actions were done by using a formal and systematic approach. Anarchy actions are informal of often haphazard.

Thus, there are two kinds of resisting strategies: formal and informal actions. Formal actions are the efforts to reject or adjust the placement of TDS by sending a formal letter to the mayor asking for permission from the chief of the community, neighborhood, or district. Communities in *Kelurahan* Genuk and Bendan Dhuwur undertook this kind of action. Informal actions are direct protests such as container burning and

threatening truck drivers, such as done by inhabitants in Sampangan, *and* Candisari neighborhoods. Both formal and informal actions can be considered as forms of resisting strategies against unwanted land-use policies. They form a policy of resistance in a struggle to reject a specific aspect of environmental policy from the local government and other inhabitants. The protesters do not want to be considered as powerless people who surrender to their oppressors. Resistance is a direct reaction to the situation. Tesh & William see it as “the straightforward act that is called the disinterested identity” (1996, p. 289). Both formal and informal actions mean to minimize and eliminate the environmental injustice which results from the TDS itself.

Some actions succeed in forcing the replacement of TDSs, but others fail in all but one (Bendan Dhuwur neighborhood) of our researched neighborhoods, there was a TDS resistance and it had caused the TDS re-placement to other places.

The rejection actions are an indication of the inhabitants’ consciousness, who in this way declare their disapproval or standpoint about TDS placement. This consciousness is employed as a power to insist on their involvement with the new local government program in their neighborhood, and it is constructed in opposition to the government’s policy that in their opinion will disadvantage them. Through that process, people construct a new social consciousness in their neighborhood, which gives focus on the environmental problem that they face.

Even though the rejection of a disposal site can be understood as a way to claim the right to a healthy and clean environment, sometimes they do not consider the same rights for others by proposing a substitution place that is also close to human settlements and houses. Thus, the TDS placements affect other inhabitants who are powerless or incapable to reject that placement. This situation indicates that the environmental

disadvantage only shifted from one place to another, from one neighborhood to another. If the method to treat waste does not change and as well as the involvement of all relevant actors is limited, or is still in a conventional way of disposing and removing waste without any proper improvement, the replacement action will not change the injustice problem. Thus, it is most likely that environmental or geographical injustice can still be found more or less detrimentally in the 'substitute' place.

If Semarang Local Government would use the waste management method which emphasizes the environmentally friendly way to minimize the amount of waste, the negative impacts of TDSs could be diminished. The rejection of waste management sites will decrease because the environmental problems of waste can be minimized.

7.3.2 Coping with the negative impact of a temporary disposal site placement

Communities that are not able to reject the placement of a TDS are trying to find a suitable way to tackle the problem based on their characteristic locations. In fact, many people want to share their own experiences to support other communities to carry out the same action as they did to reject the TDS placement. These actions emerge from the environmental consciousness because of the negative impacts of TDS. The need for a healthy environment strengthens individuals to organize others to plan and do specific actions to change the situation. Even though, in the beginning, the consciousness emerged from the individuals' daily experiences, during the process they can construct the group or community consciousness to protect their interests and neighborhoods.

Disappointment is the common expression when poor inhabitants in the neighborhood of the TDS are asked about the negative impacts of the TDS. This could be considered as a sign to accept the condition, but when they were asked, they showed disappointed faces and some even realized this acceptance and stated, “why should we accept this situation of the negative effects of TDS location”?

Some residents take positive actions to cope with the situation. The lack of ability to reject unwanted land uses from the poor is often found in ‘receive’, ‘cope’, and ‘not pay attention’ actions which are considered as forms of approval of the LULUs by the opposite party. Because they live in this area, the only way to keep holding out is to do positive actions to minimize the impact.

The negative impacts are the daily circumstance that they have to face, from the TDS itself. They are already accustomed to these situations. This does not mean that they accept and submit to the situation, but it is a sign of people’s lack of power. There are some reasons for the resilience of such conditions. For some, economic conditions force them to stay. For example, waste rickshaw drivers, scavengers, dump truck drivers, and food sellers surrounding a TDS can earn income through the existing TDSs. For others, their attachment to their own living neighborhood makes them prefer to stay rather than move.

Many inhabitants have been living in TDS areas for years, some even ever since they were born. During these years, the inhabitants have been coping with the negative effects of TDS by often showing a “do not care attitude”. These inhabitants do not want to think much about the effects and also are not really interested in finding a meaningful solution, because according to them there is no way out anymore in tackling this problem. This attitude of the inhabitants is a part of their coping strategies.

The coping strategy, which is defined as an adaptation to the TDS, is seen as a positive reaction to a TDS. It is a way for the powerless to accept the TDS placement. Based on the community's point of view, the reactions are a form of the community's impartial program for urban waste treatment.

People who can earn income through the existing TDSs, sometimes act positively. For instance, they clean the TDS, as a form to cope with the negative impacts of TDS. These people try to persuade residents to keep the TDS, otherwise, they will lose their income or place of work. This becomes an alternative way to adapt and cope with the situation. In addition to receiving benefits from the TDS, the felt environmental burden which is caused by the TDS can be decreased or compensated by the benefit itself.

To minimize negative impacts, some inhabitants plant trees around a TDS. Some built walls around a TDS. They keep arranging a 'work together' attitude (*kerja bakti*) to clean a TDS regularly, once or twice a month. Those efforts can help to minimize the negative impacts.

In addition to the reasons above, the limited space forces some people who live in densely populated areas to cope with the negative impact of a TDS. Some even express tolerance and defeatism for accepting the consequence by reasoning with the two following arguments. First, they realize that there is not enough space for the location of the existing TDS because their neighborhood is dense already. Their willingness to accept a TDS is expressed by their statements, such as: "If it is not in this TDS, where else will inhabitants put their garbage?", or "This condition is better than for those inhabitants, who dispose of their garbage just anywhere and make our neighborhood dirty".

Second, the defeatism of inhabitants around the TDS is influenced by a common attitude of the Javanese people that

would succumb to a dominant interest. In this case, the Javanese person usually chooses to be reticent to avoid a conflict with his neighbors. The attitude of *ewuh pekewuh* as already mentioned in page 94, influences people’s interpersonal skills in society. These Javanese people rule their social interaction with the harmony of ethics which consists of two principles, namely, harmony and a respectful attitude to others (Magnis-Suseno, 1985, pp. 69-70). They use those principles to avoid open conflict with others. This attitude also influences the response of individuals and groups of people who experience negative impacts of a TDS. In the condition of *ewuh pekewuh*, someone cannot think and do something freely and independently (Sulastuti, 2012, p. 13) because they have to consider others’ needs.

The community strategies in dealing with TDS in this chapter can be drawn in the scheme below.

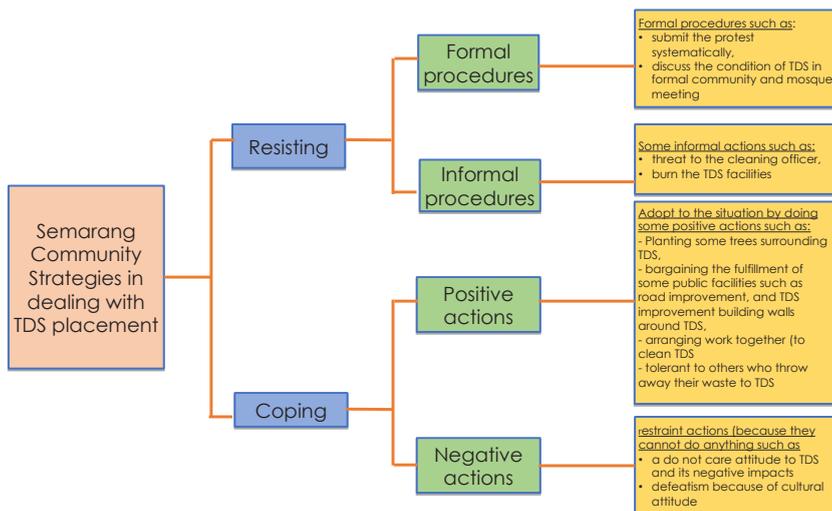


Figure 7.2 Semarang community strategies in dealing with a TDS placement

7.4 Conclusion

This chapter has identified four important aspects to describe GEJ in RSWM in Semarang.

Firstly, as many scholars found out in many practices of environmental justice, the power relation aspect (Cutter, 1999, 5, Harvey, 1993 (b), Walker, 2012) is the most influential factor that leads to GEJ in TDS placement. As seen earlier (chapter 6) power relation aspects such as wealth, social class, income, property rights, and gender intersected with each other and influenced the decision of the TDS placement in the five locations of this study.

Secondly, this study makes clear, that there are many causal factors leading to GEJ of TDS placement. The Semarang regulation and policy implementation fail to shape a fair system for the RSWM, especially with regard to the TDS placement process. At the policy level, there is a lack of real participatory processes in deciding on TDS placements. The non- or weak involvement of residents in the TDS placement process results in environmental and geographical injustice for marginalized people. In addition, the problem of GEJ in the TDS location is aggravated by the poor management of urban waste.

Thirdly, this chapter explains the consequence of GEJ of TDS placement for inhabitants. Two consequences can be explained, (1) there is an unequal apportion of environmental benefits and (2) there are unequal burdens and waste treatment costs. Geographically, the location of a TDS will determine who will receive what kind of environmental detriments. The closer the inhabitants live near a TDS, the more vulnerable they are to the nuisances of the TDS. On the other side, a different distance between households to a TDS can also engender various waste charges that have to be experienced among inhabitants. When

someone is living quite close to a TDS, (s)he will not need to pay as many charges as those who live farther away from a TDS. The different burdens indicate that TDS placements involve the unequal distribution of environmental benefits and risks among residents in the Semarang jurisdiction area. This geographical environmental injustice is the consequence of the existence of double standards and unequal treatment among inhabitants in one and the same jurisdiction area.

Fourthly, the consequence of a TDS placement and the urban waste treatment will elicit responses from the community surrounding the TDS. The responses can be at the individual or the group level. They can be categorized as resisting and coping strategies, where the resisting strategy is not only performed some years after the TDS but can also be applied during its planning. Meanwhile, resisting strategies can follow both formal and informal procedures.

Both individual inhabitants and community groups can follow coping strategies. They are conducted for several reasons, such as having the TDS as an income source and attachment to the neighborhood. These conditions force infected inhabitants to stay. With regards to the coping strategy, when the powerless reject a TDS, it can also be considered as a 'do not care about others' attitude since a group believes that there is no way out of the complicated problem of getting rid of a TDS. Some groups undertake positive actions such as planting trees around a TDS, building a wall around a TDS and working together to clean a TDS regularly. Although those efforts cannot eliminate all negative effects, they can minimize them and can protect the quality of the environment.

The lack of the ability to reject unwanted land from the poor is often found by doing these actions: 'receive', 'cope', and 'not pay attention'- because they are considered by the city

government and the affluent group as forms of approval for the LULUs. In this way, there is a demonstration of the inhabitants' own politics of place.

The actions of the poor could be regarded as 'embryos' of an upcoming future urban social movement. Having these actions is thought of as being formed by a background that the human rights of having a healthy and good environment are important and adamant. These actions must be thought against the background of the importance of a healthy and good environment as a human right. Thus, in the following chapter, there will be a description of how urban movements might be formed as an effort to defend the rights of the poor to live in a clean and healthy environment.

Chapter 8

Towards an Urban Environmental Justice Movement in Semarang

8.1 Introduction

This chapter deals with the conditions and possibilities of the coming into existence of an urban environmental justice movement⁵⁸ related to the TDS placement in Semarang. The analysis in the foregoing chapters aimed to identify strategies of communities that successfully redressed TDSs proposals by the municipality of Semarang to reach a more righteous location for neighborhood TDSs. At a higher level, these strategies might lead to a broader awareness of urban environmental issues and an environmental movement in the city.

This chapter is divided into three parts. Firstly, section 8.2 discusses the environmental movement concept and its condition, specifically related to TDS placement. Secondly, in section 8.3, I discuss the situation concerning waste regulations in Indonesia.

⁵⁸ Hereafter the terms urban environmental justice movement, and urban environmental movement and environmental movement will be used interchangeably and on a par

Thirdly, in chapter 8.4 the focus is on the challenge of an urban environmental movement.

8.2. Actors, social spaces and the conditions for an urban environmental justice movement

There are three actors, who are of interest when discussing urban environment movements concerning the placement of TDSs. Firstly, the local government; secondly, the people who live near a TDS, which can be divided into people for whom the TDS have a negative impact and people who benefit from the TDS; and thirdly, the people who take advantage of the TDS placement just because they get rid of their waste. Each actor has specific interests and takes specific actions to foster his/her interest.

This section analyses how each actor produces the social space and how the social space has influenced others. By using Lefebvre's term and definition of social space (Lefebvre, 2014, pp. 77 - 79)(see chapter 2), the political and social space in TDS placement implementation is defined by actions that are set by groups and are used to suggest and prohibit others to do something related to a TDS. The questions in this analysis are, where, how, by whom and to what purposes are actions taken. These questions guide us to identify a specific kind of politics of place that is used by each actor in relation to the location of TDSs and, in a broader sense, to the residential solid waste policy in Semarang.

