Migration and social relations in a local community in the context of flooding

A case study in Semarang, Indonesia

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Foreword

This thesis is written to finish the bachelor Human Geography at the Radboud University in Nijmegen. Since the start of this bachelor I was interested in the process of migration and the various forms of inequality involved with this. The subject of this thesis which focuses mainly on migration and social relations in the context of environmental problems is in line with this interest. For me, going to the place where this process takes place, is preferable when doing research. Doing research for this thesis was a very enriching experience.

Writing this thesis was possible because of the effort and contribution of others. In the first place I would like to thank my supervisor Martin van der Velde and Lothar Smith for the opportunity they gave me and my fellow students to do this research and I want to thank them for their comments that kept the research on track. I want to thank my fellow students for the cooperation, support and effort. In particular I want to thank my fellow students Stefan Ramaker and Anna Smits with whom I did fieldwork in Kemijen, Semarang. I am very thankful for meeting the people during our stay In Semarang in April of this year. First of all I want to thank Donny Danardono from the UNIKA University in Semarang. He helped us finding our way in Semarang and brought us in contact with other interesting persons. One of them was the student Jeany, who was willing to be a translator during the fieldwork in Kemijen. Furthermore she gave us some advice on how we could collect the data we wanted. During the fieldwork we met Mr. Puji and Mr. Sumano from the Polder Board in Semarang. They helped us around in Kemijen and without them it was almost undoable for us to conduct our fieldwork. Finally I want to thank the inhabitants of Kemijen who welcomed us in a open way. They were willing to talk with us in a very open way about their situation, although some of them lived in difficult conditions.

Huub van der Zwaluw
July, 2013

Summary

Different reasons are given by various authors about why people decide not to migrate from the low lying areas of Semarang. This research focus on how social relations could form a factor in this migration decision making in the context of flooding. The objective of this research therefore is to contribute to a better understanding of theories about migration and social relations and how these are related, specifically in the context of the flooding in the low-lying areas of Semarang. A case study is done for Kemijen, one of the low-lying areas of Semarang. To reach the research objective, the formulated research question is:

How are the decisions concerning migration of inhabitants of Kemijen, a low-lying area of Semarang, influenced by social relations in the context of the problems due to flooding they have to deal with?

The academic relevance of this research is found in the contribution to the knowledge and the understanding about the decision-making of people concerning migration. Besides this academic relevance this research also has a social relevance. This research acknowledges the importance of the perceptions and experience of the inhabitants on the problems. Furthermore the in depth insight through the different stories of inhabitants, connected to the different concepts can be used for the improvement of policy in the examined area and the areas facing the same kind of problems.

In the research objective and research question three central concepts can be distinguished, these are operationalised and linked with each other in the conceptual model. The first concept is flooding which is divided in the objective and the subjective. The objective flooding is seen as the three types of flooding occurring in Kemijen: tidal flooding, river flooding and local flooding. The subjective way of examining the flooding is about how the inhabitants experience the flooding.

The concept of migration decision making is divided into environmental factors and social factors. Because more factors influence migration decision making in a sufficient way, these will also be taken into account to place the environmental and social factors in context. The physical place attachment can be seen as a part of the environmental dimension and may change due to problems because of flooding. The social relations are seen as an important part of the social place attachment and therefore form a social factor in the decision whether to migrate.

The concept of social relations is divided into social relations inside and outside of the community. These could be a reason for people to stay, or to leave the community. In this research social relations in the community are for a large part reflected by the specific traditional social structures of Java outlined in this research.

To answer the research question a qualitative case study is used. Semi-structured interviews, informal conversations and observations were done during the fieldwork to outline the different stories of inhabitants. These stories are linked to the literature study. The main function of the literature study was to form a theoretical framework. Besides a literature study, interviews with experts are used to form this theoretical framework. The combination of the theoretical framework and the data resulting from the fieldwork are used to analyse the case of Kemijen.

It became clear that within this single case of Kemijen there still are big differences between areas and individual inhabitants. Kemijen, as sub-district of the east of Semarang, is formed by different

Rukun Warga (RW) which consists of Rukun Tetangga (RT). The perception of inhabitants on the functioning of social structures is often based at one of the two geographical scales. Not all social structures are active in every RT for example.

The experience of flooding and how they deal with the problems also depends for a part on these geographical levels, but the economic situation also seems to be very important. In a lot of cases this economic situation is reflected by the height of the house. Because of the land subsidence the houses become lower. The inhabitants without money do not have the ability to heighten their houses in a sufficient way. In this way the experience of flooding and furthermore the degree of how people depend on the help of others differs. The different situations people live in and the different ways of experiencing the flooding will also impact the way flooding influences social relations.

Flooding might have an impact on the social structures in Kemijen and contribute in dealing with the problems, but this only accounts for some RTs and it depends on how people experience the flooding and the functioning of social structures. However vulnerable respondents stated traditional social structures in general did not seem to contribute much in decreasing the negative impact of flooding.

This experience of flooding and social structures is related to the migration decision making of the inhabitants. The interviewed inhabitants with relatively more financial resources mostly preferred other adaptation strategies than migration. Heightening of the house seems to be a more preferable option than saving money in order to be able to move to another area. The respondents considered moving as an expensive option. The interviewed inhabitants who did not move but had enough money stayed either because it was cheaper to heighten the house or because they wanted to maintain their social position. The influence of social structures on this is different for every inhabitant in every RT. For the respondents with a lack of financial resources it seems to be more difficult to make a choice like the people with enough financial resources. Furthermore the social structures might have some influence on their decision not to migrate; they feel comfortable in the area because of these structures. It seems that inhabitants prefer non-migration adaptation strategies instead of an adaptation strategy concerning migration. Other factors could be more important in the decision to move out of the area compared to flooding and social relations. Flooding and social relations both influence migration in a way, in the form of marriages and social relations outside of the area for example. But the influence of the changing social structures on migration decisions is not that strong. People decide to stay in the area because they feel comfortable about the social structures in the area, but a change in these social structures because of flooding is not really the case.

So the decision inhabitants of Kemijen make about whether to migrate or not is not that much influenced by the social relations in the area. The way this is influenced differs for every individual and for every RT of RW. Flooding has an impact on these social institutions, but the impact on migration because of these changing social structures seems to be minimal. The more vulnerable people may have more abilities to deal with the flooding because of the social structures, but often migration is not a viable option. In the case of Kemijen the impact of flooding and the impact of the social relations on this migration decision making is minimal.

Contents

1 Introduction

Environmental changes such as rising sea levels, deforestation and dry land degradation, as well as increased natural disasters are likely to have a consequence on people's migration behaviour. But the way people respond to these environmental changes depends on a complex set of factors. One of the factors is the access to social networks and financial resources (Kniveton et al. 2008). People use different strategies such as income diversification in order to spread risks, the role of remittances is important. But to have the opportunity to use this kind of strategies social networks are needed to be able to move to another area (Tacoli, 2009).

This research is about how the environmental change in Semarang, due to land subsidence and flooding, effects the migration decision making of the inhabitants of the low lying area in this city on central Java in Indonesia. The flooding, mainly caused by land subsidence, has an impact on the everyday life of people. Inhabitants use different strategies to cope with the environmental change. One of these possible strategies is migration. This research will focus on the migration decisions and how these decisions relate to social relations of the inhabitants in- and outside the local community. This relationship is placed in the context of the flooding in a specific coastal sub-district of Semarang, Kemijen. The first chapter forms an introduction to the problems described above. A further description of this problem will be given in section 1.1. The objective of this research and the related research questions will be outlined in sections 1.2 and 1.3. At the end of this chapter the different steps taken in this research will be summarised.

1.1 Background
This section starts with outlining the background of this research by describing the problems highlighted in the literature. Problems around the environmental change and the consequences on migration and social relations in Kemijen will be introduced.

Semarang is one of the cities on Java dealing with the problem of flooding. Semarang is situated at the north coast of Central Java. Kemijen, which is situated in Semarang Timur, or East Semarang, is one of the areas that has problems with flooding in this region. It is one of the coastal areas of Semarang. In the map of Semarang, shown in Figure 1, the district of Semarang Timur is coloured dark purple. In Figure 2 the sub-district of Kemijen is coloured in a satellite image from Google Earth. This situation of Kemijen is based on a map Dewi (2007) used to show where Kemijen is located. During observation it appeared that some other parts, which were not included on the map, were also seen as Kemijen by the inhabitants. These parts are also taken into account.
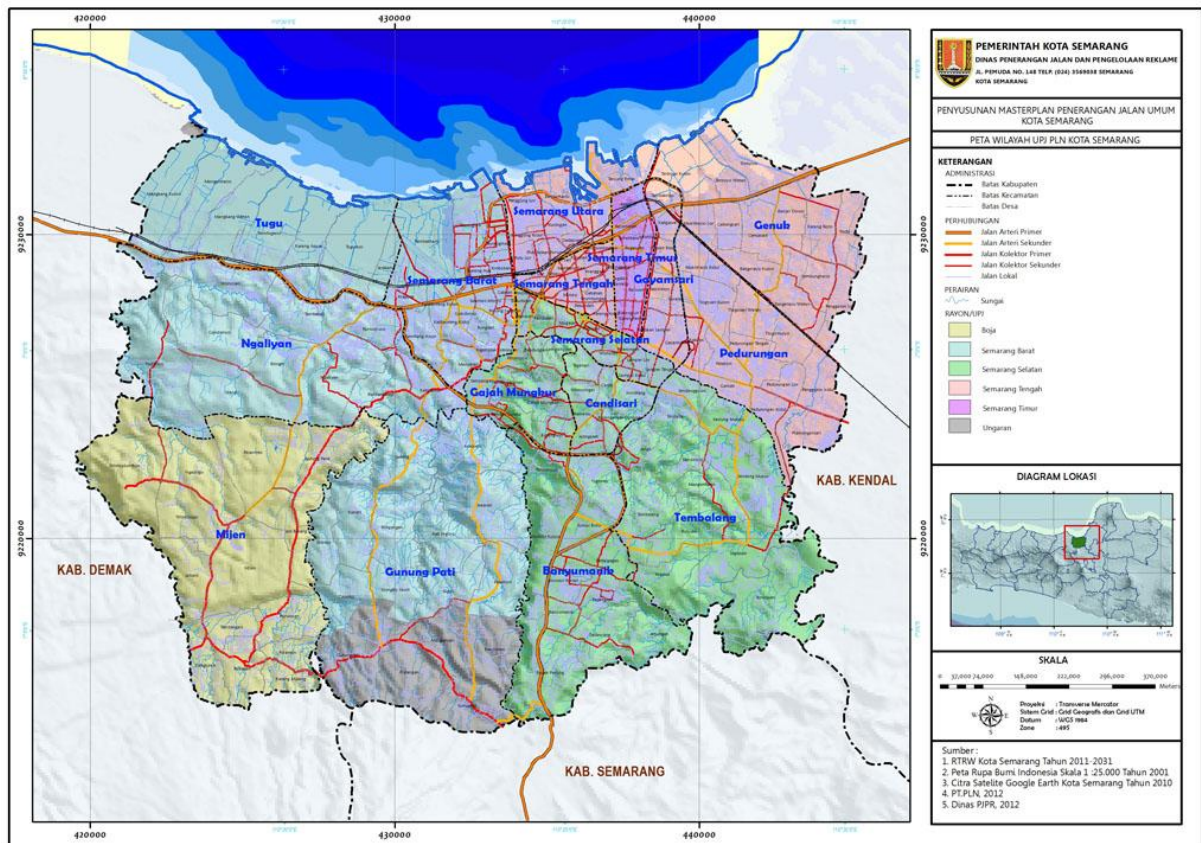
Figure 1: Administrative map of Semarang (Masterplan Penerangan Jalan Umum, n.d).

Figure 2: Kemijen, based on the map of Dewi (2007) and on the fieldwork and drawn into a satellite image of Google Earth.

According to Harwitasari and Van Ast (2011) Semarang has to deal with three types of flooding: local flooding, river flooding and tidal flooding. Local and river flooding are caused by the drainage system that has not enough capacity to deal with the rainfall in the rainy season. Tidal flooding occurs when

the sea level rises during high tide. According to Marfai and King (2007) the tidal flooding is mainly caused by land subsidence due to the withdrawal of groundwater. For more than 8 years this type of flooding has been occurring in Semarang (Harwitasari, 2009).

The problems due to the three types of flooding in the city of Semarang form the context of this research. Previous studies were mainly technical ones which focused for example on the degree of land subsidence in the area. Other studies were done to explore the perceptions and reactions of the inhabitants through surveys. Dewi (2007) explored the perceptions of inhabitants of Semarang on the flooding. Marfai et al. (2007) did research on the reactions of the inhabitants on this land subsidence and flooding. What these researches did not cover in great detail were the social consequences of flooding. This research seeks to address this by focusing on the migration decision making and how this relates to social relations in- and outside a community. The next part will discuss the different responses of inhabitants to the flooding of inhabitants found in the literature. Previous studies of Semarang show that inhabitants invest mainly in temporary solutions such as the elevation of their houses. This raises the question why inhabitants decide not to migrate and why they stay in the area with a large amount of other people. Harwitasari (2009) and Dewi (2007) point out that people living in de low-lying areas of Semarang are aware of the flooding. This could mean that those inhabitants are also aware of the negative impact of this on their living environment. Several possible reasons can be found in the literature why inhabitants of the low-lying areas make the decision not to leave the area. The study of Marfai et al. (2007) shows 65% of the inhabitants stays in the area because they do not have any alternative due the lack of financial resources. They are more or less forced to stay in the low-lying area because of the lower housing prices. Besides the lack of financial resources people can decide to stay in the area because of the accessibility to the city centre, industrial estates, public facilities, market or their working place. This is the reason for 25% of the people in the low-lying area not to migrate. Approximately 10% of the inhabitants stay in the area because it is their place of birth and they feel connected with the culture in the area. Another possible reason is that people do not migrate to safer areas because they are still able to cope with the effects of tidal flooding. When people chose to stay in the area they can cope with the problems in different ways (Harwitasari en van Ast, 2011). How they cope with these problems depends on their access to certain capital. Inhabitants of the coastal areas of Semarang who are not rich in financial resources, can be rich in social capital (Marfai, personal communication, April 2, 2013). For these inhabitants social relations therefore could be important in the way they deal with the problems around flooding. They live in a community where people look out for each other in doing work for the community for example. This is called 'G*otong Royong'. S*ocial structures like '*Gotong Royong'* and '*Ronda'* are specific traditional ways to deal with the flooding and meant to minimize the negative impact of the problems (Dewi, 2007). Besides '*Gotong Royong'* and '*Ronda','* *PKK*' and '*Dasa Wisma*' *and 'Posyandu'* are important in Javanese social live. *Dasa Wisma* is a programme fulfilled by women and is meant to involve households in development activities from the government. *Dasa Wisma* is a part of *PKK* , which stands for Pembinaan Kesejohteraan Keluar and can be translated as Women's Organization for Family Welfare Guidance (Kuroyanagi, 1999). *Posyandu* is also an activity fulfilled by women and it provides medical services, especially for infants and children. The meaning of these specific Javanese social structures will be explained later in the theoretical framework.

The importance of social relations in the local community could be a reason for inhabitants to prefer to stay in the area. If inhabitants have social relations outside the local community this could mean

an opportunity to migrate out of the local community. These are the two central relations in this research that will be examined in the context of the effects of flooding.

