Vertical housing near the Code River

What is the perception of the Code area residents about Vertical Housing, and how does it affect their livelihood?

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Acknowledgement

Dear reader,

In March 2017 I flew to the capital of the Republic of Indonesia, Jakarta located on the island Java. From there I headed through the municipality of Yogyakarta, where I would live for one month to conduct this research about the perception of the urban poor about vertical housing in Indonesia. The research is conducted in order to complete the bachelor program Geografie, Planologie en Milieu (GPM) at the Radboud University in Nijmegen. A long partnership between the Radboud University and the Universitas Gadjah Mada (UGM) created the opportunity to do a research project in a foreign country. I am very thankful for this possibility to go abroad the European borders for the first time in my life and to experience an whole different culture.

An interesting article published by UGM about the local problems near the Code River and suggestion for urban renewal in this area made me decide to conduct this research. Since I am very interested in urbanisation and the surrounding matters of it this was the perfect opportunity to do an relevant and interesting research abroad satisfying my interests. That the empirical part of this research needed to be conduct abroad gave me the opportunity to teach a lot about myself both as a persons and as a researcher.

There are some people who I like to thank in this preface; first of all I would like to my Dutch supervisor Lothar Smith, who guided me marvellously through the whole process of manufacturing this research. I also want to thank Martin van der Velde for helping me with my research proposal. In special I want to thank the people I met in Indonesia who helped me realising this research. At first I want to thank my supervisor from UGM Dr. Djaka Marwasta for supporting me in this project and helping me to get in contact with UGM students. Moreover I want to thank the students Faricha Kurniahdini and Ratih Paniti Sari for their tremendous contribution to the practical side of this research. They introduced me and my fellow students from the Radboud University to the city of Yogyakarta and helped us with conducting the fieldwork and finding respondents. But even more important they solved the problem regarding to the languages barrier. During the interviews they participated as translator so I was enabled to interview respondents in Bahasa Indonesia. Afterwards they summarized all interviews in English enabling me to analyse them. I really appreciate this huge effort. Furthermore I want to thank the locals Agus Sutanto and Trisan Three for their help and hospitality. Agus Sutanto is a local cab driver and residents of Yogyakarta. He showed us around in the city and helped us to get in touch with a lot of locals which was very helpful for as well the research but also for affairs irrespective to this research. Tristan Three is a resident of the Code River area due to his bond with the community it was quite easy to find respondents for the interviews. In the end I want to thanks my fellow students Casper de Vilder and Ruud de Louw, who also conducted an case study in the Code area, for the pleasant cooperation.

I am very please to present you my bachelor thesis about the perception of the low income in Indonesia about vertical housing.

Roelof Lammes

Nijmegen, 2017
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Glossary

In this research some Indonesian phrases that frequently appeared in the literature or during the interviews are used. Because the frequency this research chose to mainstem them in text except for translating them. Unless the definition is directly given in the main text, all Indonesian concepts used in this research refer to this glossary.

<table>
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<th>Word</th>
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<tr>
<td>Bahasa Indonesia</td>
<td>Indonesian language.</td>
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<tr>
<td>Kampung</td>
<td>The Malaysian word Kampung originally means “compound”. In Indonesia and especially in urban Java it refers to “home community”.</td>
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<tr>
<td>Kota</td>
<td>City.</td>
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<tr>
<td>Gunung</td>
<td>Mountain.</td>
</tr>
<tr>
<td>Rumah Panggung</td>
<td>Two storey building.</td>
</tr>
<tr>
<td>Rumah Rusunami</td>
<td>Walk-up flat developed for the middle-income Community.</td>
</tr>
<tr>
<td>Rumah Sunsun</td>
<td>Walk-up flat developed for low-income community.</td>
</tr>
<tr>
<td>Rupiah (RP)</td>
<td>The national currency of Indonesia. One euro is around 14.000 Indonesian Rupiah</td>
</tr>
<tr>
<td>UGM</td>
<td>Universitas (University) Gadjah Mada</td>
</tr>
<tr>
<td>Warung</td>
<td>Small shop or restaurant.</td>
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Summary

This research deals with the question what the perception of the low-income is about vertical housing and how this will affect their daily practices. Actually this research is a case study which is interested in the perception from the Code residents about vertical housing. The call for vertical housing in the Code area is raised because of the vulnerability of the settlement and their inhabitants. The origin of this vulnerability is the fact that the Code area is a disaster prone area that have been victim to lahars and floods in the past. Vertical housing, as a urban renewal strategy, is proposed to make the Code area a less vulnerable place to live. Vertical housing is an actual topic in Indonesia that is not only important for the Code area, but also relevant for more Indonesian cities. The Worldbank (2017) expect that by the year of 2025 about 68 percent of Indonesia’s inhabitants will live in cities. Due to this tremendous urbanisation building vertical is almost a must.

Since 1980 Indonesia start to build many Rumah Susun for the poor community (Seftyonono, 2012). Which led to situations in which the provided vertical housing remained empty because not all parts of the community want to live in Rumah Susun (Swatso, 2012). The findings of this research in the Code area try to contribute in understanding why the view on living vertical by the urban poor in Indonesia is so negative. In addition this research tries to understand if the implementation of vertical housing in the Code area is a sufficient urban renewal strategy to lower the vulnerability of the area. Urban renewal empathizes the need of vertical housing in urban areas and makes effort to solve urban problems like dangerous irregular settlement in the riverbanks of the Code River. The other two proposed urban renewal strategies for the Code area, open green area and relocation, are long term thinking and dependent of the implementation of vertical housing. Nevertheless by the implementation of vertical housing space will be created which could get the function of open green area. And there need to be new accommodation before the Code residents can be relocated which could go hand in hand with vertical housing.