Before elaborating on an urban environmental movement, we need first to explain the environmental rights notions as basic to a movement. The awareness of *environmental rights* is the main condition for individuals or communities to enact real action as input for a politics of place.

Unsuccessful protection of environmental rights sometimes occurs because the regulations fail to protect inhabitants of a community from the negative impacts of environmental activities. Both inappropriate contents of a regulation and uneven procedural processes when they were planned and enacted, can trigger this failure. Besides that, inappropriate implementation of regulation could also become a factor that triggers other failures. After all, a basically good regulation can lead to a negative condition if it is implemented improperly. The contents of regulations, procedural processes and implementation are pivotal topics when discussing causal factors of activities with environmental impact.

Intentionally, regulations are meant to protect the rights of citizens. Citizens entrust the state to enact a regulation to govern the affairs between citizens. Citizens will feel insecure if the contents of the regulation take sides on a specific group of people rather than protect all citizens.

In environmental regulation, Cable & Benson (1993) state that the unjust condition can be indicated through its implementation by saying:

”...the perceptions of environmental injustice [which] arise when citizens come to believe that the state is failing to protect their lives and property from environmental pollution and that pollution costs are being unfairly imposed upon them.” (p 464)

This belief might encourage people to start a collective action which can be developed into a movement to reject a regulation that harms them. The interconnection between regulation, its implementation and the reaction of citizens is an important aspect in analyzing the factors that cause the rise of citizens’ movements on environmental issues. Referring to Castells (2004, pp. 170-171), an environmental movement can

be defined by a specific combination of three elements: *identity*, *adversary* and *goal*. For the type of environmental movement which intends to defend its own space by responses such as “not in my backyard” (NIMBY), these three can be respectively defined as a connected local community, polluters, and quality of life and health. In this study, both the authorities and the better-off communities who are involved in TDS placement decisions are the adversaries.

This analysis is important to identify whether the idea of an environmental movement is already developed or not, as a part of the city’s community consciousness. There are two bodies of information that need to be analyzed:

1. The actions that the local government undertook to enforce environmental standards (see section 8.3)
2. The efforts of the community in attaining their rights to a healthy and clean environment (see section 8.4) include:
 - a. A lawsuit proposed by the community to the local government, which demands the government to do something to minimize a bad impact
 - b. the community’s sanction for people who create unjust conditions
 - c. the mechanism to keep a healthy and clean environment

The challenges of an environmental justice movement are analyzed from the more general urban movements which are defined by Castells (1983, pp. 304-305). Castells’ indicators are as follows:

1. the dominant class in a community has the institutional power to restructure social forms (and cities) to be in accordance with its interests and values, thus, changing the existing meaning of the cities;

2. the dominated class's partial or total revolution, which also changes the meaning of the city;
3. the social movement that develops its own meaning to a given space, which is in contradiction with the structurally dominant meaning of space;
4. the social mobilization (not necessarily based on a particular social class), which imposed a new urban meaning to contradict the institutionalization of other dominant urban interests.

Even though the condition of the environmental movement on TDS placement in Semarang is still limited, since the responses of communities to TDS placement are not yet influenced much by outsiders, Castells' insight on urban social movements can be used to evaluate to what extent the politics of resisting and coping strategies of the inhabitants living around the TDSs can meet the standard or requirement of an urban social movement. Furthermore, the analysis aims also to explain to what extent the continuing situation can form the environmental justice movement in the future.-

8.3. The shortcomings of local solid waste regulations in Indonesia

This section will deal with local solid waste regulations In Indonesia from the perspective of an urban environmental justice movement and the perspective of social space. The regulations on waste management are the authority of the local government. The regulation on local government and waste management in Indonesia put the responsibility of waste management as a public service to be delivered by the local authorities. In the decentralization principle, the local government is the nearest

level of government that will serve the city and residents' needs for waste management. The local government is the competent institution to carry out the public service task because this lower level of government is the institution that gets in touch directly with the residents. It is the government's responsibility to fulfil and protect the environmental rights of the inhabitants. One of these rights is the right to health. The right to health is often invoked concerning environmental protection, pollution problems, scarcity of potable water and lack of sufficient food etc. (Leib, 2011, pp. 78-79).

In addition to local regulation, there is a principal regulation for waste management in Indonesia. The regulation is governed by Act No. 18/2008 on Waste Management. Since Indonesia is a republic, all national matters must refer to the national legislation, including the waste management service. In 2008, the central government shaped a new regulation for this task, considering that during the foregoing time there was no central regulation that ruled this sector. Therefore, the local governments were free to install their own local acts on waste management. In previous times, there was no guiding standard to accomplish this task. The measurement of successful waste management also became blurred because it depended on the political will of the local government.

In 2008, the Central Government enacted a new law on Urban Waste Management on the 7th of May. The government enacted this regulation for several reasons:

1. the increasing population and their changing way of consumption resulting in the increase of waste volume and different characteristics of waste;
2. the implemented waste management resulted in negative impacts for both residents and the environment;

3. waste is considered a national issue; therefore, its management shall be done comprehensively downstream to give the greatest advantage economically, environmentally, socially, and in support of a change in social waste behavior;
4. proportional, efficient and effective waste management needs a legal system for its implementation such as clear authority and responsibility of the government, and the involvement and participation of the society and the business world.

From rejections of disposal sites in many areas in Indonesia, the government came to realize that the end of pipe system must be changed. The new regulation brings the idea to alter this system into an integrated waste management system. To implement the new regulation, the local government needs to prepare the related resources of which most of which included the local Semarang government, which still practices the old system. An umbrella regulation became the guidance for local implementation, which arose some years later when the local government proposed a totally different method to manage urban waste.

Although the implementation is still limited to small areas, the effort was recorded as the starting point of a promising practice in the future. At this stage, the Central Government realizes that the lack of regulation on urban waste management has caused the failure of human and environmental rights protection.

A similar condition occurred in Semarang. In 2012, the Semarang Municipality enacted a Semarang Local Act No. 6/2012 on Waste Management. This Local Act has the same idea as the new central regulation on urban waste. This regulation changed the previous Local Act No. 6/ 1993 which was aimed to

create local revenue from urban waste removal services, to install a proper implementation of urban waste management, which emphasizes healthy, efficient, and effective ways to minimize urban waste. Even though Semarang already has a new Local Act which has a totally different aim compared with the previous ones, practically, the end of pipe system is still mostly used in TDS and FDS. In Semarang Municipality's case, it still needs a big effort and concern to implement the proposed aim of urban waste management which was in the regulation already.

8.4 An urban environmental justice movement: a response to geographical environmental justice in TDS placement

An inadequate concern usually emerges from a lack of understanding by the local government of the importance of a healthy environment. Apparently, geographical environmental justice is not considered a main issue compared to the necessity of local revenue, aesthetics, and priorities of affluent groups in the city.

The affected people, however, still consider the negative impacts of urban waste treatment as their destiny because of their economic and social conditions (see cases Candisari, Muktihardjo Kidul and Sampangan). Some even submit to the situation and do nothing to free themselves from the negative effects of TDS location. This reaction is also influenced by cultural and political reasons such as inhabitants choosing to stay silent because of the Javanese way to keep a good relationship with others. This submissive attitude is specifically applied as a way to cope with the situation in communities that do not have property rights (for example, in *Kelurahan* Muktihardjo Kidul). They submit to the situation as a way to keep staying on someone else's property. In this context, the coping strategy is done to gain a benefit, even

though they still have to deal with the negative impacts of the TDS.

The other coping strategies are carried out by creating positive actions that minimize the negative impact on the people and the environment surrounding the TDSs. These actions are done after they notice that there is no effort from the government to minimize and solve their problem (see the case in Sron dol Wetan).

Although there are still many inhabitants who lack an understanding of the unjust waste treatment, there are a few who already demonstrated their positions when they face the geographical environmental justice problem. Both negative and positive reactions are conveyed depending on which social class they come from. For instance, scavengers respond positively to TDS, because the TDS can provide them with a place to work and earn income, whereas other groups reject the TDSs.

Even though the policies of TDSs create environmental injustice, they are until now considered the only way to remove waste from the settlements, and to minimize the view of scattered waste that is thrown away anywhere. Some inhabitants even state that the TDSs can alter the “throw away behavior” attitude of society. Besides this expectation, some inhabitants also look forward to being involved in the decision-making processes on urban waste management (see all five TDS cases). In their opinion, the government often fails to approach the public to sit and discuss urban social matters together. However, as it is now known, the government often deems the public as totally ignorant of the government projects. This way of thinking, of course, will influence the successful achievement of a program.

The various strategies used by the people and communities, indeed, maybe the basis of an environmental movement. To

understand whether a new urban environmental movement could be established, two matters are under investigation:

1. How can the experiences of inhabitants construct a new public awareness of environmental justice that is important to establish an urban environmental movement?
2. How can an urban environmental movement improve the quality of the individual and collective physical environment?

To answer the first question, the experiences of inhabitants such as their resisting and coping strategies to the TDS placement are understood as public awareness for environmental justice. This study finds that the resisting strategies are established to defend the right to a healthy and clean environment. A replacement does not erase the impact but only moves the TDS to another place. The aim of replacement in the five different *kelurahan* cases was mostly based on the felt necessity of a person or group to prevent them from having negative impacts on the TDS. In resisting the TDS, the community also shows some coping strategies which aim to protect the quality of the environment. Examples of what has been done by the affected groups were: planting trees, building separator walls, cleaning the TDS area, etc. The positive actions are meant to minimize the impact of TDSs both on human beings and on the environment. If given broad attention by public media (newspaper, online, etc.), these experiences with both the resisting and coping strategies can lead to and strengthen an urban environmental movement.

The second question is answered by analyzing both strategies in connection with the environmental justice movement that influenced the government and the community to better deal with environmental issues at a broader scale.

The interconnection between them can be analyzed from the TDS rejection cases, which directly influenced the way the government approached the residents. For example, the government canceled the planning of a TDS placement after receiving protests from a group of mosque members and other formal neighborhood groups (see Bendan Dhuwur case). The government also removed the TDS facilities after the inhabitants did several anarchical actions to reject the TDS placement (see Candisari and Sampangan and Gebangsari, Genuk cases). The changing government and public interrelation occurred by protesting strategies of the RT/RW and the board of a school, who made an organized protest against the government (see Sronдол Wetan case). In this particular case, the school board was effective in using the TDS condition as the power to request more funds and attention for the school's better development.

Even though those actions are performed as ways to reject and cope with TDSs, they only result in the direct alteration for a specific group. Although the role of the national government is important, decentralization provides full autonomy for the local governments to manage their tasks properly. The local government is found to be the frontline servant who personally knows the problems and necessities of the residents. There is no ultimate recognition for the government, however, except through residents and whatever the government does is in connection with public services. In fact, the way TDS placement is organized does not benefit the people or the environment. Instead, the Semarang politics prioritized the local revenue policy rather than environmental and human health protection.

Because the public service of the TDS placement is in city space, the right of the inhabitants and community to the city becomes another important aspect to be discussed in the environmental movement. It is understood that every inhabitant

and community, no matter their condition, should have the same access to the city resources and the same chance to be involved in the decision processes of city matters. Harvey defines the right to the city as far more than an individual's liberty to access resources because the right to the city is also the right of inhabitants to change themselves by changing the city (Harvey, 2008, p. 23). The idea of a just distribution of positive and negative impacts of city resources can be explained by Soja's definition:

"The struggle over the right to the city aimed in part at a fair and equitable distribution of resources but even more so at obtaining the power over the producing unjust urban geographies". (2010, p. 83).

This explains that the communities in the five selected neighborhoods received injustice, as they still have no free access to a healthy environment and have not been invited to the decision-making of TDS placements.

From a broader perspective, it shows that the communities' actions alone cannot yet generate new awareness and consciousness which can influence the policy of waste treatment in other regions. Considering the practice of the end of pipe system that is still being used in the TDS and FDS system, the inhabitants are bearing the risks of an unhealthy environment. The number of traditional TDSs is still far larger in comparison to the Integrated disposal sites (ITDS). The same community response could occur and repeat itself in other places at any time. This is the reason why people could learn from each other's experiences.

The first aim of a GEJ movement is to make the rights of the poor community that lives around the TDS more equal to achieve a healthy and clean environment by getting rid of the end of pipe system and changing it into a more environmentally

friendly way to manage urban waste. Secondly, the GEJ movement delivers the important message that poor communities also have the right to be involved in urban matters and land-use decision-making processes.

A GEJ movement could be triggered because of the inequality in TDS placements which are explained by the politics and power relations between the local government, urban poor, and the better-off communities. The latter use LULUs objections and NIMBY's responses which reflect a geographical perception in dealing, resisting, and coping with TDSs. Although the idea of GEJ primarily aims to establish an environmental awareness of a broader community with regard to the whole waste management system, this movement also gives a message that in doing so, the government has the responsibility to facilitate the inhabitants and community to be involved in urban public matters.

8.5 Conclusion

The responses of the five researched communities with regard to the negative impacts of the TDS placements, their protests and coping strategies can become important modalities to establish a GEJ movement. The GEJ movement can influence the decision of the government and the community to deal better with the waste treatment systems in Semarang, Central Java, as the representative of Indonesia.