This research will therefore mainly focus on the consequences of the changing environment for the link between social relations and migration decisions. Is living in a community with this kind of strong social relation a reason to stay in an area facing flooding and decide not to migrate to a safer place? Although this research focuses on the influence of social relation in the context of flooding, it does not underestimates the way factors such as political and as well as economic ones, influence migration decisions in a strong way. This research falls within the framework of researches about migration structures and the influences of environmental change on a local level.

This first chapter, which started with the outlining of the background, will continue with the formulation of a research objective and research questions.

1.2 Research objective

The previous section made clear specific traditional social relations are important in the daily living of inhabitants of Kemijen and especially in the way they cope with the negative impact of flooding. In the previous section the background of the problems this research is focuses on was outlined. This section will provide the objective of this research. The research concentrates on making clearer to what extent those social relations influence the decision of inhabitants to migrate. In this way it can contribute to the existing knowledge and the development of the theories about migration and social relations.

The objective of this research is to contribute to a better understanding of theories about migration and social relations and how these are related, specifically in the context of the flooding in the low-lying areas of Semarang.

The academic relevance of this research is found in the contribution to the knowledge and the understanding about the decision-making of people concerning migration. To contribute to this knowledge this research mainly focusès on social relations as one of the factors that could influence the decision to migrate. As stated in the objective of this research, this is done in the specific environmental context where regular flooding plays an important role. Because this research examines the decision making of individuals in a community, the knowledge is not meant to be generalised, instead the knowledge gained in this research leads to specific data that has a more in depth character. The research units are the individuals in a specific context and the different concepts found in theories about migration, social relations and flooding will also be applied on this specific case of Kemijen. The conclusions that will be drawn from this research are therefore about the case of Kemijen and could be valid for other cases with the same character. These conclusions are based on the different perspectives of both experts and inhabitants on the relationships between flooding, social relations and migration.

Besides this academic relevance this research also has a social relevance. First of all the in depth interviews used for this research acknowledge the importance of the perceptions of the individuals in the community. It is socially important and relevant to know the stories and situations of people who experience these problems. In this way the awareness about environmental problems and the people who have to deal with it might grow in society. Furthermore the in depth insight

through the different stories of inhabitants, connected to the different concepts can be used for the improvement of policy in the examined area and the areas facing the same kind of problems.

To reach this objective, different research questions are formulated in the next section. These will give answers to the different theories and concepts about environmental change. Migration decision making will be examined and related in the context of flooding. The data obtained from this examination is applied on a specific case. By confronting the different concepts with the empirics mainly resulting from the fieldwork, the different research questions are answered. These answers have a qualitative character and are analysed to contribute to a better understanding of the theory about migration and how this is related to social relations in the context of environmental change in Semarang.

In this section the objective of this research, the academic and social relevance and the way this objective will be reached were outlined. To reach this objective the first thing that follows is the formulation of a central question and some sub-questions in the next section.

1.3 Research questions
In the last section the objective of this research was formulated. To reach this objective this section will provide a central research question and sub questions. The research objective is to contribute to the development of theory about migration and how this is related to social relations by relating the flooding and social relations in the low-lying areas of Semarang with the migration. To reach this objective the following question is central in this research:

How are the decisions concerning migration of inhabitants of Kemijen, a low-lying area of Semarang, influenced by social relations in the context of the problems due to flooding they have to deal with?

Because of the central question being too wide to answer as a whole in one time, different sub questions will be formulated in this section. To be able to formulate these different sub question the central question itself has to be analysed and unravelled. The goal of the different questions is to answer all aspects of the central question, but nothing beyond it. When analyzing the central question different aspects can be distinguished. The central question is about, migration, social relations and flooding and the relationship between these aspects. Because the flooding forms the context of this research, a first sub question will focus on the specific problems of flooding in the coastal area of Semarang and the way people experience this flooding. Another key element of this research is the social relations in the area. In the central question the social relations are connected with the decision to migrate. Therefore the importance of different sorts of social relations of the inhabitants has to be analysed. Because social relations and migration are combined in this research and migration is about moving, the social relations of the inhabitants in different areas should be analysed. Most of the respondents pointed out the most important social relations lived in the same area, therefore the accent of this research lies on the social relation inside the community, but at the same time it does not deny the importance of social relations outside the community in the migration decision making. When it becomes clear which social relations are important to the inhabitants, the influence of the social relations on migration decisions can be examined. Because the research on the interdependence between these two factors is placed in the context of flooding, the influence of this flooding on the social relations and migration in the area also needs a closer

look. When all these sub questions have been answered a final sub question is needed to connect all factors; the social relations that are important to the inhabitants, with the migration decision making and furthermore how this relation is influenced by the specific problems around flooding the area is coping with.

What follows is an overview of the different sub questions deducted from the central question in the previous section.

- How do inhabitants experience the specific problems of flooding in the coastal area of Semarang they have to deal with?

- Which social relations in Kemijen are important to the inhabitants?

- How are social relations in Kemijen influenced by flooding?

- How is the decision of inhabitants of Kemijen to migrate influenced by the social relations which are important to the inhabitants

- Which impact does the flooding have on migration decisions of these inhabitants?

- How does flooding impact the relation between social relations and migration decision making

This first chapter introduced the problems around flooding the coastal of Semarang is facing. These problems will form the context of this research. Besides flooding, social relations and migration decision making form the key elements of this research. A specific objective and research question of the research were formulated. To answer the research questions deduced from this objective, chapter 2 will examine the concepts found in the theory, by doing this a theoretical and conceptual framework will be formed. Besides choosing a certain theory a method has to be chosen to get to the answers on the research questions. The choice for the using of specific methods will be explained in chapter 3. After chapter 3 the results will be presented in chapters 4, 5, 6. After describing the results, these will be analysed in chapter 7. Chapter 8 contains the conclusion.

2 Theoretical framework

This section will discuss the theoretical framework of this research by pointing out the different key elements which are necessary to answer the different research questions.

In the previous section three different sub-questions and three different key elements were mentioned: migration decisions, flooding and social relations. These concepts and the relations between them will be explored in this section. The important relationships mentioned in the previous section were the relationships between: flooding and migration decisions, social relations and migration decisions, flooding and social relations and the influence from flooding on the link between social relations and migration. The first section will outline certain concepts found in literature about how people deal with the flooding. In last section the theoretical framework is translated to a conceptual model.

2.1 Flooding in Kemijen

The problems people experience because they have to deal with flooding, form the context of this research. In literature different strategies of adapting to environmental change are found. The relevance of these strategies for this research is that migration also could be seen as such a strategy. As pointed out in the formulation of the research objective the reason people decided not to migrate is also taken in to account. When deciding to stay in the area people will probably respond in another way to the flooding. The different kind of responses will be described in this section. Furthermore the decision will depend on how people experience the flooding when living in these conditions that play a large role in their daily lives. This experience will not be described in this theoretical framework, but in the chapters where the empirical data is described and analysed. Before the description on how they deal with it is described, the three types of flooding are already distinguished in the background are recalled.

As outlined in the background section in the introduction of this research Semarang has to deal with three types of flooding: local flooding, river flooding and tidal flooding. Local and river flooding are caused by the drainage system that has not enough capacity to deal with the rainfall in the rainy season. Tidal flooding occurs when the sea level (relatively) rises during high tide (Harwitasari and Van Ast, 2011). The term used for this last type of flooding by the inhabitants of Kemijen is *'rob'*. According to Marfai and King (2007) this type of flooding is mainly caused by land subsidence. So because the land in the area becomes lower, the land gets flooded. Between 2003 and 2008, the sea level in Semarang rose with 37.2 centimetre, which is an average of 7.43 cm/ year. Between 1985 and 1998 the sea level rose with an average of 4.47. These numbers are both due to the land subsidence and the sea level rise which is a consequence of the global warmth. The average land subsidence in the period from 1985 till 2003 is around 5.165 cm per year and the sea level rise because of global warmth is about 7.8 mm per year. (Ministry of Fishery and Marine Affairs, in ACCRN, 2010). These are the average numbers, but there are outliers. The maximum land subsidence observed between 1997 and 2000 was about 16 cm per year. This land subsidence occurs due to the withdrawal of groundwater. The withdrawal of groundwater has been increased since 1900 and the population in grew. The ground water level now is around 20 meters below sea level (Marfai & King, 2007).

The previous concepts are more or less an objective outlining of the situation. How people deal with these problems also depends on the way they experience the flooding and land subsidence. In the literature this way of dealing with flooding is often described as mitigation, adaptation or coping strategies. Although all these three terms are often used there is a difference between them. Oliver-Smith (2011) argues there's a difference between mitigate and adapting to and coping with the environmental change. Mitigation is proactive and is meant to minimize the impact in advance, while adaptation is proactive and tries to minimize the impact when the change has already occurred. Adaptation can be seen as direct damage prevention, while mitigation would be indirect damage prevention (Verheyen, 2005). When we apply this on the case of Kemijen, a mitigation strategy could be to stop the ground water extraction, while an adaptation strategy could be that households heighten their houses because of the flooding. This research will focus on the adaptation strategies of the inhabitants. Adaptation is defined by the Intergovernmental Panel on Climate Change (2001, p.365) as:

> Adjustment in natural or human systems to a new or changing environment. Adaptation to climate change refers to adjustment in natural or human systems in response to actual or expected climatic stimuli or their effects, which moderates harm or exploits beneficial opportunities. Various types of adaptation can be distinguished, including anticipatory and reactive adaptation, private and public adaptation, and autonomous and planned adaptation.

Another distinction made, is the distinction between adaptation and coping. Adaptation to flooding is a kind of adjustment that has developed over the years and is a part of the cultural knowledge and practice. The response to a problem is seen as a coping mechanism if there is not a cultural constructed adaptation to deal with the problem (Oliver-Smith, 2011). This research will mainly focus on the adaptation strategies, because inhabitants face the problems on a regular basis.

Munasinghe & Swart (2005, p. 216) define three types of strategies to adapt to flooding. The first strategy of inhabitants is to protect the land from the sea, the second is to adapt to the flooding by elevating buildings for example and as third strategy they can retreat from the area. This research focuses on the decision people make whether to use the last strategy. When looking at the second strategy Munasinghe and Swart (2005) seem to focus mainly on physical adaptation of communities to the flooding. Adaptation could also mean that they make use of certain social structures that already exist in the community. These social structures and the link with flooding will be discussed in section 2.3 and 2.4. Because this research is about the inhabitants so also about how they deal with these problems, it is less about what the government is doing for example to reduce the vulnerability as Munasinghe and Swart (2005) do. They focus on a higher level than the level of an individual inhabitant of a certain sub-district. Adapting strategies of communities or a governments or a non-governmental organisation Invest for example in infrastructure to increase the adaptation capacity of an area. While this is not the most important of this research, adaptation strategies such as the pilot polder project in Kemijen, form an important context in this research.

2.2 Migration decision making
In this section different concepts about the decision making of people concerning migration will be discussed, this is one of the key concepts of this research. In the research objective it became clear that the migration decisions will be examined in the context of social relations and flooding.

First of all migration could be a decision because another area is perhaps more attractive than the current place of living. Another decision could be that people decide to stay, so the make the decision of no-migration. People's decision whether to migrate or not cannot always be considered as a choice. This leads us to the distinction between forced and voluntary migration. The Asian Development Bank (2009) states voluntarily migration can be seen as an adaptation to environmental change, therefore migration in the context of environmental change does not necessarily mean the migration is always forced. People always have at least a minimum level of agency when they decide to migrate or not, so to choose another strategy to deal with flooding (Piguet, 2010).

The migration which is influenced by an environmental change could be distress, planned, anticipatory, or labour-related (Mearns and Nortan, 2010). Climate change in general could be a major driver of shorter-term displacement and migration, because it increases the frequency and intensity of natural hazards. The largest impact of these hazards with temporarily displaced people as a consequence will be especially being the case in countries without good working policies to deal with the natural hazards. Without support, many people will not have the ability to leave the area and the negative impact of the natural hazards, because they do not have the resources to do so (Warner et al., 2009).

The relationship between environmental change and migration is not a direct relationship, but indirect via the impact on economic, social, cultural and demographic factors (Perch-Nielsen, Bättig & Imboden, 2008). Only in extreme cases a person migrates just because of environmental reasons. There is no such thing as a migrant that only moves because of climate or environmental reasons (Warner et al., 2009). It's about a relationship between environmental, political, economic, social, and cultural dimensions (Piguet, 2010). It's a complex web of interrelated factors influence migration, Perch-Nielsen, Bättig and Imboden (2008, p.379) for example state that a lot of relevant migration drivers "are factors relating to labour market (unemployment rates, income levels, etc.), taxes, land and housing factors, social welfare, political rights and freedom, and environmental factors (population density, climate, pollution, etc.),"

As stated in the introduction the research objective is about the links between social relations and migration. So although there is a complex web of interrelated factors influence migration this research will focus on the social factors. An example of how moving is influenced by social relation factors is given by Hadipuro (2012). When there is a shortage of water in a certain area of Semarang, a family or a part of a family can choose to move to another area where water is more easily accessed. During the water shortage they could move to the place where their family members live. Afterwards they will probably return.

This brings us to the difference between migration and moving as a temporary displacement. The example about the water shortage is an example of temporary displacement and says something of the ability to move to another and more safe place. As stated before climate change could be a major driver for shorter-term displacement. This moving could be seen as a coping strategy, while migration is more of an adaptation strategy. Both strategies are interesting in this research because they both could be influenced by the social relations people have. However the decision to migrate as adaptation strategy will be the main focus of this research.

As argued the social relations are central in this research, however the statements about the influence of social relations always need some nuances because of the complex set of interrelated

factors. These factors can be influenced by direct and indirect consequences of flooding. However, not every migration driver is important for every individual, household or community. These other important factors influence migration are not underestimated or ignored, but it is not the objective of this research to unravel all factors in this complex web.

2.3 The link between flooding and migration decision making

This section will examine the theory about how the migration decision making could possibly be influenced by the problems coming from flooding, outlined in section 2.1. A part of the aim of this research is to get a better understanding of migration decisions in the context of flooding. Because of the variety of factors influencing migration the choice is made to explain this decision making in the context of flooding from the beginning. This section starts with explaining how migration forms strategy to adapt to flooding. Then a model is introduced that explains how migration could be a response to climate change.

In that section 2.1 three possible ways of dealing with the water problems were mentioned. Migration is one of the strategies to deal with the negative effects of environmental change. A negative effect of flooding could be that people are not able to maintain their livelihood. However people who live in areas suffering from flooding on a regular basis are determined to stay in the area as long as possible (Warner et al. 2009).

They found an example in Bangladesh where fisherman did not prefer to move because of their work at the coast. But there might be a moment when they are forced to move. So besides migration also a short term displacement could be a consequence of flooding. In the previous section is argued climate change in general, could be a major driver of shorter-term displacement and migration, this also accounts for flooding. The largest impact of these hazards with temporality displaced people as a consequence will be especially being the case in countries without good working policies to deal with the natural hazards. Without support, many people will not have the ability to leave the area and the negative impact of the natural hazards, because they do not have the resources to do so (Warner et al., 2009). McLeman and Smith (2006) also argued the households themselves have to use certain adaptation strategies when institutions in a community do not succeed in providing the help to adapt.

Different authors state that the relationship between environmental change and migration is complex. The impact of flooding on migration depends on the socio-cultural-political-economic environment of a community. Furthermore it depends on how the people in a community experience the effects of the environmental change and on the attitudes of individuals, households and the community towards migration. (Kniveton et al. 2008). This will influence the decision whether to migrate or to stay and adapt or protect. In Figure 3 the model of McLeman and Smith (2006) this decision making in a community is visualised. In the model it is assumed that climate change will change the environmental and/or socio-economic conditions of a community.

