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Clean up the neighbourhood!

A case study in Semarang, Indonesia about strategies and partnership in solid waste management

Bachelorthesis Geografie, Planologie en Milieu

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A case study in Semarang, Indonesia about strategies and partnership in solid waste management

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Preface

The last seven months I have been working on this bachelor thesis about the solid waste management system in Jomblang, Semarang. With great pleasure I present my final version of my bachelor thesis. It was a wonderful adventure to design and work on this research and travel to Indonesia for the first time. Before this experience I knew almost nothing about the waste situation in Semarang. During the fieldwork I learned a lot. Sometimes it was demotivating to see the piles of garbage and to notice that not everybody cared about their environment. Other times it was inspiring to meet people who were really committed to improve the situation. At times it was hard deal with a different environment and culture but with the help of some people I managed to succeed.

First of all, I want to thank my supervisor Lothar Smith, for the support, inspirational talks and critical attitude during the process of writing this thesis. Also I want to thank Martin van der Velde, for the coaching at the beginning of the whole process. Further I would like to thank all the respondents I interviewed, for their time and giving me honest answers to which I could receive an insight in the waste management system of Jomblang. Finally, a special word of thanks to Oely Sidabalok, who guided me through Semarang and help with this research. Also she translated almost all the interviews I did. I could not have done this research without her.

Overall I had a great time where I learned a lot. I cheerfully look back at the time in Semarang. Doing research in Indonesia about waste management and having the change to talk about this on the radio was a great experience.

Nikki Schuurmans

Nijmegen, august 2016

Summary

Worldwide the total waste production is growing every day. This waste, produced by human activities, puts pressure on the existing waste disposal systems and causes problem in mainly developing countries where collecting, separating and dumping or processing waste often happens in an uncontrolled and environmentally sensitive manner. Economic transformations in tropical Asia together with an increasing production and consumption of manufactured and packaged goods has led to massive production of solid waste. Also in Indonesia, one of the most populated countries in Asia, the production of solid waste per capita has increased tenfold between 1970 and 2000. Influences as a lack of policies, strategies and financial support, low involvement of private sectors, inefficiency and low community awareness led to the low service of municipal waste management. Like everyone with this problem they are looking for solutions, but nobody seems to have it entirely right yet. Also Semarang, a city in Java struggles with these problems. A big aspect of the solid waste issue is the complexity of the waste disposal system in Indonesia.

In this research there is chosen to perform a case study and to focus on the sub-district Jomblang in the city of Semarang. The reason why this area was chosen is that Jomblang has a relatively well working SWM system, but is still struggling to create a better working solid waste management system. According to the literature there is a tension between the large-scale industrial solutions and the small-scale community-based solutions. However it is not very clear how they are interrelated, and how this can contribute to improving the solid waste management system. This research will give an insight in these different stakeholders, their different strategies and how these stakeholders are related to each other. The main research objective is as follows:

To create more understanding about the different strategies used by the different stakeholders involved in the solid waste management system in the district Jomblang, their interrelation, and how this contributes to a better solid waste management system.

A main question and four sub-questions are formulated to be able to reach this goal. These questions reflects the research objective and will help to reach this goal. The main question is divided in two different components. The first part will try to describe which stakeholders are involved in the SWM system in Jomblang and what strategies they use in order to keep the area clean. The second part is more exploring and will try to give an answer on how the SWM system can be improved by analysing the interrelations between the different stakeholders. The main research question in this research is:

''What are the most important strategies used by the involved stakeholders concerning solid waste in the district Jomblang in the city of Semarang, and how do they complement each other in order to create a better operating waste disposal system?''

The first theory that helps to explain which strategies are important and are used by different stakeholders is the theory about the three forms of capital by Bourdieu. The three sorts of capital are economic, social and cultural capital. Using this concept helps to understand what sort of resources the different stakeholders have at their disposal and they use certain strategies. Another theory in this research is the public/private partnership and its positive effect on the SWM system. This research looks at the extent to which there is such a cooperation between public and private domain.

Information necessary to answer the research question is gained during 5 weeks of fieldwork In Jomblang. Observations and semi-structured were conducted with the help of a translator during that time. These interviews gave an insight in the different waste disposal strategies that were used in Jomblang. It also showed the opinions of the respondents on a cooperation between the public sector, the business sector and the communities in sub-district Jomblang. The empirical data is summarised and analysed. The output of this analysed data helps to answer the sub-questions and the main-research question.

In the empirical data, four main practices were found, these are ''illegal dumping of waste', 'temporary disposal site', 'waste management within the community' and 'scavenging and waste separation'. The biggest problem in the sub-district is the illegal dumping of the waste which causes environmental problems. The communities waste management strategies are generally more sustainable than the strategies provided by the government. The government is mainly responsible for providing the temporary disposal site, final disposal site and the transport between the two. They don't have a clear policy to improve the system. The communities in Jomblang have developed their own, more sustainable strategies. The focus on these strategies lies with '*waste collecting*', '*waste separation*', '*re-using*', '*recycling*' and '*composting*'. Another important stakeholder is Bintari, a non-governmental organization that helps Jomblang with creating a better SWM system. They focus on creating awareness and education. The industry is an upcoming business in the waste sector. They collect and sell the waste for economic gain.

According to the respondent the most important strategies are creating awareness and educating and motivating people. Both social as cultural capital seemed to be important here and they have a positive influence on each other. For example, more awareness creates more motivation to improve he waste management system. To achieve this, the NGO Bintari, the women group APL and other important groups and individuals in Jomblang create workshops and information meetings that people can attend to learn more about waste management. Also the use of key persons is a popular strategy. These key persons have the 'spirit' to lead the community in managing solid waste and are an example. They also motivate people in the neighbourhood to get actively involved in solid waste management.

There is no specific program or overall policy between the government, the business sector and the community. Some stakeholders complement each other where others don't. There are gaps in the SWM system, with the consequence of illegal dumping of waste. According to the respondents there is no cooperation between government, communities and private sectors. The communities in the sub-district Jomblang bear the most responsibility in waste management. Most respondents think that the government should support the communities by providing for resources and tools. All the stakeholders should be involved but in different kind of areas. According to the data gained from the interviews the SWM system will improve when people work together and all fulfil their own part. That is not what is happening now. There are however some strong working relations between Bintari and the communities in Jomblang. Bintari guides and supports the communities by meeting with them to teach and empower them. Communities are now implementing their own initiatives. The only negative parts is that there is no coordination between the groups and communities on bigger level and that most strategies are not long-term solutions.

From the theories that were used and the data gained during the fieldwork a conclusion can be drawn. The use of resources was very dependent on which stakeholders were mostly involved. Creating awareness and education seemed to be the most important strategies as they were also the most

successful on the long-term. These sorts of strategies depend on cultural capital and show lots of creativity. Awareness and education also have a positive influence on the motivation of people. Economic gain is also a big motivation for people to treat their waste. In Jomblang every stakeholder fulfils its own role but there is no cooperation between them. The government takes care of the disposal sites and the transport between them but is nog involved in the community or with the private sector. Sometimes they provide for resources but this is very limited. The business sector is important in the waste market. Respondents call it a promising market. Little evidence was found about their role in the SWM system, except that it seems to be a promising market. The business sector can turn out to be valuable if this is more stimulated.

Table of contents

1.Introduction

The total waste production worldwide is growing more and more every day. This waste is produced by human activities. The increase of waste puts pressure on existing waste disposal systems and causes problems mainly in developing countries where collecting, separating and dumping or processing waste often happens in an uncontrolled and environmentally sensitive manner. Also in tropical Asia, solid waste is a growing problem. since the mid-twentieth century economic transformations throughout tropical Asia have led to corresponding ecological transformations and associated environmental and resource problems. Also the increasing production and consumption of manufactured and packaged goods has led to massive production of solid waste. Since the introduction of plastic as the main packaging material the problem has increased enormously. Most of the countries in the region are struggling to deal with a growing waste problem (Agamuthu et al. 2009, Hiramatsu et al. 2009).Unfortunately waste management technologies and policies have not kept pace with the increase in waste production.

In Indonesia, one of the most populated countries in Asia, the production of solid waste per capita has increased tenfold between 1970 and 2000 (Sutanto 2007: p. 10). The increasing of the amount of waste, together with the growth in population, becomes a real problem faced by the government. Influences as lack of policies/strategies and financial support, low involvement of private sectors, inefficiency, and low community awareness led to the low service of municipal waste management (MWM) (MacRae, 2014). Like everyone with this problem they are looking for solutions, but nobody seems to have got it entirely right yet.

This research will focus on the way to improve the solid waste management (SWM) system by looking at the different stakeholders involved and their used strategies. However changing the SWM system is not easy. By analysing the different stakeholders and their interrelations a necessary insight into the obstacles of solid waste management will be provided.

1.1 Project Framework

Indonesia is a country with a very high population rate, 254.5 million people, which is still growing with 1.3 % a year (World bank,2014). According to the united nations every Indonesian generates an average of 2,1 kg a day of municipal solid waste. In the year 1995 this amount was only 0,8 kg a day. It is not hard to imagine what a huge amount of waste this brings. In the year 2010 the total amount of MSW produced in Indonesia daily was approximately 176,000 ton. A big reason for this is that Indonesia is growing into a more industrialized country with an economical evolution with the result a heavily urbanization occurring across the country. According to the World bank (2014) the estimation is that in the year of 2025 around 67,5% of the Indonesian population will live in urban areas. However these urban areas have a poorly developed infrastructure for waste management (Supriadi et al., 2000). This results in an increasing waste problem in Indonesia, where there is a change in waste composition together with a not developing waste disposal system. Indonesia is a developing country dealing with waste management difficulties and has been trying to solve this problem for years (Sipriyadi et al., 2000). Facts show that only 60% of the current waste volume can be handled correctly by the Indonesian government (Meidiana & Gamse, 2010). To summarize, in developing countries like Indonesia both the amount the amount of Municipal Solid Waste and the population are increasing which causes a potential threat to the environment, society and to economic losses (Shekdar, 2009). The most acute problems are in the extremely populated and industrialized urban areas of Java. For example in Semarang which will be the focus area in this research. But before zooming in on a particular area, first it is important to put the subject in perspective by facts and to elaborate the

literature on the subject. The definition for waste which is used in this research is the definition given by McDougall et al. (2008). Waste only differs from useful product by its lack of value, but physically it contains the same materials. The focus in this research will be just municipal solid waste which accounts for only a relatively small part of the total waste stream and is the combination of household and commercial waste. According to McDougall et al. (2008) household waste is one of the hardest sources of waste to manage effectively. It concerns a very diverse range of materials, for example glass, plastic, paper, etc. all mixed together.

1.1.1 Current waste disposal situation

In Indonesia, there is a shortage of national and local waste regulations concerning waste disposal. For a long time there was no established national waste policy. Till the Five Year Plan Strategy (1979-1984), the government did not have a legal tool to control the waste disposal system on local level. Since this Five Year Development Plan the government implemented solid waste management for the first time and tried to improve solid waste management services in various municipalities. However none of these municipalities could find a long-term successful solution for their issues with the system of waste disposal (Supriyada et al., 2000). Only in 2008 the government started to have their real first concerns about the generated waste problems in Indonesia. They developed a policy which still works as the most recent one. Within this policy, different concepts of waste minimizing and waste recycling have been introduced (Meidiana & Gamse, 2010). This policy development is divided among several ministries and the implementation of it is the responsibility of each municipality. Many Indonesian municipalities have attempted to reform their solid waste management system through variety of funding and planning strategies. However according to (Supriyada et al., 2000) none of them have yet succeeded in finding a long-term solution to waste disposal. Many methods have been applied but had limited success. Also western management methods have failed. ''As the Regional Solid Waste Management seminar held in Bangkok pointed out, the constraints for adopting Western methods and technology included climatic and seasonal variations, budget and foreign exchange limitation, the economy of the region, physical characteristics of the cities, social and religious, and public health awareness'' (Thanh & Muttamara 1978 in Supriyada et al., 2000).

In the city of Semarang different ways of waste disposal are used. Most of the municipal solid waste is dumped in landfill site without any treatment (Aye and Widjaya, 2006). The final disposal for the city of Semarang has been claimed to be over capacity for over a decade. But the landfill site is still used every day (Sekito, Prayogo, Dote, Yoshitake, & Bagus, 2013). One reason for this is that scavengers take away large parts of the waste that have been brought to the final disposal site. Scavengers, also called waste pickers, collect the garbage with value for re-selling of re-using. They scavenge through the waste, trying to find some valuables that they can sell (MacRae, 2014). People also burn or bury their waste or they just throw it away in nature. The amount of waste and people illegally dumping their waste has been growing for years and there is still no comprehensive solution found in Semarang to deal with this problem. Besides these final disposal sites there also temporary disposal sites (TPS) throughout the city. Here people bring the waste that is collected from the households where it is supposed to be collected from the TSP the next day. A TSP can be a large concrete cube that is built by the municipality. These don't have any kind of cover. This result is the odour to spread, animals and scavengers spreading the waste and it can be a breeding place for flies (Sipriyadi et al., 2000). This way of dumping waste has already caused serious negative environment impacts (Christia and Thomas,

2010). For example, when solid waste is dumped along the road side and into rivers, ground water and river water can get contaminated (Christa & Thomas, 2010) (Uiterkamp et al., 2011).