There are five characteristics found in this study, which can explain the possible emergence of an environmental movement. Four of them refer to Castells' insights into environmental movements and one is the result of the empirical case studies in this study:

- Firstly, there is the type of environmental protection that defends their own spaces. The protection types include the

LULUs objections and NIMBY responses of communities that reacted to the unwanted TDS placement. Resisting and coping strategies are either reactions to TDS placement or the ways to accept it.

- Secondly, the *identity* of a group that reacted to a TDS placement is usually that of a poor local community that is or will be confronted with the negative impacts of a TDS. On the other hand, a clean environment is part of the identity of an affluent community.
- Thirdly, as for the *adversary*, some communities directed their protest to the Semarang Municipality as being authoritative in the TDS placement decision. Also, the better-off communities are sometimes seen as such, being involved in deciding the TDS location. Even though some undertook some anarchist actions, most communities know to whom they should file their protest. They clearly know the local government is the right party who can solve the environmental problem linked to the TDS placement.
- Fourthly, in their responses to TDS placements, the communities have a clear *goal* of achieving a better healthy environment by doing both resisting and coping actions.
- Fifthly, the triggering factor to respond to the TDS placement is being confronted with different benefits and risks of the TDS placements. Communities experiencing more risks than benefits logically file more often a protest against other TDS placements.

Even though the responses of the five communities to TDS placements occurred at a neighborhood scale, these responses have led to more justice actions in urban waste management overall. Their responses to reject the negative impact of TDSs were proof that the end of pipe system which is currently used

to treat urban waste, has produced injustice. Practically, the GEJ movement as a response to the urban waste treatment in the limited area of Semarang already exists.

Although inhabitants do have coping strategies at the local community level, their experiences can be replicated in other communities with the same condition to achieve a more equal waste management by the Indonesian government. The aim of the geographical environment justice movement would not only plea for the abolition of the end of pipe system but for all kinds of initiatives for a healthy environment.

Chapter 9

Conclusion

The empirical part of this study concerned the process of acceptance and/or rejection of Temporary Disposal Sites (TDS) located in five neighborhoods in Semarang Municipality. Based on research in the neighborhoods in 2007/08 with updating visits and interviews in 2019-2020, this study proved that poor urban waste management evidently resulted in a negative impact on the environment and human life. The negative impact included a spatial dimension since problems commonly started with the decision of where the waste and its facilities should be located. The decision where to locate a TDS was a crucial step because the negative impacts of the disposal sites affected those living in the immediate vicinity. The extent of the negative (and sometimes positive) impacts of the sites varied according to each site location. In other words, within specific population groups, people were unequally exposed to negative impacts depending on the proximity to the disposal sites and personal characteristics such as their age, gender, and occupation.

This study shows that people living in bad environmental conditions were frequently poor. They were often the vulnerable

party that received the negative impacts of the disposal site rather than receiving the positive. The spatial problem concerned the public policy decision between two or more locations in the same jurisdiction which resulted in an uneven distribution of TDSs between areas of poor and richer people. Disposal sites that had negative effects on the environment were usually placed on land, that was deemed as unwanted or found in less developed areas such as the areas of the poorer and/or marginalized communities. This choice was found to be based on assuming that poor people are less powerful in society, thus having less say over what would take place in their community.

This study found that the politics of place were employed by those with the power to decide where certain activities should be located. This not only included local politicians and high officials in the bureaucracy but also encompassed social groups with political influence. Because of this, the geographical injustices were not only linked to the physical location in a poor or marginalized community but also to the political decision making of more powerful communities.

The main aim of this study was to analyze the geographical environmental justice (GEJ) of waste management in Semarang. In this study, GEJ dealt in particular with the placement of a temporary disposal site (TDS) in Semarang. In chapter 1, three central issues were formulated to guide the analysis:

1. the issue of the system of policies and regulations that determines the location of the TDSs as implemented by the local government (i.e. the Municipality) of Semarang
2. an evaluation of the current location of the TDSs found in the neighborhoods in terms of their causes and consequences
3. an analysis of the strategies used and the underlying social power relations that neighborhoods had to achieve a more just location of the TDSs

The system, location and regulation of TDS placement

The base of the system that determines the location of TDSs in Semarang is formed by the regulations on urban waste management and environmental protection in Indonesia. In ensuring the success of the TDS placement in communities, an orientation of urban solid waste management to reduce, reuse, and recycle waste is required. The national regulations of waste management via TDS have been affirmed by the Semarang Municipality that enacted the Local Act No. 06 Year 2012 on Semarang Waste Management. This regulation emphasized that urban waste management had to be done by environmentally sound methods to enhance public health and the quality of the environment. For the same purpose, regulations ruled that each neighborhood has to have a TDS. These regulations require the sustainable management of urban waste, but the implementation depended on the political will and the capacity of each municipality.

Semarang urban waste treatment practice was considered inappropriate. This study found that there were still many neighborhoods in the city that had no TDS or no place to put their waste. This study also found that the urban waste system overall was not what it was supposed to be. It still aimed to remove waste and to put it in a TDS before being transfer to a Final Disposal Site (FDS). In the waste system, an end of pipe system was found to process the waste of urban areas rather than recycling and manage it with a more modern waste system.

Due to this system, two main problems of TDS placement existed.

(a) In planned neighborhoods, the municipality and the developer were the two parties responsible to provide a disposal site and its facilities. But, in reality, the decision to select a

location of TDS was mostly entrusted to an RT (*Rukun tetangga* or community), RW (*Rukun Warga* or neighborhood), and the sub-district (*Kelurahan*). The municipality only acknowledged and registered a selected TDS by placing some disposal facilities and arranging treatment such as transfer from the TDS to an FDS.

(b) In already existing or unplanned settlements, the location was found to be an important issue in a TDS decision placement. During the fieldwork, the pattern of TDS distribution did not comply with the regular system of the TDS placement. The factors which influenced the TDS location were the policy practices (that included shortcomings in the procedural process to involve relevant actors), place characteristics and social factors that impacted on acceptance or rejection of a TDS location.

The evaluation in terms of the distribution of positive and negative impacts

The evaluation of TDS locations in Semarang in terms of the distribution of positive and negative impacts at the neighborhood level took place in five sub-districts. These were 1) Srandol Wetan 2) Candasari, 3) Muktihardjo Kidul, 4) Gebangsari and 5) Bendan Dhuwur. They were selected because attempts were made by the immediate communities to reject the TDSs chosen locations or they were already rejected in the planning phase.

The location of the TDSs, which were in poor or marginalized neighborhoods suggested a correlation with social class differentiation. The wealth or lack thereof was identified by the following characteristics: the type of houses, the size of properties, and the monthly household income. All five TDSs found in the area were replacement TDSs. The response of the inhabitants to a TDS replacement in each RW was comparable. Most have

protested against the unhealthy environment the TDS created in their neighborhood.

The five TDSs were mostly open dump spaces and located close to the houses of the researched communities. The inhabitants reported during interviews that they were vulnerably exposed to environmental impacts such as unpleasant odor, the roaming of flies, the view of heaps of waste, and unhealthy fumes that arose from burning waste. This study found that there was an imbalance between the benefits and negative impacts received by inhabitants correlated to their proximity to a TDS. Women and children, rather than the men, were the most vulnerable group since they spent more time in the vicinity of their house and TDS. Men would go out of their neighborhood more, due to their responsibility of earning a living outside of their household living area.

An important *procedural aspect* concerned the limited number of people who were involved in the process of community consultation and decision-making. This has contributed to environmental injustice. The loss of power to the well-off people and important chiefs and heads of communities has led the poor inhabitants, along with the women to be unheard and underrepresented in meetings about the process of TDS placement.

Strategies, social power relations and a more equal distribution of TDS negative impacts.

Through the analysis of the process of acceptance and/or rejection of the five planned and built TDSs, this study showed power politics as a strategy to locate a TDS. In deciding on the location, there was an unequal power relation between the local government, urban poor communities, and the better-off people.

This often results in placing the TDS in a poor community. Social class, gender and age were factors that influenced politico-social relations.

Referring to what Foucault explains about power relations, through the practice of TDS placement in five different neighborhoods in Semarang, we can identify power relations that are exercised between actors. There is a process of domination from the powerful party upon the powerless in the decision process where the TDS is located. The location choice is a game played by members of the society which leads to a certain division of the benefits and the burdens. People use their social influences, power, and politics to decide what spaces will be advantageous for life and which will be detrimental.-

As a coping strategy, the poor communities were found to have taken positive actions to minimize the negative impact of a TDS. These actions comprised working together periodically (i.e., *gotong royong* and *kerja bakti*) to clean the TDS, plant trees, or build a wall around the TDS to ensure protection against the negative impact of a lasting dumping site for household waste. These responses were the result of realizing that there was not enough suitable space for the location of a TDS, other than in their community. Another reason was the common Javanese cultural attitude of giving respect to a dominant interest. This *ewuh pekewuh* attitude is practiced to avoid conflict between the poor and the financially more powerful well-off neighbors.

As for resisting strategies, the study found that influential inhabitants, who consisted of religious and community leaders and middle-upper groups, have used strategies such as Lulus' objections and NIMBY responses to pressure the Semarang Municipality to place the TDSs outside their communities. Formal procedures and informal actions were used as well. In following the formal procedure, inhabitants protested

sequentially from the household community (RT), neighborhood (RW), sub-district (*kelurahan*), and district (*kecamatan*) to the municipality. But there were also some informal actions such as burning the facilities of a TDS and threatening the TDS workers who came to pick up, clean, or dump the household garbage.

The objection against a TDS placement in the studied sites ended with a replacement. The replacement did not erase the negative impact of the TDS, because geographically it only moved to another nearby place. It only aimed to defend the right of a specific group of people. The study found that in the five *kelurahan* cases the resistance was based on the person or group's necessity to free themselves from the negative impact of a TDS. It did not happen to serve the broader community interests and the environment in general.

The importance of geographical analysis in the environmental justice concept

The study of the five TDS placements in Semarang was proof of both environmental and geographical injustice, which are intertwined with each other. Since the five TDSs were located in the poorest communities of Semarang, the concept of *substantive justice* could explain the unequal negative impacts received by the poor people who lived in proximity to the TDS.

Indonesia and Semarang regulations on urban waste management aim to protect the people and the environment by using environmentally friendly methods to deal with problems that may occur from unorganized urban waste management. Although no regulation explicitly dealt with a fair distribution of TDSs, the aim of urban waste management is to avoid the negative impacts of disposal site placements. This study, however, proved the existence of disadvantaged communities, who received

more negative impacts than benefits of having TDS placements. In short, the Semarang municipality is not really successful in enforcing a fair distribution of TDS placements. This study, however, also found that many other factors influenced the occurrence of environmental and geographical (in)justice. Social factors such as social class, property ownership, gender and age influenced the power relationship between inhabitants in deciding about the TDS location.

This study also critically affirmed that there was indeed an interrelation between environmental justice and geography. Elaboration on the geographical dimensions of environmental justice has explained the context that emerges when public policies of TDS placement are understood differently by the communities that were in the jurisdiction of Semarang. This concept labeled geographical environmental justice (GEJ) has led to the understanding that GEJ is a cause and consequence of and response to TDS placement.

The causal indicators comprised power as an institution and regulation, and power in social power relations between the rich and the ones having authority and the poor or marginalized groups. These causes have led to a spatial distribution of environmental quality, which produced a social response of either rejecting or coping with the situation. Each actor produces the social space and each has influenced others due to TDS placement.

Towards a Geographical Environmental Justice (GEJ) movement

The research in five different neighborhoods showed forms of resistance by communities to TDSs locations. Ultimately, this was due to the existence of an old fashioned 'end of the pipe'

method, whereby unsorted mixed waste is transported from one open-air place to another (to end in an FDS). This had a negative geographical environmental impact. If future waste management still uses this method, similar reactions against TDS locations can be expected.

In the case where a community has successfully influenced authorities to move a TDS from its area, this study found that the action only resulted in a direct adaptation for a limited part of the community. The geographical environmental problems of TDS still remained with the movement of a TDS to a new location. Although the Semarang Municipality acknowledged the rejection of a TDS by a community by trying to find another location and arranged a community meeting to decide together on a new place for the TDS, the government considered the community's reaction to TDS as regular and normal rather than important and new. Thus, the municipality has not changed the system of waste treatment. Therefore, the geographical environmental injustice continues.

Analyzing the above situation and in the context of an urban social movement, a challenging question could arise, namely: "Could an urban environmental movement achieve geographical environmental justice in urban waste management (in Semarang and other cities in Indonesia)?" In this study, this question could not be answered with certainty. But there are sufficient indications and suspicions that this is the case. It is, therefore, a major challenge for future studies, to delve further into this matter.

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Summary

This book deals with one of the main environmental challenges in Indonesia, namely the processing of solid waste. As a case, the study focuses on household waste management in the city of Semarang in Central Java. Semarang still uses the end of pipe system. Waste is brought to temporary disposal sites (TDSs) and from there to a final disposal site (FDS). The poor urban waste management evidently does not only result in a negative impact on human life and the environment but also constitutes a geographical problem. This is because the negative impact of disposal sites will affect those living in the immediate vicinity. The extent of the burden or benefit, of the sites, will vary according to the site location. Further to this, within a specific population group, households will be unequally exposed to some burdens depending on their proximity to the disposal site, gender (women will usually suffer more), age and social group. Frequently poor people are the most vulnerable party who will receive the burden of the disposal site rather than its benefit.