In order to measure the perception of the low-income about vertical housing this research operationalised in three different forms of perceptions: social cultural, social economic – and political perception. In 2007 Paicone described eight criteria that residents consider when selecting a house. These criteria are also used in a comparable quantitative research about the willingness to move to vertical housing by the urban poor in Jakarta (Rahardjo, et al., 2015). In this research the eight criteria of Paicone (2007) form the underlying base for the three different forms of perception towards vertical housing. The literature review pointed out that in Indonesia the vertical housing meant for the lower economic class of society is called Rumah Susun. Rumah Sunsun are low cost apartments provided by the Ministry of Public works for rental public housing which is targeted for the low income people (Swatso, 2012). In Indonesia people are considered as low income when they earn between 1.000.000 - and 2.500.000 Indonesian rupiah a month (Ministry of housing the Republic of Indonesia, 2009). In order to get an insight in the daily practices of the low income residents of the Code area the concept of livelihood is added to this research. By measuring the presence of the five different capitals; financial, human, natural, physical and social, the coping – and adaptive strategies of the Code residents are found. The coping – and adaptive strategies present the actions and behaviour of the residents against shocks and stresses they need to deal with. In the Code case of this research the shocks and stresses contain mainly the risk of a lahar disaster. The last concept present in this research is vulnerability. Vulnerability is a broad concept that consist of multiple types of vulnerability. For this research physical vulnerability is considered the most important due to the fact that the suggest urban renewal technique is improving the current settlement by implanting vertical housing. Although this research have taking the cultural, ecological, economic and social vulnerability in consideration as well. These vulnerability factors can change as well whenever vertical housing will be implanted.
The empirical part of this research contains observations, photographs and interviews. It was decided to conduct the research in three different kampungs located in three different sub-districts of Yogyakarta. In every kampung, two residents were picked by differing age, income class, gender and profession to gain different insights from the Code residents towards their perception of vertical housing. After the interviews with the Code residents three different professors from UGM were interviewed. It was a deliberate decision to interview the UGM experts after the Code residents. In this way the interview guide could be adjust and interesting matters found during the resident interviews were introduced for explanation. Next to the interviews with respondents from, LedokCode, Jogojudan, Tukangan and UGM, observations were conduct in the three different kampungs located next to the Code River in the city centre of Yogyakarta.

The observation were conducted at three different days, during different times between 11:00 till 18:00, in order to gain a better understanding of the livelihood in the kampungs. This research tried to find out the livelihood of the Code residents by focussing on the five capitals during the fieldwork and interviews. During the fieldwork it was made clear that most of the Code residents belong to the urban poor and suffice to the Indonesian definition of low income. One of the respondents even earn less than 1.000.000 RP a day and lives in extreme poverty. According to the interviewed experts the Code area is cheaper to live compared to other places in the city centre. In addition most of the Code residents work at the Maliboro street located close near the Code kampungs. Maliboro street is known as the touristic heart of Yogyakarta and provides a lot of (informal) jobs for the locals. The economy of the Code kampungs depends for a great part on the activities in this street. The residents of the Code kampungs are hoping to attract more tourists to their neighbourhoods by organising certain events like a lampion festival. However the accessibility of the kampungs is still really poor. In the literature review the density of settlement in the Code kampungs was pointed out. This density also got confirmed during the fieldwork, however the density in the Jogjudan kampung is less.

The Jogjudan kampung is the only visited kampung that is accessible by car and contains Rumah Sunsuns. Beside the Rumah Sunsun in the Jogjudan kampung, that is provided and build by the government, most of the settlement in Code kampungs are built by the inhabitants themselves. Due to this fact the quality of housing in the Code kamung differs greatly. All three kampungs possess a wall that protect them against floods and lahars. The lahar of 2010 destroyed a bridge that was crossing the Code river between the LodekCode kampung and a neighbour-kampung of the Jogjudan kampung. Seven years later this bridge is still not restored which has a huge impact on the livelihoods of the residents. However the government did not built a new bridge yet it provided a budget to help the people who were hit by the lahar of 2010. But the strong community bond is might the most valuable asset for the Code residents. After the lahar disaster the residents of the Code river help each other to recover from the vulnerable situation. The strong community bond and source of employment in the form of Maliboro makes that the residents accept their vulnerable situation.

Vertical housing could improve the vulnerable situation for residents in the Code riverbanks without moving the residents to another location. Still there is not much interest from the Code residents for this plan. The residents want to live in a safer place but still live in the city centre and they do not see living vertical as an option. This research found some interesting insights why residents of the Code kampung do not want to live in a vertical housing unit. The current form of vertical housing for the low income seem not to fit their cultural as well their economic desire. Building your own residence is part of the Indonesian culture and still seem to be very valuable. Not only because of the cultural aspect but renting a fabricated apartment by the government is according to the Code residents also economically less appealing.
The main cause therefore is the current renting system. This system makes it not possible for people without a land certificate to get a credit from the bank.

In addition most of the daily practices from the Code residents do not take place insight but outside their house. Most of these practices like running a shop cannot be done in the current form of vertical housing. Thereby the residents do not see their ‘physical’ vulnerability as that problematic. Improving their economic – and social vulnerability is on top of their mind. They neglect the fact that they can be hit by a lahar on the long term whenever they are not sure if they even will have food on the short term. The residents take a high physical vulnerability for granted because they experience other vulnerabilities as more important to improve.

However the residents also acknowledge the positive (side) effects that the implementation of vertical housing could have. The implementation of vertical housing will make the area less dense which created new (economic) chances for open green area and ecotourism. The residents of the Code area desire to attract more tourist to their kampungs which would be good for the whole community. But in the end it seems that the current form of vertical housing, in the form of Rumah Susun, contains to many personal drawbacks for their residents. The living conditions of the Rumah Sunsun apartments are not in line with the daily practices of the residents and do not fulfill their needs. In addition the current renting system does not help to make living in a Rumah Sunsun any more appealing for the Code residents.
1. Introduction

1.1 Contextual background

Indonesia, among all other countries in the pacific rim, is the most vulnerable to natural disasters due to a higher frequency of disaster and a higher concentration of population in disaster prone areas (Kriemer, 2001). The major urbanisation in Indonesia results in overcrowded cities with areas that need to deal with an tremendous high population density. The Worldbank (2017) expect that by the year of 2025 about 68 percent of Indonesia’s population will live in cities. However urban areas are already feeling the pressure of this massive population growth. Due to the lack of available land for housing the urban poor are settled around public spaces like parks, plazas and most notably riverbanks (Fatrochman & Kumorotomo, 1995). Riverbanks are disaster-prone area’s which make the residents of such areas extremely vulnerable; especially when the population density is high the impact of an disaster can be massive. The Code area in Yogyakarta is such disaster-prone place with a very high population of residents that belong to the urban poor. Urban renewal and especially the urban renewal strategy of providing vertical housing is proposed to decrease the vulnerability in the Code area.

Different studies show that many people in Yogyakarta live in a very vulnerable situation near the Code River. In 2010 the eruption of the Merapi volcano, located north of the city Yogyakarta, led to an lahar flood that hit the city of Yogyakarta and Sleman Regency. The settlement located in the riverbanks of the Code area where prone to this disaster. Already in 2000 Lavinge, Thouret, Voight, Suwa and Sumaryono made a detailed hazard map with additional risk assessment that showed that 13,000 people live at risk near the Code River. The settlements near the river, that are prone to flood or lahar, had a value of likely 52 million dollar to lose (Lavinge, et al., 2000). Since then the settlement in this area, due to lack of spatial planning, still increased, which made the area even more vulnerable. In addition the chance on a disaster is also increased, because of a shorter but more intense rainy season the floods are more likely to occur (Measy, 2010). Even though the lahar of 2010 destructed a lot of the settlement near the Code River, the land of the riverbank is still mostly used for housing.