According to Baud et al. (2004) a more environmentally friendly and sustainable solid waste management strategy emphasizes on activities in relation to reduction, reuse and recycling. Reduce, reuse and recycle, also called the 3Rs, are included in the concept of waste hierarchy (figure 1). When the 3R concept is applied to waste management it can minimize the amount of waste that goes to landfills. It is therefore a more sustainable way of dealing with waste. Figure 1 shows the framework of waste hierarchy. This framework shows the different methods of getting rid of solid waste, with on top the most preferred method and on the bottom the least preferred method. The pyramid shows all the options for getting rid of waste. These are ranked by sustainability (European Commission, 2015).
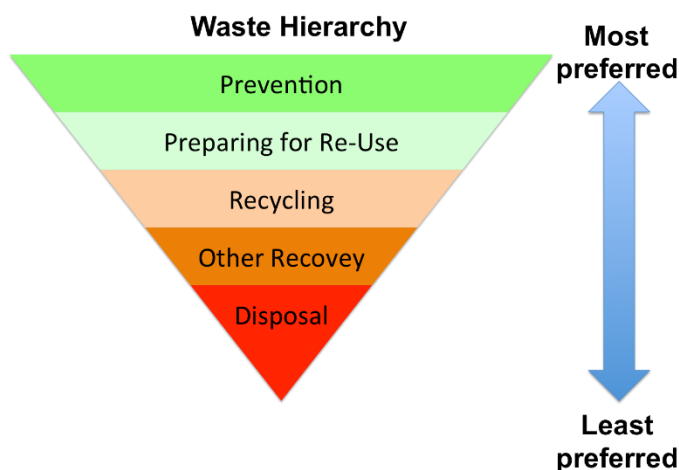

Figure 1: Waste hierarchy. Source: http://www.wastefootprint.com/

Recycling is the process of transforming or reproducing materials that served the original function in to new products. Those products will otherwise be considered as waste. Most materials used for recycling are materials such as plastic, glass, metals and electronic waste. Also organic materials can be recycled by turning them into compost. Reuse, like recycling is about using waste again instead of throwing it away. However reuse does not involve reprocessing or transforming waste from one type of material into another. Reuse occurs when a material served its original purpose and is reuses for another purpose instead of treating it as useless garbage. Reduction is the aim of reducing the amount of waste that is produced (Zhu et al., 2007). Different strategies have come by, some more preferred than others. All of these strategies can be distinguished between formal and informal types of waste disposal (Medina & Gamse, 2010).

1.1.2 Different stakeholders

A big aspect of the solid waste issue is the complexity of the waste disposal system in Indonesia. Many different institutions are involved in solid waste management in Indonesia with most of them having a lack of feeling of responsibility. In developing countries both public and private sectors are active in handling SWM. Agencies in the public sector in SWM generally mean municipalities or city corporations. They operate under certain inherent limitations, for instance rigid laws, under which they must work. This makes it difficult to bring change to operational matters. Besides the formal public sector there exists an 'informal' private sector in almost all cities in the developing world. They play a significant role in SWM. All people that may be grouped as the private sector are people who

are not engaged by the public sector but whose livelihood solely or partially depends on solid waste. Most of the private operators are 'informal' workers (Ahmed & Ali, 2004). Informal sector activities are not regulated or controlled by government agencies. They exist and operate because of market forces or other social-economic factors (Ali, 1999). In low-income countries the size of the informal sector is significant because of poverty, unemployment or underemployment. There are also comparatively formal entities active in the private sector, for example community-based organizations and small business enterprises (Ahmed & Ali, 2004). According to Ahmen & Ali (2004) the public and private sector can be grouped in the following way:

Public sector
The government, environmental organizations and other groups are required to play a key role in bringing awareness about MSWM programs. Unless the public are involved throughout the MSWM programs by the implementing agencies, awareness cannot be achieved (Ahmed & Ali, 2004). Local legislation can facilitate or constrain a waste management policy or project. It is a major driver in the group of institutional drivers of waste management and it can change the way waste materials are managed or disposed (Agamuthu et al., 2009).

Waste pickers and waste buyers
People in cities of the developing countries who support themselves and their families by directly or indirectly participating in waste collection and recycling. All cities in the developing world have a sizeable population that ekes out a living from picking waste generated by their wealthier neighbours. Waste buyers are people who walk around town to buy any waste material that they can sell for a profit such as paper, plastic and glass bottles and metal cans. There are also stationary buyers who operate shops to buy waste brought to them by others including waste pickers. These are very small-scale operations.

Recycling industries
There are small-scale industries as well as large-scale industries. On small-scale businesses involved in SWM are mainly recyclers of waste material. They purchase items like glass, plastics, etc. and manufacture them as saleable products. Their suppliers can be waste pickers, waste buyers or even micro enterprises. They are self-sustaining operations and remain in existence as long as the demand for their problem remains. They also have an informal linkage with the public sector as buyers of waste from the public SWM workers. Large scale industries are industrial establishments that buy suitable waste materials in bulk to use in their manufacturing process. They buy waste in large quantities and they are profit-oriented operations whose sustainability depends on market forces.

CBOs
Community-based organizations (CBOs) are informal institutions formed by members of a community to address the needs of a community such as a park, sports facility or community centre. Sometimes these organizations respond to deplorable environmental conditions in their locality by initiating SWM operations, mainly primary collection and street cleaning. The primary goal in such operations is providing a social service.

NGOs
Non-governmental organizations (NGOs) may enter into SWM related activities for a number of motives. These motives can be social concerns for waste pickers, introducing new recycling technology (e.g. composting), extending micro-credit, concern for the poor environment in which their beneficiaries live, or simply because they are contracted by other agencies to implement a project.

Mostly they are not driven by making profit but by the need to achieve their goal. Their scope of work can include waste collection, rehabilitation of waste pickers, building awareness in the communities, dissemination of information, research and the introduction of new technology. They traditionally work closely with communities and there is usually good cooperation from the community from the community members.

Micro-enterprises
Micro-enterprises are for-profit business operations that are run by entrepreneurs. Their focus is on creativity, innovations and the constant search for new products or process ideas. Micro-enterprises enter into SWM activities because they see a gap in service delivery and existence in a demand for filling that gap. They find this niche and charge for their services. An example is that they may find a demand for house-to-house garbage collection (primary collection) that the municipality cannot provide, and seize the opportunity by providing the service in a neighbourhood for small charges to the households.

Community participation
According to related literature a big part of the waste management is left by households and neighbourhoods itself. A community decides for themselves how they want to manage their waste. However very often the community as well as the chief of a community do not have the information, education or awareness that is needed to develop a good working sustainable waste management system. This social factor is one of the main reasons of the waste disposal systems failing. Other reasons are the lack of relevant waste disposal policies and regulations, and the lack of financial support for local municipalities for investing in a good waste disposal system (Supriyada et al., 2000). To put the garbage at the street at least a minimum participation of the community is required to keep the solid waste management running. Community participation can be a success but that also depends for a large part on other actors that are involved, like the municipality, community-based organizations, micro-enterprises and local leaders. For instance when the municipality doesn't collect the waste separately, there is also no use for the community to separate their waste. The cooperation between the CBO, the local authority and other stakeholders are important for a better working and more sustainable solid waste management.

As was described earlier, the private sector works alongside the public sector in many developing countries. The extent of the private sector depends on a number of factors including demand for the service, ability to pay, poverty and regulations. When it comes to privatization, governments generally only consider full privatization without considering the partnerships with all levels of the private sector.

1.1.3 Waste management strategies and cooperation

In his research article MacRae (2010) talks about waste management in Bali where both production and awareness of waste are relatively advanced. As such this is a useful case for exploring the wider problem and possible solutions. MacRae (2010) reviews the current state of solid waste management in Bali and shows that there is a fundamental tension between large-scale industrial solutions and small-scale community-based ones. According to MacRae (2010) the most successful solutions to date are at intermediate scales. He argues that the reasons for this relative success are primarily social, cultural and political ones rather than technical or economic ones. This research looks into different approaches that have been tried in different areas in Bali with varying degrees of success. While Bali is an extraordinary case, its waste problems are essentially common to most of tropical Asia as are the

range of potential solutions. The approaches to waste in Bali are split between proponents of large-scale industrial processing made possible by overseas funding and technology, and those advocating small-scale, relatively low-tech, local community-based solutions (Gies, 2009). Proponents of large-scale approaches tend to begin with technical and financial analyses of the scale of the problem itself. Human factors such as the social, cultural and political contexts of project form little if any part of their analyses. Those who advocate small-scale approaches on the other hand emphasize social and community aspects and question dependence on foreign money and technology, as well as the environmental side effect of large projects. The solutions that have been most successful in Bali are intermediate in scale. The project that seem to have worked the best combine recycling with composting in various mixes. The evidence reviewed here identifies two different models which suggest that WTE approaches may not be the most viable, at least in the short term. The two successful models are intermediate in scale between 'industrial' and 'community' models. To understand the factors that enable success it is necessary to shift the analysis away from purely technical and economic dimensions to social and cultural ones.

In the management of solid waste in some countries both public and private sectors are active. According to Ahmeda & Alib (2004) there is an emerging trend in encouraging the private sector to enter into solid waste management operations, and attempts are being made to formally link the public and private sector operator. Such linkages can improve the efficiency of the entire sector. Also Visvanathan and Trankler (2003) say that waste management strategies can only be effective if all the stakeholders are well adjust to each other. There are various stakeholders in waste management that interact. When the stakeholders are connected they can work together to build a viable system. For example customers (residents) willing to pay for sanitation and waste. Businesses see business opportunities in waste and sanitation. Financing institutions offer credit product to customers and businesses. (Local) government are responsible for setting rules and regulations. An improvement to this stakeholders interaction could help to improve the solid waste management (Ahmed & Alib, 2004).

According to Sekito et al. (2013) community participation can be helpful because many local authorities in developing countries suffer from a lack of financial, technical and human recourses. Therefore they are not capable or willing to deliver and maintain basic urban services. The definition of community participation given here is: ''the sociological process by which residents organize themselves and become involved at the level of a living area or a neighbourhood to improve the conditions of daily life (water, sanitation, health, education, etc). It comprises various degrees of individual or collective involvement (financial and/or physical contributions, social and/or political commitment) at different stages of a project'' (Subash). The success of community participation within solid waste management also depends on other actors that are involved, such as the municipality, community-based organizations (CBOs), micro-enterprises and local leaders. Community strategies are essential to generate a broad-based understanding of solid waste issues among community members on the one hand and responsiveness of the stakeholders to the demands of the community on the other.

1.2 Research area
The area where this research takes place is the city of Semarang, in Central Java, Indonesia (figure 2). The city of Semarang is one of largest city in Indonesia with a population of 1,553,778 inhabitants. With an annual growth rate of approximately 1.4 percent, it is predicted that Semarang city will have a population rate of 2,569,986 by the year (Mulyana et al., 2013). This huge increase will put a large

amount of pressure on the current solid waste disposal system. With this in mind, the city of Semarang provides an interesting case for this research.

Figure 2; Map of Indonesia, source; worldmaps, n.d

The city could be divided in sixteen districts. Within the city of Semarang one district is selected where the research will take place. By selecting one district within the city, it is easier to make a better and more complete analysis. The fieldwork will take place in the area called Jomblang (figure 3). Jomblang is one of the sub-districts in Semarang and is very densely populated with a population of approximately 18.000 inhabitants. This particular area is chosen because Jomblang has a relatively well working SWM system, for which they have received multiple awards. Despite the fact that this sub-district is a relatively good example for other areas when it comes to waste management, it is still struggling to create a better way of disposing their waste. During the fieldwork, more information about this area is going to be collected.
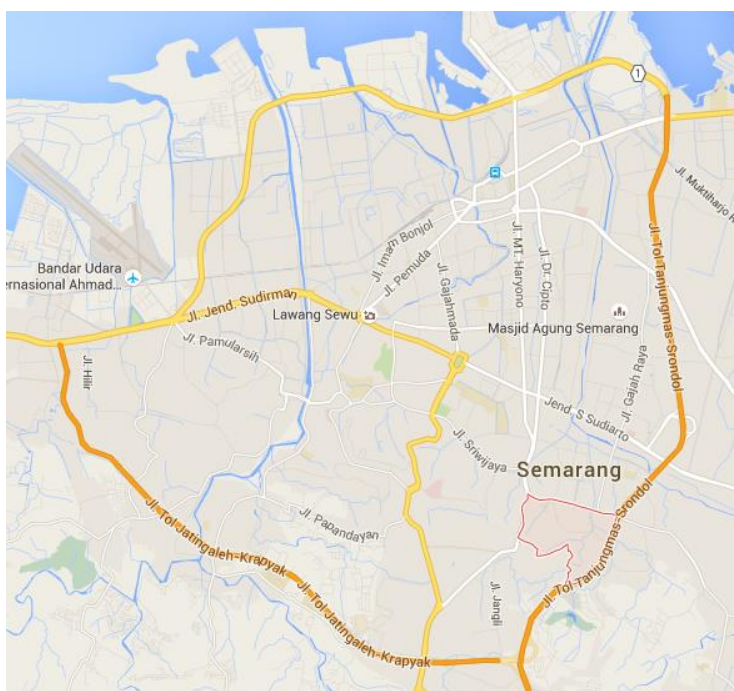
Figuur 3: District Jomblang in the city of Semarang. Source: google maps, n.d.

1.3 Research objective

In the previous paragraph, a short introduction was given about the subject of this research. Information was provided about the waste management situation in Semarang. There is already written extensively on solid waste management, strategies that can be applied and what different actors are involved. There is a tension between the large-scale industrial solutions and the small-scale community-based solutions. However it is still not very clear how they are interrelated, and how this specifically can contribute to improving the SWM system.

This research will give an insight in these different stakeholders, their different strategies and how these stakeholders are related to each other. The main research objective is as follows:

To create more understanding about the different strategies used by the different stakeholders involved in the solid waste management system in the district Jomblang, their interrelation, and how this contributes to a better solid waste management system.