The geographical problem can also be explained through the different public policy implementations between two or more different locations in the same jurisdiction. This is why environmental injustice is very often unevenly distributed

between places. This condition creates the need to consider geographical aspects in waste management also. Elaboration of the geographical dimensions in environmental justice in this study proves that the policy of TDS placement is understood differently in Semarang jurisdiction.

The central question in this research concerns the situation of geographical environmental justice (GEJ) in solid waste management in Semarang. The central question is divided into three research questions as follow:

1. How is the system of policies and regulations that determines the location of TDSs implemented by the local government of Semarang?
2. What are the causes and consequences of the current distribution of TDSs in the sub-districts of Semarang?
3. What strategies do the communities follow to successfully redress TDSs proposals made by the municipality of Semarang in acquiring a better TDSs location?

As consequence, the analysis of GEJ in solid waste management is divided into three parts. The first part of the study contains chapters 1, 2, and 3, which provide the background of the study, the theoretical framework, and the method used for the study, respectively.

The second part consists of chapters 4 and 5 and focuses on the system of TDS localization. Chapter 4 specifically discusses the system that leads to the current location of TDSs while chapter 5 provides the policies and power relations between the local government, urban poor communities, and the better-off ones in influencing the placement of TDSs.

The third part consists of chapters 6, 7, and 8. It discusses respectively the distribution of TDSs, how they were located, the causes, the consequences, and the responses to the locations. In a

broad sense, these responses may lead to an urban environmental movement to achieve a more equal distribution of TDS placements.

The last chapter stresses more the importance of geographical analysis in environmental justice. The strategies to reach a more equal distribution of TDSs need to be echoed at a broader scale in Semarang and probably Indonesia. A social movement in the context of urban waste management could change the current practice of TDS placement to a better system and urban waste treatment to be more equal. The only way to achieve GEJ is to turn awareness into a social movement by empowering inhabitants to be aware of their right to a clean and healthy environment.

The study starts with chapter 1 by introducing the regulation and policy of urban waste management in Indonesia and Semarang, the unsatisfactory condition of TDSs, the unfair treatment of TDSs placement and the NIMBY responses to some TDSs in some places in Indonesia specifically in Semarang. This chapter offers the elaboration of two concepts that are; environmental and geographical justice (geographical environmental justice) to examine and analyze the distribution of risks and benefits of the geographical aspect of TDS placement. The idea of GEJ is used to analyze four aspects. Firstly, the specific location of the TDSs and their environmental impacts on the community. Secondly, is the system that had resulted in the current locations of TDSs. Thirdly, there are the causes and consequences of TDSs' distribution in the community, and fourthly, is the level of community power in attempting to achieve a more equal and just distribution of the TDSs.

Chapter 2 presents the theoretical framework which is used to answer the central question in this study. The literature review on environmental justice and the geographical aspects

are presented to formulate the model to approach geographical environmental justice (GEJ) in RSWM in Semarang. Specific discussions on urban solid waste treatment and management are elaborated in GEJ. GEJ is analyzed by looking at three kinds of processes, namely the causes, the consequences and the responses concerning environmental change in a specific location. Firstly, the influencing factors can be considered as causes. They can be analyzed primarily through social classes and political power. Secondly, the location can produce consequences that impact both the environmental quality and the influencing factors. The consequences can describe the spatial distribution of environmental quality which comprises benefits and burdens. Some influence factors can be used to analyze the GEJ of TDS placement in five different neighborhoods in Semarang. Meanwhile, a response is analyzed through a strategy of the community for GEJ which consists of coping and resisting strategies, and the urban social movement as a response to geographical environmental injustice in TDS placement.

Chapter 3 discusses the research strategy to describe the situation of geographical environmental justice in residential solid waste management in Semarang. There are two criteria for selected research locations for the aim to describe the conflict between classes when placing the TDS. They are the neighborhoods that consist of some different social classes and ever had the incident of TDS rejection. By investigating the history of the TDS rejection, the connection between the location and the strategy to place the TDSs can be proven. There are five research locations selected to match the research criteria. To explain the geographical environmental justice, there are some variables defined to identify the predicted factors to both geographical and environmental justice. Some variables are categorized into social class and geographical proximity.

For the geographical proximity, there are two predictors used for this study: (1) the distance between the household and the TDS, and (2) the radius of the affected area of the TDS. The information was taken from an existing map of disposal sites in each neighborhood. The conditions of the house and surrounding area were determined through observations. The proximity of the TDS to the neighboring household was mapped in each location. The predicted factors of the social class selected dealt with income, occupation, property rights status, the condition of the houses and accessibility. Other predictors were added, such as ethnicity, gender, and age, when they were found to be influential in a specific district. The question that dealt with the social class factors was included in the questionnaire. To explain distributive justice, experiences of impact on health, financial burdens, and other matters of inconvenience were investigated through the interview process. Respondents were also questioned on the kinds of benefits they have received throughout the process of the TDS's placement. The questions on the process of TDS decision making, the involvement of the community, the understanding and memory of the TDS placement process, and the understanding of the decision-making structures were used to explain the procedural justice of the TDS placement in Semarang. To determine the system of the TDSs placement, there were two kinds of information gathered which were; how was the TDS placed and where it was located. While the issue of 'strategy, politics and power' was procured from three sources which were; local RSWM policy, social aspects and the environmental consciousness of residents. To complete the explanation about community responses to describe the power strategy to improve the living condition in this study, there were three kinds of information gathered i.e., the causes, consequences and responses of inhabitants. There were 126 respondents interviewed to get

that information. Some focus group discussions were held to get the community information and the history of TDS placement. The field research was done for almost 18 months in the years 2009-2011 and was updated in 2019 and 2020.

Chapter 4 aims to explain the system of temporary disposal site (TDS) placement in Semarang. In order to understand the system, this chapter is divided into two main discussions. First is the explanation of residential solid waste management. The second is the description of the Indonesian policy and regulation on residential urban waste management, which consists of the definition of residential urban waste and waste management, the aim of waste management, and government's tasks and the public involvement in urban waste management. Semarang Local Governments still fail to effectively manage and dispose of its area's urban waste. Ineffective management is the result of many factors including the limited institutional capability and finances, the 'throw away' culture which still exists across a broad layer of society, and industries that do not consider the external cost of excessive packaging. In fact, the term 'management' is not a suitable word to describe the practice of urban waste treatment in Semarang city since the dominant technique is to dispose of and not manage solid waste. The waste is still in its 'disposal' state when it reaches its final destination and has not been dealt with in any environmentally friendly way. The urban waste management in Semarang still aims to remove disposal from residential and other activity areas and transfer them to TDS and FDS. The failure of waste management can be physically viewed on a daily basis in several parts of the city. Most TDSs and the FDS still need to be improved. Public trash bins are limited in both quantity and quality and in allowance for the separation of organic and inorganic wastes.

Chapter 5 discusses both national and local regulations as part of the regular framework as explicated in five sections. They are the factors belonging to the contextual practice, the characteristics of a place, the social considerations, and the characteristics of urban waste treatment facilities. The regular framework refers to the urban waste regulation system while policies concern the contextual practice and the procedures of the policy implementation. Besides regulations at the national and local level, other factors such as local policies and social considerations influence the distribution pattern of TDS location. The regulations rule the ideal condition for TDS setting as the normative aspect. These, of course, aim to protect inhabitants from the negative impacts of a TDS. However, the implementation of the normative TDS placement is not easy to do. The limited open space causes a lack of options to select a proper place for a TDS, thus leading to locations that are close to settlements. Unfortunately, policymakers have reinforced the unequal decision to place TDSs in poor communities, which experience the burden of TDS. A common characteristic of TDS location is that they are placed in a poor and marginalized community. Social factors of both the individual and community level also lead to the distribution pattern of TDS. Two personal reasons to accept TDS were related to the place of work. First, TDS is used as a place of work; and second, TDS is nearby the workplaces. As found out from interviewing some respondents, some feel that they had no property rights due to being a new temporal citizen. Because of this, they have no choice but to accept the TDS placement. The Javanese culture of tolerance become a media used to accept the TDS placement in a neighborhood.

Chapter 6 describes the current distribution of TDSs in five different neighborhoods (RW) and sub-districts (*kelurahan*)

in Semarang. The chapter consists of the introduction to TDSs in Semarang and the description of each TDS in each selected neighborhood. Three aspects explained to describe the TDS were the history of the (re)placement, the TDS and community condition and the causal factors for the (re)placement. Most TDSs are in densely populated areas. This condition locates households, at distances between 5 to 20 meters to TDS, although the regulation requires 30 meters should be the minimum distance. All five TDSs are in open dumping condition and only three have three sides divided walls. Of four existing TDS locations, only three have a proper concrete basement and containers. The number of containers varies between one or two, depending on the estimated amount of solid waste production. Besides being located in a poor community, five TDS placements describe five different groups who receive more negative impact than others. Children, women, inhabitants with no property rights, and poor households are the groups who experienced more negative impacts than others. They have no courage to reject the TDS placement. Some reasons proposed by influence groups to reject the TDS placement. The common reasons are the negative environmental health such as experiencing the odor, scattered view, and flies and the aesthetic reason.

Chapter 7 presents a comprehensive analysis of the geographical environmental (in)justice (GEJ) in the residential solid waste treatment (RSWM) system in Semarang. The analysis is carried out by way of three interrelated groups of discussions. Firstly, this chapter starts with an explanation of the causes of locating the TDS from social power and policy perspectives. Secondly, there are discussions on the consequences of GEJ; and thirdly, there is also discussion on the spatial distribution of benefits and risks of TDSs. This chapter has identified four important aspects to describe GEJ in RSWM in Semarang.

They are the power relation aspect; unfair regulation and policy for RSWM; non-involvement of residents in the TDS placement decision process and the poor management of urban waste. This chapter explains two consequences of GEJ of TDS placement for inhabitants. First, there is an unequal apportion of environmental benefits and second, there is burdens and unequal waste treatment costs. Geographically, the location of a TDS will determine who will receive what kind of environmental detriments. The closer the inhabitants live near a TDS, the more vulnerable they are to the nuisances of the TDS. On the other side, a different distance between households to a TDS can also engender various waste charges that have to be paid among inhabitants. When someone lives quite close to a TDS, (s)he will not need to pay as many charges as those who live farther away from a TDS. The different burden indicates that TDS placements involve the unequal distribution of environmental benefits and risks among residents in the Semarang jurisdiction area. This geographical environmental injustice is the consequence of the existence of double standards and unequal treatment among inhabitants in the same jurisdiction area. The consequence of a TDS placement and the urban waste treatment will elicit responses from the community surrounding the TDS. The responses can be at the individual or the group level. They can be categorized as resisting and coping strategies, Meanwhile, resisting strategies can follow both formal and informal procedures. They are conducted for several reasons, such as having the TDS as an income source and attaching to the origin of the neighborhood. These conditions have forced infected inhabitants to stay. With regards to the coping strategy, a group believes that there is no way out to tackle the complicated problem of getting rid of a TDS. In Semarang, some groups undertook positive actions such as planting trees and building a wall around a TDS and working

together to clean a TDS regularly. Although those efforts could not diminish all the negative effects, they could minimize them and protect the quality of the environment.

Chapter 8 deals with the conditions and possibilities of the coming into existence of a social movement. The responses of communities with regards to the negative impacts of the TDS placements can become the prior modalities to establishing a GEJ movement awareness. The GEJ movement can influence the decision of the government and the community to deal better with the waste treatment systems in Semarang, as the representative of Indonesia. There are five characteristics found in this study that can explain the possible emergence of an urban environmental movement. Firstly, is the type of environmental protection that defend their own spaces. The protection types included the LULUs objections and NIMBYs responses of communities that reacted to the untrustworthy TDS placement. Resisting and coping strategies are the ways done by communities either as the reactions to TDS placement or the ways to accept it. Secondly, the identity of a group that reacts to a TDS placement is usually a poor local community that receives the negative impact of a TDS. On the other side, the affluent community form the identity of the settlement as a clean area. Thirdly, as the adversary, some communities propose their protest to the Semarang Municipality as the authoritative of the TDS placement decision and the better-off community, who get involved in deciding the TDS location. Even though there are some who do some anarchy actions, most communities know to whom they file their protest. They clearly know the local government is the right party who can solve the environmental problem due to the TDS placement. Fourthly, in their responses to TDS placements, the communities have a clear *goal* to achieve a better healthy environment by doing both resisting

and coping actions. Fifthly, the triggering factor to respond to the TDS placement is having different benefits and risks of TDS placements. The community, which experiences more risks than benefits have triggered other communities to file a protest against other TDS placements. Even though the responses of the five communities to TDS placements occur at a neighborhood scale intending to protest the Semarang Municipality, these responses have led to more justice actions in urban waste management. The responses to reject the negative impacts of TDSs are proofs that 'the end of pipe system' which is currently used to treat urban waste has produced injustice. Practically, the GEJ movement to respond to urban waste treatment in some areas of Semarang, already exists.