When a community faces this change the question is if the community institutions are able to adjust to this and help members to adapt to the change in another way then migration. Community institutions in particular are not the main focus of this research, especially when looking at institutions on a more formal level. But it could be important when the social structures in the community are formed by some kind of institutions that might help in the adaptation to flooding without migration. Social structures as *Gotong Royong*, *Ronda*, *Dasa Wisma* and *PKK* and *Posyandu*

might be important institutions influence the decision to stay in an area. These structures are explained later in this chapter. When the institutions of community are able to adapt to this changes, migration would not occur in a significant way according to McLeman and Smith (2006). When they are not able to adjust to the changing environment households themselves have to use certain adaptation strategies.

Which strategy they use depends on the different kinds of resources they own, such as social or financial resources. If a household is very rich in social resources, it might be still hard for them to move elsewhere because of the lack of financial resources. Mearns and Nortan (2010) also argue the possibility for people to migrate depends on the access to power and recourses. Therefore social actors with different degree of access to power and recourses make different decisions. When migration is seen as the most preferred option a (part of a) household could decide to migrate. But if people have the ability to move, the still could decide another adaptation strategy is more preferable. When community members leave, it will change the structure of the community. Also possible immigrants from other communities could change this.
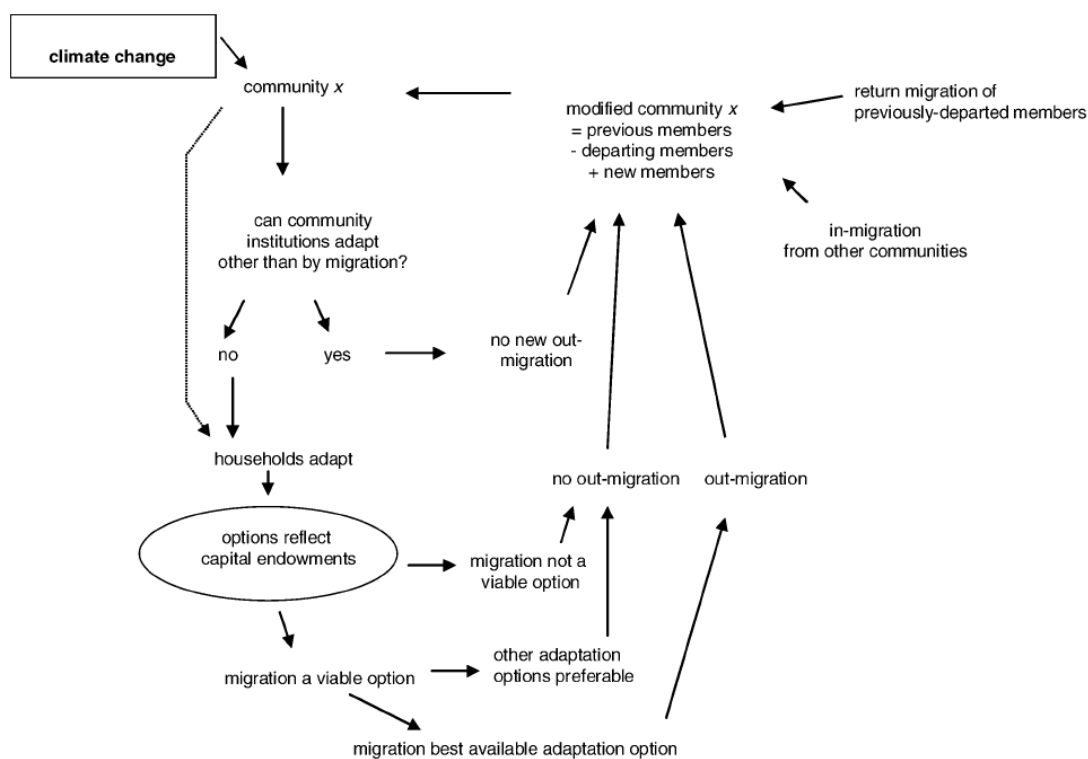
Figure 3: model of migration in response to climate change (McLeman and Smith ,2006)

2.4 Social relations

In the previous section the relation between flooding and migration decision making is described. The way migration could be influence by flooding in an indirect way via social relations is most interesting concerning the research objective. To know how social relations are linked to migration the social relations in a Javanese context have to be described first. There are different kinds of social structures on different administrative levels. A place on Java is divided in different administrative levels. The city of Semarang is divided in 16 districts (Kecamantan) and 117 sub-districts (Kelurahan). Each sub-district is divided into communities (Rukun Warga). These communities are divided into neighbourhood associations (Rukun Tetangga). Especially in a case as Kemijen, a close neighbour is probably more important than a distant kin because they rely on the ones in the direct environment. When people have to deal with flooding on a regular basis then they get probably more often help

from other people in the neighbourhood than from the social relations who live elsewhere. People from the same area live closer and above all the experience the same sort of problems.

In this section most of the studies referred to are done in Javenese villages. These social structures are more or less applicable to the city of Semarang as given by Dewi (2007).

In this section the social structures of *Gotong Royong, Ronda, 'Dasa Wisma and PKK and Posyandu* are described. In the model of McLeman and Smith (2006) the ability to adapt of households and community institutions to the flooding was distinguished. The named social structures named in this section could be defined as social institutions.

Gotong Royong

The first of them is *Gotong Royong* and can be seen as an institution that is important in a Javanese context (Subejo, 2009). This is the relationship of mutual help. Keasberry (2002) argues this is an important part of Javanese social life. *Gotong Royong* is about the mutual help between members of a community, but it is more complex than just mutual help. *Gotong Royong* can be seen as an institution. Bowen (1986) states there are three types of *Gotong Royong*: Labour as a direct exchange, generalised reciprocity assistance and labour mobilised on the basis of political status.

The first type is about the exchange of labour. This exchange is based on a (normative) calculation to split the work of major task in the community. In rural areas these task are mostly agricultural. The calculation leads to which part of the work has to be done by a certain member of the community.

The second type of *Gotong Royong* is generalised reciprocity assistance. This type is about the obligations of members of the community to help other members with special events. When a member helps another member he can expect assistance in return in the future. Bowen (1986) mentions sometimes a community (in a village) decides to record the contribution of each member to an event. The amount of contribution depends on the kinship distance. Examples of these events are marriages, funerals or with reparation of the house.

The third type is about labour mobilised on the basis of political status. Doing work for the community is seen as duty and local officials can command a member to do certain tasks.

An important note Keasberry (2002) makes is the fact not everyone benefits in the same way of this social network. The author states that an important condition for *Gotong Royong* is that the help is mutual. When no one in a household is able to help someone else they wo not get help anymore. This is a problem for people living alone such as older people.

Ronda

Besides *Gotong Royong* the term *Ronda* was introduced earlier. *Ronda* is about patrolling the neighbourhood at night and it an old, probably pre-colonial, institution (Baker J, 1999). According to Dewi (2007) *Ronda* could form another strategy to cope with the negative impact of flooding. Hadipuro (personal communication, April 8, 2013), did not see a direct relation between *Ronda* and dealing with the problems of flooding. While Dewi (2007) seems to distinguish *Ronda* from *Gotong Royong* as coping strategy, Keasberry (2002) does not see *Ronda* apart from *Gotong Royong*. Instead the author states *Ronda* can be seen as an activity of *Gotong Royong*. *Ronda* is a social function of men to guard a part of the village.

Dasa Wisma and PKK

As *Ronda* is a social activity fulfilled by men, *Dasa Wisma* is fulfilled by women. *Dasa Wisma* is about informing other women in a group that is most of the time mobilised by the wife of the head of the neighbourhood. Hadipuro states almost all development programmes are based on women or housewives activities. *Dasa Wisma* is a programme to make the households get involved in all the development activities from the government (W. Hadipuro, personal communication, April 8, 2013). *Dasa Wisma* is a part of the *PKK* that exists on the level of RT. *PKK* stands for Pembinaan Kesejohteraan Keluar and can be translated as Women's Organization for Family Welfare Guidance (Kuroyanagi, 1999).

Posyandu

Another important social structure in Java is *Posyandu* which started in the 1980s. This is an activity of a community which provides medical services, especially for infants and children. It's a program of the members of a community and is supported by a medical doctor or a midwife from the sub-district clinic. Every month the *Posyandu* program is taking place (Anwar et al., 2008).

Except from these Javanese social structures, which play an important role in the daily social life of the Javanese people, this research also takes other social relations of the inhabitants into account such as ties with family, friends, neighbours and colleagues. Especially neighbours are important when talking about the working of the social structures in a community. But not all of these factors are important in the same degree. People can for example chose to focus more on their family and less on the interest of the community as a whole.

2.5 Social relations and (no-) migration in the context of flooding

The previous section mainly focused on the specific Javanese social structures. In an earlier section in this chapter the links between migration and flooding was already outlined. This section will describe the link between the social relations, described in the last section on the migration decision making of inhabitants in the context of the flooding,

When people make the choice whether to migrate or not, this could depend on the degree of place attachment. When people have a high degree of place attachment, this could be a reason to decide not to migrate. Local social relations are an import factor in this degree of place attachment. In general social relations are seen as a part of place attachment (Hidalgo and Hernandez, 2001). People are not just attached to a place because of the place itself, or in other words physical attachment. But they also are attached to that specific place because of the social relations, or the social attachment (Low & Altman, in Hidalgo & Hernandez, 2001, p. 275). Kusuma (2008) argues a good relationship with the neighbours in an Indonesian urban context is a reason for people to be attached to a place, especially for the ones with a low income. This strengthen the argument social relations are important to the place attachment and therefore is a reason not to leave the area

Social relations are important in the adaptation and recovery of weather and climate-related hazards and he argues the success of communities to adapt to climate change depends on their ability to act collectively. Individuals use relationships with other actors in societies for their own and the collective good (Adger, 2003). Inhabitants help each other to minimize the negative impact of flooding by using local social strategies (Dewi, 2007). All the mentioned social structures, *Gotong*

Royong, *Ronda*, *Dasa Wisma*' and *PKK* and *Posyandu*, could be seen as social institutions which form an important factor in the link between flooding and the decision to migrate, as shown in the model earlier in this chapter. It's about how the migration decision making of individuals is influenced, among other things, by social relations, and therefore also by these social institutions. Besides these social institutions the migration decisions are also influenced by social relations, that in a way are perhaps more private, such as family or friends.

As stated earlier in this chapter the decision whether to migrate partly depends on the ability of institutions in a community to adapt to the water problems. This section focus on how the social relations in Kemijen, formed in the social structures outlined in the last section, could help people to choose another adaptation strategy than migration. As mentioned earlier *Gotong Royong* and *Ronda* are specific traditional ways to deal with the flooding and meant to minimize the negative impact of the problems (Dewi, 2007). If these structures work well in the context of the problems around flooding, this could help members of the community to minimize the negative impact of it. Therefore they could have enough ability to choose another adaptation strategy than migration. If the social structure of *Ronda* works well for example, this could mean that people feel safe because of night patrol supported by the social relations. Other forms that of social relations that could form a social institution are *Dasa Wisma* and *PKK* and *Posyandu*. *Dasa Wisma* and *PKK* focus on the women in the community to involve them and their households. *Posyandu*, a health care program, might enlarge the ability of households to cope with the effects of flooding. In general all these institutions seem to have a negative impact on migration. In the upcoming chapters, when the results from the fieldwork are given, the influence of flooding on this relation in Kemijen will be examined.

Of course there are other factors that influence the migration decision making. Besides this degree of attachment because of social relations another important reason to be attached to a place is the accessibility for example. Because these people have low incomes it saves time and costs to be near their work or study place. The last section focussed especially on the effects of social relations in the local community on the migration decision making. However the effects of social relations outside of the community cannot be ignored, because these also impact migration patterns. When a community has social networks in other areas members have the possibility to migrate further away than when most of the social relations are located on a local scale. Social relations are important when someone wants to migrate. Social relations in the other area can help new migrations by informing them, this will reduce the costs and risks. When they settle in the new area their social relations can help them finding a new job. Migration can be a result of the presence of one of the family members in an area, other members of the family could follow this person which results in family reunification. A specific reason for an individual to migrate because of social reasons is marriage (Curran, 2002).

When the social networks are strong at local scale, it's more likely people choose an adaptation strategy that does not lead to migration or maybe lead to migration on a local scale. When the social relations are more wide spread migration to areas further away are possible (Adger et al., 2007). When migration is chosen as strategy, the membership of a community and the (social) coping capacity of the institutions changes as well (McLeman & Smit, 2006).

According to Livingston, Bailey and Kearns (2008) most of the authors see place attachment as something positive for people, but they argue place attachment can be negative in a way. People are better off when they are able to move. Earlier in this chapter it is explained that a lack of different kinds of capital has as consequence that people cannot migrate when they prefer to do so.

In the next section the concepts that were examined in this chapter are visualised in a conceptual model. After the conceptual model the operationalisation is shown.

2.6 Conceptual framework and operationalisation
In this section a conceptual framework of the outlined concepts and different links between them will be shown. In the other part of this section the key concepts will be operationalised.

Conceptual framework
To summarize and visualize the thoughts a conceptual framework is shown in this section. The key terms and their relationships are visualised in Figure 4. These represent the central research question:

How are the decisions concerning migration of inhabitants of Kemijen, a low-lying area of Semarang, influenced by social relations in the context of the problems due to flooding they have to deal with?

The relations mentioned in the central questions, which are also broken down into the sub questions, are visualised in the conceptual model in Figure 4. The first relation is the one between social relations and migration decisions and is meant to answer the question to what extent the migration decision of inhabitants of Semarang are influenced by the social relations. The arrows from flooding to social relation and migration are important because, as stated in the previous section, there could be a relationship between the flooding and social relations and migration decisions.
This intervening arrow shows the question about the influence of flooding in Semarang on the relation between social relations and migration decisions of the inhabitants.
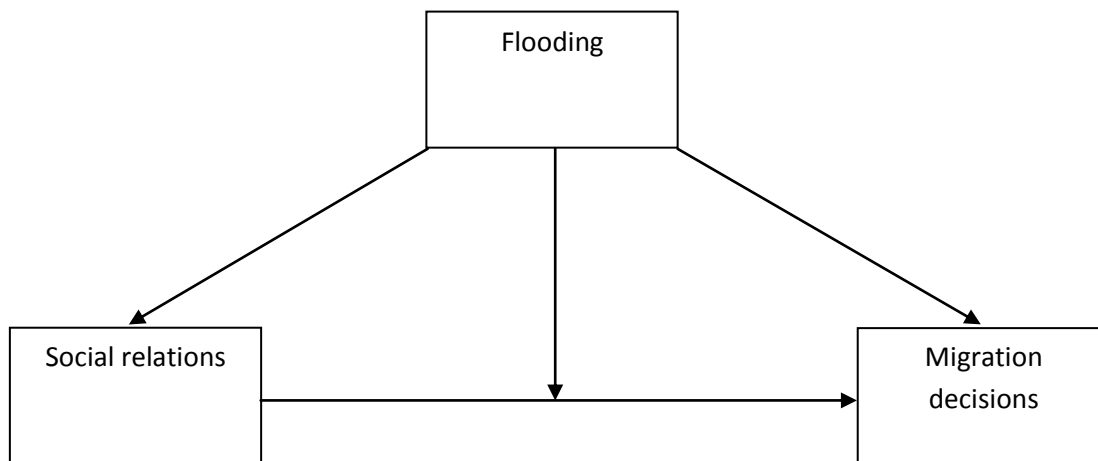
Figure 4: Conceptual model

Operationalisation
The concepts used in this research which need most clarification are social relation, migration decisions and flooding. There are different possible definitions of these concepts and these could be approached from different perspectives. What is meant by these different concepts is described in this chapter and will be visualised by the operationalisation in this section.