The Code Riverbank has been determined a 50 meter buffer zone by the municipality of spatial planning to prevent severe damage by flood or even worse a lahar (Sukoco, 2013). According to Budiarti & Rachmawati (2016) currently 78 percent of the Code Riverbanks, which are intended to function as a buffer zone, is built with irregular settlement. Budiarti & Rachmawati (2016) plead that a lack of spatial planning implementation is responsible for this vulnerable situation. They suggest three stages of urban renewal, as an alternative for spatial planning, to solve the problems of irregular settlement near the Code River and make it a less vulnerable place to live. The first strategy of urban renewal is widening the path on both sides of the river and establishing an open green area. This open green area will be used as public space but also frames an economic chance for ecotourism, which efforts an increase of local economic activities (Budiarti & Rachmawati, 2016). The second strategy is relocation of the settlement. But due to its complexity for implementation this is also the last option. The third strategy is to build vertical public housing in the form of Rumah Sunsun (Budiarti & Rachmawati, 2016). Rumah Sunsun are walk-up flats developed for housing mainly the low-income community (Swatso, 2012).

However all three strategy of urban renewal sound realistic to bring in practice this research will be mainly focused at the strategy vertical housing. The implementation of relocation seems very unlikely to bring in practise and realising open green area depends on the implementation of vertical housing. The only way to realise open green area and still house the current number of residents in the Code area is by building vertically. It seems that vertical housing can decrease the vulnerability and even improve the quality of life in the Code area. Nevertheless there are some obstacles that need to be considered before bringing this urban renewal strategy into practice. In 1980 Indonesia started to build many Rumah Sunsun for the poor community (Seftyonono, 2012). However Rumah Sunsun has several positive sides, not all parts of the community want to live in this housing unit. This lead to situations in which the provided Rumah Sunsun remained
empty and started to become slum (Swatso, 2012). Not all people see their life in irregular housing as problematic, but rather as a part of their unique culture (Seftyonono, 2012). Moving from irregular landed houses to regular vertical houses can have an big impact on the daily practices and so the livelihoods of the residents in the Code area.
And there is another issue what questions the efficacy of local participation in the proposed urban renewal strategy. The average income of the residents of the Code Riverbank is about 10.000 RP to 15.000 RP per day (1 dollar). People participation will not be effective if people are struggling to fulfil their basic need (Seftyono, 2012). Without knowing the need and daily practices of the Code Riverbank residents a proper intervention can’t be brought in to practice. By discovering the perception of residents about vertical housing this research tries to find out the effect of vertical housing on the livelihood of residents and the vulnerability of the Code area.

1.2 Research aim
The aim of this research is to find out what the perception of low-income residents is about urban renewal and especially the urban renewal strategy; vertical housing. This knowledge should help point out if the suggested urban renewal strategy will be a sufficient solution for the current danger and problems in the Code area. The main goal of the proposed urban renewal is to decrease the vulnerability of the Code area and make it a safer place to live. In addition urban renewal embraces the possibility to improve the quality of life in the area, by improving the housing around the Code River and creating open green areas what is base for new economic chances like ecotourism. In relation to a successful effort of vertical housing it is important that the community in the riverbanks of the Code River is willing to participate in this urban renewal process.
With the information that is gather through qualitative research, perspectives from residents of the Code River would be analysed and compared on how they perceive the plans of vertical housing and other urban renewal processes. Thereby this research will describe how vertical housing can affect the livelihood and vulnerability of the Code area residents.
In the end this research tries to generate new (scientific) knowledge about vertical housing for the low income in relation to the Indonesian culture and livelihoods of low income. In addition this research tries to do a recommendation about vertical housing and other urban renewal strategies for this specific Code area case.

1.3 Research Relevance
The societal relevance of this research is based on the current vulnerable situation around the Code River. According to Budiarti & Rachmawati (2016) 78 percent of the Code Riverbanks, which is intended to let through the volcanic mudflow in a hazard scenario, is used for housing. All these settlements and inhabitants are prone to flood and lahars. This research will help to find if vertical housing is a suitable urban renewal strategy to reduce this percentage and make the Code Riverbanks a less vulnerable area to live. By involving the residents to give their perspectives about vertical housing this research want to make sure that conceivable urban renewal implementation in the Code area will be the most charitable to the residents in the area and not to other stakeholders.

This research will not only contribute in a practical way but will also provide a scientific contribution. According to Herlinawati (2010) the view on living vertical is a big social problem in Indonesia; “Not mentioning the positive and negative parts of living vertical and problem of public
acceptance in doing so since the population grow in Indonesia will continue, while urban land is limited especially in major – and medium cities, the development of living vertical has become already a must”. In addition Zheng, Sheng and Wang (2014) wrote: “future research should explore how to realize sustainable housing in urban renewal. Specifically culture, public facilities and other element should be studied in terms of their relationship and function to sustainable urban renewal”. This research will generate new insights in the relationship between vertical housing, as a sustainable renewal intervention, and the livelihood of the low-income in Indonesia.

1.4 Research Question
To gain an insight in the relation between the plans of vertical housing in the Code area, and the consequences for the livelihood if its inhabitants, the following research question will be central in this research project:
“What is the perception of the residents of the Code River about vertical housing, and how will this affect there practices?”
As stated in the introduction, and will be clarified further in the second chapter of this research, most residents of the Code area belong to the urban poor and belong to the lower class of economy. On account of the case that is used in this research the author have chosen to make use of the phrase ;“the residents of the Code River”, in the central question. But in order to lift this research to a broader level “the residents of the Code River” stated in the central question can be interpreted as “residents of the lower class economy”. The practices mentioned at the end of the question are the underlying factors behind the livelihoods of the residents. This is further explained in chapter two of this research.
An answer to this central research question will be provided by literature research, doing observations in three different kampungs located in the riverbank of the Code River and mainly by conducting interviews with local residents and experts. In order to find an substantiated answer to the central question the following sub-question are made up:
- “What do the residents think of living in/moving to a Rumah Susun?”
- “How do the residents experience their current daily practices?”
- “How do residents perceive there influence on making and creating plans for urban renewal?”
- “How will vertical housing affect the livelihood of the residents in the Code area?”
The perception is categorized in three different views of perception; political, social-economic and social-cultural. This is further explained and conceptualised in the second chapter of this research. The question; “how do the residents perceive there influence on making and creating plans for urban renewal”, should help in finding the political perception on the plans of urban renewal. The other question will help in finding out the perceptions based on cultural, economic and social perspectives.
2. Theoretical framework

This chapter contains the theoretical framework that is important for determining the perception of the residents about urban renewal in the Code area. At first the main concepts that are used in this research are operationalised an their theoretical background is explained. The concepts that are discussed in this theoretical framework are; urban renewal, vertical housing, livelihood, urban poor and vulnerability. In the end a conceptual model with the main concepts that are used in this research is presented and explained to clarify the relation between the different concepts of this research.