Chapter 9 presents a synopsis of the concluding remarks which are made in chapters 2 – 8 which describe the situation of geographical environmental justice of waste management in Semarang. Semarang urban waste treatment practice is considered inappropriate. This study proves that there are still many neighborhoods in the city that have no TDS or no place to throw out their waste. This study also proves that urban waste management is not what it is supposed to be. It still aims to remove waste and put it in a TDS before being transferred to a Final Disposal Site (FDS). In the waste system, 'the end of pipe system' only use the TDS as a temporary place to put waste without recycling and managing them with a more modern waste system.

The strategy of the community, which either to reject or cope with the TDS are the modality and the indication to enhance community awareness of GEJ either to the TDS placement or the conventional urban waste treatment. They apparently are the form of geographical space defense of the community, to achieve a healthy environment by minimizing

the negative impact of TDS. To be a social movement, those strategies need to be supported by other parties who have similar problem. Moreover, up till now the system of urban waste treatment has not changed much. Semarang still uses the end of pipe system. TDS is still found as one of the places in urban waste treatment in Semarang. That could be possible their strategies would be imitated by other communities to respond to the same condition. Their responses should be echoed at a broader scale in Semarang (and probably in Indonesia) and not isolated as an awareness of a limited community. The social movement in the context of urban waste management could change the mostly practice of TDS placement and urban waste treatment to be more equal and better. The only way to achieve GEJ is to turn the awareness into a social movement by empowering inhabitants to have an awareness of their right to a clean and healthy environment.

Samenvatting (Summary in Dutch)

Dit boek behandelt één van de belangrijkste milieuproblemen in Indonesië, namelijk de verwerking van vast afval. Als casus richt de studie zich op het beheer van huishoudelijk afval in de stad Semarang op Midden-Java. Semarang maakt nog steeds gebruik van het "end-of-pipe"-systeem. Afval wordt dan naar tijdelijke stortplaatsen (*Temporary Disposal Sites – TDS'en*) gebracht en van daar naar een definitieve stortplaats (*Final Disposal Site -TDS*) vervoerd.

Slecht beheer van stedelijk afval heeft vanzelfsprekend negatieve gevolgen voor mens en milieu, maar vormt ook geografisch een probleem. De negatieve effecten van stortplaatsen zullen immers gevolgen hebben voor de mensen die in de onmiddellijke omgeving wonen. De omvang van de last dan wel het voordeel van de stortplaatsen zal variëren naar gelang hun locatie en binnen een bepaalde bevolkingsgroep. Huishoudens zullen in ongelijke mate worden blootgesteld aan bepaalde lasten. Deze lasten zijn afhankelijk van de nabijheid van een stortplaats, binnen huishoudens van het geslacht (vrouwen zullen meestal meer te lijden hebben) en de leeftijd, alsmede de sociale groep zelf.

Vaak vormen arme mensen de meest kwetsbare partij die eerder de lasten dan de baten van een stortplaats zullen dragen.

Het geografische probleem ontstaat ook door de verschillende implementatie van het overheidsbeleid tussen twee of meer plaatsen (locaties) binnen hetzelfde rechtsgebied. Daardoor is milieu-rechtvaardigheid zeer vaak ongelijk verdeeld. Daarom is het nodig om ook bij beheer van het afval rekening te houden met geografische aspecten. De nadere uitwerking van de geografische dimensies van milieu-rechtvaardigheid in deze studie laat zien dat het beleid van plaatsing van TDS'en binnen het rechtsgebied Semarang verschillend wordt toegepast.

De centrale vraag in dit onderzoek betreft de situatie van geografische milieu-rechtvaardigheid (*Geo graphical Environmental Justice – GEJ*) bij het beheer van vast afval in Semarang. De centrale vraag is onderverdeeld in de volgende drie onderzoeksvragen:

1. Hoe wordt het systeem van beleid en regelgeving dat de locatie van TDS'en bepaalt, door de lokale overheid van Semarang uitgevoerd?
2. Wat zijn de oorzaken en gevolgen van de huidige spreiding van TDS'en in de sub districten (*kelurahan*) van Semarang?
3. Welke strategieën van de gemeenschappen (*rukun warga, RW en rukun tetangga RT*) zijn succesvol om TDS'en op een betere plaats te krijgen dan door de gemeente Semarang voorgesteld?

De analyse van GEJ in het beheer van vast afvalbeheer is verdeeld in drie delen.

Het eerste deel van de studie bestaat uit de hoofdstukken 1, 2 en 3, die respectievelijk de achtergrond van de studie, het theoretisch kader en de methode voor de studie behandelen.

Het tweede deel bestaat uit de hoofdstukken 4 en 5 en richt zich op het systeem van de plaatsing van TDS'en. Hoofdstuk 4 bespreekt het systeem dat heeft geleid tot de huidige locatie van TDS'en, terwijl hoofdstuk 5 zich richt op de invloed van het beleid en de machtsverhoudingen tussen de lokale overheid, de arme stedelijke gemeenschappen en de meer welvarende op de plaatsing van TDS'en.

Het derde deel bestaat uit de hoofdstukken 6, 7 en 8. Het bespreekt respectievelijk de spreiding van TDS'en, hoe ze werden geplaatst, en de oorzaken, de gevolgen en de reacties op hun plaatsen (locaties). In brede zin kunnen deze reacties leiden tot een stedelijke milieubeweging om te komen tot een meer gelijke verdeling van TDS-plaatsen. In het laatste hoofdstuk wordt meer de nadruk gelegd op het belang van een geografische analyse voor milieurechtvaardigheid. De strategieën om te komen tot een meer gelijke verdeling van TDS'en zouden op ruimere schaal navolging kunnen krijgen in Semarang en waarschijnlijk Indonesië. Een sociale beweging gericht op stedelijk afvalbeheer zou de huidige praktijk van TDS-plaatsing kunnen veranderen in een beter en rechtvaardiger systeem. Eén manier om GEJ te bereiken is via een sociale beweging en voor deze het nodig om bewoners bewust te maken van hun recht op een schoon en gezond milieu.

De studie begint in hoofdstuk 1 met een introductie van de regelgeving en het beleid van stedelijk afvalbeheer in Indonesië en Semarang, de staat van de TDS'en, de mate van rechtvaardigheid in het beheer van TDS'en en de *Not in my Backyard* (NIMBY) reacties op sommige TDS'en in Semarang. In dit hoofdstuk worden twee concepten uitgewerkt: milieurechtvaardigheid en geografische milieurechtvaardigheid (GEJ) waarmee de verdeling van de risico's en voordelen van het geografische aspect van de plaatsing van TDS worden onderzocht en geanalyseerd. Het concept van GEJ werd gebruikt om vier aspecten te

analyseren. Ten eerste, de specifieke locatie van de TDS'en en hun milieueffecten op een gemeenschap. Ten tweede, het systeem dat heeft geleid tot de huidige locatie van TDS'en. Ten derde, de oorzaken en gevolgen van de verdeling van de TDS'en in een gemeenschap en ten vierde, de mogelijkheden van een gemeenschap bij het pogen om tot een meer gelijke en rechtvaardige verdeling van TDS'en te komen.

Hoofdstuk 2 presenteert het theoretisch kader om de centrale vraag in deze studie te beantwoorden. De literatuurstudie over milieurechtvaardigheid en haar geografische aspecten worden gebruikt om tot een model te komen voor de rond geografische milieurechtvaardigheid in de vaste afvalverwerking in Semarang. Specifieke discussies over de behandeling en het beheer van vast afval worden in een GEJ-perspectief uitgewerkt. De GEJ wordt geanalyseerd door te kijken naar drie soorten processen, namelijk de oorzaken, de gevolgen en de reacties met betrekking tot milieueffecten op een specifieke locatie. Allereerst kunnen de beïnvloedende factoren als oorzaken worden beschouwd. Deze kunnen worden geanalyseerd aan de hand van sociale klassen en politieke macht. Ten tweede kan de specifieke locatie gevolgen teweegbrengen die zowel de milieukwaliteit als de beïnvloedende factoren beïnvloeden. De gevolgen hebben betrekking op de ruimtelijke verdeling van de milieukwaliteit, die bestaat uit voordelen en lasten. Deze factoren kunnen worden gebruikt om de GEJ rond de locatie van TDS'en in vijf verschillende buurten in Semarang te analyseren. Ook wordt de reactie van de gemeenschappen op de GEJ bij de plaatsing van TDS'en geanalyseerd aan de hand van aanpassings- (*'coping'*)- en verzets- (*'resistance'*) strategieën van de stedelijke sociale beweging

Hoofdstuk 3 bespreekt de onderzoeksstrategie om de geografische milieurechtvaardigheid in afvalbeheer in woonwijken in Semarang te beschrijven. Er zijn twee criteria voor het

selecteren van onderzoeklocaties om het conflict tussen de sociale klassen bij het plaatsen van een TDS te beschrijven, (a) buurten met verschillende sociale klassen waar (b) ooit een TDS werd geweigerd. Door de geschiedenis van een TDS-afwijzing te onderzoeken, kan het verband met de plaatsingsstrategie van een TDS worden geanalyseerd.

Vijf geselecteerde locaties voldeden aan de onderzoekcriteria. Om de geografische milieurechtvaardigheid te verklaren werden een aantal variabelen gedefinieerd voor zowel geografische als milieurechtvaardigheid. Sommige variabelen hebben betrekking op sociale klasse en andere op geografische nabijheid. Voor de geografische nabijheid werden in deze studie twee factoren gebruikt: (1) de afstand tussen het huishouden en de TDS, en (2) de invloedssfeer van het TDS-gebied. Deze informatie is afkomstig van een gemeentelijke kaart van stortplaatsen in iedere buurt. De toestand van het huis en de omgeving werd bepaald middels observaties. De nabijheid van de TDS tot de huishoudens werd voor elke locatie in kaart gebracht. De factoren ten aanzien van sociale klasse hebben betrekking op inkomen, beroep, eigendomsrecht, de toestand van de huizen en hun toegankelijkheid. Andere factoren zoals etniciteit, geslacht en leeftijd, zijn toegevoegd wanneer zij in een specifiek district van toepassing waren.

Om de mate van rechtvaardigheid in de verdeling te analyseren, werden middels de interviews ervaringen met de impact op gezondheid, de financiële lasten en andere zaken onderzocht. De respondenten werd ook gevraagd welke voordelen zij hadden ervaren gedurende het de plaatsing van een TDS. De vragen over het besluitvormingsproces rond een TDS, de betrokkenheid van de gemeenschap, het begrip van het plaatsingsproces van een TDS en de structuur van het besluitvormingsproces werden gebruikt om de procedurele

rechtvaardigheid van de TDS plaatsing in Semarang vast te stellen. Om het systeem van de plaatsing van de TDS te bepalen, werden twee soorten informatie verzameld: (1) hoe werd de TDS geplaatst en (2) waar werd deze geplaatst. De kwestie van strategie, politiek en macht werd op basis van drie bronnen bepaald: (1) het lokale huishoudelijk vast afvalbeleid (RSWM: Residential Solid Waste Management), (2) de sociale aspecten in de buurt en (3) het milieubewustzijn van de bewoners. Om de reacties van de gemeenschap te begrijpen en de machtsstrategie voor verbetering van de levensomstandigheden te beschrijven, werden er ook drie soorten informatie verzameld. Deze hadden betrekking op (1) de oorzaken en (2) de gevolgen van de plaatsing van een TDS en (3) de reacties van de bewoners. Hiertoe werden 126 respondenten geïnterviewd. Ook werden om informatie van de gemeenschap over de geschiedenis van de plaatsing van de TDS te verkrijgen enkele focusgroepsdiscussies gehouden. Het onderzoek werd uitgevoerd gedurende bijna 18 maanden in de jaren 2009-2011 en bijgewerkt in 2019 en 2020.

Hoofdstuk 4 heeft als doel het systeem rond de plaatsing van de TDS'en in Semarang te verduidelijken. Om dit systeem te begrijpen, is het hoofdstuk verdeeld in twee secties. In de eerste wordt uitleg gegeven over het beheer van vast huishoudelijk afval en in de tweede wordt het Indonesische beleid en de regelgeving voor huishoudelijk stedelijk afvalbeheer beschreven. In dit hoofdstuk worden de definitie van residentieel stedelijk afval en afvalbeheer, het doel van afvalbeheer, de taken van de overheid en de betrokkenheid van de bevolking bij het stedelijk afvalbeheer toegelicht. In het algemeen blijkt dat de overheid van Semarang er niet goed in is geslaagd om het stedelijk afval binnen haar gebied doeltreffend te beheren en te verwijderen. Het minder doeltreffende beheer is het resultaat van vele factoren, waaronder de beperkte institutionele capaciteit en het gebrek aan financiën,

de “wegwerp”-cultuur onder een brede laag van de samenleving en het feit dat bedrijven geen rekening houden met de externe kosten van verpakkingsmateriaal. In feite is de term “beheer” geen geschikt woord om de praktijk van de stedelijke afvalverwerking in de stad Semarang te beschrijven, aangezien de overheersende techniek bestaat uit het verwijderen en niet in het bewerken van afval. Het afval is nog steeds grotendeels in de oorspronkelijke staat wanneer het zijn eindbestemming bereikte en op geen enkele milieuvriendelijke manier be- en/of verwerkt. Het stedelijk afvalbeheer in Semarang is nog steeds gericht op het verwijderen van afval uit woonwijken en andere gebieden en het overbrengen naar TDS'en en uiteindelijk de FDS. Het relatieve falen van het afvalbeheer kan in delen van de stad dagelijks worden waargenomen. De toestand van de meeste TDS'en en de FDS zijn voor verbetering vatbaar. De openbare stortplaatsen waren in zowel kwantiteit als in kwaliteit beperkt evenals de mogelijkheid om organisch en anorganisch afval van elkaar te scheiden.