The research objective gives an analysis about the different stakeholders involved in the solid waste management system. According to the literature there are a lot of different stakeholders and they all have their own strategies. The research objective will thereby contribute to a better understanding of how these different stakeholders in both the public as the private sector are interrelated. It gives an insight in the various ways of interaction between government, institutions and citizens behaviour throughout the years and how this can contribute to a better solid waste management system. By providing this information, this research can contribute to the knowledge on how to achieve better policy within the SWM system. The negative effects of the already existing methods can be reduced and the difficulties will become more clear.

1.4 Research model

This section will shortly sketch the research model which was used (figure 4). By looking at different theories and relating them to each other, a conceptual model can be established. This conceptual model together with the most important theories and literature form the foundation for this research. The theories and conceptual model are further explained in the next chapter.

After the establishment of the conceptual model and the used research methods, we move on to the next step, which is fieldwork and collecting data, this will be explained more in chapter 3. The results collected from the fieldwork can be compared with the conceptual model. On the basis of the results, the conceptual can possibly be corrected a little bit.

The next step is analysing the date, after all the research results are collected. From the analysed data, a conclusion can be drawn, which can lead to recommendations.
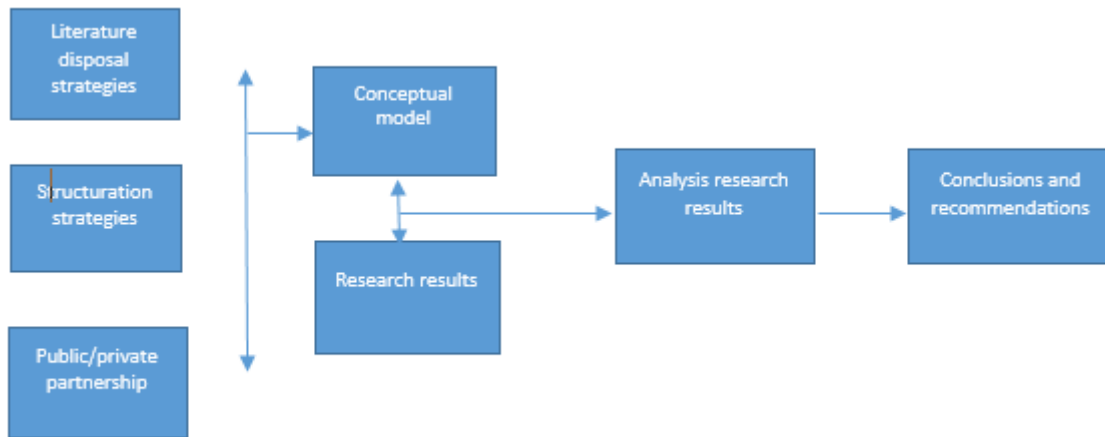
Figuur 4: Research model

1.5 Research questions

Following out of the research objective, a main research question is established that will be presented in this chapter. The research is mainly descriptive as will the research question be. Only the last part of the research question is more exploring. Besides the main question there are also a few sub-questions. The main research question is:

''What are the most important strategies used by the involved stakeholders concerning solid waste in the district Jomblang in the city of Semarang, and how do they complement each other in order to create a better operating waste disposal system?''

The main question is divided in two different components. The first part will try to describe which stakeholders are involved in the SWM system in Jomblang and what strategies they use in order to keep the area clean. The second part is more exploring and will try to give an answer on how the SWM system can be improved by analysing the interrelations between the different stakeholders.

Besides the main research questions there are a few sub questions. The sub questions are only intended to support the main question, and they don't form an extension to the research. (Verschuren & Doorewaard, 2007). With this in mind the following sub questions were constructed:

- *What are the practices within the already existing solid waste management system and what are the gaps between them?*

- *Which stakeholders are involved in the SWM system and what are their used strategies for waste disposal?*

- *How are these stakeholders and their strategies interrelated?*

- *In what way do the different stakeholders complement each other regarding solid waste management?*

The sub-questions support the main-question and are help to answer the main-question. This part will elaborate more on the reason why these sub-questions were used. In order to understand why different strategies are applied, it is necessary to look at the already existing waste management system and the important practices within it. The second sub-question will answer which stakeholders there are which strategies they apply. Sub-question 3 will answer of and how these stakeholders and their strategies are related to each other. These two questions answer an important part of the main-question and are needed to properly understand the solid waste management system in Jomblang. The last sub-question helps answering the last part of the main-question. The different stakeholders can complement each other regarding solid waste management. It is however also possible that they don't.

2. Theory

2.1 Theoretical framework

The theoretical framework elaborates on the different theories applied to this research. The first theories are the structuration theories by Giddens (1984) and Bourdieu (1986, 1990). The theory of Giddens will explain the interrelation between the current waste disposal system and the different agencies who can influence this. Later Bourdieu elaborates further on this theory by adding the concept of capital, and the different forms of capital related to the different used strategies concerning waste management. The second part looks into public/private partnership and how this can be applied to SWM. The use of different theories will help answering the main question of the research by providing concepts that can be used.

2.1.1 Theories of structuration

Theories about structure and agency can be applied to this specific research topic. The theory of structuration was developed by sociologist Anthony Giddens and in 'Elements of the Theory of Structuration' (1984) Giddens explains his theory ad gives a definition about agency and structure. According to Giddens agencies are regarded as knowledgeable, this means that they are capable of exercising agency in and through their practices. Agency here means the ability to change something which is mostly associated with the actor (Inglis & Thorpe, 2012). Agency refers more to the capability of doing things instead of the intentions people have, so agency implies power (Giddens, 1984). Without the option of choosing, agencies would not be able to invoke socials change (Inglis & Thorpe, 2012). Social structures are routinized practices. Practices are everyday routinized activities. According to Giddens some studies have too much focus on action and less on structure, where as other studies focus too much on structural features of a society and less on the actions of individuals. Structures always have two sides in the sense that is enables us to act and take positions but it also restricts us.

With the structuration theory Giddens seeks to unite both approaches, which means that behaviour and structure are interconnected (Inglis & Thorpe, 2012). Both approaches united is called the duality of structures. Structures are depended on our actions and through our actions we can change structures. In his theory Giddens shows the interaction between structures and agencies. The link between the social theory of Giddens and the research topic can be laid especially in the terms 'structure' and 'agency'. In this theory Giddens assumes that agency produces structure and that structure regulates agency. The current waste management system here is the structure, with its flaws and benefits. This structure, the solid waste management system, is determined by the agencies, which are the different stakeholders involved trying to improve this system. Because structure changes due to agency, there needs to be a change in agency in order to accomplish this. The theory of Giddens was about structure and agency, and how structure can be changed due to agency. Bourdieu can elaborate more about this subject. In his theory Bourdieu uses concepts like habitus, fields and capital (Bourdieu, 1986; 1990). These concepts will be shortly introduced before applying them on the research topic.

'Habitus' is an embodied structure that describes how social conditions shape actions of individuals. According to Bourdieu, a habitus is essentially the characteristic way of thinking, feeling, acting and experiencing shared by all members of a certain group of people (Inglis & Thorpe, 2012). It is a product of history and it produces individual and collective practices in accordance with the schemes generated by history (Bourdieu, 1990). This theory describes the combination of how social structures act on individuals and how individuals actively respond to social situations created by those structures. In essence, a habitus can either change or reproduce the social situations individuals operate within. It

also can disguise itself in by making people see the world in a common-sense way. This means that practices , produced by the habitus, can be generated without the full awareness of actors. Another term in this theory is 'field', which is a social context in which a person can find him or herself in. Fields are spaces of positions whose properties depend on their positions within these spaces. In order for a field to function there have to be people and capital (Bourdieu, 1994). When a person enters a field his habitus strongly influences the position his person (Inglis & Thorpe, 2012).

Capital are the resources an actor possesses. Each position within a field is created by a specific amount of capital. There are three sorts of capital. These are economic, social and cultural capital.

Economic capital
This is the level of monetary resources an actor has at their disposal. This form of capital is also very closely related to the other two forms of capital. Bourdieu (1986) explains that economic capital is at the root of the other types of capital, which means that the effects of social and cultural capital are partly based on economic capital.

Social capital
Social capital is the amount of resources a person has in terms of networks and relations with other people. This from of capital is about the possession of a durable network with different members an relations. These networks and relations can attribute a huge amount when it comes to managing the solid waste in an area. For example, the social capital a community possesses can help them in achieving a better SWM system.

Cultural capital
Cultural capital are the cultural resources an actors has at its disposal, this is the amount of socially recognised prestige attached to a person's various practices. For example the amount of knowledge and skill. This can be expressed in the level of education, the higher the level of education is, the richer an actor is when it comes to cultural capital. According to Bourdieu cultural capital can be categorized into three different types. The first type is embodied state, this refers to cultural capital that is attached to the body and is passed through the next generation. The second type is institutionalized state, which refers to the cultural capital that is established by institutions. For example education and language. The last type is the objectified state of cultural capital, which refers to object that represent part of culture. For example art.

The relevance of the capital depends on the field an actor finds itself in (Inglis & Thorpe, 2012). For example when a person is at an art show, the level of cultural capital matters more than the level of economic capital. When these three types of capital are applied to the research subject it is a great way of understanding what sort of capital the different stakeholders have at their disposal. The means stakeholders have to change anything about their situation or field, equals the different sorts of capital they have at their disposal. Without these different types of capital it is hard to change the field. The research objection and question talks about the different stakeholders, their strategies, regarding solid waste and the interrelation between the different stakeholders. Economic, social and cultural capital have influence on these matters. They influence the strategies used by the different stakeholders as well as their relation to each other.

2.1.2 Public/private partnership

In their article Ahmed and Ali (2004) claim a well working public/private partnership in SWM can be a success. As mentioned before both sectors are active in management of solid waste in developing countries and that there is an emerging trend in encouraging the private sector to enter into SWM operations and to link both the private and public sector formally. In developed countries, SWM practices progressed from no system to an increasingly centralized 'municipal system'. SWM is there considered as an urban planning problem or a public health issue. According to this approach, the municipal authorities are the main actors in the field (Baud & Shenk, 1994 in Ahmed & Ali, 2004). However when this model is followed in developing countries it is doomed that the responsibility for managing solid waste primarily rests with the municipal authorities. A number of private sector operators are a valuable contribution in this case. The question then arises whether a synergy in the form of partnership between the two sectors may be achieved to deliver better SWM services and to prove the efficiency of the entire SWM sector.

Theories that pertain to PPPs add to understanding the validity of such arrangements with respect to SWM. A few relevant theories will be presented, these are sociological, economic and management theories. In their article Ahmed and Ali (2004) make a division between these disciplines. According to them there can be an advantage on these three disciplines through a public/private partnership.

Sociological theories

First of all PPP for solid waste management can be viewed in light of sociological theories. These are the theories of functionalism and general systems as is clarified by Abuyuan (1999, in Ahmed & Ali, 2004). According to the functionalism theory partners in both private and public sector may be seen as interdependent organs of a larger organization each having its specialized function working as a whole towards the common goal of delivering effective service. So PPPs in SWM adapt well to this theory if the partners are viewed as parts of a whole organization that delivers services. Another sociological theory is the general systems theory which analyses systems from three different viewpoints: system relations to determine the nature of relationship between various components of a system, system effectiveness to judge how satisfactory are relationships among various components of a system for the whole system to survive or make optimum use of resources, system dynamics to investigate what forces a system to change and the direction in which the change occurs.

This theory is also relevant for a public/private partnerships in solid waste management. It is necessary for the private sector to be given the role in which they have the maximum potential to excel. For example the private sector has a comparative advantage over the public sector in the case of primary collection. The other way around, financial and management inputs for operating secondary collection may be beyond the capacity of most private sector agencies. It may be better to leave this to the public sector. It is important to make an assessment on how comfortable the partners are in a PPP arrangement. Both theories help in visualizing partnerships as adapting, living beings vying for survival in a changing world. This perspective is valuable in analysing the need, evolution and future direction of partnership.

Economic theories

When looking to PPP for SWM from an economic perspective there can be pointed to the Property Rights theory, and the belief that it is the rights of ownership that creates incentives to excel (Hart, 1998 in Ahmed & Ali, 2004). The private sector can be successful because in this sector people and commercial enterprises pay no more than necessary for labour, supplies and capital. Businesses pay

the market rate. This is in contrast to the government, who also produces goods and services from the market for providing public service, and where market competitiveness is not applied. The result is higher costs. However, an alternative economic arrangement has been emerging. This alternative arrangement is called 'mixed economy' and is the combination of the two sectors which was becoming more widespread (Larkin, 1994). Bozeman (in Larkin, 1994) examined some characteristics of the mixed economy in more detail. He argued that business firms are becoming more independent of government agencies and many government agencies are becoming more like business firms. Etzioni (in Larkin, 1994) states that these hybrid organisations hold a great deal of promise for many domestic problems. These organisations provide a means to combine the efficiency and expertise from the business world with the public interest, accountability and broader planning of government. According to Etzioni, these organisations are important as alternatives, and they balance the roles played by public and private sector. Government and public agencies cannot completely withdraw from this sector because this had a public health and a public good dimension. The question here is how to minimise the costs and maximise the resource utilisation, while maintain the best possible quality of service. A hybrid or mixed organisation, of both private and public sector, may offer such an opportunity.