2.1 Literature review of key issues: Urban Renewal

Firstly the concept of urban renewal will be reviewed. This section is important for this research because vertical housing is a intervention which can be applied as an urban renewal strategy. Urban renewal empathizes the need of vertical housing in urban areas and makes effort to solve urban problems like dangerous irregular settlement in the riverbanks of the Code River. This section first discuss why urban renewal is important for urbanised places as Yogyakarta. After that the definition of urban renewal is explained and the most important literature about urban renewal is discussed.

Nowadays urban renewal is a major element of urban policy in many countries and regions. In 1990 Couch gave two reasons for this growing importance: at first, people are increasingly moving to and living in urban areas, which results in the need for renewal of the old urban fabric. In addition urban renewal responds to large quantities of abandoned urban areas and discouraging urban sprawl. Urban sprawl can be defined as a pattern of urban and metropolitan growth that reflects low-density, automobile-dependent, exclusionary new development on the fringe of settled areas often surrounding a deteriorating city (Squires, 2002). The concern about constant expansion of towns and cities into their agricultural hinterlands can be tackled with urban renewal (Couch, 1990). The research of Couch was based on British cities and there sprawl into land that is used for agriculture, as a logical response to the strong urbanisation in Europe in the 20th century. Nowadays the urbanisation rate of many cities in Asian countries is very high; in 2010 the urbanisation rate of the province Yogyakarta was already 66,4 percent (Firman, 2017). By the year of 2025 it is expected that about 68 percent of Indonesia’s population will live in cities (Worldbank, 2017). Indonesia is also experiencing a tremendous population growth in addition to the rapid urbanisation. The population of Indonesia has almost tripled in the past 50 year (Worldbank, 2017). All these new people need a place to live and it seems that most of them need to find a place in the city.

The city of Yogyakarta is struggling to cope with this enormous population growth in the city. The extent of Yogyakarta’s available land has been extremely limited, and this has caused urbanization in Yogyakarta to spread out to the Sleman regency and Bantul Regency (Widodo, 2014). Widodo predicated that all the rice fields in Sleman, Yogyakarta and Bantul would disappear and change into settlement areas by 2030, if this sprawl is not well controlled (see Figure 5 in chapter 4). As plead by Couch (1990) urban renewal is an important element of urban policy to control the urbanisation and the sprawl into the agricultural hinterlands, which now should be used in Asian cities like Yogyakarta.

Urban renewal is suggested to solve the problems and improve the quality of life of the residents of the Code area. It is important to gain a good understanding of the concept of urban renewal and his definition. Many studies have been conducted the field of urban renewal. Adams & Hasting (2001) regard urban renewal as a sound approach to promoting land values and improving environmental quality; in addition urban renewal is also about enhancing existing social networks, improving inclusion of vulnerable groups, and changing adverse impacts on the living environment (Chan & Yung, 2004). But urban renewal is also defined as the process of slum clearance and physical redevelopment that takes account of other elements such as heritage preservation (Couch, Sykes, & Boerstinghaus, 2011).
Urban renewal is a process of physical change or change in the use or intensity of use of land or buildings (Couch, 1990). It is important not to confuse urban renewal with urban regeneration and urban redevelopment, which can be seen as actions to implement an urban strategy. The terms do resemble each other but there are differences. By comparison, urban regeneration is a comprehensive integration of vision and action in order to resolve multi-faceted problems of deprived urban areas to improve their economic, physical, social and environmental conditions (Ercan, 2011).

Urban redevelopment is more specified and used on a smaller scale, a site that has pre-existing uses will be used for any new construction, such as the redevelopment of a block of townhouses into a large apartment (De Sousa, 2008). Summarised Urban renewal aims at improving the physical, social-economic and ecological aspects of urban areas through various actions including redevelopment, and regeneration (Zheng et al., 2014).

Many studies state that the concept of urban renewal interweaves with the concept of sustainability. Sustainability is a difficult concept having economic, environmental and social aspects. There is no commonly agreed definition of sustainability, which makes it a difficult concept (Weingaertner & Barber, 2010). According to Turner (2009) the definition of a sustainable urban landscape is an absolute balance between environmental, economic and social needs. But it does not matter which definition you use to explain the link between urban renewal and sustainability. According to Zheng et al. (2014) the consensus of sustainability appears to be that it has three pillars: social, economic and environmental. Which are closely linked to the concept of urban renewal. These pillars seems to be the popular approach to achieve a more sustainable society in most of the contexts (Zheng et al., 2014). The concept of urban renewal is improving the same pillars but from a different kind a view. Urban renewal is an instrument for solving urban problems including; urban function deterioration, social exclusion in urban areas, and environmental pollution (Zheng et al., 2014). It can be used for improving environmental quality, and promoting land values (Adams & Hastings, 2001). But urban renewal can also be used to restore urban decay problems and to increase various socioeconomic objectives to improve inclusion of vulnerable groups and changing impacts on the living environment (Chan & Yung, 2004). Specifically, urban renewal projects facilitate good-quality housing, improve the health of the community, promote the repair of abandoned buildings and improve the effective use of the building stock and land resources in the city (Zheng et al., 2014). If it follows a sustainable path in these respects, urban renewal can significantly contribute to a sustainable society. However most urban renewal policies have tended to focus on economic renovation instead than on social - or environmental renovation (Couch & Dennemann, 2000). But in the plans for urban renewal in the riverbanks of the Code River it seems that social an environmental aspects are the most important pillars.