First the term social relations will be operationalised in the specific traditional context as described in section 2.3. In this research social relations are studied that are seen as important by the inhabitants

themselves. By studying the literature the assumption was formed that *Gotong Royong, Ronda, PKK and Dasa Wisma and Posyandu* are experienced by the inhabitants of Semarang as important structures in the neighbourhood. As stated in section 2.3 *Ronda* could be seen as part of *Gotong Royong*, but it is not exactly clear if inhabitants of Semarang will see this in the same way. Therefore the term *Ronda* is mentioned apart from *Gotong Royong*. Furthermore the figure shows three types of *Gotong Royong* that are distinguished in this research. These social structures are mainly based on the social relations with neighbours. Besides these social relations, other kind of, social relations are distinguished. Family, friends and colleagues, are not as important as neighbours for the mentioned social institution, but they are still important social structures in the community.
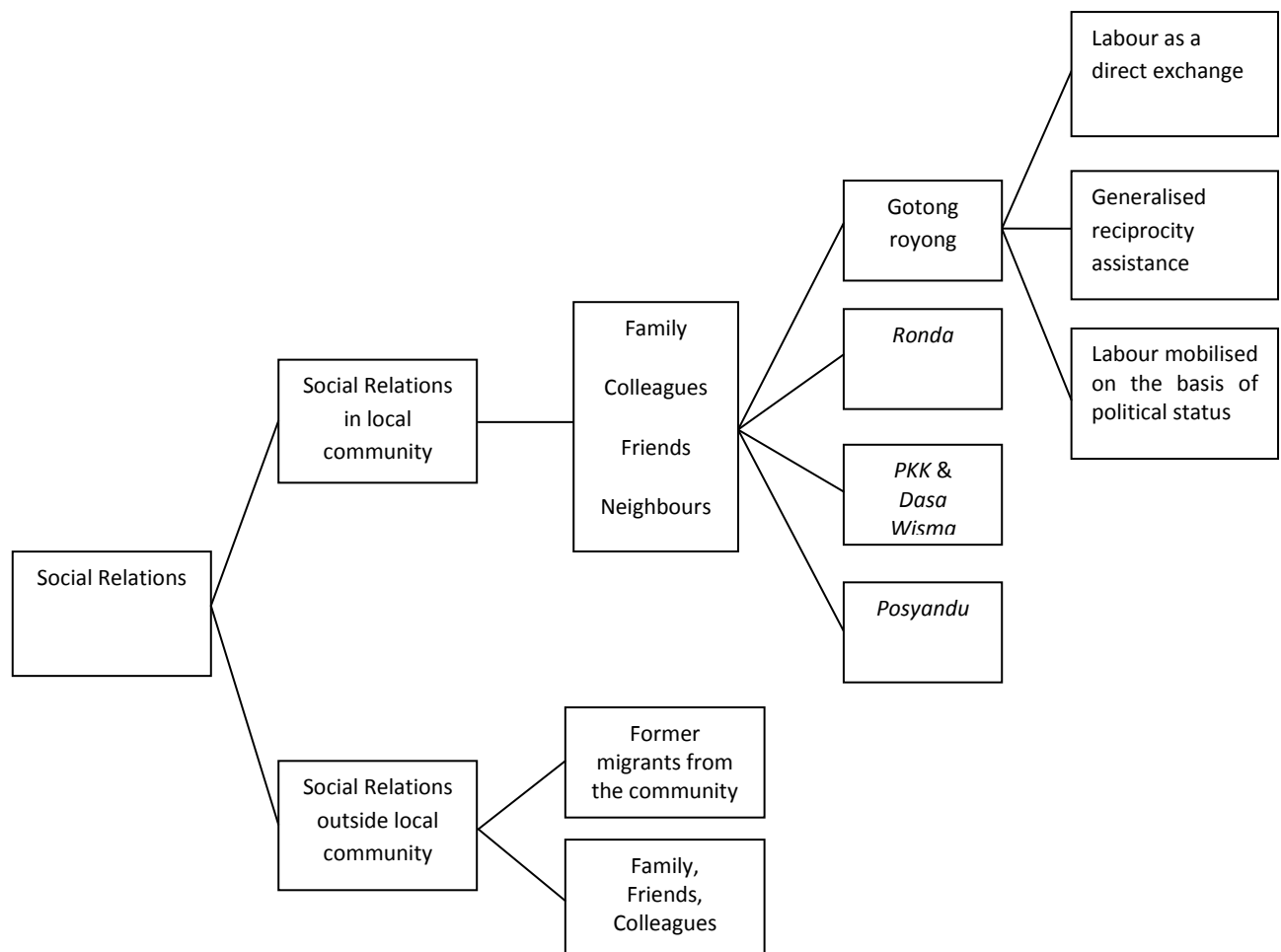
Figure 5: Operationalisation of 'social relations'

The other concept operationalised in this section is 'migration decisions'. In section 2.2 it's argued environmental factors are not the only reason for migration. Economic and political factors should always be taken into account. That people are rich in social capital does not mean they are rich in financial resources. The political factors will be mainly taken into account as a context. However this research will mainly focus on the social factors in the decision to migrate. One of the social factors influence the decisions to migrate is place attachment. In this research two dimensions of place attachment are used. One of the factors that influence the degree of place attachment is the social relation in that place. Social relations can be split up as shown in Figure 3. The physical attachment to a place depends on the environment. In the case of a community of Semarang, the physical attachment to a place might depend on the frequency of flooding. A higher frequency of flooding could possibly mean the physical attachment to a place will become less. Other factors such as

16

economic and political ones cannot be ignored. Although it is not the intention of this research to focus on these factors, they will be used to place the influence of social relations and flooding on the migration decision in context.

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┌──────────────┐        ┌──────────────┐        ┌──────────────┐
│ Environmental│────────│Physical place│────────│   Flooding   │
│   factors    │        │  attachment  │        │              │
└──────────────┘        └──────────────┘        └──────────────┘
   ╱
┌──────────────┐        ┌──────────────┐        ┌──────────────┐
│  Migration   │────────│ Social factors│───────│ Social place │────────│Social relations│
│  decisions   │        │              │        │  attachment  │        │              │
└──────────────┘        └──────────────┘        └──────────────┘        └──────────────┘
   ╲
┌──────────────┐
│Other factors:│
│  Economic,   │
│political, etc.│
└──────────────┘
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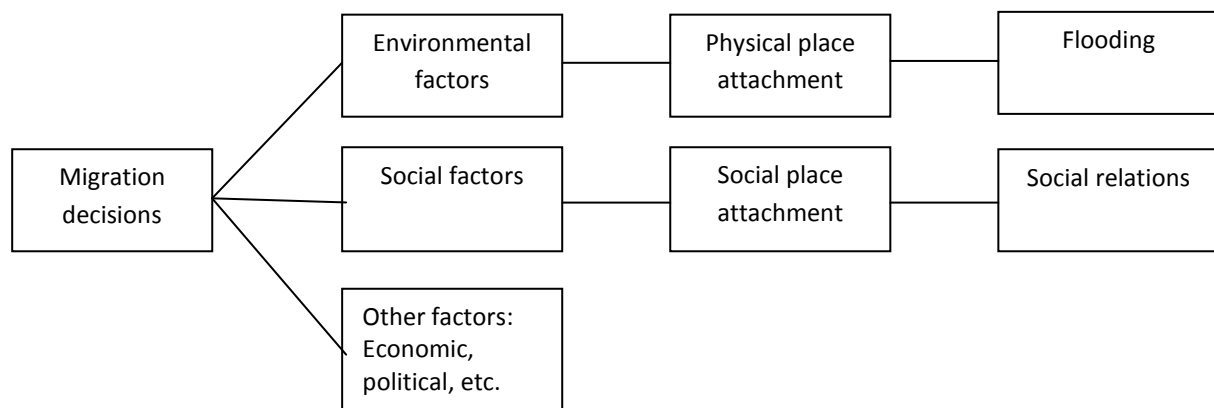
Figure 6: Operationalisation of 'migration decisions'

The last concept that has to be operationalised is flooding. Outlined in one of the previous sections is that we can distinguished the more or less objective side of flooding from the more the subjective side. This subjective side is about how the people experience the flooding. The objective flooding in Semarang can be categorised in three types of flooding.

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                    ┌──────────────┐        ┌──────────────┐
                    │  Subjective  │────────│  Experience  │
                    └──────────────┘        └──────────────┘
                      ╱
┌──────────────┐                            ┌──────────────┐
│   Flooding   │                            │Tidal flooding│
└──────────────┘                            └──────────────┘
                      ╲     ┌──────────────┐ ┌──────────────┐
                       ─────│  Objective   │─│River flooding│
                            └──────────────┘ └──────────────┘
                                             ┌──────────────┐
                                             │Local flooding│
                                             └──────────────┘
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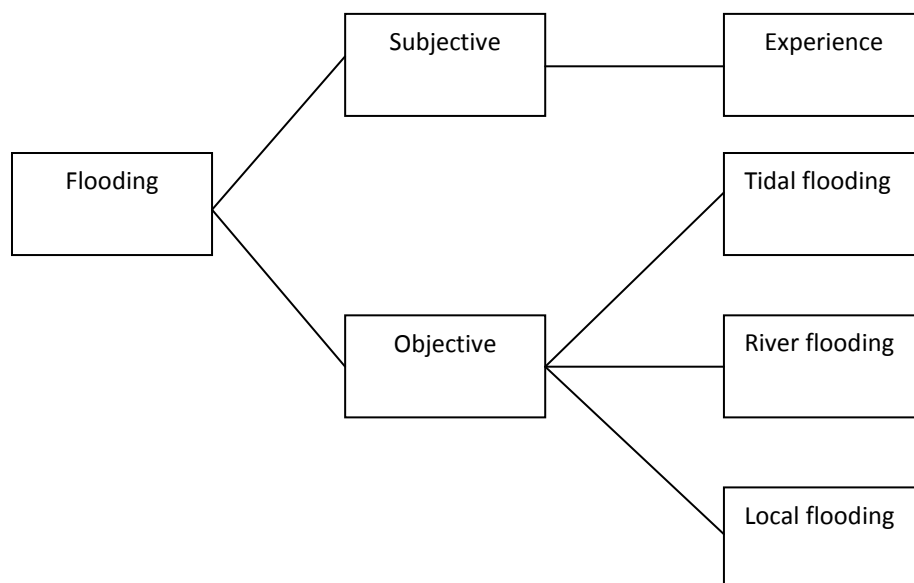
Figure 7: Operationalisation of 'flooding'

This chapter forms the theoretical framework of this research. Theoretical concepts about flooding, social relations and (no-) migration were outlined. In section 2.2 a model was introduced in which the ability of community institutions and households to adapt is related to flooding and migration. Migration depends on this ability to adapt in a community and whether there is enough financial resources to make this decision. In this chapter and in this research the focus lies on the social kind of institutions in a community, which are formed by the social relations described earlier. The social structures are broken down into four different traditional social activities which are shown in Figure

5. The operationalisation of migration decisions shows four kinds of factors are distinguished. Social en environmental factors are the main focus, but economic and political are not ignored. During the fieldwork the economic situation is observed and is discussed in the interviews. Political factors

3 Methods

This section discusses the methods that will be used to answer the research questions. To reach the objective of this research a qualitative approach is chosen. The research will focus on the low-lying area of Semarang to contribute to a better understanding about the way inhabitants deal with the environmental change. It is not the primary intention to draw generalizing conclusions, but to contribute to the knowledge about local outcomes of the relationships discussed in theory. Therefore the research focuses on with an in-depth approach on a specific case, namely a community in the low-lying areas of Semarang. In the first section I will explain how the research material is collected and in the second section I will outline how these data will be analysed.

3.1 Research material

This section focuses on the collection of the research material to answer the different sub question and the central research question. The research material that will be collected is about the specific case of Kemijen, therefore it's a case study. Data from literature mainly forms the context, but because it's a case study an in-depth approach is needed.

The first sub question about the specific problems of flooding in the coastal areas of Semarang is answered by examining the different descriptions of the problems in literature. Besides the literature study, interviews with experts are conducted during the stay in Semarang. After this the further answering of these questions took place during the fieldwork by conducting semi-structured interviews. Because flooding forms the context of this research this question will not only be answered in one chapter, this question will be recalled during answering other sub questions. This is more or less the same for the answering of the sub question about social relations and the influence on migration decision for example. Interviews with experts are conducted during the stay in Semarang. Because it's about decision making of individuals within a household it is important how these Javanese social structures are experienced by the inhabitants themselves. So besides interviews with experts a further answering of the research questions is done by conducting semi-structured interviews during the fieldwork in Kemijen. The same accounts for the question about the relationship with migration. An interview guide is needed which lead the interview in a certain direction and give the opportunity to ask supplementary questions. This interview guide is based on the different dimensions and indicators of the different key concepts. This interview guide can be found in the Appendix 1. Besides semi-structured interviews, informal conversations and observations are used to answer this question. To get an answer on the question about the social relations within the community observations in the streets were useful, because it can show the way how people socialize with each other. Informal conversations are useful to begin within the first stadium of the fieldwork. Inhabitants gave indication about their vision on the social structures in the community, the perception on flooding and the opinions about migration which had led to a revision of the interview guide. Informal conversations were useful in answering the sub question about for example social relations. For the question about how they experience the flooding very open questions are used to give the respondents the change to describe their experience of the water problems and on how they deal with it. To answer this question observations are needed besides the semi-structured interviews. By doing observation the situation described in literature and by the respondents during the semi-structured interviews can be placed in context. Most of the sub questions can be partly answered by a literature study, but to examine the specific case of Kemijen,

data is needed, that is collected by observations, semi-structured-interviews and informal conversations.

The data from the semi-structured interviews, informal conversations and observations was collected during one month of fieldwork in Semarang. During this fieldwork a lot of conversations with different inhabitants have taken place. For these respondents the only criteria is that he or she is a member of the community. Besides these members of the community, the semi-structured interviews will also focus on people that deal with the community and have knowledge about the social structures of the community.

What was mentioned before in this section indicates the research units in this research are the inhabitants of Kemijen, a sub district in the low-lying area of Semarang. The units of observation are the individuals in a community and they will be the respondents of the semi-structured interviews.

Because of the language barrier we've got the help of a translator. Our translator, a student from the UNIKA University in Semarang, had a good knowledge of the English language. She made it possible for us to do this research, but because our data consists of a translation and therefore an interpretation of our translator this required some extra attention and nuances when using this data. It seems she understood well what kind of research we wanted to do and therefore she made some suggestions about how to ask certain questions. When describing the data in the next chapters some citations will be used to emphasize the importance of the stories and the perspectives of the inhabitants. These citations are translated into English by our translator.