Management theories

In order to meet the needs of society three distinct sectors – public, private and non-profit- have emerged. Each of these sectors has its comparative advantage. Traditionally each sector restricted itself to its own sphere of activities. However, lately, organisations have grown to realise that much value can be created by co-operating with others outside of its sphere. Aickenhead (1999 in Ahmed & Ali, 2004) has invested several theories of management to reflect upon PPP. While traditionally partnership among organisations only occurred on a small scale, now organisations have been forced to recast their view, due to increasing demand, complexity and limitation of recourses. They realised the importance of developing a collaborative advantage. The resource dependency theory posits 'alliances and networks operate as alternatives mechanisms to markets or hierarchies for addressing specific strategic needs' (Aikenhead, 1999 in Ahmed & Ali, 2004). This framework about co-opetition offers a new way to view the interaction of organisations. A new element, called the 'complementor' is added to the traditional value net of customers, supplier and competitors. There is talk of a complementor when customers value your product more when they also have the other player's product then have your product alone (Aickenhead, 1999 in Ahmed & Ali, 2004). A complementor is the opposite of a competitor, who makes the product of its rivals less attractive. It is common for organisations to fill both roles at different occasions, which increases the change of co-operation. However, before an organisation sees the value of co-operation it must emerge out of two traditional mind-sets. The first is the 'business-as-war' that views all players as potential enemies that should be vanished. The second one is the 'either-or' and does not allow exploration of an alternative relationship between organisations. It is important that an organisation learns to use the power of perspective, so the benefits of co-operation amongst the players will become clear. It is particularly important that an organisation draws the value net of any new entrant, as there is the tendency to view new entrants solely as competitive threats rather than complementary opportunities. Finally, the theory of co-opetition is about co-operating with others to best exploit the comparative advantage of each organisation. The precept of co-opetition theory is that it does not matter if others win or lose, it matters if the organisation itself benefits.

It can be difficult to transpire the above ideas to partners in SWM. The public sector may be reluctant to relinquish power to the private sector, municipalities may feel as left out with responsibility but without means to intervene when necessary. On the other hand, intense competition among the private providers may make the opportunity less lucrative. With careful planning and participation from all sides, such difficulties may be minimised.

2.2 Conceptual framework

This section will provide a framework for the different concepts that are used in this research in order to answer the main research questions. These concept are derived from theory. The framework will be helpful when trying to understand what this research wants to achieve by relating these different concepts. The operationalization of these concepts will also be explained in this section. The operationalising of the used concepts will provide a clear vision on what sort of information needs to be collected for answering the research questions. The framework of the theories in the previous section will be sketched before a conceptual framework for the main question can be established.

2.2.1 Operationalization

First the concepts originating from the structuration theories will be featured, beginning with the concepts of structure and agency by Anthony Giddens (1984), and then going on to the different forms of capital set forth by Bourdieu. Finally the concepts out of the theories of public/private partnership will be discussed.

Structuration theories

In his theory, Giddens uses the concepts of structure and agency. He indicates that structures depend on our actions and that our actions can change structures. On the opposite, structures also regulate agencies. There is an interaction between both concepts. As already mentioned before in section 2.1, the structure here is the already existing solid waste management system in the district Jomblang. Agencies here are the actions of the various stakeholders within the SWM system, which are also formed by the structure. The focus of the research will be more on agency. However it is important to have a good insight on how the structure is formed.

In figure 5, there is schematically displayed which waste strategies there are used by the various categories of actors. This schedule is partly based on the all the different strategies that have come by in the literature. The concept of used waste disposal strategies is operationalized by setting out the different activities that concern different waste disposal methods.

Figure 5: Operationalization of the used waste disposal strategies

As is shown in this schedule, the strategies can be distinguished between formal and informal types of waste disposal. In the literature this distinction is often used, however one must keep in mind that most of these activities which are divided in formal and informal waste disposal are intertwined with each other (Wilson et al., 2009).

Bourdieu builds on this theory by adding the concept of capital. Capital means the resources an actor possesses. According to Bourdieu there is a distinction between economic, social and cultural capital. It depends on capital, what strategies an actor is able and willing to apply within the SWM system. This is shown schematically in figure 6.
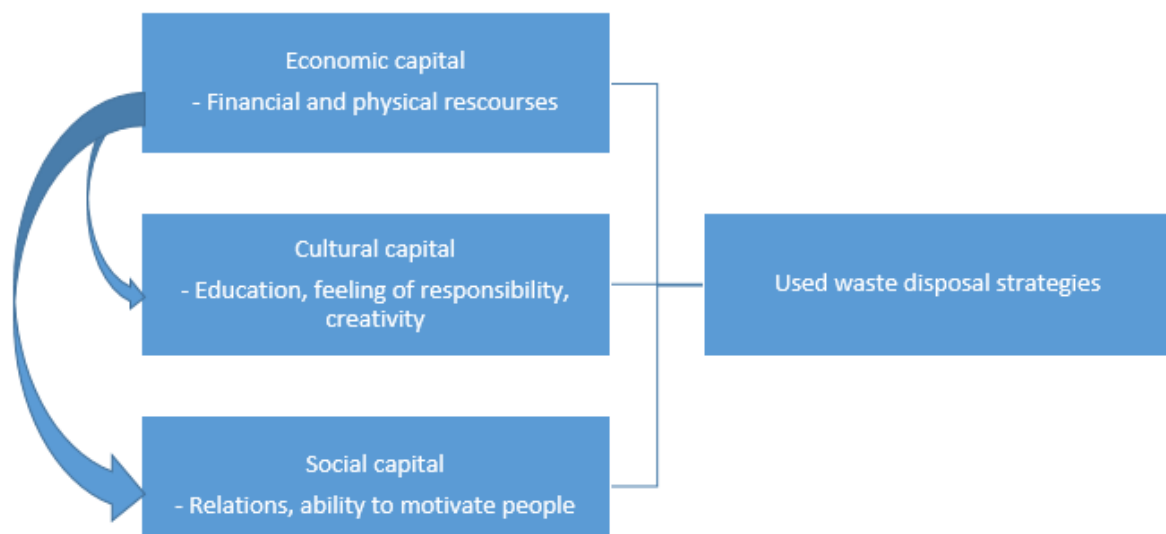

Figure 6: Operationalization of capita land its relation to used waste disposal strategies

The distinction made between the different forms of capital here is visible. The different forms of capital have influence on which sort of disposal strategies are used. This is depended on economic capital, which includes financial and physical sources, cultural capital, which includes education, feeling of responsibility and creativity, and social capital, which consists of relations and the ability to motivate people. The economic capital also influences the two other forms of capital. This is according to Bourdieu (1986), who says that economic capital is at the root of the other types of capital. It is not necessary to examine the concepts of capital, because the relation between the different forms of capital and the used strategies is more central here.

Public/private partnership
According to the sociological, economic and management theories, related to PPP, arrangement between the two sectors can be very helpful for creating a better working SWM system. The private sector is divided between the business sector and the non-government, not-for-profit and community sectors (figure 7). By making partnership arrangements, the different sectors can cooperate. Within a partnership, each actor has its own role to fulfill where it is best fitted. In the next section is explained how this public/private partnership relates to the other concepts.
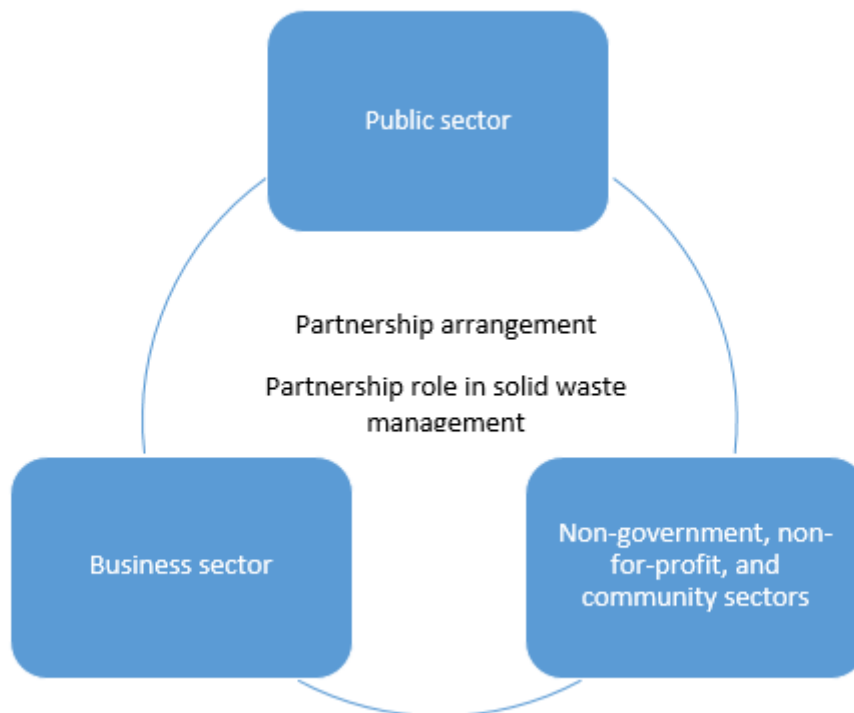
Figure 7: Operationalization of public/private partnership.

2.2.2 Conceptual model

This section discusses the final analysis of the research. The final analysis will be done with the help of the different concept which are extracted from the theory. All the concepts come together in this model (figure 8), which shows how these different concepts are interrelated. The ultimate goal is to provide knowledge about how the SWM system can be approved. This depends completely on which strategies are used for the disposal of waste. For example, recycling is a more sustainable solution as illegally dumping of waste. What strategies are used by different stakeholder depends for one part on the resources it possesses. These resources are here expressed in capital. But according to the theories concerning public/private partnership, cooperation or a lacking of, between the different sectors also has influence on the used waste disposal strategies and indirectly on the working of the SWM system. The questions that remains, is whether partnership between the public and private sector influences the SWM system and can lead to a more sustainable way of disposing waste.

Figuur 8 Conceptual model

3. Methodology

At this point in the designing process, there is a clear transition visible. So far everything was in the sign of a conceptual design by developing a viable research objective, research questions and making a research model. The question now is what has been done in order to get an adequate answer on the research questions and how to collect this within reasonable time. In this section the strategy used in this research will be discussed for acquiring empirical data during the fieldwork. In order to obtain useful data to answer the research question, a clear methodological approach is needed. In this section the strategies to do the fieldwork and obtain valid data will be discussed. The first section will illustrate the strategy which is used and give an explanation about what sort of research is used in order to answer the research question. The next section will go more into detail about the materials that were conducted.

3.1 Research strategy

In this section the research strategy will be discussed that is used for acquiring relevant empirical data during the fieldwork in order to get answers to the research questions. There is chosen for an in-depth research instead of a wide-ranged research. In contrary to a large-scale approach that generalizes the results, a research with more depth focusses on a smaller-scale approach, in which there is less generalizable knowledge but which is more detailed, complex and has a stronger substantiation with a minimum of uncertainty. This research is a qualitative research within a case study. Characteristic of a case study is that the object, the case, is studied in its natural environment. The focus has been put into one location, which is the sub-district Jomblang in the city of Semarang in Indonesia. A case study is useful because this brings a more deep and integral insight of the research object. It gives the possibility to gain more detailed information about the research units. As mentioned before this research aims to describe the different stakeholders involved in the SWM system, their strategies, and their relation to each other, their perceptions about these relations and the way the SWM system is managed. A case study really gives the possibility to focus on individual actors and the interactions between them, which is exactly what this research is about. It is hereby not the quantity of the information that matters but the quality of the information gathered by the respondents. By conducting interviews together with studying all sorts of documents, a clear in-depth understanding in the way which certain processes conduct this way instead of otherwise. Also there is chosen to perform a singular case study instead of a comparative case study. A singular case study focusses on one case, whereas the comparative case study compares two or more different cases next to each other (Verschuren & Doorewaard, 2007). The reason why a singular case study is used, is because adding another neighbourhood would not add significant more knowledge about different stakeholders involved in SWM system and their relations.

Compared to the others research strategies, a qualitative research within a case study is the best way to go. The use of a quantitative research is excluded for different reasons. The first reason is that the amount of observation units are too little to perform a quantitative research (Verschuren & Doorewaard, 2007).The short time that was available for doing the fieldwork, made is difficult to contact a large number of respondent. But more important is that looking at the main research question, it is necessary to perform a qualitative research. The question requires more subjective answers, which a difficult to measure. So for example performing a survey would not be possible, because this is all about getting a broad picture of the research subject together with the ability to

generalize (Verschuren & Doorewaard, 2007). This is not the aim of this research. Also to be able to get a good picture about the different stakeholders involved in SWM in Jomblang and especially how they are interrelated, in-depth-interviews are needed. It is very difficult to express these relations between stakeholders in a quantitative matter. The research focusses besides geographical, also on sociological and management aspects. To come to good a good understanding of the subject, it is important to accurately analyse relationships from the question. On the other hand, there is also tried to get more general insights about the issues from a Indonesian context. This context is important for the reason that this research is done in a different country with a different culture. For this reason there is searched for a balance between a general overview of the problem combined with the necessary in-depth insights.

3.2 Research and case selection

The area where this research has taken place is in the sub-district Jomblang in the city of Semarang, in Central Java, Indonesia. The area, Semarang, where the research would take place, was known before the subject of the research was chosen. The research subject was partly chosen because it fits in the research area. Semarang is a large city where the population growth will put a large amount of pressure on the current solid waste disposal. The means that the city of Semarang is the perfect place for this research. But Semarang is a large city and it would difficult to perform this research in such a wide-spread area. With 177 sub-districts in Semarang, one sub-district is chosen to make a more complete and more in-depth analysis about the research subject. The sub-district Jomblang, is chosen together with contact person Oely Sidabalok from Unika University. This was very useful because as a resident of the city, this person knew much better which area would be suitable to perform this research.