Due to the multi-dimensional character of urban problems such as deterioration housing quality, poverty, unemployment, social exclusions, segregation and low quality of public space, urban renewal policies have grown in complexity the last three decades (Kleinehans, 2004). The content and implementation of urban renewal policies differs greatly between countries, depending on, the political forces as well as physical, social and economic structures of urban areas (Kleinhans, 2004). In context of the Code River urban problems such as low quality of public space and deteriorated house quality are the forces behind the top-down content of urban renewal. The two stages of urban renewal suggested by Budiarti & Rachmawati (2016), establishing an open green area for ecotourism and building public vertical housing seems to fall under the concept of sustainable urban renewal. In an urban area like Yogyakarta, urban renewal should fill sustainable settlement in order to prevent emerging problems like droughts, floods and contamination of ground water (Widodo, et al., 2014). This important reason for urban renewal seems to determine under the social and environmental pillar. In order to make the Code area a safer place is a social aspect, but the contamination of ground water is an ecological reason. In 2010 Winston discussed housing in terms of sustainable urban renewal.
The sustainable development of urban areas can be positive or negative depending on the policy and the practice that is been made. Many aspect of housing can have a negative impact on the environment of the area. On the other hand housing is important for the sense of well-being and quality of life of the residents of an area (Winston, 2010). Social housing like the planned vertical housing in the Code area, can improve the quality of life of the residents and the environment if it is conducted correctly. The vertical housing is intendent to make more space for an open green area near the Code River to improve the environment and providing new economic chances. It is important to discuss vertical housing in Indonesia and to understand the concept.
2.2 Vertical Housing in Indonesia

This section is written because in the end this research wants to discover the perception of the low-income in Indonesia about vertical housing. First the concept of vertical housing is reviewed and conceptualised. Subsequently the most important literature about vertical housing in Indonesia is discussed. At the end of this section an operationalisation of the perception about vertical housing is given and virtualised.

The concept of vertical housing is to build vertical houses, known as flats and to move people from usually grounded condition into these vertical living places (Swatso, 2012). In many situations this concept is used in relation to slum clearance. By removing overcrowded low-rise buildings and replacing them with vertical-houses land in the area will be efficiently saved. With this transition from more to less dense housing the space can be used for other purposes like open green areas. Since 1950 many walk-up flats have been built in many big cities in Indonesia (Swatso, 2012). It started in Jakarta were the flats were built as prestige building for intuitions like the Ministry of Foreign Affairs and Police staff (Herlinawati, 2010). Because off the increasing limited and expensive land prices in urban areas, due to the urbanisation since 1970, vertical housing in Indonesia became important for the public housing. This construction can consists of up to five floors divided into several units that can accommodate many households. The form of this residential unit is formerly known as walk-up flats. The definition of walk-up flat, in Indonesia, that is used for this research is:

“Walk-up flat may best be described as a multi storey building, which is built in such an environment and consist of units that functionally structured both horizontally and vertically. These units can be owned and lived separately by respective resident and equipped with sharing (social) unit, land and infrastructure. Unlike the other vertical housing delivery in other countries, the characteristic of walk-up flat in Indonesia may be distinguished by its concern of not having vertical movement equipment except stair (no lift/elevator). This is the main reason why the height of walk-up flat is considered ‘only’ 4 storey (more or less, which may up to 6 floors). Considering ‘humanity’ concern or easiness factor of walking up and down regular and affordability issue for the (potential) residents” (Swatso, 2012).

In Indonesia they dived two different types of flats. Rumah Rusunami are walk-up flats that can be distinguished by its private ownership, the target group of the Rumah Rusunami is the middle class society. The other type is called Rumah Sunsun and is the only type that is important for this research. Rumah Sunsun are low costs apartments for rental public housing which is targeted for low-income people (Swatso, 2012). The main institution who is responsible for the Rumah Sunsun is the Ministry of Public works. Rumah Sunsun is developed as a housing solution for mainly the low income people. In addition Rumah Sunsun offer better protection against lahars and flooding than conventional buildings and houses because there are no apartments on the main floor. Although the Rumah Sunsun has several positive sides, later development showed that not all parts of the community want to live in this housing units. Because of psychological and socio-cultural reasons many Indonesian people prefer to live in landed houses (Swatso, 2012). In addition, some part of the community doesn’t like to be bounded too much by the several rules that apply for living in flats (Herlinawati, 2010). The rules differ in every Rumah Sunsun but need to cover aspects like safety, security, health issue, cleanliness, convenience, aesthetics, harmony and humanity, and need to for fill the norms of the legal rules established by government institution (Swatso, 2012).
2.2.1 Operationalisation of the perception on Vertical housing

Based on these assumptions it seems to be important to know if residents of a certain area are prepared to move from a landed house to an apartment in a Rumah Sunsun. In 2015 Rahardjo and his fellow researchers Dinariana and Viska did research onto the willingness from the urban poor to switch from landed houses to vertical houses. For this research the data was collected near the banks of the Ciliwung river in the Kampung Pulo area, Jakarta. This area is pretty similar to the Code area, expect for the threat of lahar. But in both areas most of the residents have a low-income and both areas are at risk for floods. According to this research the most important reason for the residents of the Kampung Pulo area to live in vertical housing is the proximity of work in the area (Rahardjo, et al., 2015).

The flood-free zone is the second reasons why the residents of the Kampung Pulo would move. But it is important to mention that the correlation between the depended variable and promixty to work was 57 percent and the correlation with the in depended variable flood-free location only 7,7 percent. Rahardjo and his colleagues (2015) used a quantitative method for their research in Jakarta. They measured around 20 different independent variables based on the eight criteria of Pacione (2007).
Pacione (2007) described several criteria that residents consider when selecting a house:

1. **Locations**, includes accessibility, traffic conditions and surrounding conditions. Social condition
2. **Zoning**, is a regulation related to different aspects which among, the type and size of the building, the height requirements of the building and the line worth building.
3. **Community**, mainly related to social environment.
4. **Costs**, which is primarily according to the cost and affordability of tenants.
5. **Technical factors related to the conditions of, cost, drainage, design and topography.**
6. **Utilities**, that includes the availability and the condition of drainage system, sanitation system, installation of gas, electric and telephone.
7. **Aesthetics** includes scenery and landscape.
8. **City services, and other services held by the government.**

The eight different criteria from Pacione (2007) all have influence on the perception of living in a Rumah Sumsun. In order to make the data analyse process later on more easy the eight categories are dived over the three underlying forms of perception (see Figure 1). The first criteria can be seen as a social-cultural perception but as a social-economical perception as well. Location could obviously be important for work, that why so many rural residents move to urban areas. Otherwise location is also important for everyday contact and your connection with the community which is more a social-cultural aspect. Criteria six is also dived under two perceptions. Presence of utilities is obviously a social-economical aspect but it is also slightly political. Because many (public) utilities are arranged by a governmental programme in collaboration with the community.