To start our fieldwork in Kemijen we needed a key informant during our observations and interviews. What makes Kemijen special is that it is part of a polder project in which the municipality of Semarang works together with the Dutch Hoogheemsraadschap van Schieland en Krimpenerwaard (Hoogheemsraadschap van Schieland en Krimpenerwaard, 2009). The representative of the inhabitants in the Polder Board was contacted and he was willing to show us the neighbourhood. Afterwards he was still willing to help us with finding respondents. The most important for us was we had someone the people in Kemijen know. People we met recommended this because otherwise people start talking and maybe see us as unwelcome guests. Our key informant could explain our research to the people and in that way we could gain their trust. In this way we could walk through the neighbourhood comfortably and ask different people the questions we wanted to ask. Everybody we asked for an interview was willing to help us.

This case study that has been done is on a large part based on the conducted semi-structured interviews with the inhabitants. After the first day of conducting interviews we concluded our key informant was picking out respondents who knew about the polder project and could tell successful stories about the project. For our research it was necessary to also interview some other people. Besides the ones Mr. Puji picked out. That's why the following times we walked with our key informant, we try to select other respondents. We did this without wanting to detract from potential respondents they informant introduced to us. On the days our key informant was not able to go with us in the neighbourhood, someone else from the Polder Board, was willing to help us. It seems he was less known in the neighbourhood. This also had some advantages, because we could more easily select the respondents we wanted.

A total of 13 respondents are interviewed during the field work. These were mainly selected randomly. As mentioned before a part of them were selected by Mr. Puij. To prevent that only the

success stories from these respondents were taken into account, inhabitants in a different situation were interviewed. This selection was based on the housing and economic situation and there for example. In the Appendix 2 an overview of the respondents can be found. The stories of the different respondents have been given a number. By given them a number the identity of the respondents stays more or less anonymous. The respondents were asked about their age and job and their living condition was observed. People with different economic situations and different living conditions were approached during the fieldwork.

3.2 Analysing the research material
The collected data is analysed and interpreted per sub question. The information collected through semi-structured interviews, informal conversations and observations is placed in the context outlined by the literature study. This is done with the intention to get a clearer image about how migration decisions are influenced by social relations in the context of flooding.

The collected data from the community in the low-lying area of Semarang are analysed and interpreted with the help of the results from the literature study and interviews with experts in Semarang. Before the data from the semi-structured interviews and informal conversations were analysed and interpreted they had to be transcribed and coded. Besides the data resulting from the semi-structures interviews, the data resulting from the observation in Kemijen are described and interpreted. The data resulting from the sub questions about social relations through observations are interpreted differently than the data collected through conversations and semi-structured interviews. The analysis of the observation depends more on interpretation than the analysis of the interviews. Because these data is unspoken it depends more on the way certain situations and actions in the streets are interpreted. Semi-structured interviews also depend on the interpretation but not as much as with observations. The interpretation of the various semi-structured interviews and observation with the information from literature study result in answers on the different sub questions. The answers on the different sub question are related to each other and will result in an answer on the central research question. The answering of the central research question begins with the answer on the first sub question about how inhabitants of the community experience the flooding in the area. This question is related to the way they experience the social relations in the community and the migration decision making. When analysing the data it's the number of respondents that gave a certain opinion while another number of respondents told a different story is not that important. This research focus on what the different respondents told, not on the number of respondents that told a certain story.

The way the data is analysed comes close to the method of objective hermeneutics which is about reconstructing social realities. It does not claim to be representative, but the specific characteristics of the case to be analysed are important. It recognizes the importance of one single case. Interpretation of the data is seen as an important focus point of Objective Hermeneutics (Mann & Schweiger, 2009). This also accounts for this research which studies the specific case of Kemijen. Trough semi-structured interviews and observations different stories or 'texts' are gathered and interpreted. The methods used in this research are not completely in line with the methods of objective hermeneutics. In objective hermeneutics every case can be generalised and is representative in a way. In this research the interpretation of one case is important but this is done more careful and with more nuances regarding to its degree of how it can be generalised.

Analysing the data from the fieldwork in the way that has been described above will result in stories of people with different experience and perspectives on the problems in the specific case of Kemijen.

These stories, that are analysed and interpreted, form stories on their own. But these are also compared to parts of other stories told by other inhabitants. So it will result in stories which emphasise their reality which is and interpreted and analysed. Not the whole story of every respondent is told, but the interesting parts are selected

In this chapter the methods used in this research were outlined. Together with the theoretical framework a fieldwork is done in Kemijen. In the next three chapters the results of this fieldwork will be described. The next chapter (Chapter 4) starts with describing the results about flooding. In the chapter 5 and 6 chapters the social relations and migrations will be described.

4 Flooding

In this chapter the experiences of the inhabitants of the flooding in Kemijen will be examined. Environmental stressors and information about this are perceived in a different way by different people. It has a different impact on the various individuals, households and communication (Piguet, 2010). Because of this and because it forms the context of this research, the examination of the way people experience flooding is necessary. Describing how flooding impacts the daily live is a relevant step to reach the research objective, because this makes it possible to examine the social structures and relations and the migration in Kemijen in this context. In first section the way different inhabitants experience flooding will be described. Subsequently the second section will discuss the different ways of dealing with the problems they experience.

4.1 The experience of the flooding

In the first section of the theoretical framework of this research the causes and consequences of flooding was described. This is section is mainly about the perception of inhabitants about the causes, and consequences of the problems and about their experience with the flooding.

On the question in the interview about when their last experience with flooding was, the respondents gave different kind of answers. This difference has probably something to do with the height of the house they live in. During the observations it became clear that the differences in income of the different households were visible in the height of the house. When they experience flooding for the last time can therefore also differ. Most of them told the last time they experienced flooding was in February or in March, but respondent number 3, who lives in a heightened house in another RW, said the last flood was in December.

In the theoretical framework the three types of flooding Semarang has to cope with were distinguished. The inhabitants also seem to distinguish these three types of flooding: tidal flooding, river flooding and local flooding. Flooding that comes from the sea, the tidal flooding, is called *'rob'* by the inhabitants. Almost all of the respondents see this as one of the major causes of the water problems in the area, so as the most important type of flooding. Heavy rain is also named as one of the major causes of the problems. Another major cause of the water problems is the land subsidence. The exact causes of this land subsidence were not always named. Every respondent acknowledged they have to heighten their house as consequence of the land subsidence to protect themselves from the water, although not everyone was able to do so.

Besides these more natural causes inhabitants also acknowledge other factors. There's a lot of garbage and this has as consequence the water cannot circulate well. The inhabitants themselves see the amount of garbage as a consequence of the so called bad habit in the area.

The importance of the experience of the inhabitants is supported by the following example. During one of the days of the observation and interviews, the streets of Kemijen were flooded because of the heavy rain of the night before and that day itself. When we asked people about the last time flooding occurred, an inhabitant answered the last time was a month ago. This is interesting because it shows the perception of people on flooding. During the fieldwork it became visible the experience mainly depends on the situation of the houses. People with less money suffered more from the land subsidence than people with money. Because of the land subsidence the houses became lower, not everyone has enough money to heighten their house. The houses that are the most vulnerable to flooding in Kemijen are the ones lying below street level. Some of the houses are always full of water. People living in these houses face various problems such as rash on the feet and other diseases.

During the flooding the inhabitants are worried about the health of their children. They have to sleep with water in their house and therefore the change they get sick is larger. In this way they experience insecurity during the flooding.

People who live in heightened houses also experience negative consequences of the flooding. Some of them told they are freighted at night when the area is flooded or a flooding is coming. When the electricity is not working because of the flooding they stay awake in their house to protect their belongings from being stolen. In this case the role of *Ronda* (the night patrol at night) is interesting. *Ronda* will be explained in more detail later in chapter 5 and 7.

Figure 8: Photo of a low and high house, the lower one is full of water

For some people in Kemijen the situation became worse while for others the situation has improved. This experience about the change in water problems can differ strongly per person. Because of the dike they build and the pumps in the RTs the water problems have decreased according to a part of the respondents. For others that are not able to heighten their house for example the situation becomes worse. In a certain RT the owner of the only house that lies below street level in his RT told the flooding has become twice as high. The flooding in February was more than one meter according to him. People who live in low houses suffer from the fact the roads in the area heightened. When flooding comes all the water comes to the low lying houses. People with enough money to heighten the house will live above street level. These people told the problems around flooding in the community have become less. This difference in the way people experience flooding also became visible in the way people deal with the flooding, this will be explained in the next section.

4.2 Dealing with flooding
The way people in Kemijen experience flooding differs, this is the same for the way inhabitants deal with the problem. An important factor in this difference is the economic situation of someone. When people have enough money they probably will make their house higher. But if they do not have enough to do this in a sufficient way they could make their houses higher by putting sand into their houses for example. When someone does not have any money to take this kind of measures, the house will become lower and lower. During the observations these different situations became clear. The respondent with the lowest house (respondent No. 6) told his bed was the only high place in his

home. Stating that some of the people have enough money to heighten the house does not necessarily mean these people are rich people. It only means these people have maybe more money to renovate the home than the average inhabitant in Kemijen. In the end all of them have to deal with the water problems, but the point here is the ability to reduce the negative consequences differs.

As mentioned in the last part some RTs have a pump that functions well. In this way the water problems become less in the area. Inhabitants of a RT watch the water and the functioning of the pump. This seems to improve the average situation of the people in the RT, but still there are vulnerable people. Some inhabitants have a personal pump that can be used to get the water out of the house as fast as possible. It became clear that not many inhabitants could afford this kind of measures. People without many abilities to deal with the situation, seem to sort of accept their situation. A term that is used sometimes is *'sudah biasa'*. With this term people want to say they learn to live with the situation as if it's normal. In a way they get used with flooding and its consequences they say, it has become a part of daily live. When flooding comes they try to safe their equipment, clothes and papers by storing them in a higher place. The stove and the television were often seen as important equipment. When the flooding gets really high they evacuate. Most of the people that own houses on or below street level told they respond in this way during the flooding.

The aim of this chapter was to describe the problems of flooding the inhabitants have to deal with and to make clear these problems are experienced differently by the different inhabitants. This experience of flooding and the way they are able to cope with it form the context for the rest of the research. In chapter 7 this will be linked with migration decision making and social relations and with the theoretical framework. In the next chapter the importance of social relations in this context will be described.

5 Social relations

In this chapter a description of the social structures, or institutions, of *Gotong Royong*, *Ronda, Dasa Wisma* and *PKK,* and *Posyandu* in Kemijen will be given. This description is based on how the inhabitants experience these social structures in their daily life. Because *Gotong Royong*, *Ronda, Dasa Wisma* and *PKK* and *Posyandu* mainly occur on the level of RW and RT, these levels will be recalled first. In general most people say that these practices are active and mean a lot to them, but how they experience these practices differs from person to person. Furthermore we asked about if the practices changed because of the flooding. In general there were inhabitants who said the practices did not change because of the flood. These social structures are all based on the relation with the neighbours, but besides these structures other social relations such as family, friends and colleagues might be important.

During the fieldwork in Kemijen the Rukun Warga (RW) and especially the Rukun Tetangga (RT) were very important administrative levels when talking with the respondents about the neighbourhood. In section 2.3 is stated that a place Java is divided in different administrative levels. The Rukun Warga forms the community within a sub-district and the Rukun Tegangga forms the neighbourhoods association in these communities. The sub-district in this research is Kemijen and this sub-district is situated in the district of Semarang Timur, which means East Semarang.

5.1 Social structures
In Kemijen people from different RWs were interviewed and within these RWs from different RTs. Besides the similarities we found in the social structures and also the specific Javanese social structures, they also differ within the sub-district of Kemijen.

Gotong Royong
In section 2.3 three types *Gotong Royong* are distinguished. The first type is about splitting the work of major task in the community. The second type is about the obligations of members of the community to help other members with events such as marriages, funerals or with reparation of the house. The third type is about the point that the community is seen as a duty and local officials can command a member to do certain tasks. During the interviews no specific questions about these three types were asked. The respondents were asked about *Gotong Royong* in their RT and the answers they gave indicate more or less the same division. In this way the most important forms of *Gotong Royong* were pointed out by the inhabitants themselves. In general the second type of *Gotong Royong* we distinguished in this research was mentioned most often. This type is about generalised reciprocity assistance, which means that there is an expectation that if a person or a family is helped with a certain event, they will help the others in the future. Examples of events that are mentioned the most by the inhabitants of Kemijen were marriages and funerals. Another event that was mentioned by a respondent (No. 9) and can be seen as generalised reciprocity assistance is the circumcision party. Besides these events the inhabitants pointed out some other forms of *Gotong Royong*. For example when a person in the area is sick they will help that person. If necessary they collect money to rent a car to take the person to the hospital. According to an inhabitant *Gotong Royong* also occurs when something in the street is broken, like the lanterns.

There were also some mentioned practices that can be seen in the context of flooding. One of the activities mentioned was cleaning the environment. When the inhabitants gave some examples of *Gotong Royong* in the area, they pointed out the activities mentioned before such as help with weddings, funerals and illness. But when they were asked about the influence of flooding on the social practices, there were some respondents who started talking about the relation between *Gotong Royong* and cleaning the environment. It differs from person to person if they experience *Gotong Royong* in the case of cleaning the environment. Some say there is *Gotong Royong* while other inhabitants state *Gotong Royong* does not mean anything in the area and that special people are hired to clean the environment.

Others told *Gotong Royong* was used to make the roads higher, during observations this practice was also visible. Not all the roads where heightened by *Gotong Royong*, there also was a fund given to some RTs to heighten their roads. Besides the roads that were made higher also some houses were made higher in Kemijen, but not everyone is able to do this. When talking to the inhabitants the most of the inhabitants did not mention that there is *Gotong Royong* for helping each other with making the house higher. People have to hire people to raise the floor of the house. This could mean that there is no *Gotong Royong* for helping each other with the renovation of the house.

Besides the questions about *Gotong Royong* we also asked them about whether they worked together with other inhabitants dealing with the flood. Inhabitants experience different ways of helping each other with the problems around flooding. People in the higher houses told us they offered others in the community to evacuate in their home when flooding comes. One of the respondents told she gave people the opportunity to store their motorbikes in her house. Inhabitants also help each other through information and warn each other. Someone also told about collecting money for the poorest persons to help them recover from the flooding. Someone else mentioned that they make meals together during the flood.

Not all of the respondents see this working together in dealing with the flooding in their area. Because people have their own difficulties, people focus on their own house. Worth mentioning is that most of the respondents with visible bad housing conditions, in comparison to the average housing condition, told us there was no co-operation with others when dealing with flooding. A man, who was the owner of the only house in his RT that was below street level, told he is the only one with a low house and during a flooding all the water comes to his house Therefore he suffers the most, but he did not received any help from others.

Ronda

In the theoretical framework *Ronda* is described as social structure that is about patrolling the neighbourhood and that this, according to Dewi (2007), could form another strategy to cope with the negative impact of flooding. Therefore it could influence the decision about whether to migrate. According to Hadipuro (personal communication, April 8, 2013) *Ronda* is not used in the context of flooding, but *Ronda* is only meant to prevent crime. During the fieldwork the inhabitants were asked about their experiences with *Ronda*. The experience of the function of *Ronda* could be one of the factors influence the decision whether to stay in the area.

For *Ronda*, most of the respondents say it is not active anymore, but the reason for this differs. Inhabitants told it was safe enough so they do not need *Ronda* anymore, only during on big religious days when the crime is higher. A story worth mentioning is the story of someone who told *Ronda* is not active anymore because it's safer without *Ronda*. When there was *Ronda*, some motor cycles and belongings in the area were stolen. Now they do not use *Ronda* anymore nothing gets stolen. She also told *Ronda* is not working because the male are too lazy. When someone does not

show up for *Ronda* the others will refuse to come, it's a social problem. A woman from another RT also told us about this social problem. In that RT she lived in *Ronda* does not work and it was not safe she said, her bicycle was just stolen she said. A man in the same RT confirms that the area is unsafe and that *Ronda* does not work. Therefore he and his friends hang out and walk around and do *Ronda* themselves. There are also examples of *Ronda* that's still active. Inhabitants showed us the scheme in which different households had to participate in *Ronda* on different days.