The sub-district Jomblang is interesting for this research because it is a very densely populated area, which puts pressure on the waste management, but at the same it also has a relatively well working SWM system, for which they have received multiple awards. Despite this, there is still a struggle with waste in the area.

3.3 Research material

In this section, the material is considered that has been used in order to answer the different research questions. The process of collecting data within a case study is rather complex. The collected data needs to be more in-depth instead of wide-ranged. In order to achieve this there needs to be worked with different labour-intensive forms of data generation. This means taking labour-intensive face-to-face interviews with open questions rather than a questionnaire to be taken online or by telephone. Other forms of data collection within a case-study are group interviews, observation of the research area and collecting textual material. The use of these different methods is called method-triangulation. In addition, there may be obtained extra depth by using different sources, which is called sources-triangulation. Because of the language barrier by doing research in a foreign country, group interviews are probably not convenient during the implementation of this research. The other methods, however, were all used. Another aspect that needs to be established before collecting the actual data, is the sample size. For this research there is chosen to interview around 10-15 different respondents. For all the respondents applies that the aim is to collect information as extensively and detailed as possible.

Within a case-study, a strategic sampling instead of a random sampling is generally used to get respondents. The is necessary because otherwise the change is too big to get an atypical sample, which in its turn can have consequences for the external validity of the research results. The research units

will therefore be consciously chosen, led by the conceptual model and focussed on what information should be collected. However, because this research will be executed in a foreign country and only little is known about the terrain in question or what to encounter in this case, it is also necessary to us a methodology called 'snowballing' for selecting the cases. This means that respondents are selected one by one and can be found through other respondents. This method will help to find enough relevant respondents and also because this research looks at the relationship between those actors it is useful to create this network. So data collection within a case study can be extensive, because of the use of multiple sources of information like literature, observations and interviews. As said before all of these sources of information will be used within this case and will be discussed in the section.

The basis of knowledge for the research subject is generated from a literature study. Before collecting data in the field, a literature study was done in order to determine the main research question as well as the sub-questions in this research. The literature forms the foundation for the design of this research. It showed different researches on waste that have already been done, it showed were there are still gaps of information and it provided useful theories on which the conceptual framework and the operationalisation is based. It consists of documents of waste disposal in general and more specific documents on the case.

The most empirical data will be generated from the interviews. Face-to-face interviews with different respondents is the main source of information for this research. The advantage of doing face-to-face interviews is that the interrogator get to see the facial expressions and other body language, which can be important for the proper interpretation of the answers. The interrogator can also explain the questions during the interview when these are not clear to the interviewee. This can lead to higher response to the questions and better answers.The interviews are semi-structured, to give guidance during the interview but also leave enough space for improvisation. When the interview is to structured it could hinder a respondent to talk freely. So by creating an interview guide which is both structured and non-structured, it creates the opportunity for the respondents to have influence on the conversation and to tell their experiences but the interviewer is still able to lead the conversation.

The last method used for collecting the empirical data is observation. This method could be described as experiencing a phenomenon in its natural setting (Creswell, 2013). Observation is a technique of data collecting in which the researcher does observations on site. With the help of a monitoring plan different persons, situations, objects or processes can be observed. A monitoring plan is a schedule with keywords to which should be looked at during the observation. These are called monitoring categories which are derived from the research target and questions. There is a distinction made between a strong pre-structured and a more free variety. This distinction runs parallel to the difference between a survey and an interview. For this research there is chosen to go with the more free variety, with only a list of considerations in mind. These considerations are the physical site of the district Jomblang, the behaviour of the inhabitants and their interactions. During the observation, the role of a non-participant observer will prevail.

3.4 Research population

The next step was to actually find respondents to interview. As said before, the snowballing method has been used, which means not all respondents were already known. However the intention was to talk at least to one chief or leader in the sub-district Jomblang, one non-governmental organisation who is familiar with the waste disposal strategies in Jomblang, one person from the government (higher or lower level) who deals with waste management and local people from Jomblang. The mixture of research units on different hierarchy levels is important. Without this diversity, it won't create a comprehensive understanding about the research object.

The first person that was interviewed is Ibu Ismi, leader of the women group APL. This person has a central role in the SWM system in Jomblang. The contact with this person was made through Oely Sidabalok, who already knew this person from previous interaction. This interview was recorded with a mobile phone. This made it possible to listen to all the interviews again and the idea was to transcribe the literal text after. More information about this in section 3.5. The same was done with every other interview that followed. For the start of these recordings, all the respondents were asked for permission. None of the respondent did mind that the interview was recorded. After finishing the first interview, the second interview followed very fast. Because Ibu Ismi has such a central role in the SWM system she knows a lot of people that were interesting to interview. Together with the help of the contact person Oely Sidabalok it was not hard to find new respondents. Most people were easy to approach and very willing to do the interview. Only the interviews with the scavengers and one of the local inhabitants weren't planned. These people were just approached on the street and were willing to do an interview. It doesn't mind that they were randomly chosen, as it was the intention to get to know the subject from the perspective of a scavenger and a local, as long as the scavenger was active in Jomblang and the local was living in Jomblang. The scavenger was approached at the TDS where he just finished with working and the local was approached at her food stall.

3.5 Analysing the empirical data

After the empirical data was collected, it needed to be analysed. In this section the method for analysing the qualitative data will be discussed. The empirical data were collected through fieldwork, mostly by doing semi-structures interviews. During the interviews the data was recorded. This way the data could be processed and analysed after the interview. Notes made during the interviews and observation are only for further understanding the research object and will therefore not be analysed.

Most of the collected data is analysed from a phenomenology perspective. In a phenomenology the common experiences of people of a particular phenomenon or concept are analysed (Creswell, 2013). A phenomenology is an inductive and descriptive approach, used to describe the experiences of individuals within a group, where the researcher tries to give a description of the phenomenon. The aim is to describe the different experiences, lived by the different stakeholders concerning solid waste management. However the last part of the main research question is more exploring then describing and it is better to analyse the collected data from a different perspective. A grounded theory can therefore be applied as well. This theory puts the focus on processes and events that have taken over time. It seeks to encode a theory from the empirical data collected by open interviews. This theory can be useful here to perform an inductive research while discovering what problems exist in the social scene of this case and what process different stakeholders use to handle them. It can also be helpful to show the relations between the variables of the conceptual model.

The idea was to make transcriptions of all the collected data during the interviews. Here starts the first overall reflection of the collected data. By transcribing the data you can get a more abstract look of the data and you will be able to see the data in a different way (Creswell, 2013). By making summaries of the transcripts and reading them several times, new thoughts on the subject can be made. However the language barrier seemed a problem when literally typing out the spoken text in the interviews. Sometimes it was hard to understand what the respondent meant with certain pronunciations. Sentences were not always completely finished. This made the story incoherent at some times. Because of many unclear parts in the transcribed text, the summary was used for the larger storyline and argumentation. The summary gave a more clear view on the overall arguments and opinions the respondent gave. These summaries were analysed on the basis of four categories, which were extracted from the sub-questions. These are practices, stakeholders and strategies, resources, and the relations between the stakeholders. Every piece of the text is intensively read and assigned to one of the categories. By categorising the text it is easier to analyse. The overall argumentation in the analysis is therefore mainly based on the summaries that are made from the transcribed text. When quoting the respondents, the transcriptions were used. In most interviews these quotes are already a translation from the literary pronunciation.

3.6 Reflection

For this research there was chosen to interview around 10-15 different people. The respondents that were interviewed are a diverse group of people that are all familiar with the waste management in Jomblang. It turned out that using the snowballing effect for finding respondents was useful. Many respondents were found through other respondents. Most information was collected through these interviews, the observations were a nice contribution in order to emphasize with the situation. Although it was difficult to get a complete picture of the sub-district Jomblang, since the area was still very large. It can be discussed if the amount of interviews and observations were enough to represent such a large area. By using a local contact person and a translator, it was possible to find respondents and interview them. A translator turned out to be of great value and was indispensable. Because of the language barrier it was not possible to carry out this research in English. Although a translator was indispensable, it also brought difficulties with it, both while doing the interviews as analysing them after. The translator usually gave a summary of the given answer instead of literally translating the answer. So the answer was already interpreted in a certain way, before transcribing the interview and analysing the text. Another difficulty was that it was often not possible to talk directly with the respondents during the interviews. This causes the loss of a certain sharpness to the interview, which came at the expense of the quality of the interview.

4. Empirical data: practices

4.1 Introduction
In order to understand why different strategies are applied and be able to answer the main research question, it is necessary to look at the already existing waste management system and the practices relating to solid waste and its disposal. Structure and agency are here related were the current waste management system and the involved stakeholders influence each other. In order to influence the existing solid waste management system in a more positive manner the structure or agency needs to change. The involving stakeholders and their strategies regarding solid waste disposal have an direct influence on the existing solid waste management system. These strategies are in their turn emerged out of this system. So, to understand the nature of these strategies and the involvement of the different stakeholders it is a necessity to get a vision of the different practices already existing in the current solid waste management system.

4.2 Four main practices
This chapter shows the practices happening in the area Jomblang regarding solid waste disposal and management. The main foundation of the elaboration on these practices are from the different interviews held with the stakeholders that were interviewed as well as the observations made while visiting this area. There are a lot of differences between the waste management strategies of communities in Jomblang, however some practices are the same for every community. Another important finding is that some practices are purely the domain of the government and others the domain of the community, where there is not much interaction between the two domains. But before elaborating more about this division, this chapter will first show the main practices concerning solid waste disposal in Jomblang and where they stand on the level of sustainability. By using the empirical data, there were four main practices found that will be discussed. These main practices are ''illegal dumping of waste', 'temporary disposal site', 'waste management within the community' and 'scavenging and waste separation'.

4.2.1 Illegal dumping of waste
A practice that is clearly visible in Jomblang is the illegal dumping of mixed household waste in rivers and surroundings. According to the literature the ground water and the river water can get contaminated (Christa & Thomas, 2010) (Uiterkamp et al., 2011). Another big negative effect is that the river and the riverbank is full of household waste, which in time can cause flooding. Throwing waste in the river or surrounding is illegal but people can easily get away with it. It seems socially accepted and there are no real consequences, like for example a fine, for dumping waste illegally. Even though there are rules they are not always respected.

''*Because they don't get fine. I think they should get it. Actually there is already a regulation but it is not enforced*'' (Ali Harianto, march 23 2016).

This was also told by one of the respondents, Ibu Ismi, who is a woman living in the sub-district of Jomblang and guides the area in the process towards a more sustainable waste management. People throw away their waste illegally because they don't live close enough to temporary disposal site and they think it's too much effort to bring the waste there. According to Ibu Ismi mostly women rather than man bring that waste to the TDS, because waste is part of the household chores. They don't mind bringing the waste along them when they go to the market once a week, but they don't want to bring

the waste on a more regularly basis. This costs too much trouble. They also don't want the waste lying around the house for more than a week. A large part of the inhabitants are not aware of the consequences of throwing the waste away in this illegal way. Especially the older people are a problem according to Ibu Singi, leader of RW in Jomblang who plays an important role in creating a more sustainable waste management system.

''Especially the older generation, they say that since they were only 1 year old they threw away the waste, but the waste has changed, more plastic'' (Ibu Singi march 18 2016).

They have always done it this way and they are used to throwing the waste away at a time that there was much less plastic and more biodegradable materials were used. They don't take in mind that the waste materials have changed fast over the years and there is much more plastic now. The result is that dumping the waste into the river or surroundings is the more easier option. By this they do not only contaminate their own area but also others, when the waste is carried away with the river flow. This way of illegal dumping causes very negative environmental impacts. People also burn or bury their waste. However no evidence was found that the burying or burning of the illegal waste was very common in Jomblang.

4.2.2 Temporary disposal site

One of the practices that came up many times during the interviews is the temporary disposal site. This is a frequently used option for inhabitants to dispose of their waste. This practice consist of the inhabitants bringing their waste themselves to the nearest temporary disposal site or the waste is picked up by the garbage collector. In case of the last option it is the task of the household to collect their household waste and place it in front of the door. This way the garbage collector can pick it up and bring it to the nearest disposal site. The price for this service is between 10.000 and 15.000 rupiah each month per household. The transport for the garbage collector to pick up the waste is usually provided by the government The frequency of this garbage collection varies within the different housing blocks in Jomblang. According to one respondent, the garbage collector should come by every day. However in some areas this doesn't always happen and the garbage collector sometimes did not come by and did not pick up the garbage. As a result the garbage became overloaded and smelly. Some reasons for this are that the garbage collector is not paid well or that the area is too hilly for the garbage collector. Another option for the inhabitants is to bring the waste to the temporary disposal site themselves. The problem here is that the nearest temporary disposal site is still far away for most people. A negative aspect of this practice is that the household waste is not separated but all mixed together with different waste compositions.

One negative side effect of the TDS is that these sites mostly don't have any kind of cover, as is also the case in Jomblang. As a result it spreads a nasty smell and become a breeding place for flies. This causes more problems regarding to social (in)justice. According to Oely Sidabalok, an expert on the theme and currently finishing her research about socio-spatial justice and waste management, people don't want to live next to a landfill or TDS.

'' Every several years the government must find new places for the landfill, people and government face rejection, because people don't want a landfill in their neighbourhood'' (Oely Sidabalok, march 21 2016).

It is not something that people want close to their house, but it is also a problem when it is too far away.