<table>
<thead>
<tr>
<th>Perception</th>
<th>Residents criteria for selecting a house (Pacione, 2007)</th>
</tr>
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<tbody>
<tr>
<td>Social-cultural</td>
<td>1,3 &amp; 6</td>
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<tr>
<td>Social-economic</td>
<td>1,2,4,5 &amp; 6</td>
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<tr>
<td>Political</td>
<td>6 &amp; 8</td>
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*Figure 1: Perception about vertical housing divided*
2.3 The urban poor and their Livelihood

This section is written in order to define the group “low-income” in Indonesia. As been discussed before the Rumah Sunsun are low cost apartments for rental public housing which is targeted for low-income people (Swatso, 2012). So it is important for this research to know what the definition of low-income people is in Indonesia and who is included in this group. In addition the term livelihood and the concept of sustainable livelihood are explained in this section. The concept of sustainable livelihood is a primary approach in poverty eradication by understanding all vital aspects of poverty. The sustainable livelihood can help this research by exposing the daily practices of the residents in the Code area. This research looks at the perception of residents about vertical housing and urban renewal. An underlying danger is that the perception of residents become desire, which can stand far away from reality. The sustainable livelihood approach is a tool that can be used as a bridge between perception and the real practices. It is important for this research to understand the daily practices of the residents so you can measure if the planned urban renewal strategy will fit in their livelihood and fulfil their needs. The use of the term sustainable livelihood also helps to reflect if collected perceptions of residents are valid and suit with their daily practices or just contain dreams and wishes. Before the term sustainable livelihood will be explained the group “low-income” will be clarified.

2.3.1 Urban poor

According to Seftyono (2012) most of the residents in the banks of the Code River are categorised to the lower class of economy. The average income of Code inhabitants is about 10.000 to 15.000 Indonesian rupiah a day, which is around 1 American dollar a day (Seftyono, 2012). The international standard of extreme poverty is to the possession of less than 1,25 American dollar a day (United Nations, n.d.). This would mean that most of residents near the Code River live in extreme poverty.

It is important to know if the respondents for this area belong to the category low-income or even worse live in extreme poverty. In this research the definition of the Indonesians ministry of public housing is been used. Low-income people are the people who have income above 1.000.000 Indonesian rupiah (US$100) – up to 2.500.000 Indonesian rupiah (US$ 250) per month (Ministry of housing the Republic of Indonesia, 2009). So the people who earn less than 1.00.000 live in extreme poverty.

In the research of Rahardjo et al (2015) the theory of residential mobility from Turner (2012) was used. According to this theory there are differences reasons for choosing a selected residence in the community. There are three different social classes of society to distinct based on people’s behaviour in choosing a residence namely:

1) Lower economic class of society, who want to reduce cost by staying at a place close to the workplace. This group is called Bridgeheaders.
2) Consolidator, well-established group who is looking for a more comfortable environment to live.
3) Strong economic group who are looking for a nice place, trying to get recognition associated with social status. This group is called seekers.

The first social class of the theory from turner is also interesting for this research. If you want to bring urban renewal successfully in practise you have to know with what kind of group you are dealing with. As been described in chapter four most of the residents in the Code area belong to lower class of society. Not all of the low-income residents are Bridgeheaders but all of the Bridgeheaders are low-income. For this research it is interesting to look into the differences in perceptions between bridgeheaders and the other “low-income” residents. Bridgeheaders are might more interested in living in a Rumah Sunsun compared to the other “low-income” residents, but if not they are might more interested in another urban renewal intervention like open green area or even relocation of the Code area “kampungs”.
2.3.2 Livelihood

The term livelihoods conceptually means all the activities, entitlements and assets by which people make a living. In this particular context assets contain not only natural and biological resources like land, water and other flora and fauna but also social resources like community, social networks and participation and physical resources as bridges, clinics, roads and schools (Elasha et al., 2005). Sustainable livelihood is a concept that attempt to go beyond the conventional definitions and approaches to poverty eradication (Krantz, 2001). A sustainable livelihood assessment is a strategy which tries to understand how an individual, household or a community acts under certain frame circumstances (Elasha et al., 2005). This section first discuss the definition of sustainable livelihoods in addition the manner of bringing a livelihood assessment in practise is reviewed.

The conventional definitions and approaches were found to narrow because they only focused on certain aspects of poverty, like low income, and did not consider other aspects of poverty like social exclusion and vulnerability (Krantz, 2001). Today it is recognized that poverty is more than only a low income. Various factors and processes constrain the ability of poor people to make a living in an economically, ecologically and socially sustainable manner (Krantz, 2001). Chambers and Conway (1992) introduced the first definition of sustainable livelihoods; “ A livelihood comprises the capabilities, assets (acces, claims, resources and stores) and activities required for a means of living: a livelihood is sustainable which can cope with and recover from stress and shocks, maintain or enhance its capabilities and assets, and provide sustainable livelihood opportunities for the next generation; and which contributes net benefits to other livelihoods at local and global levels and in short and long term.”

The definition of Chambers and Conway (1992) is mostly applied at household level, but in this research it is applied at individuals. More recently the Institute for Development studies and the British department for International Development adjust the definition of sustainable livelihood a little bit; “ A livelihood comprises the capabilities, assets (including both material and social resources) and activities required for a means of living. A livelihood is sustainable when it can cope with and recover from stresses and shocks, maintain or enhance its capabilities and assets, while not undermining the natural resource base” (Rakodi, 2014). This ‘updated’ definition put more focus on preserving the natural resource base and differs from the old definition by deleting an old requirement. To be considered sustainable livelihood do not longer need to contribute net benefits to other livelihoods (Rakodi, 2014). In this research the norms of the new definition are held.

As said before a sustainable livelihood assessment is a strategy to understand how a community, a household or, meaningful for this research, individuals behave under specific conditions. One strategy to understand livelihood systems is to analyse the coping and adaptive strategies that individuals deploy as a response to external shocks and stresses such as drought, civil strife and policy failures (Elasha et al., 2005). Coping strategies determine the short-term actions and behaviour which try to cope with specific shocks. On the other hand, adaptive strategies contain long-term changes in the behaviour of people as a response to the external shocks and stress (Elasha, et al., 2005). For this research it is important to know what kind of behaviour perform against shocks like flood and lahars. This research tries to analyse the two different strategies including short- term and long-term behaviour of individuals against lahars and floods. The obtained knowledge will help finding an answer if building Rumah Sunsun is an effective urban renewal strategy, which fits in the livelihood of the residents, against lahars and floods in the Code area.
The sustainable livelihood assessment use the notion of the five capitals; financial, human, natural physical, and social (see Figure 2), in order to frame the enquiry and the collected practices that result in coping and adaptive strategies. As stated by Elasha and his colleagues (2005) the coping and adaptive strategies present the livelihood of community or individuals. The five different capitals can be seen as the different assets that are useful for the livelihood of community or individuals. Assets are considered to be stocks of different types of capital that can be used directly or indirectly to generate livelihoods (Elasha et al., 2005). The following capitals are identified for the sustainable livelihood framework (Elasha et al., 2005):

1) **Financial capital:** Includes stocks of money or other savings in liquid form, but also income levels and other disposable assets such as access to credit, distribution within society of financial savings, livestock, debt levels and variability over time.