Although *Ronda* is meant to prevent crime in the area by male inhabitants patrolling at night it is also used in the context of the problems around flooding. A man who told the social structures still have an important role in the area said that at night, when everybody sleeps, they patrol the area and they guard the people and they warn others when the water comes. A woman in a RT where *Ronda* does not work also states that *Ronda* contributes in the protection against the water problems, therefore she is sad that *Ronda* is not active.

Dasa Wisma and PKK

As *Ronda* is an activity where male inhabitants participate in, the female inhabitants participate in *Dasa Wisma*. This programme to make households get involved in development activities of the government, is taking place every month or every week, this depends on the RT. Dasa Wisa is part of the *PKK* (Pembinaan Kesejohteraan Keluar). This can be translated as Women's Organisation for Family Welfare Guidance.

The *PKK* and *Dasa Wisma* were mostly pointed out by women, especially when the question was asked about if they participate in an organisation dealing with the water problems. They see it as an organisation which gives instructions and information. It's also possible to save and loan money from the organisation. The *PKK* also gives information about how to prevent diseases. Women also collect money with the *PKK* to help the poor people in the area. As mentioned before people who need to go to the hospital might need money for transportation. In that case the money of the *PKK* can be used. All the women in *PKK* s bring some rice sometimes and this is will be given to a person through a lottery. They think it helps a lot when someone does not have money. Another respondent (No. 7) also told that this kind of lottery is also done with money.

They also give instruction on how to prepare themselves on the flooding. They instruct them to not put the garbage everywhere for example. Despite this instructions inhabitants still throw the garbage everywhere according to a respondent (No. 9). Another instruction the *PKK* gives is about relationships in the area. The same inhabitant told that the *PKK* gave her norms about the RT, she needs to be good to others because she might need them once. This could be used in dealing with the flooding in the area. In general it seems that the *PKK* and *Dasa Wisma* could contribute in dealing with the problems of flooding through their instructions, but there are less signs this social structure has changed because of the flooding.

Posyandu

Posyandu, which is a programme to monitor the childrens growth and their health, happens every month. *Posyandu* seems to be important for the people in Kemijen. They are positive about it the fact the *Posyandu* takes care about the children in the area. It is of great value to the poor people in the area because they often have not enough money to see the doctor. Furthermore they also look after the health of the elderly. During the interviews one of the respondents (No. 2) did not knew *Posyandu* also was for the older people, she did not make use of *Posyandu* because her children were already in junior high school. This shows not everybody in the area has the same access to

knowledge. This woman that did not knew about the *Posyandu* programme for elderly was not informed about the Polder in the area for example.

There are no clear signs that the program of *Posyandu* changes because of the flooding. Inhabitants seem to experience *Posyandu* as something that happens every month and is not influenced by the flooding. It might be possible that the *Posyandu* activities are adjusted to the context in which flooding takes an important role in the daily lives of the inhabitants, but this was not mentioned by the respondents.

5.2 Neighbours, family, friends and colleagues

Besides the specific Javanese social structures the inhabitants were asked about which social relations are important to them. People rely on the ones in the direct environment and therefore neighbours are important. The neighbours form the basis of the social structures described in this chapter. However, most of respondents in Kemijen see family as most important kind of social relation they have. Neighbours are seen as the second most important kind of social relation. A good relation with the neighbourhood is seen as important. The statement about people relying more on the close neighbours than on family was supported by a story of a woman who does not have family in Kemijen. So if she is having a problem she asks help from the neighbours, not from the family. Another respondent (No. 9) told us she got help from the neighbours when she was given birth. There was no family around and the neighbours brought a doctor to her. Other reasons to have a good relation with the neighbours is because they help each other and solve the problems together in the neighbourhood and that they want to live peacefully happily together. So although family is often seen as most important, they still maintain good relationships with neighbours.

Some of the explanations about why social relations are important can be placed in the context of flooding. An inhabitant told that especially during flooding she had a close relationship with the neighbours, because they live in the same situation. She also worked together against the flood with here close neighbours by building a dyke in front of their homes; this could be seen as *Gotong Royong*.

Friends and colleagues were not mentioned as important social relations directly, they only told about the neighbours and family. On the question about social relations outside of Kemijen most of them mentioned family or friends and some of them also mentioned colleagues. Some of the respondents worked outside of Kemijen and for this reason they have colleagues and friends in other areas than in Semarang.

A respondent (No. 1) with social relations outside of Kemijen told that during the flood she moves to their home for maybe two or three days and that after the flooding they come back. There are some people who lived in Kemijen before and now live in another area. Why they moved will be described in the chapter 6.

In this chapter the role of the specific Javanese social relations in Kemijen are examined. The main focus was to examine these structures in the perception of the inhabitants of Kemijen. Inhabitants of Kemijen seem to experience a kind of change in *Gotong Royong* because of the flooding in the area. Cleaning the environment or renovate the street in the context of flooding are examples of this practice. Also *Ronda* seems to have a function during the flooding, these night patrol is also used in the area to warn people when flooding comes. The *PKK* informs woman how to deal with the flooding. Neighbours are important for the inhabitants, people want to live in peace with the

neighbourhood and most of them told us they do. A good relation is important because they might need help form the neighbours. An important note here is that the poorest people in the neighbourhood not always feel like they get a lot of help of others when the area gets flooded. They got help when some of their belongings are lost because of the flooding, but they do not help with the bad situation of the house. A part of this group still feels comfortable in the neighbourhood and accepts the way it is.

Are these good social relations with the neighbourhood a reason for the inhabitants to stay in the area? This question will be answered in the next chapter.

This chapter described how the social structures, or institutions, are experienced and it described whether inhabitants experience *Gotong Royong* in the context of flooding. In chapter 7 the working of these social structures in the context of flooding will be analysed.

6 Migration

In section 4 and 5 the flooding and the social relation in Kemijen are described. To reach the research objective the decision making of inhabitants in Kemijen about (no-) migration need to be described first. In first section the relation between social relations and (no-)migration decisions will be described. This relations and the relation between flooding and migration are important. The factors which are mentioned in relation to flooding will be described in the second section. Because there are other factors influence (no-)migration decisions then just the influence of social relations, In the third section other factors that influence the migration decisions of inhabitants will be described.

6.1 (no-) migration because of social relation

The respondents were asked if the relationship with the neighbourhood influenced their decision to stay. Most of the respondents gave a positive response on this question. A good relationship with the neighbours could make them feel comfortable for example and therefore it forms a reason to stay. In this section the decision whether to migrate because of the social relations in the neighbourhood is described for different people in different situations. The way social relations influence this decision could take different forms, this will became clear in this section.

A woman that leads the *Posyandu* (respondent 4) states her reasons to stay in the area are mainly social ones. She has an important role in the area because she leads the *Posyandu*, but also the *PKK* and *Dasa Wisma*. This makes her social position in the area high. Furthermore the observation of her house indicated that she probably has enough financial resources; her house was heightened a lot. Because she has enough financial resources l migration seems to be a viable option for her. Still she prefers to stay in the area. What makes her decision not to migrate more interesting is that she has relatives in the higher area of Semarang, which could make migration a more accessible option. Her first child asked her to live with them in that are but she does not want to. She feels comfortable in Kemijen and in her opinion the high area where her child lives as an area for elite people. Her first child left Kemijen because of the bad influences of the area on children. With this bad influence she did not meant the influence of flooding, but the influence of what she called bad habit. Children gamble and get drunk in the streets, especially boys. She only has daughters, but her daughter moved because she has sons. She did not want her children to grow up in this bad situation.

Another woman (respondent 2) in the area also told us she stayed in the area because of the social relation. But her situation was different from the woman that leads the *Posyandu*. She told that she did not have any money, this also was visible when observing the situation of her house. She owned a house that was below street level and which was always full of water. Still she stated she lives comfortable in this neighbourhood, because of the good relationship with the neighbours. She never thought about moving, although she realises her house has a bad condition. Her bad economic situation is probably the main reason she does not even think about moving.

Both women told they stay in the area because they feel comfortable with the neighbours. But their economic situation and their social position differed strongly. The woman from the *Posyandu* made a more informed decision to stay in the area while the other woman seems to have fewer options to decide. This will be further interpreted in chapter 7.

In one case a respondent (No. 7) told that not the social relations of herself in the area she is currently living made her stay. Instead he social relations of her husband in that area made moving

impossible for her. She told us she preferred to move back to the place of her roots, but she cannot. This shows a different kind of link between social relations and the decision not to move.

Another woman also told she wanted to move if she had enough money, but that her husband preferred to make their house higher if they will have enough money. So also in her case her husband preferred staying in the area while the woman wants to leave if possible.

When the inhabitants were asked about why people they know moved out of Kemijen, marriage was an often mentioned reason. They also told people are coming from other areas to Kemijen because of marriage.

6.2 Impact of flooding on the migration decision

The last section described how the migration decision making was influenced because of social relations. Another relation that has to be examined in order to reach the research objective is the relation between flooding and migration decision. As stated in section 2.2 this is not a direct relationship. However some of the respondents told they want to move because of problems around flooding or that knew people who moved because of the flooding. So although the link between flooding and migration is more complex than a direct link, some of the respondents described it in a direct way.

The story of the 8th respondent makes this influence of flooding clear. This respondent owned a house that became uninhabitable because of the land subsidence and flooding (figure 9). He does not have money to build a new house and no one helps him. He also cannot leave the area because the lack of financial resources. Besides the lack of financial resources he also mentioned the good relationship with the neighbourhood as reason to stay.

His children lived with him in the house that's now uninhabitable, one of them moved out of Kemijen because of the problems around flooding. He moved and the rest did not because he had more money than him. So the flooding impacts the preference to leave the area, but it depends on for example financial resources whether this preference can be fulfilled.

Figure 9: The former house of respondent 8 is lying below street level (Stefan Ramaker).

According to another respondent (No. 9) flooding influences the decision of people to stay in this area. She states areas that are exposed to flooding are cheaper than the ones without flooding. She

has not enough money to move, but if she had the change she would like to move to a place without flooding.

These two respondents are examples of inhabitants who seem see the link between flooding and migration. However flooding was not mentioned that often as a factor influencing migration decision making.

6.3 (no-) migration because of other factors
Besides the factors related to the social relations or flooding, most of the other important factors are related to the personal economic situation. These factors are taken into account to reactivate the influence of social relations and flooding. During the fieldwork these seemed to be an important factor that places the influence of social relations and flooding more in context. The lack of financial resources could make it impossible for people to move out of Kemijen. But some of the respondents made an informed choice based on economic reasons. One of the respondents (No. 3) preferred to stay in the area because according to him it was cheaper to renovate the home than moving out and buying a new house elsewhere. This is an economic rational reason. So although migration is a viable option for this man, because he has enough money, he still chooses to stay in the area. This is not just because it's cheaper to renovate his home than to move out, but this decision is also based on other factors. He has a business in the area, this is another economic reason for him to not move out of Kemijen. Besides this he has an important position in the community which can make him decide to stay. This is a more social reason for making the decision to stay. Because he is rich in both financial resources and social capital migration is a viable option, but because he prefers to stay for the reason mentioned he does not migrate. It seems that flooding does not impact the decision of this man whether to migrate that much.

Most other economic factors that made people stay in Kemijen had to do with the lack of financial resources. Some of them did not even think about migration, while others said they prefer to migrate if this was possible. The story of the respondent (No. 8) described in section 6.2 is an example of a man who prefers to move, but who is not able to do so because of the lack of financial resources. Respondents 9 and 10 also name the lack of economic financial resources as important reason for the fact they are unable to leave the area. At the same time they mention they like to live in the area because of the good relationship with the neighbourhood.

The most important other factor besides social relations of flooding, which are important when keeping the research objective in mind, economic reasons are also important factors of people whether to migrate or not. Besides these economic factors, respondents named other factors that made them stay, such as the access to work or the access to the airport, shopping centre or city centre. Another factor in the migration decision is that some of the respondents like to return to their cities of origin, or in other words: remigration. But the inhabitants which were interviews still had different reasons to stay.

This section described the factors influence migration, factors concerning social relations, flooding were distinguished. Furthermore the influence of other factors were described, the economic factor seems to be the most important 'other' factor kind of factor according to the inhabitants. This is the last section of the chapters in which the data from the fieldwork is described. In the next chapter the data described that's described in the chapters 4, 5 and 6 will be analysed.

7 Analysis

In this chapter the results described in the last three chapters will be analysed and linked with the theoretical framework in chapter 2 and especially the relation shown in the conceptual framework. The theoretical frame work and the description of the data both started with how people experience the flooding and the way the deal with these problems. In the first section of this chapter this will be related with the working of the social institutions. In the second section will be examined to what extent the decision not to migrate is influenced by the previously named social structures. This section focus on the question why inhabitants choose other adoption strategies than migration. Subsequently section 7.3 will examine if decision of inhabitants to migrate could be seen as adaptation strategy to the flooding. At the end of this chapter a revision of the conceptual model will be shown.

7.1 Experience of flooding and how this influences the social relations

The link between flooding and social relations will be analysed in this section. When social structures change because flooding, this might influence migration decisions in Kemijen. In chapter 4 the results from the fieldwork concerning flooding were described. The most important note was that the experience and dealing with the flooding, depends on the situation of an inhabitant. During the observations the difference in height between houses are important in the way people experience flooding. The question is how the experience of flooding influences the social relations and how this differs when people experience the flood differently.

In section 4.1 a situation from the fieldwork was outlined when a respondent (No. 9) was asked about the last time flooding occurred according to that person. The respondent answered the last time was around a month ago, but while stating this, the streets were flooded and some houses must have been filled with water that day as illustrated in Figure 10. It seems that what we, as foreign students, experienced as a flooding, was not seen as a flooding by all of the inhabitants. This could be because of it happens more often and was not that high on that day or because it was from the rain and not from the sea or river. This example makes clear the perception on flooding can differ and therefore different people might experience the way it influences social relation differently. Besides, this difference in perception might influence the way it impacts migration decision making. Some of the people who are living in the lower houses of Kemijen stated living with the flooding was about *sudah biasah*, they live with the situation as if it is normal. They experience the flooding as something they accepted as being part of their daily life. It can be concluded that for this research the different ways of experiencing of flooding is more important than the distinguished objective types of flooding.

Poor people who experience the negative impacts of flooding every day might not see how social structures could help them out of their current situation. While people who experience less negative impact of flooding may experience the positive impact of social structures when a flooding occurs. Perhaps they are not talking about the daily flooding some people have to deal with when they talk about some social structures such as *Gotong Royong* as a success in limiting the negative effects of flooding.

Figure 10: Flooding in a part of Kemijen

How people experience the flooding and the functioning of social structures also depends on the RT they live in. The functioning of *Ronda* differs per RT. But meanwhile a person stated *Ronda* was not active because they feel safe and so *Ronda* was not necessary. In an RT where *Ronda* was not active people were worried at night. So first they stated they feel safe and do not need *Ronda*, and after they start telling about that they do not feel safe during the flooding. Hadipuro (personal communication, April 8, 2013) stated *Ronda* is not used in the context of flooding. As Hadipuro stated this was the case in certain RTs. But in other cases there is an impact of flooding on the social structure of *Ronda*. As already described in chapter 5 some People warn each other, also at night, when the flooding comes. Besides this warning system they watch the functioning of the pump in a RT. This supports the argument *Ronda* is used to adapt to the problems around flooding.