4.2.3 Waste management within the community

There are also initiatives from the community itself to dispose of the their waste in a more sustainable way. The area Jomblang started to manage the solid waste they produce of their own since 2007. At first they faced some problems of getting people involved and informing them. But according to Ibu Ismi this got better after the first ideas were established. There are different practices within this so called community-based waste management. One of the first ideas that was established is the waste bank or the so called 'bank sampah'. People can bring their valuable waste to this waste bank and sell it. The person who manages the waste bank notes who brings their waste, what amount they bring and the money they get from it. This waste bank is initiated and active in not only Jomblang but also other districts in Semarang. Since recently, beside the 'bank sampah', there is a new sort system called the 'bank plunglap'. A difference is that when someone brings the waste to this bank, the money will be put in one saving instead of the person who brings the waste. When households don't bring their waste to this place they have to pay. According to Ibu Ismi there are two main reasons they want from this operation. The first is very obvious, which is the neighbourhood to be clean, the second is a more social reason and is to bring the neighbourhood closer together by organizing fun trips.

Practices that are visible here are reusing and recycling. Reusing, as already mentioned before, is the practice of using material that are already seen as waste. This practice stands very high on the sustainable waste disposal hierarchy. In Jomblang, most of the time reusing is not only done for the purpose of protecting the environment but also for economic reasons. Especially the poorer people rather reuse old things then buying new things. Not able to buy new things, they are often forced to reuse. Recycling is also a much used practice in Jomblang, there are multiple types to be found. One example are the articles Ibu Ismi makes out of Marimas sachets, like the shopping bags (figure 9). These actions help to raise awareness. The impact on the level of sustainability is not very big, because there only a few people who do this, it recycles only a very small part of the plastic that is produced. However waste separation and recycling can contribute to the waste management. Separating waste can make a big difference in the amount of waste that can be prevented from going to the final disposal site. When plastic, paper and other materials are separated on a larger scale, it can be sold to be recycled. A community can also profit from this. Another practical approach to waste management visible in Jomblang is composting. A handy tool they could use for this was the Takakura box. People can place this box at their house which can function as a trash bin for organic waste. Then after a while this organic waste will turn into compost, which can be used as a fertilizer. This fertilizer can be used for their own gardens or be sold to nearby farmers. But this strategy is not always that successful, there are problems as well. People don't know how to use the box or get bored after a while and don't feel the motivation to go on. This can also be blamed to the fact that changing organic waste into fertilizer is a long process before it can actually be used or sold.

4.2.4 Scavenging and waste separation

For a large part the separation of the waste is practiced by the scavengers. Some people associate waste separation with scavengers who don't have a very positive reputation. They don't like to be seen as a scavenger. Scavengers are often unwanted guests in a community. They mostly collect plastic bottles. After scavengers have collected the waste, they usually sell it to a third party to make profit. These third parties use this useful waste and recycle it into new items. According to the data found

during the interviews and doing fieldwork there are different types of scavengers in this system. There are different types of scavengers because there are also multiple sources of waste disposal sites where the scavengers can collect the waste from. For example scavengers can either pick up the waste from the houses or at the disposal sites, both the temporary disposal site as the final disposal site. Scavengers play a big role in the recycling of waste in Indonesia. And even though it is not intended they also help with the protection of the environment. Also the scavengers have a bad image in the community. There are seen as poor people from the lower class.

4.3 Level of sustainability

When comparing these practices to the level of sustainability, the framework of waste hierarchy (figure 1) can be a helpful tool. This ranking shows that some practices and strategies are more preferable than others. When looking at the different practices, it is clear that the community waste management is high on the ranking of sustainability. Illegal dumping however is the opposite of sustainable. It contaminates nature and can have an influence on people's health. The TDS seems to be somewhere in the middle. The waste is disposed when brought to the TDS but it will only be displaced to another disposal site where the waste is not treated. The only exception is when scavengers interfere and collect waste from the TDS. This has a positive influence, because they search for useful waste which then can be sold and treated. It also means the waste in the disposal sites is reduced. Although a TDS is not the most sustainable solution for treating waste, it is a necessary measure. The community-based waste management is too small-scaled to treat all the waste produced by the community. In addition, there is still too much resistance, or too little collaboration of people in Jomblang.

5. Strategies and resources

5.1 Introduction

In the previous section, the different practices related to the waste management in Jomblang were discussed. This chapter will take a closer look at the different stakeholders, how they are related and which strategies they apply. These relations between the stakeholders and their strategies are related to each other and also to the practices that are already happening in Jomblang. This means that the practices mentioned in the previous chapters stand in relation with the chosen strategies. In the conceptual model the assertion is made that the strategies, elected by the stakeholders, partly depend on the available resources. Resources are expressed in capital here. In addition to discussing the different strategies that are applied, this chapter will also delve into which stakeholder possesses which form of capital and to which extent this affects the chosen strategies in waste management.

5.2 Stakeholders

To be able to answer the main-research question it is important to know the different actors and institutions. In their own way, these actors all have an influence on the way the solid waste is managed and the level of sustainability of this waste management. This part will go into these different stakeholders and which ways they are involved in the different strategies. The waste disposal system in Indonesia is complex with many different stakeholders involved. As already mentioned before both the public as the private sector are active in handling the solid waste management.

5.2.1 Bintari

Bintari played a big role in the Jomblang sub-district regarding solid waste management. Bintari is a non-governmental organization that cares for the environment and wants to support the environment in the city of Semarang, and since a few years also it surroundings. Bintari was the reason that the sub-district Jomblang came into better contact with the sustainable waste management. A big strategy of the NGO is to involve the community and work with the people. Their basic strategy is working with the people, with the community. This is also the case in the sub-district Jomblang. For creating a better waste management system they started to work with the communities in Jomblang in 2001. This is called community based waste management. They focus on education. They educate children, students and also adults, for example the women groups. Besides education they also empower them. According to Amalia, executive director of Bintari, they went there to give them support at least once a week by just visiting them, involve in the 'money thing' and educate. Jomblang was the first sub-district Bintari started to work in, by giving them support, workshops and resources. When this turned out to be successful more and more communities asked for the help of Bintari.

This was also the case with the leader of the women group Ibu Ismi. She was very enthusiastic about a workshop she followed, given by Bintari, and wanted to implement the ideas and strategies from Bintari in her own community. Since that moment Jomblang was the front runner in the community-based waste management in Semarang and a big example for other areas. Bintari is still involved in the area by providing resources and information. They also give awards for the most sustainable RW's and RT's to motivate communities. Their main approach now is to pick the women that have 'spirit' and can be key persons. They can take the lead in improving the solid waste management system. They

choose women to approach, because as mentioned in section 4.2.1 women are the ones who do the household and create the most waste. They are usually also the ones who take care of the waste.

5.2.2 Community

Sub-district Jomblang has its own environmental organization, which manages its own waste. This organization is a women group called APL, with leader Ibu Ismi. They have their own waste management strategies, which they also update every year. Their goal is to change the consciousness of people and the way they treat their waste by giving workshops in not only Semarang, but different provinces in central Java. In most communities in Semarang the women of the community come together in a group meeting to discuss and exchange ideas and information about life in the neighbourhood. This means that they sometimes also speak about waste management, separating waste and composting of waste. This way all the households in the community are connected and share this information. It is striking that there are mostly women involved in this matter. Another important organization that should be mentioned is Gotong Royong. This is a voluntary cooperation in every community in Indonesia which means that they work together for the benefit of the community. This cooperation is very important for the Indonesian people and is taken very seriously. For example when the streets or river are full of garbage they will clean it up together, together with the whole neighbourhood. This concept of togetherness and community is a very important strategy in the waste management on this level.

Another important strategy with communities is the choice of looking for key persons. This strategy was already introduced in the previous section, where as it was also a familiar strategy for the NGO Bintari. A community is a gathering of individuals where some individuals play a bigger role and are an example in the community based waste management strategies. One of the key persons, mentioned in the previous section is Ibu Ismi, leader of the women group APL. As told before, she has close relations with NGO Bintari, and was one of the first persons in Jomblang who started working on a more sustainable waste system. A few other important key persons came by while doing the research. Another leader of a neighbourhood in Jomblang who has great impact on the waste management situation is Ibu Muniadi. Her focus lies on waste separation. In her community, people bring their waste to her house, where she collects the waste and sells it. Most people bring the waste to her house and don't want anything in return. The money that is made goes directly into the community. This organization also functions as a bank where people can lend money and pay it back with low interest. At the house of Ibu Muniadi, people can buy primary things for in the household, like oil, soap or rice and can pay for it one month later.

The role of these key persons and leaders is very important according to a few interviewees. Local inhabitants don't take initiative on their own, but follow the leader of the community. This person is an example and motivates the community to follow her (mostly women) lead. This person can also provide for information, because the research showed that many inhabitants don't know how to treat their waste in a proper way. These leaders are usually also the people that are able to make contact with higher levels of government and organizations like Bintari or Marimas.

5.2.3 Industries

Another stakeholder that was interviewed and meddles in the waste management in Jomblang is the organization Marimas. This industry produces drinks in powder form, for which you only have to add water. The waste this produces are the small plastic sachets the powder goes in. Ibu Ismi came up with

the idea to make all sorts of creative things with these sachets, for example shopping bags, wallets and all sorts of decorative things. When the organization Marimas noticed this they contacted Ibu Ismi and ordered a large amount of shopping bags. After this Ibu Ismi and Marimas made a contract. Marimas provides for the sachets and Ibu Ismi made these sachets into useful things. Marimas collects these used sachets from customers by promising them financial return or free products. Even though Marimas has only a small part in the solid waste management in Jomblang, it represents a larger part which is the industry. According to some respondents industries do play a part in the management of waste, mainly in recycling. According to Oely Sidabalok, the industry is an upcoming business in the waste management.

''In Semarang there are many business man that work in the waste area. Waste is promising. The scavengers inform that they can receive income from waste'' (Oely Sidabalok, march 21 2016).

5.2.4 Government

As already mentioned in the introduction, there is a shortage of national and local waste regulations concerning waste disposal. Many methods that have been applied in Indonesia only had limited success. Currently the municipality dumps most of the waste in landfill sites without any treatment (Aye and Widjaya, 2006). According to Amalia, the executive producer of Bintari, waste management is still not a priority for the Indonesian government and also for the municipality in Semarang. For the neighbourhood there is no fund to help the people with waste management. They only support them socially instead of financially, by asking the people not to throw their waste in the river.

''There is no funding from the higher level government, so the only way we can help is by motivating people instead of helping financially'' (chief of Kelurahan march 14 2016).

The government doesn't have a clear policy to make the waste system more efficient. They provide for the TPS and bring the waste from the TPS to the FDS. The problem with this strategy is that the waste is not separated and is not recycled or re-used. This means that this way of waste disposal isn't very sustainable. Besides this, the government is not more involved in waste management. The sub-district Jomblang is however very well-known by the government and thinks some parts of Jomblang can be presented as examples for other communities. They encourage them to do so, as they also encourage them to do their own waste management.

5.2.5 Scavengers

As said before, waste scavenging is also a common practice in Semarang and also in the sub-disrtrict Jomblang. Scavengers or waste pickers collect useful garbage with the value for re-selling of re-using. As said in the introduction they scavenge through the waste and try to find some valuables that they can sell (MacRae, 2014). There are different kinds of scavengers and they have different strategies for collecting the waste. They can pick up the waste at the house or pick up the waste at the disposal sites.

''There are two kinds of trisal drivers. The one who go to the houses and neighbourhoods and are paid by the households, usually they get 10.000 rupiahs. But the other kind are hired by a business person, he pays the trisal driver, because the trisal driver belongs to the boss. So they are paid by the boss and also by the household when they collect the waste there'' (Owner Temporary Disposal Site, march 18 2016).

Scavengers are mostly driven by their own economic gain. They make a living out of selling waste, which gives them a bad name. Their strategy depends on how they get paid and make the most money. Although they are seen as lower class, they have a positive influence on the sustainability of the SWM system.

5.3 Resources

In chapter 2 resources are expressed in capital. So capital here means the resources the stakeholders possesses. In the conceptual model the expectation is that the different forms and the amount of capital have an influence on the sort of strategies used by the stakeholders. Within these different forms of recourses a division can be made between the economic, social and cultural capital, which were already introduced in chapter 2. Some resources more than others that are available and used in the sub-district Jomblang have influence on the waste management system.

5.3.1 Economic resources

For example economic resources, especially financial resources, were not mentioned very often during the interviews and the inhabitants as well as the leaders of the neighbourhood as Bintari said that money or the lack of money was not a problem. The government doesn't provide for funding, but most community members don't even want help from the government. They provide for their own waste management strategies and say that the financial aspect is no problem. The garbage collector, when there is one, is paid by households and the leaders of the communities work for free. From the waste they collect and sell or recycle they earn some money which is mostly invested back into the community.

There are however some physical resources that are used in the sub-district or that could be useful. An example is the TPS. These sites are appointed by the government. In these places people can dump their waste that is later picked up by scavengers or a truck which brings the waste to the FDS. This transportation from the TDS to the FDS is arranged by the government. As mentioned in section 4.3 choosing a place for the TDS can be problematic. People don't want to live next to it because of the smell, but when it is placed too far away they complain about the distance they have to walk to dump their waste. Some interviewees like say that the government should provide for more physical resources, like for example the Takakura box (chapter 4). Jomblang received 550 Takakura boxes from the government. But according to them the government should provide for more facilities. Ibu Ismi and her group don't want to receive money from the government, but do like to get useful tools to support them. Ibu Muniadi mentions that when local government helps the community in providing the necessary tools, for example a waste trunk, this is also beneficial for them.

''When the government assist to prepare the trunk, the task of the government for solid waste management decreases because the temporary disposal site and the final disposal site will become less full'' (Ibu Muniadi, march 18, 2016).

5.3.2 Education and awareness

Creating awareness seems to be a term that comes by very often in all the interviews. According to the respondents it is very important to create more awareness with the people to improve the solid waste management system.