2) **Human capital:** Consists education, skills and health of individuals. In addition the quantity and quality of available labour is an important asset.

3) **Natural capital:** Includes availability of land, water and biological resources such as Threes, pasture and biodiversity. Human management may have an improving or degrading effect on the productivity of these resources.

4) **Physical capital:** Is the capital that is created by economic production, it includes infrastructure such as electricity, houses, irrigation works and roads.

5) **Social capital:** All assets such as rights and claims which includes the ability to call on family or friends in times of need, support from trade or professional associations and political claims on chiefs or politicians to provide assistance.

Measuring the five different types of capital will help to find the coping and adaptive strategies that result in the daily livelihoods of the low income in the Code area. In order to resilience the livelihood and there coping and adaptive strategies some indicators need to be selected. The selected indicators should reflect the following aspects;

- The ability of individuals to cope with and recover from shocks and stresses.
- Economic efficiency and income stability
- Ecological integrity; ensuring that livelihood activities do not irreversibly degrade natural resources within the given ecosystem
- Social equity; which suggests that promotion of livelihood opportunities for one group should not foreclose options for other groups, either in present or in the future.

In chapter five of this research selected indicators that are used in the analyse for this research. Not all parts of the sustainable livelihood assessment are discussed neither used in this research. This is because livelihood is not the key-term of this research. The aim of this research is to find the different perceptions from the residents about vertical housing and urban renewal. The concept of sustainable livelihood have been added to this research to make sure that the perception are realistic and give a honest portrait about the daily practices, and do not only contain dreams. The parts of the sustainable livelihood assessment are extended enough to measure this, it is not needed to use the other parts ass well in this research.
Figure 2: (Levine, 2014) Sustainable livelihoods framework

Key
H = Human Capital  S = Social Capital
N = Natural Capital  P = Physical Capital
F = Financial Capital

VULNERABILITY CONTEXT
- SHOCKS
- TRENDS
- SEASONALITY

LIVELIHOOD ASSETS

TRANSFORMING STRUCTURES & PROCESSES
- LEVELS OF GOVERNMENT
- LAWS
- PRIVATE SECTOR
- INSTITUTIONS

LIVELIHOOD STRATEGIES

LIVELIHOOD OUTCOMES
- MORE INCOME
- INCREASED WELL-BEING
- REDUCED VULNERABILITY
- IMPROVED FOOD SECURITY
- MORE SUSTAINABLE USE OF NR BASE

PROCESSSES
2.4 Vulnerability

This section is important for this research because in the end this research aims to contribute in making the Code area a less vulnerable place to live. First the term vulnerability will be defined and the relation between vulnerability and livelihood will be drawn. After that the most important literature about vulnerability valuable for this research is discussed.

Vulnerability regarding to natural disasters is the capacity to anticipate, cope with resist and recover from the impact of a natural disaster (Masozera, 2007). This is comparable to the context of coping – and adaptive strategies which determine livelihood. If the coping and adaptive strategies of residents change the vulnerability can also decrease or otherwise maybe increase.

The density of residential constructions effects the potential loss in a positive relation, thus if there is a higher residential density there is a higher potential for economic and social loss (Masozera, 2007). Low-income communities are overall more vulnerable to natural hazards, because these communities often settle in more hazardous places, are less able to cope with the aftermath of a natural disaster due to a lack of recourses, have fewer reserves, and have less alternatives to move somewhere else. (Masozera, 2007). As discussed in the introduction of this research the people density in the Code area is really high and most of the residents are considered as low-income. It may take years for the low-income to recover from a natural disaster because they can’t bear the costs for repair reconstruction or relocation.

Vulnerability is a broad concept that comes in a lot of different forms. In 2002 Alcantara-Ayala made a distinction between natural – and human vulnerability (see Figure 3). Natural hazards, originated from the atmosphere, biosphere or lithosphere, lead to natural vulnerability. On the other hand there is human vulnerability originated from societies which consist of cultural –, economic –, social – and political factors. The four factors together determine how vulnerable a society is. Natural – and human vulnerability together determine if natural hazards can lead to a natural disaster, like the lahar disaster of 2010 in the Code area. Only human vulnerability will be explained in this chapter because this research is interested in the effect of vertical housing on the livelihood of low-income residents. After all the placement of Rumah Susun cannot prevent that a lahar will occur but it will mainly effect the human vulnerability.

Figure 3 (Alcántara-Ayala, 2002). Vulnerability and the relation to natural disasters
According to Aysan (1993) human vulnerability is divided in several forms:

- Attitudinal and motivational vulnerability: lack of public awareness
- Cultural vulnerability: Certain beliefs and customs
- Ecological vulnerability: Degradation of the environment and inability to protect it
- Educational vulnerability: lack of access to information and knowledge
- Economic/material vulnerability: lack of access to resources
- Organisational vulnerability: lack of strong national and local institutional structures
- Physical vulnerability: weak buildings or weak individuals
- Political vulnerability: limited access to political power and representation
- Social vulnerability: disintegration of social patterns

For this research physical vulnerability is considered the most important due to the fact that the suggest renewal technique is improving the current settlement by implanting vertical housing. This should result in making the settlement and inhabitants of the Code area less (physically) vulnerable. Although this research have taking the cultural, ecological, economic and social vulnerability in consideration as well. Whenever vertical housing will be implanted these vulnerability factors can change as well due to the change in livelihood. So these vulnerabilities will be analysed as well due to the fact that living in Rumah Sunsun will affect the daily practies of residents. However this research will analyse the expected effect of Rumah Sunsun on the physical vulnerability in first place.
2.5 Conceptual Model

This research project will clarify the relation between vertical housing, as a urban renewal strategy, and the livelihood of the low-income in Indonesia. This relation concerns the effect that vertical housing will have on the daily practices, expressed as livelihood, of the low-income. In addition a change in livelihood can have effect on the vulnerability of the low-income. As discussed in the theoretical framework vulnerability regarding to natural disaster is the capacity to anticipate, cope with resist and recover from the impact of a natural disaster (Masozerza, 2007). This is comparable to the context of coping – and adaptive strategies which determine livelihood. The implementation of vertical housing will have impact on the five capitals that result in the coping – and adaptive strategies. Summarized vertical housing will have an effect on the livelihood of residents which can result to a more or less vulnerable situation. This research tries to discover what vertical housing would imply for the daily practices of the low-income residents. In addition this research want to observe if this would lead to less or more vulnerable situation of the residents.