Most of the respondents told that there was no change in the *Gotong Royong* because of the flooding. A part of the respondents did not seem to see a relationship between *Gotong Royong* and the protection of the neighbourhood against the flood. *Gotong Royong* works, but not yet in the context of flooding. *Gotong Royong* is still more about helping others with funerals, marriages or illness for example. When they talked about cleaning the environment they told the scheme to do so did not change and they do not help cleaning the houses of others. This could point at the fact that according to the inhabitants *Gotong Royong* does not change because of the flooding. Others experienced a change in *Gotong Royong* because of the flooding. They work together to clean the canals and put the garbage away or they take care of the pump together for example.

A lot of women in Kemijen seem to participate in *Dasa Wisma* and *PKK*. They also get instructions on how to deal with the negative impact of flooding. These social institutions therefore are changed in the way that they are adjusted to the problems of flooding. If there were other problems inhabitants had to deal with, these institutions probably have helped them with

instructions about how to deal with them. So the flooding as a specific problem probably does not change the social structure, but It will help people to deal with the problem of flooding.

There are no clear signs the functioning of *Posyandu* is influenced by the problems around flooding. The leader of *Posyandu* states the functioning of the social structures has changed, but this is due to the changing norms of people and not because of the flooding. In her perception not many people work from their heart anymore. Today people think more about money and time. Because they cannot get any money with these social activities they do not want to spend time on it.

This section analysed the way flooding might have an impact on the social structures in Kemijen. *Gotong Royong* and *Ronda* seem to have the most impact, but this only accounts for some RTs and it depends on how people experience the flooding. *Dasa Wisma* and *PKK* also support people in dealing with the problems, *Posyandu* however seems to contribute less in decreasing the negative impact of flooding. This all depends on how the inhabitants experience the problems around flooding and the functioning of the social structures. This perception differs from person to person and from RT to RT.

The next section is about the reason no-migration adaptation strategies are chosen by the inhabitants. It will be argued this depends on the perceptions, analysed in this section.

7.2 Use of no-migration adaptation strategies

This section will focus on the adaptation strategies chosen by the inhabitants of Kemijen. In the conceptual model this link is shown by the arrow between flooding and migration. It may be better to replace the key term 'migration' in the conceptual model by the key term '(no-)migration'. Migration as adaptation strategy is distinguished from the adaptation strategies without migration. This section only examines the no-migration adaptation strategies, in the next section migration as adaptation strategy will be examined. In the last section the influence of the experience of flooding on the social relations was analysed. This section will analyse the reasons for people in Kemijen to choose certain adaptation strategies without migration. Also the role of the social institutions, in the context of flooding, will be analysed.

The stories of inhabitants about their decision not to migrate will be analysed. These persons are living in different situations. In this section people with enough financial resources, and therefore a viable option to migrate, will be distinguished from people with a lack of financial resources. Also social structures will be taken into account. For inhabitants living in the last situation migration might be a less viable option.

In the theoretical framework is argued that many people will not have the ability to leave the area and avoid the negative impact of the natural hazards without support, because they do not have the resources to do so themselves (Warner et al., 2009). On the other hand, in the theoretical framework was stated that one of the reasons people in Semarang are able to adapt to the situation, and therefore prefer to stay in the area, was because of financial support from the government (Harwitasari en van Ast 2011). The results of the fieldwork in the sub-district of Kemijen do not fully support this statement. The money from the government is mainly used to heighten the roads in the area. There is no money from the government for the heightening of the individual houses. Households themselves need enough means to heighten the houses. When there is not enough financial resources people depend more on the social capital.

Based on the observation the conclusion is drawn that not everyone is able to heighten their own house. After interviewing some of the owners it seems most of them did not experienced any support of the neighbours although a lot of respondents told that the poorest people in the area are supported financially by the social structures in the community. Money is collected by the *PKK* for the poorest people, but this is probably not enough for the heightening of the house. So although the government is giving money to certain RTs to heighten the streets, this is not always beneficial for individual households. The in section 4.1 described case of the man who owned the only low house in the RT is an example. When flooding comes the water from the street will come to his house. The fund from the government will not help him dealing with his situation.

The model of McLeman and Smith (2006) already showed that if community institutions have enough abilities to help inhabitants to adapt to the flooding, the situation of a household still depends on the amount of resources of a household, both economic and social. The social institutions of the community seem to have a role in the daily life of inhabitants. However the poor people do not feel that these institutions help them in adapting to the flooding. They just have to live with, so they say. For the relatively less poor inhabitants of Kemijen the social institutions work well enough and along with enough financial resources to heighten the house for example, they can adapt to the flooding. Some of them also named the financial support of the government which helped them to heighten the roads. For the ones living in the higher houses this is beneficial. This situation is contrary to the situation of the inhabitants who own a house below the level of the street.

We now will have a closer look on how the different social institutions might influence the migration decision. In section 2.4 of the theoretical framework is argued most of these social institutions might influence the migration decision. These social structures (*Gotong Royong*, *Ronda*, *Dasa Wisma* and *PKK* and *Posyandu)* will make them stay because they will help them to adapt to the flooding. In the previous section when the relation between the experience of flooding and the social relations was analysed, it became clearer that the way people experience the working of social relations depends on how they experience the flooding. Besides the difference between personal experience the working of the social institutions and how this has changed by flooding depends on the RT someone lives in. As argued in the previous section not all the social institutions are active in every RT in the same degree.

When community institutions are successful in adapting to the flood and when households have enough financial resources they are able to migrate if they want to. Although it seems there're few people in Kemijen who prefer to migrate. People with a different situation that all choose another adaptation strategy than migration can be distinguished.

Inhabitants with enough financial resources

First there are inhabitants with enough money living in Kemijen. These are the ones for who migration is a more viable option. Still most of them preferred to use other adaptation strategies than migration. The story of the man, whose situation is already described in section 6.2, makes clear inhabitants who are able to migrate not always prefer to do so. He has enough financial resources but because of economic reasons and his social position he prefers to stay. Because of this consideration about the economically most attractive option, other adaptation strategies are preferred. When someone earns enough money with his current job, moving could mean a loss of income. Furthermore renovating the house and buying a pump could be a cheaper option than buying a new house in a place without flooding. This decision is also made while thinking about the social position in the RT. Giving up this position also makes migration a less attractive option.

The decision of the man not to migrate is mainly based on economic reasons. The woman that leads the *Posyandu* had more social reasons to stay in the area. Because of her role in the area, she also preferred other adaptation strategies than migration. What makes her story interesting is that she has a child living in the higher area of Semarang. They offered her to live with them, but she does not want to. She feels comfortable in Kemijen and sees the high area as an area for elite people. In the theoretical framework it has been argued social relations in another area can help people to migrate (Curran, 2002). This makes it more likely that people with relations outside of Kemijen who can help that person to migrate, will make the decision to migrate. However the woman from the *Posyandu* decides to stay in the area. A possible explanation for this is that she does not experience negative impact of the flooding in the same as some others in Kemijen do. When staying in the area still brings more advantages than disadvantages, because of social relations for example, this could make people decide to stay in the area. Again, this depends on the situation they live in. Because she lives in a higher house she maybe experience less negative consequences then the people who live in a house below street level. So on one hand she maybe does not feel the need to move because of flooding, she is still able to deal with it. And on the other hand it's attractive for her to stay in the area because of the good relationship with the neighbourhood and her social position. So although these two persons have enough financial resources or social contacts outside of Kemijen, they prefer to stay in the area and to heighten their houses for example.

What is the role of social institutions in this in this decision not to migrate from the area? Earlier in this section it was stated the social structures can help people to stay in the area. In section 7.1 was argued that *Gotong Royong* and *Ronda* could be an important factor in dealing with the water problems. In the case of the man, it seems that the described social structures are not of great influence in his RT. He only focuses on his own household, like everybody in his RT does. So for him the influence of these social structures seems to be minimal in his experience. For the woman of the *Posyandu* it could be different. She is the leader in important social institutions such as the *Posyandu* and the *PKK*. For her it is important to being part of these social structures that it could influence her decision to stay in the area. But what happens if this woman will experience more negative impacts from the flooding. Then it could be more attractive to move to the higher area of Semarang where one of her children lives. In this part the situation of inhabitants of Kemijen with enough financial resources were analysed. In the next part it will be analysed why people with a lack of financial resources use no-migration adaptation strategies.

Inhabitants with a lack of financial resources
For people with enough money it might not be necessary to take part in the social structures because they have enough financial resources to deal with the problems themselves. Of course there are people participating in these organisations because they want to do something for others, but this is not necessary for their own ability to deal with the problems.

The last part analysed the decision for some people with a relative good economic situation to choose other adaptation strategies than to migrate. For people without enough economical there might be other factors in making this decision. As described in section 6.2 Kemijen is a cheap are according to an inhabitant. This statement is supported by Marfai et al. (2007). The lack of financial resources is an important constrain when people want to move. People with a less economic situation more often told they want to move from to the area. They had to use other adaptation

strategies because they did not have the money to move. The people with less money and who wanted to move lived mostly in the lower houses of the area.

When a lack of financial resources makes moving a less viable option, moving then can be made possible by social relations outside of Kemijen (Adger et al., 2007). The woman of the *Posyandu* for example was offered by relatives to live with them in the higher area. The interviewed inhabitants with a less economic situation seem to have fewer contacts outside of Kemijen which could provide them the opportunity to move to there. Although some of them have contacts outside of Kemijen, in most cases these were relatives, they didn´t provide them an opportunity to move. As described in the last chapter there was the case of the woman who wanted to move to her place of origin, but she couldn´t because her husband wanted to stay. So the social relations of her husband in Kemijen formed a constraint in her migration decision making.

As already described in chapter 5, inhabitants often mentioned they wouldn´t want move because of the good social relations. However, they might not even be able to migrate because of a lack of financial resources. Most of the inhabitants who told they couldn´t move, also mentioned that social relations are an important reason. In the theoretical framework it has been argued a good relationship with the neighbours in an Indonesian urban context is a reason for people to be attached to a place, especially for the ones with a low income (Kusuma, 2008). Besides saying these social relations are an important factor in the decision to stay in the area, they also say that flooding does not impact the social structures in their experience. For example *Gotong Royong* does not seem to function for renovating the homes in the area for example. People, who are more vulnerable to flooding because of their housing situation, still have a bad situation. These people experience not many benefits from the specific social structures such as *Gotong Royong* and *Ronda*. This statement needs the nuance, because also most of these inhabitants are instructed about how to deal with flooding in *Dasa Wisma* or *PKK*. Different inhabitants stated a structure such as *Gotong Royong* functions well in the context of flooding for cleaning the environment for example, but not for helping individual households with cleaning their house after a flooding. In section 7.1 is argued people in the higher houses might experience the social relations as more successful concerning the flooding, because they have to deal with less negative impact than the poorer people. These poor people who live in the lower houses suffer more often from flooding. During these regularly flooding the inhabitants without money do not always experience the social structures of the RT helps them.

Still the inhabitants with a lack of financial resources feel comfortable in the neighbourhood and say they help each other out if necessary, this because of the good social relations. An important reason for them to stay in the area is because the lack of financial resources, perhaps they would move when having enough financial resources. However their ability to adapt to the flooding is influenced by the social structures in the neighbourhood, especially *Dasa Wisma* and *PKK*.

So the interviewed people who have more financial resources, which became clear by the observation during the interviews, preferred other adaptation strategies than migration. Heightening of the house is an option earlier taken than saving money to move. Moving is considered as an expensive option. The two respondents stayed because they made either a consideration about the cheapest option or because they wanted to keep their social position. They had more choices concerning migration decisions. The influence of social structures on this decision depends from person to person in every RT. The last respondents with a lack of financial resources cannot make a choice like the people with enough financial resources. Furthermore the social structures might have some influence on their decision not to migrate; they feel comfortable in the area because of these structures.

7.3 The decision to migrate

In the last section the cases of the ones who decide not to migrate were analysed. Inhabitants stayed in the area because of economic reasons, other adaptation strategies to the flooding such as renovating the house is. This because it is cheaper than moving, or because of the chance they would lose their social position when they decide to migrate. On the other hand, people without enough money have fewer options to migrate. That's the reason for them to use other adaptation strategies than migration. In this section they cases of migration will be analysed. It will be examined in which way the decision to move out of Kemijen is influenced by flooding and the social relations In Kemijen. By doing this the factors that influence migration will become more clear. In the conceptual model influence of social relations and flooding on the migration decision making are visualised. But this influence has to be relativised by the fact that not every decision to migrate has to be influenced mostly by these two factors.

In chapter 6 different reasons for inhabitants deciding to migrate are described. From this description some social reasons from people who moved out of Kemijen can be distinguished from the other reasons. According to the interviewed inhabitants, people who move in or out of Kemijen did this mostly because of marriage as social reason. There were some inhabitants who came to Kemijen to live there because they married someone from the area. On the other hand, people moved out because of marriages with people from other areas. One of them mentioned people moved to and from a nearby lying area, *Tambak Lorok*, which also had to deal with the water problems. So inhabitants from Kemijen moved to *Tambak Lorok*, but there were also people who moved from that area to Kemijen. Another social factor influence migration is the wish of some inhabitants to move back to their cities of origin. The interviewed people were not able to do so, but maybe others are able to do so when having enough financial resources. As argued in the theoretical framework social relations in other areas might be used as strategy to live elsewhere (Adger et al., 2007). However, moving because of marriage did not seem to be used as strategy to deal with the problems of flooding in Kemijen. Although it is often mentioned reason to move and therefore is part of the dynamics around mobility

Other social reason than moving because of marriage and because of family members elsewhere were not mentioned that explicitly. Most of the people wanted to stay because of the social relation with the neighbours in Kemijen, so they had more social reasons to stay.

According to the respondent who told about *Tambak Lorok* they will start building a polder in *Tambak Lorok* to. The water problems in *Tambak Lorok* are worse according to this respondent, who was convinced about the success of the polder project in Kemijen. Meanwhile there are other respondents in Kemijen who never heard about the project, this could be the same for the inhabitants in *Tambak Lorok* and the coming project. In that case people might not experience any good perspectives for the future in that area and therefore move to Kemijen for example. Additional research is necessary to examine and map the migration as adaptation strategy between these two areas.

In section 6.3 the impact of the economic factor on migration is described. The situation of a man who did not have enough financial resources to move was described. However his son was able to do so. The man explicitly stated that the reason for him to move out of Kemijen was the flooding. He probably experienced more disadvantages than disadvantages from the flooding and decided to leave the area. He was able to make this decision because he had enough financial resources. He

made this choice because of the problems due to flooding, while the woman from the *Posyandu* chose not to do so. This could point at the different degree of place attachment because of social structures in the RT. For the woman from the *Posyandu* this was a reason to decide not to move from the area, while the man decided to move. It could be that he was less attached to the place because of the social structures. That these social relations were less important to him could be because he moved directly from his parental home. The woman from the *Posyandu* lived in the area for many years and therefore may be more attached to the place. .

Besides these economic reasons, other reasons are mentioned. A child of the woman that leads the *Posyandu* moved out, not because of the flooding but because of the bad environment to raising the children. The use of alcohol and gambling on the streets by the youth is not uncommon.