''So the problem in this neighbourhood is the unconsciousness of the people how to treat the waste. Usually they throw the waste in the river or burn it. So her goal is to change the consciousness and the way people treat the waste'' (Ibu Ismi march 14 2016).

This sorts of resources fall under cultural capital (chapter 2). The communities within Jomblang show a lot of creativity by providing many different solutions for their waste issues. These ideas are all good but are not always very successful on a long-term. Some long-term solutions should be found as well, for example education and creating awareness. Multiple interviewees claim that that lack of education, knowledge and awareness is still the biggest problem on this matter. For example Bintari sometimes teaches children at school or gives workshops at neighbourhoods. This way they reach persons like Ibu Ismi, who then apply the information given in their own community. This means that creating cultural capital is an important step in the creation of long-term solutions. But there are already a few institutions that provide for different types of education to the community. First, schools are and should be educated about waste. This eventually leads to the fact that the younger and future generation know how to treat the waste. However, only teaching the future generation is not good enough. This knowledge will go to waste when the rest of the community doesn't have the same knowledge and awareness about the waste situation. So organizations like APL and Bintari also educate adults by giving workshops and information meetings. In contrary to the children, adults are not obligated to join these workshops or meetings. This means that they are usually harder to reach. So there should be a way to motivate these people to be present at these workshops and meetings. The following section will elaborate more about social capital.

5.3.3 Motivation

Social capital is about relations and the ability to motivate people. These resources are very important because they can have a big influence on the awareness people have about the waste issues. This is important because most respondent named the lack of awareness as the biggest problem. The lack of awareness makes people throw their waste into the river and causes a low rate of sustainability of the waste management systems in the sub district Jomblang. This actually also applies to other areas. The lack of awareness in its turn also has an influence on people's motivation to throw away their waste in a proper way. When people are not aware of the consequences on the environment and their living space they have no reason to do this. Motivation and awareness have a very close relation to each other but it doesn´t necessary mean that people who are aware of the consequences of not treating the waste in a good, are motivated to do something about it.

In Jomblang there are many ideas about how to motivate people to treat their waste in a proper manner. One example is an initiative from Ibu Muniadi, leader of RW in Jomblang and focussing on waste separation. As mentioned earlier in section 5.2.2 her organization also functions as a bank. Here people can lend money or buy things for in the household and can pay it one month later. The aim is to create a bond and motivate people to get involved.

´´So a way to motivate people. We want the members to come again next month, to pay what they already took and also to come to the meeting, get involved´´ (Ibu Muniadi, march 18 2016).

According to both Ibu Muniadi and Ibu Singi, changing the conceptions of people and getting them involved is difficult and one of the biggest challenge in creating a more sustainable solid waste management system.

6. Working together

6.1 Introduction

A few of these cooperation's between the public and private domain were mentioned before, however not analysed yet. The theory (chapter 2) according to Ahmed and Ali (2004) claims that a well working public/private partnership in SWM can be successful. The question is of these stakeholders complement each other in order to improve the solid waste management system. According to the theory this should be a cooperation between the public sector and the private sector, which was explained in the operationalisation as followed: *''the private sector is divided between the business sector and the non-government, not-for-profit and community sector''.* An arrangement between the sectors should be helpful when creating a better working SWM system. This may seem logical but reality shows some differences. This chapter will address the roles both sectors have in the SWM system in Jomblang and how their partnership has an influence on the solid waste management system.

6.2 Role fulfilment

Developed countries have a very centralized municipal system in SWM. It is considered as an urban planning problem and a public health issue. Arranging SWM here is mainly the responsibility of the municipal authorities, which is the public sector. According to the theory this model is doomed to fail when applied to a developing country like Indonesia and the responsibility of managing the solid waste. There is an emerging trend in encouraging the private to enter into SWM operations, which can be a valuable contribution (Ahmed & Ali, 2004). This section will elaborate on the different roles fulfilled by the three sectors within the SWM system in sub-district Jomblang, starting with the public sector.

As became clear in the previous chapters, there is a shortage of national and local waste regulations. The methods that have been applied had only limited success. According to the interviews the government provides for the TPS and brings the waste from the TDS to the FDS but they don't have a clear policy about making the waste system more efficient. Waste management in contrast to economic growth is not their priority. The role of the government in waste management on local level in the sub-district is very limited. They provide for the disposal sites and place them in the neighbourhoods. Also their strategies are not very sustainable. The waste that gets to the TDS is not separated or recycled and goes directly to the FDS without any treatment. When the SWM system is too centralized on the municipality, it wouldn't be very sustainable. However the government encourages the communities in Jomblang to continue their good work and is also willing to support this when there is already an initiative or beginning of a plan from the community. At least according to Ibu Endang, chief on department of environment on city level.

''The most important is the participation of the community and if there is already an embryo then we will give our support if there is already an initiative in the community'' (Ibu Endang, april 4 2016).

The private sector can be divided into the business sector and the community, NGO and non-for-profit sector. The business sector doesn't play a big role in the waste management system. According Oely Sidabalok, this sector is an upcoming business but in the research there was not much evidence that businesses have a large influence already. However there are industries like Marimas who involves itself with the communities to recycle their own products. There are some industries that play a part in the management of waste, mainly in recycling because this is economically interesting. When more

industries are interested in waste, the better for the people who sell the waste. The business sector would then be a good addition to the SWM system. However it is difficult to make statements about this, because there is not enough data to prove that the this business actually has some real influence.

About the other side of the private sector there is enough information to give a good inside in their role in the SWM system. The communities clearly bears the most responsibility for their own waste and are the central player in the SWM system. The respondents also agree with themselves, by saying that they are the responsible ones for treating their own waste. Together with NGO Bintari and women group APL, different communities in Jomblang came up with creative ideas. The role of the private sector is very important in the SMW system because they are the ones who take initiative.

6.2 The influence on the solid waste management system

The question then arises whether a synergy in the form of partnership between the two sectors may be achieved to deliver better SWM services and to prove the efficiency of the entire SWM sector. Looking at the theory and information gathered from the research, a partnership between the two sectors can improve the efficiency because when both sectors are aligned, they can complement each other on certain points. Both sectors already have taken in their roles within the system but there is definitely space for improvement. At this moment there are gaps in the SWM system, with the consequence of illegal dumping of waste.

According to the respondents there is no cooperation between government and community. Ibu Ismi mentions that there is no specific program. Also she thinks that the community itself bears the most responsibility and the government should just be there to control. She does think however that the government should be involved by following her workshops and for support. However the opinions about that matter are divided. For example the chief of the Kelurahan thinks the community should work together with the government to motivate and reach more people. He thinks the condition of urban waste is getting worse in Semarang and that there should be a fund to manage the waste better. There is no good system to manage the waste.

''The way to deal with the solid waste actually starts from the simple way, from the family, from ourselves, and then it spreads to the neighbourhood'' (Ibu Ismi march 14, 2016).

''When the government gives more support to the local people who separate the waste in their community, this will improve the efforts people make'' (chief of Kelurahan, march 14, 2016).

Ibu Muniadi thinks all the stakeholders involved should be responsible, but in different kind of areas. So the household is responsible for their own house, the community for the neighbourhood and the government for their own aspect but this should be related with the community. According to her everything can succeed when people work together. Also Amalia thinks the community is mainly responsible for the waste management in their own neighbourhood, but the government should provide for the facilities to collect to garbage. However they don't take this full responsibility, but only take care of the easy things like providing for a TDS. It gets tricky when it is unclear who caused the waste pollution. Ibu Singi says that it is sometimes difficult to say who is responsible for the waste in the river. The source of this waste is not only from this area but also from other areas. The water bring the waste to them.

The community is also still working with Bintari. According to Amalia, Bintari is still connected to some key persons in Jomblang. Sometimes they go there and share with each other what is new. She says

that Bintari is not so innovative as them, so they only assist in the solutions that come from the community itself. They are just the supporting player. However Bintari did start by making the efforts to change their consciousness. Communities are now implementing their own initiatives, but there is already some sort of competition going on, which is not a good thing according to Amalia. Instead of working on Kelurahan level, they work in smaller groups and there is no good coordination yet between the groups.

''There is no overall policy and it's too competitive'' (Amalia, march 15, 2016)

7. Conclusion and recommendations

This research was designed to gain information about the solid waste management system in the sub-district Jomblang. This conclusion attempts to provide an answer to the main research. But before answering this main question, the sub-questions will be answered. The findings about the existing practices, used strategies, stakeholders and their influence on the SWM system will be summarized and concluded to create a better understanding about the research subject. This research was executed as a case study on the SWM system in Jomblang sub-district in Semarang, where the goal was to create more understanding about the different strategies used by the different stakeholders, how they are related and how this can be a contribution to a better SWM system. After this conclusion follow the recommendations, which starts with a reflection on the current SWM system based on the results and then gives advice what can be done for further research. The chapter ends with a reflection on the overall research and the implementation of the research.

7.1 Conclusion

This research was carried out with the aim to feed the social and scientific discussion on the waste problems in the sub-district Jomblang and on larger scale in Semarang, Java and Indonesia. This was tried to be done by giving an understanding about the different stakeholders involved in the SWM system in Jomblang, what their strategies are and how they are related. To achieve this insight, documents, literature and interviews hold during the fieldwork were analysed. To reach a constructive analysis, four sub-questions were used. These sub-questions will now be answered step by step to end with answering the main research question.

Sub-question 1: What are the practices within the already existing solid waste management system and what are the gaps between them?

There were four main practices found in the empirical data. These are ''illegal dumping of waste', 'temporary disposal site', 'waste management within the community' and 'scavenging and waste separation'. Clearly visible in Jomblang is the fact that many people throw away their waste in the river and surroundings. This illegal dumping of waste can cause all sorts of environmental problems. The problem is that people throw away the waste illegally because they don't live close enough to the TDS. The TDS were the waste is stalled temporary before the government truck brings it to the FDS, this can take longer than a few days. Households can bring their waste to the TDS themselves or can arrange for a garbage collector to pick up the waste. In some areas the garbage collector doesn't come by every day or at all to collect the waste. Sometimes they are not paid enough or some areas are very hilly which makes it difficult to enter with a garbage truck of trisal. Another negative side effect of the TDS is that they normally don't have any cover, which is also the case in Jomblang. As a result a nasty smell spreads form it and it is a breeding place for pests. The waste in the TDS is not separated and doesn't get any further treatment, which put pressure on the TDS and especially on the FDS. The TDS as well as illegal waste dumping are not very sustainable. More sustainable ways of waste management are the many initiatives coming from the community itself. This so called community-based waste management started in Jomblang in the year 2007. The goal of community-based waste management in Jomblang is improving the SWM system and disposing the waste in a more sustainable way. The focus lies on separating, re-using, recycling and composting waste. However the impact on the level of sustainability is not very big, because these are often small scale project and not every wants to get involved. Besides the community, a large part of waste separation of done by scavengers, who collect

the useful waste that can be sold. There are different kind of scavengers, the ones who collect the waste at the households and the ones who collect the waste at the disposal sites. Although scavengers don't have a positive reputation, they are for a large part responsible for waste separation.

Sub-question 2: Which stakeholders are involved in the SWM system and what are their used strategies for waste disposal?

The stakeholders and their strategies could be divided into two domains, the public and the private domain. The public domain or government is only responsible for the transport from the TDS to the FDS. Everything else is the responsibility of the private domain. The private domain is the combination of the business sector and non-governmental organisations and communities. Starting with the government, they are mainly responsible for providing for the temporary disposal site, the final disposal site and the transport from the temporary to the final disposal site. Waste management is still not a priority for the Indonesian government. They don't have a clear policy to make the solid waste system more efficient. The communities all have developed their own waste management strategies. Because the community makes use many little initiatives and strategies it is possible not all of these were mentioned. However the centre focus lies with the next 5 subjects: '*waste collecting*', '*waste separation', 're-using', 'recycling' and 'composting'. Some* communities have focussed on particular strategies in which they excel. Some strategies are more sustainable than others but they all focus on reducing the amount of waste that is thrown into nature. Bintari is a non-governmental organization that cares for the environment. Their strategy is to involve the community and work with the people. The focus on education and empowering the communities. Their main approach now is to look for key persons that can take the lead in improving the solid waste management system. Industries don't have a very big role in the waste management. In section 5.2.3 there is mentioned that the industry is an upcoming business and that there are many business man that work in the waste area. They collect and sell the waste for economic gain. Marimas, is a business organization that meddles in the waste management in Jomblang. They collect the used packaging products and give it to Ibu Ismi to make useful products out of it. It turned out that for the biggest part they use the failed packaging product instead of the failed packaging products. Scavengers collect waste for their own economic gain. They collect it either at the houses and neighbourhoods or at the disposal site.

Sub-question 3: How are these stakeholders and their strategies interrelated?

As there is already appointed, there is a public and private domain within the SWM system. The public domain seems to have little relations with the private domain. They are two different entities with their own role in the SWM system. Within the private domain a division is made between the business sector and the NGO, non-profit and community. Some practices are purely the domain of the government of the community, where there is not much interaction between the two domains. According to some respondents there is no cooperation between government and community (section 6.2). But there is also evidence that the government encourages the communities in Jomblang to continue their work and is willing to support this when there is already an initiative or beginning of a plan from the community.

As mentioned in section 6.2 the business sector doesn't play a big role in the waste management system but it is a upcoming business. Through the help of scavengers they collect useful waste to sell and make profit. One business organization involves itself with the waste management in Jomblang by

recycling their own products. They approached Ibu Ismi to let her and the women group APL help them with producing useful products out of the used and failed packaging products

There are however strong relations between the NGO Bintari and the communities in the sub-disctrict Jomblang. Bintari helped Jomblang to improve their waste management, which has made Jomblang one of the most progressive sub-districts in the area of waste in Semarang. Bintari works closely together with the people in the community. They started to work with the communities in Jomblang in the year 2001. The approached important key persons as Ibu Ismi and other leaders of communities to take the lead in improving the solid waste management system. Bintari supports them in their role.