Hoofdstuk 5 behandelt zowel de nationale als de lokale regelgeving als onderdeel van het regelgevende kader. Dit wordt in vijf secties toegelicht. Het kader omvat factoren die behoren tot de context waarin de dagelijkse praktijken zich afspelen, namelijk: kenmerken van een plaats, de sociale omgeving en de kenmerken van de stedelijke afvalverwerkingsinstallaties. Het kader verwijst naar het systeem van regelgeving voor stedelijk afval, terwijl het beleid betrekking heeft op praktijk(en) en de procedures voor de uitvoering van het beleid. Naast de regelgeving op nationaal niveau beïnvloeden ook andere factoren, zoals het lokale beleid en sociale overwegingen, het distributiepatroon van TDS'en.

De regelgeving creëren de ideale voorwaarden voor de vestiging van een TDS vanuit een normatief perspectief. Deze hebben uiteraard als doel bewoners te beschermen tegen

de negatieve gevolgen van een TDS. De realisatie van een normatief ideale TDS-plaatsing is echter niet gemakkelijk. De beperkte open ruimte zorgt voor een gebrek aan opties om een geschikte plaats voor een TDS te kiezen, zodat locaties vaak dicht bij woonkernen komen te liggen. De beleidsmakers hebben de ongelijkheid nog versterkt door TDS'en te plaatsen in arme gemeenschappen. Een veel voorkomend kenmerk van de locatie van TDS'en is namelijk dat ze geplaatst zijn in arme en gemarginaliseerde gemeenschappen. Ook sociale factoren op zowel individueel niveau als gemeenschapsniveau zijn van belang bij het distributiepatroon van TDS'en. Individuele redenen om een TDS te aanvaarden houden verband met het werk. Ten eerste kunnen TDS'en zelf als werkplek dienen en ten tweede kan men het afval van het werk eenvoudig afvoeren als ze dicht bij de werklocatie liggen.

Uit interviews met een aantal respondenten bleek dat sommigen het gevoel hadden dat zij niet bij de inspraak betrokken werden omdat zij geen eigendomsrechten en slechts beperkte andere rechten hadden. Daarom hadden zij geen andere keuze dan de plaatsing van een TDS te aanvaarden. De Javaanse cultuur van tolerantie werd zo een middel om de plaatsing van een TDS in een buurt te aanvaarden.

Hoofdstuk 6 beschrijft de huidige verdeling van TDS'en in vijf verschillende buurten (*RW*) en sub districten (*kelurahan*) van Semarang. Het hoofdstuk bestaat uit een inleiding tot TDS'en in Semarang en een beschrijving van de TDS in elk van de geselecteerde buurten. De drie aspecten die worden toegelicht om de TDS te beschrijven zijn de geschiedenis van de (her)plaatsing van de TDS; de conditie van de TDS en de buurt; en de factoren die een rol speelden bij de (her)plaatsing. De meeste TDS'en bevinden zich in dichtbevolkte gebieden. Daardoor liggen de TDS'en vaak dicht bij de huishoudens (5 tot 20 meter), hoewel

de verordening voorschrijft dat tussen een TDS en een woning minstens 30 meter moet liggen. Het gaat bij alle vijf de TDS'en om open stortplaatsen en slechts drie hebben aan drie zijden scheidingsmuren. Slechts drie locaties hebben een betonnen ondergrond en containers. Het aantal containers varieert van één tot twee, afhankelijk van de geschatte hoeveelheid geproduceerd vast afval. De vijf TDS-locaties bevonden zich in arme gemeenschappen, maar daarbinnen zijn er verschillende groepen die meer negatieve gevolgen van een TDS locatie ondervinden dan andere, zoals kinderen, vrouwen en bewoners zonder woonrechten. Zij hadden niet de moed om de TDS-plaatsing te verwerpen. Enkele redenen die door groepen met meer invloed werden voorgesteld om een TDS-plaatsing te verwerpen waren de negatieve milieugevolgen zoals stank, rondslingerend vuil, vliegen en esthetische nadelen.

Hoofdstuk 7 presenteert een uitgebreide analyse van de geografische milieu(on)rechtvaardigheid (*GEJ*) in het systeem van de verwerking van vast huishoudelijk afval (*RSWM*) in Semarang. De analyse is uitgevoerd door middel van drie onderling samenhangende discussies. Het hoofdstuk begint met een uiteenzetting van de oorzaken voor het locatie/patroon van TDS'en vanuit sociale machts- en beleidsperspectieven. Daarna worden de gevolgen van *GEJ* besproken. Het derde deel omvat een discussie over de ruimtelijke verdeling van voor- en nadelen van TDS'en. Vier belangrijke aspecten worden gebruikt om *GEJ* in de afvalverwerking in Semarang te beschrijven, respectievelijk sociale machtsverhoudingen, oneerlijke regelgeving en beleid, de niet-betrokkenheid van de bewoners bij het besluitvormingsproces voor het plaatsen van TDS en het slechte beheer van stedelijk afval. In dit hoofdstuk worden twee gevolgen van *GEJ* van een TDS-plaatsing voor de bewoners toegelicht. Ten eerste de ongelijke verdeling van de milieuvoordelen en

ten tweede de lasten en ongelijke kosten voor afvalverwerking. Geografisch gezien zal de locatie van een TDS bepalen wie welk soort milieuschade zal ontvangen. Hoe dichter de inwoners bij een TDS wonen, hoe gevoeliger zij zijn voor de overlast van de TDS. Anderzijds leidt de afstand tussen een huishouden en een TDS ook tot verschillende afvalheffingen die door de inwoners moeten worden betaald. Wanneer iemand vrij dicht bij een TDS woont, zal hij minder moeten betalen dan iemand die verder weg woont. De geografische milieu-ongelijkheid is mede het gevolg van het bestaan van dubbele normen en ongelijke behandeling van inwoners in hetzelfde rechtsgebied.

De gevolgen van de plaatsing van een TDS en de afhandeling van het stedelijk afval zullen reacties uitlokken van de gemeenschap rondom de TDS. De reacties kunnen zowel op individueel als op groepsniveau zijn. Ze kunnen worden gecategoriseerd als verzets- en aanpassingsstrategieën,

Verzetsstrategieën kunnen zowel formele als informele procedures volgen. Ze worden om verschillende redenen ingezet, zoals het gebruiken van de TDS als een bron van inkomsten en de noodzakelijke verbondenheid aan de buurt. Hierdoor kunnen bewoners die milieunadelen van een TDS ondervinden, zich gedwongen voelen om toch te blijven. Wat de aanpassingsstrategieën betreft, kan het afwijzen van een TDS door een groep met weinig macht ook worden beschouwd als een “*do not care*” houding omdat de groep gelooft dat er geen mogelijkheid is om het ingewikkelde probleem van het zich ontdoen van een TDS aan te pakken. In Semarang ondernamen sommige groepen constructief-positieve acties zoals het planten van bomen of het bouwen van een muur rond een TDS en het maken van afspraken om een TDS regelmatig schoon te maken. Hoewel deze inspanningen niet alle negatieve effecten verminderen, kunnen ze er wel toe bijdragen dat ze tot een

minimum beperkt worden en de kwaliteit van het milieu zoveel mogelijk beschermd worden.

Hoofdstuk 8 behandelt de voorwaarden en mogelijkheden voor het ontstaan van een sociale beweging. De reacties van de samenleving met betrekking tot de negatieve gevolgen van de TDS-plaatsingen, kunnen bijdragen aan het tot stand brengen van een GEJ-beweging. Deze kan invloed uitoefenen op beslissingen van de overheid en de samenleving om beter om te gaan met de afvalverwerking in Semarang. Er zijn in deze studie vijf kenmerken gevonden die het mogelijke ontstaan van een stedelijke milieubeweging kunnen verklaren. Ten eerste is er het type milieubescherming dat met name de eigen leefomgeving verdedigt. Dit omvat LULUs bezwaren en NIMBYs reacties van gemeenschappen die worden ingebracht in het beslissingsproces rond de willekeurige' plaatsing van TDS'en. Verzets- en aanpassingsstrategieën zijn manieren die worden toegepast als reactie op de feitelijke plaatsing van een TDS, als een manier om deze te aanvaarden. Ten tweede was de identiteit van een groep die reageerde op de plaatsing van een TDS meestal die van een arme gemeenschap die de negatieve gevolgen van een TDS ondervond. Meer welvarende gemeenschappen namen de identiteit aan van streven naar een schoon gebied. Ten derde, richten sommige gemeenschappen, als tegenstander, hun protest op de gemeente Semarang als de autoriteit van het besluit tot plaatsing van een TDS en de beter gesitueerde gemeenschappen. Daarmee raakten zij betrokken bij het besluitvormingsproces over de TDS-locatie. Ook al waren er enkelen die 'anarchistische' acties ondernamen, de meeste gemeenschappen wisten bij wie zij hun protest moesten indienen. Zij wisten goed dat de lokale overheid de juiste partij was om milieuproblemen ten gevolge van de plaatsing van een TDS op te lossen. Ten vierde hadden de gemeenschappen in hun reacties op de plaatsing van een TDS

het duidelijk doel om een beter en gezond milieu te bereiken, of het nu ging om verzets- dan wel aanpassingsacties. Ten vijfde werd de reactie op de plaatsing van een TDS bepaald door de afweging van voordelen en risico's van de plaatsing van een TDS. Een gemeenschap die meer risico's dan voordelen ondervond zette andere gemeenschappen ertoe aan om te protesteren tegen andere TDS-plaatsingen. Hoewel de reacties van de vijf gemeenschappen om bij de gemeente Semarang te protesteren tegen TDS-plaatsingen weliswaar plaatsgrepen op buurtniveau, hebben deze reacties wel geleid tot meer rechtvaardigheid in het stedelijk afvalbeheer. Hun reacties om de negatieve gevolgen van TDS te verwerpen waren het bewijs dat "*end-of-pipe*" stelsel dat momenteel wordt gebruikt om stedelijk afval te verwerken, onrechtvaardigheid met zich meebrengt. In de praktijk bestaat de *GEJ*-beweging die reageert op de stedelijke afvalverwerking in sommige gebieden van Semarang al.

Hoofdstuk 9 bevat een synopsis van de slotopmerkingen uit de hoofdstukken 2 - 8, waarin de situatie van de geografische milieurechtvaardigheid van het afvalbeheer in Semarang wordt beschreven. De stedelijke praktijk van afvalverwerking in Semarang werd als ongeschikt beschouwd. Uit deze studie bleek dat er nog steeds veel wijken in de stad waren die geen TDS hadden of geen plaats om hun afval weg te gooien. Uit deze studie bleek ook dat het stedelijk afvalbeheer niet was wat het had moeten zijn. Het was er nog steeds op gericht om afval te verwijderen en het in een TDS te stoppen alvorens het naar een definitieve stortplaats (FDS) te brengen. In het afvalstelsel bleek dit "*end-of-pipe-systeem*" het afval van stedelijke gebieden te verwijderen in plaats van het te hergebruiken en te beheren volgens een moderner afvalstelsel.

De strategieën van de gemeenschap om een TDS af te wijzen dan wel te dulden is een indicatie en een middel om

meer bewustwording te creëren ten aanzien van GEJ, zowel bij de plaatsing van een TDS als bij de stedelijke afvalverwerking in het algemeen. Ze zijn een vorm van verdediging van geografische leefomgeving van de gemeenschap, om zo een gezond(er) milieu te bereiken door de negatieve impact van TDS te minimaliseren. Om uiteindelijk een sociale beweging tot stand te brengen, moeten deze strategieën gesteund worden door andere partijen die met een gelijksoortige problemen kampen. Het systeem van stedelijke afvalverwerking tot nu toe niet veel veranderd. Semarang gebruikt nog steeds het “*end-of-pipe*” systeem en TDS’en zijn nog steeds van belang in de stedelijke afvalverwerking. De reacties en strategieën van gemeenschappen zullen moeten worden nagevolgd door andere gemeenschappen door op dezelfde situaties te reageren. Deze reacties moeten op bredere schaal in Semarang (en waarschijnlijk in Indonesië) weerklink vinden en niet geïsoleerd blijven als tot een beperkte aantal gemeenschappen. In de context van het stedelijk afvalbeheer zou een sociale beweging de gangbare praktijk van TDS-plaatsing en stedelijke afvalverwerking kunnen veranderen die daarmee gelijkwaardiger en beter kan worden. De enige manier om GEJ te bereiken is het bewustzijn om te zetten in een sociale beweging door de inwoners bewust te maken van hun recht op een schoon en gezond milieu.