It seems that people rather choose non-migration as adoption strategies instead of an adaptation strategy concerning migration. It seems that other factors than flooding are more important in the decision to move out of the area. Social relations in the form of marriages and social relations outside of the area might influence flooding.
Flooding and social relations both influence migration in a way. But not much point at the fact that migration is influenced by changing social structures because of the flooding. Flooding changed the social structures in a way, but the influence of these changing social structures on migration decisions is not that strong. People decide to stay in the area because they feel comfortable about the social structures in the area. It seems a change in these structures because of flooding is not really the case.

Earlier in this chapter the link between how the flooding is experienced and the social relations was analysed. The experience of the flooding seems to have the most influence on *Gotong Royong*, *Ronda* and *Dasa Wisma* and *PKK*. The experience of the problems around flooding and the functioning of the social structures differs from differs from person to person and from RT to RT. In the second section of this chapter the role of these social relations in the decision not to migrate was analysed. This also depends from person to person. For inhabitants with enough financial resources migration could be a viable option in contrast to the people with a lack of financial resources cannot make this choice. For people who are able to migrate if they want Kemijen still has more advantages than disadvantages. Therefore they prefer other options to adapt such as heighten their house or buy a personal pump for example. People who are not able to migrate are mainly people who have a lack of financial resources, these inhabitants have less choice. Some of them are more or less obligated to stay living in the area because of the social relations of their husband. Also inhabitants who choose to migrate do this for different reasons. Flooding and social relations both seem to have more or less influence on people decision to leave the area. However other factors have also to be taken into account.

This analysis leads to a revision of the conceptual model from the theoretical framework; this is shown in Figure 11 the names of the key concepts are revised a bit and differences in importance of the various links is indicated by the thickness of the arrows. The experience of flooding is more important than the objective types of flooding distinguished in chapter 2. How inhabitants experience the functioning of the social relations is certainly related to how they experience flooding. Social relations are seen as important and therefore make people decide not to migrate to other areas; therefore the arrow is a bit thicker than normal. Migration of Inhabitants because of the

flooding does exist, but most of the time this is not the main reason. The inhabitants of Kemijen didn't seem to relate this to the changes due to the flooding.
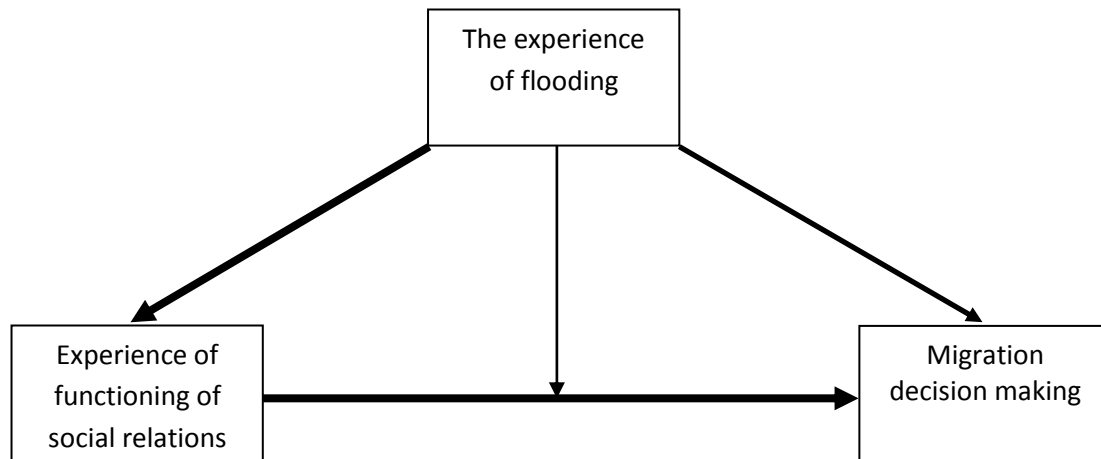
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                    ┌─────────────────────┐
                    │   The experience    │
                    │    of flooding      │
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┌──────────────────┐                  ┌──────────────────┐
│  Experience of   │                  │    Migration     │
│ functioning of   │ ───────────────→ │ decision making  │
│ social relations │                  │                  │
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Figure 11: revision of the conceptual model.

8 Conclusion

8.1 conclusions

This research examined the link between migration and social relations in the context of the flooding in Kemijen, a sub-district in the low-lying area of Semarang, to get a better understanding of the interaction between these concepts. To reach this research objective a central question has been formulated. The central question of this research is: *How are the decisions concerning migration of inhabitants of Kemijen, a low-lying area of Semarang, influenced by social relations in the context of the problems due to flooding they have to deal with?*

The process of answering this central question began with a literature study, which summarized the useful information that already has been publicized about migration and social relations in the context of flooding. With this examination of the literature different sub question were partly answered. The first sub question was meant to give an answer on how inhabitants experience the specific problems of flooding in the coastal area of Semarang. In the theoretical framework is stated Kemijen has to deal with three types of flooding which is mainly caused by the land subsidence in the area. How these water problems are experienced is described in chapter 4 and further analysed in chapter 7. The perception of flooding differs for every person and every RT. One of the factors influencing this experience is the height of the house. People with less money do not often have the ability to heighten their houses as adaption to the land subsidence. These inhabitants are more vulnerable to flooding than the richer inhabitants. Not all the inhabitants experience water in the area as a real flooding. This could be because the flooding has a regular character and has become a part of their daily life. The different situations people live in and the differences in ways of experiencing the flooding will also impact the way flooding influences social relations. It can be concluded that the experience and therefore the subjective part of flooding is more important than the objective side outlined in the theoretical framework.

The second and third sub questions are meant to answer the question which social relations in Kemijen are important and how these are influenced by flooding. In the theoretical framework different kinds of specific local social structures were examined. These social structures are formed with the neighbours in an RT or RW. After collecting the research material it seemed that the most important structures in the daily lives of the inhabitants are *´Gotong Royong', Ronda', Dasa Wisma and PKK and Posyandu.* The importance of these structures again differs in every RT. In some RTs *Gotong Royong* and *Ronda* are not active. An example was given of an RT where everybody focuses on their own household and *Gotong Royong* was not working. In some cases *Ronda* was not active because of the same reason or in other cases because it was more safe without *Ronda* than with according to an inhabitant. The way these social structures are experienced by the inhabitants depends on various factors. One of those factors is economical status. Some of the poorer people did not experience help with the bad situation of the houses they were living in, while the richer people emphasized they help each other during the flooding, they clean the environment together and warn each other when a flood would come. This last example is a form of *Ronda*. Flooding seems to impact the social structures *Gotong Royong* and *Ronda* the most in Kemijen. The instructions inhabitants get from *Dasa Wisma* and *PKK* also support people in dealing with the problems, *Posyandu* however seems to contribute less in decreasing the negative impact of flooding. Again, this depends from the different experiences in the various RTs. For *Gotong Royong*, inhabitants argued this social structure works, but not especially for the problems around flooding. However people also argue they help each other with the problems of flooding, this could be seen as a form of *Gotong Royong* in the

context of flooding. Most of the social relations people have are situated in Kemijen, some of them also have contact with people outside of Kemijen, in most of the cases these are relatives.

Now that the influence of flooding on social relations has been examined the sub question about migration can be answered. In the theoretical the model of McLeman and Smit (2006) has been examined. This model visualise the impact of environmental change on migration in a community. This is an indirect impact via the social environment. The migration is about adaption and the ability to do this with or without the necessity to move. This adaption of a community depends on the institutions in a community and the adaptive capacity of individual households. It has been argued that the local social structures could be seen as institutions. In this way the social structures, or social institutions can be analysed. Besides the social institutions of individual households the decision of inhabitants to migrate also depends on the ability of households to adapt to a changing environment. The government has some funds for areas as Kemijen. With help of this fund the streets in most of the RTs are heightened. This is positive for the people who live above the level of the street, because they might experience fewer problems with flooding after the renovation. For people who do not have enough money to heighten their own house, the situation becomes worse. When flooding comes, all the water will flow to their houses. Migration could form a strategy in the adaption to flooding. So migration is influenced (indirectly) by flooding. In chapter 6 it has been described that migration does not seem to happen on a large scale in Kemijen. There is a high degree of place attachment, according to most of the inhabitants. This is due to the good social relationships in the area. However the ability to move also depends on the financial resources of the households. So although people state they want to live in the area because they feel comfortable with the social relations, some of them will not have the ability to move because of the lack of financial resources. Some of the inhabitants with enough financial resources and for who migration seem to be a viable option, preferred other adaption strategies than migration while others chose to move out of Kemijen. The ones who stayed in Kemijen and heightened their houses because of the land subsidence, have social or economic reasons to stay in the area and use this adaption strategy. Other inhabitants chose to heighten their house instead of moving because this is a cheaper option. They stated they were not able to move because this is more expensive. Having social relations in another area was also argued as opportunity to move out of the area with the flooding. In Kemijen however this is not mentioned as a strategy people use, but there are signs this could be a strategy for some of them.

In some cases flooding was mentioned as a direct reason for people to move from the area. In these cases staying in the area had probably more disadvantages than advantages and therefore the adaption strategy of moving was chosen. For the ones staying in the area this could be because staying in the area has more advantages than moving to another place, or because they do not have the ability to move. Because of this they have to choose other adaption strategies. The ability to do this differs from person to person. The fact that some people do not have the ability to move can be caused by different factors. For example, it would not be possible because of the lack of financial resources. Another reason that makes people stay in the area are the social relations of someone else in the household. Different women stated they could not move because their husband prefers to stay in the area where he has social relations. Marriage seems to be an important factor in the decision to migrate to another area. There is a connection between Kemijen and other sub-districts through the different marriages. However there were no examples of marriage used as strategy to avoid the negative impact of flooding.

So the decision inhabitants of Kemijen make about whether to migrate or not are not that much influenced by the social relations in the area. The way this is influenced depends on the case of individual people and households. Flooding has an impact on these social institutions, but the impact on migration because of these changing social structures seems to be minimal. The more vulnerable people may have more chance to deal with the flooding because of the instructions from *Dasa Wisma* and *PKK* for example. Furthermore people started to live with the more regular flooding as something that is a part of their daily lives, *sudah biasa* as the inhabitants call this. Even though the social structures have changed in a way, they still are not able to migrate so the impact of flooding on this migration decision making is minimal in the case of Kemijen.

8.2 Reflection

The objective of this research was to contribute to a better understanding of theories about migration and social relations and how these are related to each other, specifically in the context of the flooding in the low-lying areas of Semarang. This objective has been reached in a sufficient way by doing this research, but as in many research projects, there are some aspects that need a critical reflection. This project mainly focussed on specific stories of inhabitants of Kemijen, a sub-district in Semarang, Indonesia. In order to draw conclusions about the link between migration and social relations in the context of flooding. This way of doing research is fruitful because it produces in depth information, but it also comes with some disadvantages which will be discussed in this in section. Besides it will give some recommendations for further research.

First of all the obtained knowledge is limited because of the length of this research. During the semi-structured interviews various interesting statements were made by inhabitants. Due to the lack of time it was difficult to ask other inhabitants about their perspective on these statements. In this case we had to depart strongly from the interview guide which was almost undoable for the time period of 4 weeks. More time for the fieldwork probably would have lead to more complete results. To get the whole picture about this topic further research is needed.

Another important point of reflection has to do with the chosen research area Kemijen. This sub-district of East Semarang consists of different areas with different characteristics. Conclusions about social relations for example are difficult to draw on the level of Kemijen. The functioning of social relations differs strongly in every area, therefore these areas are distinguished during the analysis. But when further research is done it could be better to compare the specific sub areas.

The results from the fieldwork depend on a few stories of specific inhabitants, which gave different insights about their situation and the situation in the area. However the influence of the informants who joined us during the interviews on these few stories is strong. Some statements of the inhabitants changed after a discussion with these informants. This influence is interesting, but unravelling this wasn't the main objective of this research. Besides the influence of the informants the influence of the language barrier and the translator are of great importance. Although our translator did a good job we could not expect a direct and perfect translation in English.

As stated in the introduction this research examines the decision making of individuals in a community and therefore generalisation is not the objective of this research. The in depth character of the results are specific for the case of Kemijen, but the knowledge gained may be used for similar cases as Kemijen.

When further research on this topic in this area is done more general applicable conclusions can be drawn if the researchers have more time to do their fieldwork. Furthermore the differences between

the various geographical levels are of major importance and the influence of informants, language and translators have to be recognised

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Appendices

Appendix 1 Interview guide

<u>In general</u>
Respondent's name:

How many people are living in your house?

What is your relationship with them?

What job do you have?

<u>Water problems</u>
Now we want to talk to you about the water problems in this area:

Please describe what kind of water problems this area is coping with?

Do you remember the time before the increase of the water problems? What are the differences between then and now?

What do you think is the major cause of the water problems?
- How did you acquire that knowledge?

When was the last time you experienced a flooding?
- Please describe what happened and how you experienced it?
- Did you feel safe during the flooding?

<u>Dealing with the problems</u>
What do you do to protect your home, household and belongings before, during and after flooding?
- In what way does this help to protect your home, household and belongings?
- Do you think you have enough abilities to protect yourself?
- Did you work together with other people from your neighbourhood in this?

What are you doing now to prepare for the next flooding?
- Do you think you have enough information on how to prepare?

Are you participating in any formal organizations that are dealing with the water problems?

<u>Relationships</u>
Now we want to talk about relationships, with this we mean ties or bonds between you and another person or group.

Could you please tell us something about ties that are important for you?

Family, friends, neighbours, colleagues
- Why do you have a relationship with them? Do you have common purposes?
- Are any of these ties with people with a different religion or ethnicity?
- Where do these people live in general?
- Did any of these people live in this neighbourhood before?

<u>Working together</u>

What do Gotong Royong, *Ronda*, *Dasa Wisma* and *Posyandu* mean to you?
- Do you have any examples of these practices in your neighbourhood?
- What are the differences between these practices before and after the increase of the water problems?
- Do you think that these practices contribute to the protection of your neighbourhood against the water problems?

When a household gets in trouble because of the water problems, do other members of the neighbourhood help them?
- Can you give any examples?
- Does this happen on a voluntary basis?

<u>Moving</u>

Now we want to talk about reasons to move from or to stay in the area.

What are the reasons for you to stay in here?
- Do your relationships have any influence on you staying here?

If you would move out of this neighbourhood, where would you go and why?

Appendix 2 General information about the respondents

Respondent number	Age	Job	Living condition
#1	52	Owner of creative house. Making craft of plastic (rubbish)	House on street level, floor of stone
#2	46	Makes snacks and sells them	Living permanently with water in her house, floor of sand
#3	67	Works for himself, repairs and sells diesel-machines	High house with own pump, floor of stone
#4	70	Doing household, head of *Posyandu*	Heightened house, floor of stone
#5	37	Freelancer. Finishing furniture	Heightened house, floor of stone
#6	56	Collecting garbage	Low house. Very vulnerable to flooding, floor of sand
#7	28	Doing household	House on street level, floor of sand
#8	65	Jobless because he is sick, used to be a construction worker	House on street level, floor of stone
#9	51	Doing household, used to work at a herbs company	House on street level, floor of sand
#10	21	student	Heightened house, floor of stone
#11	43	Doing household	House on street level, Next to the river, Floor of stone, living permanently with water in her house
#12	27	Freelance construction worker	House on street level, floor of sand
#13	32	Freelance ship mechanic	Heightened house, floor of stone