Sub-question 4: In what way do the different stakeholders complement each other regarding solid waste management?

There is no specific program, overall policy of cooperation between the government and community (section 6.2). There are gaps in the SWM system. As some stakeholders complement each other, others don't. Most respondents think the communities in the sub-district Jomblang are responsible for the waste management in their neighbourhood and the government should control and support them. Others also think the government should help to motivate and reach more people. They don't take this full responsibility, as they take care of some facilities as the TDS but back out when it gets to complicated. This causes problems in some areas where it is not always clear who is responsible for the waste and what the source is. The river can bring waste from other areas to Jomblang. When they do provide for the resources they can be a good addition to the SWM system, as the communities often don't have the economic resources to provide for it themselves.

The cooperation between Bintari and Jomblang showed that different stakeholders can complement each other. Bintari thinks they are not so innovative as the communities and the individuals in the community, so they chose to assist them in the solutions that come from the community itself. They are the supporting player. However it seems that there is also some competition going between the different neighbourhoods. On one hand this could be successful as it can be an extra motivation, but according to Amalia it is not necessary a good thing. They work in smaller groups and there is no good coordination between them yet.

Main research question: ''What are the most important strategies used by the involved stakeholders concerning solid waste in the sub-district Jomblang in the city of Semarang, and how do they complement each other in order to create a better operating waste disposal system?''

The strategies that are used in the sub-district are dependent on both structures and agencies, were structures and agencies influence each other as well. The strategies applied are partly determined by the solid waste management system that already exists and by the agencies, which are the different stakeholders involved trying to improve this system. The position a stakeholder has and the strategies that are applied depend on resources an actor possesses, here expressed in capital. According to Bordieu (chapter 2), the relevance of the capital depends on the field an actor finds him/herself in. Economic, social and cultural capital all have influence on the strategies used by the different stakeholders and their relations to each other. The expectation was that the economic resources were the most important in order to create a better SWM system, as they also have an influence on the social and cultural capital. It turned out that this was very dependent on stakeholders that were most involved. Creating awareness and education seemed to be the most important strategies as they are successful and long-term solutions. These sorts of strategies depend on cultural capital and show lots

of creativity. Awareness and education also have a positive influence on the motivation of people to be present at workshops, meetings and treat their waste in a proper way. Social capital is about relations and the ability to motivate people. Social and cultural capital seemed to have a positive influence on each other. More awareness and knowledge can motivate people. Another motivation for people to treat their waste is economic gain. It can be a positive development to create a way in which waste can provide for more economic benefits.

According to the theory of a partnership between the private and public sector can have a positive effect for creating a better working SWM system. To substantiate this they use sociological, economic and management theories. Within this partnership each actor should fulfil its role where it is best fitted and where they cooperate with each other. This does not seems to be the case in the sub-district Jomblang. Every stakeholders fulfils its own role bit there is hardly any cooperation between them. The government takes care of the transport from the TDS to the FDS but doesn't mingle much with the private sector or the community in order to improve the solid waste management system and make it more sustainable. Sometimes they support a community by providing for resources when there is already an idea. When this is extended, they could be a good addition between to the system as they can support for more resources, control and reach more people. The business sector is important for the waste market. Little evidence was found about their role in the SWM system, except that it seems to be a promising market. As economic reasons seems to be a big motivation for people to separate and sell their waste, the business sector can turn out to be valuable.

7.2 Reflection

The implementation of this bachelor thesis turned out to be a fun but also intensive job. For me one of the most difficult phases of the research process was the first part, to come to a solid research plan while also paying close attentions to all the details of the research. Difficult was the fact that I had little knowledge of the research area, which made it harder to find an interesting subject and case to study. This made the selection of the case a tricky step. Eventually I managed to come to a case that in my opinion was both interesting and useful to study. Finding literature about the subject was not a problem but coming to a solid theory chapter was difficult. Also here I found it inconvenient that I didn't know much about the research area in front, and that I did not know what to be expected. I probably made this part of the research process harder than necessary. It can be said that the start of the process was a bit rough. Before going to the chosen area to perform my fieldwork, I was not able to find respondents for the chosen case study. Fortunately, later turned out to be that finding respondent didn't seem to be as hard as thought.

Finding respondents was not too difficult as all the approached individuals and organizations were prepared to do an interview, although these were sometimes postponed. The interview with the respondents themselves were very pleasant. They were willing to give honest and full answers, which gave me the possibility to get a better understanding of a foreign situation with a different culture, regulations and customs. As told in chapter 3 it was sometimes hard to work with a translator, because it was not possible to talk directly to the respondents. But I was lucky that the translator happened to be expert on the subject. This made it easier to explain what my research was about and for her to interpret my questions and the answers of the respondents. When transcribing the interviews, I did notice that there are still many areas of improvement possible in the questions and performing the interviews.

It also remained difficult to estimate what knowledge could be gained with a bachelor thesis like this. Many times I had to adjust parts of this research to make it more focused and specifically. This was not always convenient for the amount of time and capacity I had. At times I wished I've had more time in the fieldwork area to create a wider but also more detailed understanding about the issue around solid waste in Jomblang. Often I had the feeling to be a visitor with not enough insight in the case to deliver a good qualitative piece. Still, I think I managed to give a nice picture of the situation in Jomblang, and gave useful insights to further research this matter.

Although I wasn't always completely satisfied with the result, I have learned a great deal from this experience. This was the first time for me to perform such a project on my own, and gave me the opportunity to what doing research is about. This this fieldwork had to be carried out in a foreign country made it extra challenging. In the end, I have learned a lot from this experience and I think this will be very helpful while writing my master thesis.

References

Agamuthu P, Khidzhir KM and Hamid FS (2009) Drivers of sustainable waste management in Asia. Waste Management & Research 27: 625–633

Ahmed, S. A., Ali, M. (2004). *Partnerships for solid waste management in developing countries: linking theories to realities.* Habitat International 28 (2004) 467–479

Ali, M. (1999). *The informal sector: What is it worth?* Waterlines, 17, 10–12.

Aye, Lu., Widjaya, E.R. (2006), *Environmental and economic analyses of waste disposal options for traditional markets in Indonesia*, International Technologies Centre (IDTC), Department of Civil and Environmental Engineering, found at Waste Management 26 (2006) 1180–1191, Elsevier

Baud, I., & Schenk, H. (1994). Solid waste management in an urban context: Raising the issues. In I. Baud, & H. Schenk (Eds.), *Solid waste management: Modes, assessments, appraisals and linkages in Bangalore* (p. 2). New Delhi, India: Manohar Publishers.

Baud, I., Post, J., Furedy, C. (2004). Solid Waste Management and Recycling: Actors, Partnerships and Policies in Hyderabad India. USA. Kluwer Academic Publisher

Bourdieu, P. (1986). The Forms of Capital. J. Richardson, Handbook of theory and research for the sociology of education (pp. 241-258). New York: Greenwood Press.

Bourdieu, P. (1990), 'Structure, Habitus, Practices', *The Logic of Practice*, Cambridge: Policy Press, pp. 52-65

Bourdieu, P. (1994), 'Some Properties of the Fields', *Sociology in Question*, London: Sage, pp. 72-77.

Christia M, Thomas G. Development of waste management practice in Indonesia. European Journal of Scientific Research 2010;40(2):199–210.

Creswell, J., (2013), *Qualitative inquiry & Research Design*, Sage Publications Inc, US. 3rd ed.

European Commission. (2015, April 22). Additional toolsFacebookTwitter YouTube Print versionDecrease textIncrease text. Retrieved May 2015, from Environment: http://ec.europa.eu/environment/waste/framework/

Giddens, A. (1984), 'Elements of the Theory of Structuration', *The Constitution of Society: Outline of a Theory of Practice*, Berkeley: University of California Press, pp. 1-28.

Gies E (2009) *As Tourism Rises in Bali, What to Do With Waste?*. New York Times, 24 May, 2009.

Hiramatsu AY, Hara M, Sekiyama R, Honda R and Chiemchaisri C (2009) Municipal solid waste flow and waste generation characteristics in an urban-rural fringe area in Thailand. Waste Management & Research 27: 951–960.

Inglis, D. and Thorpe, C. (2012), *An Invitation to Social Theory*, Cambridge: Polity Press. Chapter 10: 'Structurationist Paradigms'

Larkin, G. R. (1994). Public-private partnerships in economic development: A review of theory and practice. *Economic Development Review*, 12, 7–9.

MacRae, G. (2012) *Solid waste management in tropical Asia: what can we learn from Bali?* Waste Management & Research 30(1) 72–79

McDougall, Forbes R. White, Peter R. Franke, Marina, Hindle,P. (2008) Integrate Solid Waste Management: A life cycle inventory. Chichester:Wiley.

Meidiana, C., & T. Gamse (2010) *Development of Waste Management Strategies in Indonesia*, European Journal of Scientific Research, 40--2: 199--210.

Mulyana, W., Setiono, I., Kracker Selzer, A., Zhang, S., Dodman, D. (2013) *Urbanisation, Demographics and Adaptation to Climate Change in Semarang, Indonesia.* International institute for environment and development, United Nations population fund. Urbanization and emerging population issues working paper 11.

Sekito, T., Prayogo, T. B., Dote, Y., Yoshitake, T., & Bagus, I. (2013) *Influence of a Community based Waste Management System on People's Behaviour and Waste Reduction* , Resources, Conservation and Recycling 72: 84 - 90.

Shekdar, A. V. (2008). Sustainable solid waste management: An integrated approach for Asian countries. *Waste Management* , 1438-1448.

Sipriyadi, S., Kriwoken, L. K., & Birley, I. (2000). *Solid waste management solutions for Semarang, Indonesia.* ISWA

Subash, A. *Community Participation in Solid Waste Management.* SWM specialist, TNUDP-III

Sutanto HB (2007) Solid Waste Disposal on Land in Indonesia. In: Proc. of the 4th Workshop on Greenhouse Gas Inventories in Asia, Jakarta, 14–15 February

Thanh, N. C. & Muttamara, S. (1978) Collection and transportation of solid waste in Asia. In: *Proceedings of the 2nd Regional Seminar on Solid Waste Management.* Department of Environment, Bangkok, Thailand, pp. 31-66.

Uiterkamp, B. J. Schoot, Azadi, H. and Ho, P. (2011). 'Sustainable recycling model: A comparative analysis between India and Tanzania'. Resources Conservation and Recycling 55 (3) 344 -355.

United Nations (2014), *Population Division, World Urbanization Prospects*, 2014 The Revision, founded at: http://esa.un.org/unpd/wup/CD-ROM/, 26-02-2014

Verschuren, P., & Doorewaard, H. (2007). *Het ontwerpen van een onderzoek.* Den Haag: Boom Lemma.

Visvanathan, C., Trankler, J. (2003). *Municipal Solid Waste Management in Asia: A Comparative Analysis.* Asian Institute of Technology.

Zhu, Da, Asnani, P. U., Zurbrugg, C. 2007. Improving municipal solid waste management in India: A source book for policy makers and practitioners. Herndon: World Bank Publication.

Subash, A. *Community Participation in Solid Waste Management.* SWM specialist, TNUDP-III

Appendices

A. List of respondents

#	Name	Date of interview	Type of respondent	Information
1.	Ibu Ismi	14-03-2016	Leader	Ibu Ismi is leader of her RW, the chair of APL and is a guide in leading Jomblang towards more sustainable waste management.
2.	Chief of Kelurahan (no name)	14-03-2016	Chief	This is the new chief of the Kelurahan. He is not yet very familiar with the waste situation.
3.	Amailia	15-03-2016	NGO	Amalia is the executive producer of Bintari
4.	Ibu Muniadi	18-03-2016	Leader	Leader of RW, and separates and sells waste to collect money for the community
5.	Ibu Singi	18-03-2016	Leader	Leader of RW. First in contact with Bintari and has an expertise in composting.
6.	Owner TDS and scavenger (no name)	18-03-2016	Scavenger	Owner TDS works at TDS in Jomblang, the scavenger collects waste at the houses and neighbourhood.
7.	Oely Sidabalok	21-03-2016	Expert	Contact person from Unika, research about socio-spatial justice and waste management
8.	Ibu Putzi	22-03-2016	Local	English teacher in Semarang, lives in RW Ibu Muniadi
9.	Mina	22-03-2016	Local	Owns local foodstall, lives in RW Ibu Muniadi
10.	Ali Harianto	23-03-2016	Industry	Director of Marimas, works together with Ibu Ismi to reduce the waste of his packaging products
11.	Ibu Endang	04-03-2016	Government	Chief of environment department city level

B. Interviewguide

- Can you introduce yourself?
  - What is your name and age?
  - Where are you from originally?
  - What is your function within this industry?

- What is your overall opinion about the way solid waste is managed in Semarang?
  And in the sub-district Jomblang?

- Do you think the current solid waste management system is good enough?
  Why (not)?

- What are your strategies for collecting waste?

- What do you do with the collected waste?

- What are your motives for doing this?

- What do you think you influence within solid waste management has been?
  (negative/positive and why?)

- What is the main cause of this?

- What relations with other actors do you have regarding solid waste? Can you describe these?

- Who do you think is responsible for the solid waste management in Semarang and why?

- What do you think should be improved in the current solid waste management system and
  what is according to you the best way to do this?

- What can your role be in this?