Ringkasan (Summary in Indonesian)

Buku ini mengenai analisis terhadap salah satu persoalan lingkungan di Indonesia yaitu, proses pengelolaan sampah padat. Sebagai kasus, studi ini berfokus pada manajemen pengelolaan sampah rumah tangga di Kota Semarang, Jawa Tengah. Semarang masih menggunakan sistem yang menempatkan lingkungan sebagai tempat akhir pembuangan sampah. Sampah dibawa ke Tempat Pembuangan Sampah Sementara (TPS) dan dari sana kemudian dipindahkan ke Tempat Pembuangan Akhir (TPA). Pengelolaan sampah yang buruk terbukti tidak hanya menghasilkan dampak negatif pada manusia dan lingkungan, tetapi juga menghasilkan persoalan geografis. Hal ini akan berdampak pada lingkungan sekitarnya. Beban dan manfaat akan beragam tergantung pada lokasinya. Rumah tangga akan secara tidak berimbang menerima resiko TPS berdasarkan faktor kedekatan pada TPS, jender (perempuan akan menerima resiko yang lebih besar), usia dan status sosialnya. Sering kali kelompok masyarakat miskin menjadi kelompok yang rentan menerima resiko daripada manfaat dari TPS.

Persoalan geografis dapat dijelaskan melalui implementasi kebijakan publik di antara dua atau lebih lokasi yang berbeda

dalam wilayah administratif yang sama. Manfaat dan resiko suatu aktifitas seringkali terdistribusi secara berbeda di berbagai tempat dalam wilayah administratif yang sama. Oleh sebab itu pertimbangan geografis menjadi penting dalam pengelolaan sampah. Elaborasi dimensi geografis dan keadilan lingkungan dalam studi ini membuktikan bahwa kebijakan penempatan TPS dipahami secara berbeda di Wilayah Semarang.

Pertanyaan utama dalam penelitian ini berfokus pada keadaan keadilan lingkungan geografis dalam pengelolaan sampah padat di Semarang. Pertanyaan utama akan dijawab dengan 3 pertanyaan penuntun penelitian sebagai berikut:

1. Bagaimana sistem kebijakan dan peraturan menentukan lokasi TPS dan implementasinya oleh Pemerintah Kota Semarang?
2. Apa penyebab dan konsekuensi penyebaran TPS di beberapa *kelurahan* di Kota Semarang?
3. Strategi apa yang dilakukan oleh masyarakat untuk memperbaiki praktek penempatan TPS oleh Pemerintah Kota Semarang untuk tujuan penempatan TPS yang lebih adil dan lebih baik?

Oleh sebab itu, analisis keadilan lingkungan geografis dalam pengelolaan sampah padat dibagi dalam tiga bagian. Bagian pertama meliputi bab 1, 2, dan 3, yang menjelaskan latar belakang studi, kerangka teori dan metode yang digunakan dalam penelitian.

Bagian kedua meliputi bab 4 dan 5 yang berfokus pada sistem penempatan TPS. Bab 4 secara khusus akan mendiskusikan sistem yang digunakan saat ini untuk menempatkan TPS, sementara bab 5 menyajikan kebijakan dan relasi kekuasaan antara pemerintah kota, komunitas masyarakat miskin, dan kelompok warga lainnya dalam penentuan lokasi TPS.

Bagian ketiga meliputi bab 6, 7 dan 8. Bagian ini mendiskusikan hal-hal terkait dengan distribusi TPS, bagaimana mereka ditempatkan, penyebab, konsekuensi dan respon komunitas terhadap penempatannya. Secara luas, respon ini mungkin mengarah pada gerakan lingkungan kota untuk tujuan penempatan TPS yang adil.

Bab terakhir lebih menekankan pada pentingnya analisis geografi dalam keadilan lingkungan. Strategi untuk mencapai distribusi TPS yang lebih adil perlu digaungkan pada skala yang luas di Semarang bahkan di Indonesia. Gerakan sosial dalam konteks pengelolaan sampah perkotaan dapat mengubah praktek penempatan TPS yang ada menjadi sistem yang lebih baik dan adil. Satu-satunya cara untuk memperoleh keadilan lingkungan geografis adalah dengan mengubah kesadaran menjadi suatu gerakan sosial dengan memberdayakan warga kota untuk lebih sadar akan hak atas lingkungan yang bersih dan sehat.

Studi ini dimulai dengan bab 1 dengan memperkenalkan peraturan dan kebijakan pengelolaan sampah perkotaan di Indonesia dan Semarang, kondisi TPS pada umumnya, perlakuan yang tidak sama dalam hal penempatan TPS dan respon NIMBY pada TPS di berbagai tempat di Indonesia khususnya di Semarang. Bab ini menawarkan elaborasi dua konsep yaitu: keadilan lingkungan dan keadilan geografi (keadilan lingkungan geografis) untuk menguji dan menganalisis distribusi resiko dan manfaat dari aspek geografis penempatan TPS. Gagasan keadilan lingkungan geografis digunakan untuk menganalisis empat aspek. Pertama, lokasi TPS yang spesifik dan dampak lingkungan terhadap masyarakat. Kedua, adalah sistem yang digunakan untuk penempatan TPS yang berlaku saat ini. Ketiga, adalah faktor-faktor penyebabnya dan, konsekuensi distribusi TPS di masyarakat, dan keempat adalah strategi dan kekuatan kelompok

masyarakat dalam upaya mencapai distribusi yang adil dalam hal distribusi TPS.

Bab 2 memaparkan kerangka teori yang digunakan untuk menjawab permasalahan utama dalam studi ini. Review literatur tentang keadilan lingkungan dan aspek geografis dipaparkan untuk memformulasikan model pendekatan yang dapat menjelaskan keadilan lingkungan geografis dalam manajemen pengelolaan sampah rumah tangga di Semarang. Diskusi khusus mengenai perlakuan dan pengelolaan sampah rumah tangga dielaborasi dalam keadilan lingkungan geografis. Keadilan lingkungan geografis dianalisa pada tiga proses yaitu penyebab, konsekuensi dan respon yang terkait dengan perubahan lingkungan khususnya di tempat tertentu. Pertama, faktor-faktor yang berpengaruh dan dianggap sebagai penyebab. Mereka dapat dianalisa khususnya melalui kelas sosial dan politik kuasa. Kedua, lokasi dapat menghasilkan konsekuensi yang berdampak baik pada kualitas lingkungan dan faktor-faktor pengaruhnya. Konsekuensi akan menjelaskan distribusi spasial kualitas lingkungan yang meliputi resiko dan manfaat. Beberapa faktor pengaruh dapat digunakan untuk menganalisa keadilan lingkungan geografis dalam penempatan TPS pada 5 kelurahan yang berbeda di Semarang. Sementara, respon dianalisa melalui strategi masyarakat untuk memperjuangkan keadilan lingkungan geografis yang meliputi strategi melawan dan bertahan, serta gerakan sosial kota sebagai suatu respon terhadap ketidakadilan lingkungan geografis penempatan TPS.

Bab 3 mendiskusikan strategi penelitian untuk menggambarkan situasi keadilan lingkungan geografis dalam pengelolaan sampah pada perumahan di Semarang. Ada dua kriteria yang digunakan untuk menentukan lokasi penelitian dengan tujuan untuk menggambarkan konflik antar kelas dalam penempatan TPS. Lokasi penelitian adalah kelurahan yang di

dalamnya terdapat beberapa kelas sosial yang berbeda dan pernah terjadi penolakan terhadap penempatan TPS. Melalui investigasi sejarah penolakan penempatan TPS, hubungan antara lokasi dan strategi untuk menempatkan TPS dapat dibuktikan. Ada 5 lokasi penelitian yang dipilih sesuai dengan kriteria penelitian. Untuk menjelaskan keadilan lingkungan geografis, ada beberapa variable yang ditentukan untuk mengidentifikasi baik keadilan geografis dan keadilan lingkungan. Variable tersebut dikelompokkan ke dalam kelas sosial dan kedekatan geografis terhadap TPS. Untuk kedekatan geografis, ada dua faktor yang digunakan untuk studi ini yaitu: (1) jarak antara rumah tangga dan TPS, dan (2) radius wilayah yang terdampak. Informasi diambil dari peta TPS yang ada di setiap kelurahan. Kondisi rumah-rumah dan daerah sekitar TPS digambarkan melalui observasi lapangan. Jarak antara TPS dengan perumahan dipetakan di setiap lokasi. Faktor-faktor untuk menentukan kelas sosial adalah pendapatan, pekerjaan, status kepemilikan tanah dan rumah, kondisi rumah dan akses ke pemukiman. Faktor-faktor lain yang ditambahkan adalah, etnisitas, jender dan usia. Faktor-faktor ini ditambahkan jika di lokasi tertentu ditemukan sebagai faktor pengaruh. Pertanyaan yang terkait dengan faktor-faktor tersebut dimasukkan dalam kuesioner. Untuk menjelaskan keadilan distributif, pengalaman dampak pada kesehatan, beban finansial, dan hal-hal mengganggu lainnya diinvestigasi melalui proses wawancara. Responden juga ditanyai hal-hal yang terkait dengan keuntungan yang diterima dari penempatan TPS. Pertanyaan yang terkait dengan proses pengambilan keputusan penempatan TPS, keterlibatan publik, pemahaman dan ingatan terhadap proses penempatan TPS dan pemahaman yang terkait dengan struktur pengambilan keputusan digunakan untuk menjelaskan keadilan prosedural penempatan TPS di Kota Semarang. Untuk menentukan sistem penempatan TPS, ada dua informasi yang dikumpulkan yaitu; bagaimana TPS

ditempatkan dan dimana ditempatkan. Sementara isu mengenai strategi, politik dan kuasa, dihasilkan dari tiga sumber, yaitu kebijakan lokal pengelolaan sampah padat di pemukiman, aspek-aspek sosial dan kesadaran lingkungan warga. Untuk melengkapi penjelasan tentang respon masyarakat sebagai strategi kuasa untuk meningkatkan kondisi lingkungan yang lebih baik, ada tiga informasi yang dikumpulkan yaitu; penyebab, konsekuensi dan respon dari masyarakat. Ada 126 responden yang diwawancarai dalam penelitian ini. Beberapa diskusi kelompok terfokus diselenggarakan untuk memperoleh informasi kelompok dan sejarah dan ingatan mengenai penempatan TPS. Penelitian lapangan dilaksanakan selama hampir 18 bulan antara tahun 2009 – 2011 dan diperbarui kembali di tahun 2019 - 2020.

Bab 4 bertujuan untuk menjelaskan sistem penempatan TPS di Kota Semarang. Untuk memahami sistem penempatannya. Bab ini dibagi ke dalam dua diskusi utama. Pertama adalah penjelasan mengenai pengelolaan sampah padat pemukiman. Kedua adalah penjelasan mengenai kebijakan dan peraturan Indonesia mengenai pengelolaan sampah perkotaan yang meliputi; definisi pengelolaan sampah perkotaan, tujuan pengelolaan sampah dan tugas pemerintah serta keterlibatan publik dalam pengelolaan sampah kota. Pemerintah Kota Semarang masih gagal mengelola sampah kotanya secara efektif. Pengelolaan yang tidak efektif adalah dampak dari banyak faktor termasuk kemampuan keuangan institusi yang terbatas, budaya ‘membuang sampah’ yang masih ada, serta lemahnya tanggung jawab lingkungan industri untuk mengelola kemasan produknya. Faktanya, istilah ‘pengelolaan’ bukanlah kata yang tepat untuk menggambarkan praktek pengelolaan sampah perkotaan di Semarang karena tehnik yang dominan digunakan masih pada kegiatan ‘membuang’ bukan ‘mengelola’. Sampah masih dalam kondisi tidak terkelola dengan baik sampai di tempat pembuangan

akhir (TPA). Pengelolaan sampah perkotaan di Semarang masih bertujuan memindahkan sampah dari pemukiman dan tempat aktifitas lainnya, ke TPS dan TPA. Kegagalan pengelolaan sampah sangat jelas terlihat secara fisik di beberapa bagian kota. Umumnya TPS dan TPA masih membutuhkan perbaikan. Tong-tong sampah di tempat publik pun masih terbatas baik dalam hal kuantitas dan kualitas untuk memilah sampah organik dan inorganik.

Bab 5 mendiskusikan baik peraturan nasional dan lokal sebagai bagian dari kerangka umum yang dijelaskan secara lengkap dalam 5 bagian. Kelima nya adalah; faktor-faktor yang terkait dengan praktek yang ada, karakteristik tempat, pertimbangan sosial, karakteristik fasilitas pengelolaan sampah kota. Kerangka umum yang dipakai mengacu pada peraturan sistem pengelolaan sampah perkotaan nasional. Sementara kebijakan yang terkait dengan praktek kontekstual dan prosedur implementasi kebijakannya menggunakan peraturan Kota Semarang dan praktek di masyarakat. Selain peraturan nasional dan daerah, faktor lainnya adalah kebijakan lokal dan pertimbangan sosial yang mempengaruhi pola distribusi penempatan TPS. Peraturan adalah syarat normatif yang ideal untuk menempatkan TPS. Peraturan, tentu saja, dimaksudkan untuk melindungi warga kota dari dampak negatif TPS. Akan tetapi, dalam implementasinya, penempatan TPS tidaklah mudah dilakukan. Keterbatasan ruang menyebabkan seringkali terjadi kegagalan dalam memilih lokasi yang tepat untuk TPS, sehingga seringkali di beberapa area, TPS sangat dekat dengan pemukiman. Sayangnya, pengambil kebijakan mendukung keputusan yang tidak adil dengan menempatkan TPS di pemukiman masyarakat miskin. Mereka lah yang mengalami dampak negatif TPS. Lokasi yang umum dipilih untuk menempatkan TPS adalah pemukiman miskin dan marginal. Faktor sosial baik secara

individu dan kelompok juga mempengaruhi pola distribusi TPS. Alasan personal dalam menerima penempatan TPS terkait dengan tempat bekerja. Ada dua alasan untuk hal ini, yaitu TPS digunakan sebagai tempat bekerja, dan TPS harus ada di sekitar tempat bekerja misalnya seperti di pasar tradisional. Berdasarkan wawancara terhadap beberapa responden, sebagian merasa karena mereka tidak mempunyai kepemilikan hak atas tanah dan rumah, mereka menganggap bahwa mereka bukanlah warga yang mempunyai hak suara dalam pengambilan keputusan untuk penempatan TPS. Oleh karena itu mereka tidak mempunyai pilihan untuk menolak penempatan TPS. Budaya toleransi Jawa juga menjadi pengaruh dalam menerima penempatan TPS di pemukiman mereka.

Bab 6 menggambarkan distribusi TPS yang ada di 5 *Rukun Warga* (RW) di 5 *kelurahan* yang berbeda di Kota Semarang. Bab ini berisi sub bab pengantar mengenai TPS di Kota Semarang dan gambaran setiap TPS di setiap RW yang dipilih. Ada tiga aspek yang digunakan untuk menggambarkan TPS yaitu; sejarah penempatan/pemindahan TPS, kondisi TPS, lingkungan dan rumah tangga di sekitarnya dan faktor penyebab penempatan/pemindahannya. Umumnya TPS berada di wilayah padat penduduk. Kondisi ini menyebabkan posisi rumah tangga hanya berjarak antara 5 sampai 20 meter dari TPS, meskipun peraturan mensyaratkan 30 meter adalah jarak minimum. Kelima TPS berada dalam kondisi terbuka dan hanya 3 diantaranya dibatasi dengan tiga sisi dinding beton. Dari 4 lokasi TPS tersebut, hanya 3 yang memiliki lantai beton dan kontainer untuk menempatkan sampah. Jumlah kontainer bervariasi antara 1 sampai 2, tergantung pada jumlah produksi sampah rumah tangga di RW tersebut. Selain lokasinya berada di RT yang miskin, kelima penempatan TPS menggambarkan bahwa ada 5 kelompok berbeda yang menerima dampak negatif

yang lebih besar dibandingkan kelompok yang lainnya. Anak-anak, perempuan, warga yang tidak memiliki hak milik atas tanah, rumah tangga yang miskin adalah kelompok yang mengalami dampak negatif lebih besar dibandingkan warga lainnya. Mereka tidak mempunyai keberanian untuk menolak penempatan TPS. Beberapa kelompok lain yang berpengaruh berhasil meminta pihak-pihak terkait untuk memindahkan TPS dari lokasi sebelumnya. Beberapa alasan yang diajukan dengan pertimbangan kesehatan dan kebersihan lingkungan terkait dampak negatif yang ditimbulkan TPS, seperti; bau, pemandangan sampah yang berserakan, lalat dan alasan estetika.

Bab 7 memaparkan analisis yang komprehensif mengenai ke(tidak)adilan geografis dalam sistem pengelolaan sampah padat pemukiman di Kota Semarang. Analisisnya dilakukan dalam diskusi 3 hal yang saling terkait. Pertama, bab ini dimulai dengan penjelasan mengenai penyebab penempatan TPS dari perspektif kuasa dan kebijakan sosial. Kedua, adalah diskusi mengenai konsekuensi dari keadilan lingkungan geografis; dan ketiga adalah diskusi mengenai distribusi sosial manfaat dan resiko dari TPS. Bab ini telah mengidentifikasi 4 aspek penting untuk menggambarkan keadilan lingkungan geografis pengelolaan sampah padat pemukiman di Kota Semarang. Keempatnya adalah aspek relasi kuasa, peraturan dan kebijakan yang tidak adil untuk pengelolaan sampah padat pemukiman; ketiadaan pelibatan warga dalam proses pengambilan kebijakan penempatan TPS dan pengelolaan sampah kota yang buruk. Bab ini juga menjelaskan 2 bentuk konsekuensi keadilan lingkungan geografis penempatan TPS untuk warga. Pertama, ada pembagian yang tidak berimbang pada manfaat lingkungannya, kedua adalah resiko dan biaya pengelolaan sampah yang tidak adil. Secara geografis, lokasi suatu TPS akan menentukan siapa yang akan menerima kerusakan lingkungan. Semakin dekat warga ke

suatu TPS, semakin rentan mereka terhadap dampak negatif TPS. Di sisi lain, jarak yang berbeda antara rumah tangga ke suatu TPS juga dapat menyebabkan berbagai biaya yang harus ditanggung. Ketika seseorang tinggal sangat dekat ke suatu TPS, ia tidak perlu membayar biaya sebagaimana halnya seseorang yang tinggal jauh dari TPS. Perbedaan beban menandakan bahwa penempatan TPS menyebabkan distribusi yang tidak adil dalam yurisdiksi administratif Kota Semarang. Ketidakadilan lingkungan geografis adalah konsekuensi keberadaan standar ganda dengan perlakuan yang tidak sama antara warga kota dalam yurisdiksi yang sama. Konsekuensi penempatan TPS dan perlakuan terhadap sampah kota akan menimbulkan respon dari komunitas di sekitar TPS. Respon dapat dilakukan baik secara individual maupun kelompok. Respon dapat dikelompokkan sebagai strategi bertahan dan penolakan terhadap TPS. Sementara, strategi menolak dapat dilakukan baik secara formal maupun informal. Strategi ini dilakukan untuk beberapa alasan, seperti menempatkan TPS sebagai tempat untuk mencari nafkah dengan memulung sampah dan alasan kelekatan dengan lokasi asal. Kondisi ini memaksa warga untuk tetap tinggal, meskipun harus berhadapan dengan dampak TPS. Terkait dengan strategi bertahan, hal ini terbentuk ketika kemampuan menolak penempatan TPS tak memadai atau tak dimiliki. Warga membuat berbagai strategi untuk tetap bertahan. Bahkan sikap 'tidak peduli' pun merupakan bagian dari strategi ini, karena kelompok menganggap tidak ada lagi cara lain untuk mengatasi masalah yang kompleks dari TPS. Di Semarang, beberapa kelompok mengambil tindakan positif seperti menanami pohon-pohon di sekitar TPS, melakukan kerja bakti secara rutin untuk membersihkan TPS. Walaupun berbagai upaya tersebut tidak dapat menghilangkan semua dampak negatif, namun mereka

dapat meminimalkan dampak dan dapat melindungi kualitas lingkungan.

Bab 8 menjelaskan mengenai kondisi dan kemungkinan munculnya gerakan sosial kota. Respon warga terhadap dampak negatif penempatan TPS, dapat menjadi modal utama untuk membangun kesadaran gerakan keadilan lingkungan geografis. Gerakan ini dapat mempengaruhi keputusan pemerintah dan warga kota untuk memperbaiki sistem pengelolaan sampah di Kota Semarang, secara lebih luas di Indonesia. Ada 5 karakteristik yang ditemukan dalam studi ini yang dapat menjelaskan kemungkinan munculnya gerakan lingkungan kota. Pertama adalah tipe perlindungan lingkungan untuk mempertahankan ruang spasial. Perlindungan ini termasuk penolakan LULUs dan respon terhadap NIMBYs dari warga kota sebagai reaksi terhadap penempatan TPS yang tidak adil. Strategi penolakan dan bertahan adalah cara yang dilakukan oleh warga sebagai reaksi terhadap penempatan TPS atau juga cara untuk menerimanya. Kedua, identitas kelompok yang bereaksi terhadap penempatan TPS biasanya adalah kelompok masyarakat miskin yang menerima dampak negatif TPS. Di sisi lain kelompok masyarakat mampu membentuk identitas pemukimannya sebagai wilayah yang bersih. Ketiga, sebaliknya, beberapa kelompok warga mengajukan protes terhadap Pemerintah Kota Semarang untuk menempatkan/memindahkan TPS ke tempat lain. Meskipun ada beberapa yang melakukan aksi anarkis, umumnya warga paham kepada siapa mereka mengajukan protes. Mereka secara jelas memahami, pemerintah kota adalah pihak yang tepat untuk menyelesaikan persoalan lingkungan terkait dengan penempatan TPS. Keempat, saat merespon penempatan TPS, kelompok warga mempunyai tujuan yang jelas untuk mencapai lingkungan sehat yang lebih baik dengan melakukan aksi penolakan dan bertahan terhadap TPS. Kelima, faktor yang pemicu untuk

merespon penempatan TPS adalah adanya perbedaan manfaat dan resiko dari TPS. Kelompok warga, yang telah mengalami lebih banyak resiko dibandingkan manfaat TPS mendorong mereka untuk mengajukan protes terhadap penempatan TPS. Walaupun respon kelima warga RT terhadap penempatan TPS terjadi pada skala RT dengan tujuan untuk melakukan protes terhadap Pemerintah Kota Semarang, respon ini telah menuntun pada tuntutan keadilan dalam pengelolaan sampah kota. Respon mereka untuk menolak dampak negatif TPS dibuktikan bahwa sistem *'the end-of-pipe'* yang masih digunakan untuk mengelola sampah kota telah menghasilkan ketidakadilan. Secara praktis, gerakan keadilan lingkungan geografis pada wilayah yang terbatas di Semarang, sebenarnya telah ada.

Bab 9 memaparkan sinopsis kesimpulan untuk bab 2 – 8 yang menggambarkan situasi keadilan lingkungan geografis dalam pengelolaan sampah di Kota Semarang. Pengelolaan sampah kota di Semarang dianggap masih belum layak. Studi ini menemukan bahwa masih ada banyak RW di Kota Semarang yang tidak memiliki TPS. Studi ini juga menemukan bahwa pengelolaan sampah kota masih belum dilakukan sebagaimana layaknya pengelolaan sampah. Praktek yang ada masih bertujuan memindahkan sampah dan menempatkannya di TPS sebelum dipindahkan ke TPA. Dalam sistem pengelolaan sampah, sistem *'the end-of-pipe'* adalah sistem yang digunakan daripada mendaur ulang dan mengelolanya dengan sistem yang lebih modern. Strategi penolakan warga dibangun untuk tujuan mempertahankan hak atas lingkungan yang sehat dan bersih. Sementara penolakan terhadap penempatan TPS yang berujung pada pemindahan TPS hanya bertujuan untuk mempertahankan hak atas lingkungan sekelompok warga saja. Pemindahan TPS tidak menghapuskan dampak negatif TPS, karena secara geografis, TPS hanya dipindahkan ke tempat lain, praktek TPS

masih tetap berlangsung. Dalam studi ini, penolakan didasarkan pada kebutuhan perorangan dan kelompok untuk membebaskan mereka dari dampak negatif dari TPS. Hal ini tidak dilakukan untuk kepentingan publik dan lingkungan secara umum. Kondisi inilah yang kemudian menjadi bukti bahwa ada ketidakadilan lingkungan geografis yang terjadi.

Kedua strategi ini adalah modal untuk meningkatkan kesadaran warga atas keadilan lingkungan geografis terhadap penempatan TPS dan manajemen pengelolaan sampah kota, yang sebetulnya adalah upaya untuk mempertahankan ruang geografis warga untuk mewujudkan lingkungan yang sehat. Untuk menjadi suatu gerakan sosial warga, kedua respon tersebut harus didukung oleh kelompok lain yang mempunyai masalah yang sama. Apalagi sampai saat ini sistem pengelolaan sampah masih sama dan tidak berubah banyak. Kota Semarang masih menggunakan sistem 'the end-of-pipe' untuk mengelola sampahnya. TPS masih ada dan masih menjadi tempat sementara untuk menempatkan sampah.

Strategi untuk memperjuangkan ruang geografis yang sehat terhadap TPS dapat juga ditiru oleh kelompok warga lainnya. Respon seperti ini perlu digaungkan pada skala yang lebih luas baik di Kota Semarang maupun Indonesia, dan tidak terbatas sebagai kesadaran sekelompok masyarakat saja. Gerakan sosial dalam konteks pengelolaan sampah perkotaan dapat mengubah praktek penempatan TPS yang lebih adil dan lebih baik. Satu-satunya cara untuk mencapai keadilan lingkungan geografis adalah dengan mengubah kesadaran lingkungan menjadi gerakan sosial dengan memberdayakan warga untuk memiliki kesadaran atas hak untuk lingkungan yang sehat dan bersih.

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