However due to a time-limitation this research could not study a certain case before vertical housing is applied and after the vertical housing is realised. For that reasons this study chose to look at the perception of the low-income about vertical housing as a key issue. The perception of the residents are measured based on their social-cultural, social-economic and political perception towards vertical housing. The results of the perception can be applied at how the livelihoods and so forth the vulnerability might could change, by the implementation of vertical housing. In the first compartment of the conceptual model four different concepts can be seen (see Figure 4). This is done because vertical housing will be implied as an urban renewal strategy in order to improve the area. The other two concepts; open green area and relocation are also proposed as a urban renewal strategy for the Code area. So those two strategies are also slightly discussed during the interviews for this research. However in the end this research is most interested in the perception about vertical housing and the conceivable effects of vertical housing on the daily practices of the low-income.

![Figure 4: Conceptual model](image-url)
3. Methodology

In chapter two a conceptual model and theoretical framework are presented as a backbone for the conducted research in Yogyakarta. However that is not enough preparation to reach the final goal of this research; finding information that is useful for answering the central research question. The methodology explained in this chapter is the guideline for finding useful information that will help to achieve the aim of this research. The conceptual model and theoretical framework already created a scope to make sure that the gathered information is useful for answering the central research question. The methodology used for this research is mostly based on the insights of Creswell (2013), Verschuren & Doornewaard (2010) and Vennix (2016). In this methodology chapter a research strategy is presented in order to make sure that the obtained data in Yogyakarta is valid. After that the research material and analysis technique, that is needed to obtain and process the data, is underlined to make sure there cannot be misinterpretation about the reliability of the results. In the end of this chapter the executed and chosen methodology for this research is reflected and discussed.

3.1 Research Strategy

The research aims to contribute to the understanding of perception of low-income residents about urban renewal and especially the urban renewal strategy; vertical housing. The first step of conducting a research is to decide what kind of data you want to collect. Because this research is interested in the perception and practices of people a qualitative method is obvious. A quantitative study can be seen as a statistical research and is mostly interested in numbers. But this research tries to find out the deeper thoughts behind the numbers and has an exploratory background. As mentioned in the theoretical framework the research of Rahardjo et al (2015) about low-income and vertical housing in Jakarta is very similar to this research. The research produced really interesting results however it was a quantitative study so the underlying causes and thoughts of the results were missing. Therefore it is an interesting challenge for this research to fill up this missing scientific gap, and the best way to get this results is by conducting an qualitative study.

Within the qualitative research inquiry there are different approaches to design a research and collect your data. Because this research is interested in an in-depth understanding of the perception and practices of residents near the Code area a case study is the most suitable approach. Case studies are often used in qualitative research, they give insight in practices or processes, and also on the cause of why these practices or processes occur (Verschuren & Doornewaard, 2010). According to Vennix (2016) a case study is a useful research approach when it meets the following conditions; the central question tries to find out how or why a certain phenomenon is what it is. In addition the researcher cannot isolate the phenomenon from the natural context where it occurs, the research object can only be studied in this natural context. Both conditions apply in this research and that is why a case study is used.

There are many different forms of case studies and it all depends on the type of case that researcher select how the research will be applied. According to Creswell (2013) a critical, intrinsic, typical, extreme/deviant or a maximum/minimum variation case can be applied. For some of this forms two or more cases need to be studied. Because of a lack of time and resources it was not possible to do research in multiple cases and that why a number of case forms drop out as an option for this research. The studied situation in the Code area is very particular situation and an equivalent situation cannot be find nearby. Because of exceptional situation near the Code River an extreme or deviant case approach is the logical option to apply. The situation in the Code River area is unique because of the risk for lahar disaster is very high but still the population density really high as well. That is why an extreme or deviant approach is chosen for this research because it is used to learn from abnormal situations. In addition to type of case study the researcher also need to choose if he is going to use an embedded/single or multiple case design.
As discussed before, a multiple case study, in which two or more cases need to be investigated, is not an option for this research. For this research an embedded case study design will be used. An embedded case study has a positive influence on the internal validity of a research (Creswell, 2013). By increasing the number of analysis within the case of the Code River, the validity of this research will be stronger then choosing for one analysis in a single case design. Residents from three different kampungs will be interviewed instead of the residents of one kampung in order to improve the validity of this research. The selected kampungs and the reasons why the specific studied kampungs are chosen is discussed in chapter four.

A disadvantage of choosing an embedded single case design over a multiple design is that results found are hard to generalise to a broader theory. In order to improve the generalisation analytical generalisation is applied in this research. By focussing on specific characteristics of the residents like age and income the case can be compared with different cases with the same characteristics (Boezeman, 2017). In this way the results of this research can be generalised to a broader theory.

Another important characteristics of a case study is that multiple sources of evidence are used (Vennix, 2016). In this research data triangulation is embedded to get an integral insight of the research object. This research has made use of interviews, observations and collecting visual data to obtain empirical data that is used to analyse. The different forms of empirical data will help compose answers and conclusions for the main research question. Due to the use of triangulation, by obtaining data through different empirical techniques, the data collection contains different and multiple sources which improves the validity of the research (Creswell, 2013). Practices of residents for example can not only be observed during fieldwork but also discovered through interviews and deduced from obtained visual data. In this way the main concept of this research, vertical housing, will be looked at in various ways which can lead to insight of the perceptions about the main concepts and the influence they have on the daily practices. This will provide new scientific knowledge about the concepts and might result in interesting insights for (local) government agencies, project agencies or spatial planners to improve the quality of life in the Code area.

The practices of all forms of data collecting used in this research will be explained to prevent any miscommunication about the obtained data.

3.1.1 Interviews
This research has chosen to make use of semi-structured interviews. Semi-structured interviews provide a base but still have plenty room to go deeper into the topic and ask the respondents for explanations or perspectives (Creswell, 2013). It is important for this research to have the liberty to deviate a bit from the interview guide, because this is a qualitative research that is interested in perceptions and the underlying causes of given perspectives. In collaboration with two fellow students from the Radboud University Casper de Vilder and Ruud de Louw an interview guide is made. The study topics of both students are similar to this research and also needed to be conduct in the riverbanks of the Code area. The interview guide start with some questions about the personal background of the respondent, including demographic related question like age, education level and income which can help generalising the results to a broader theory. Followed up with some general question about living in an area that is vulnerable for disasters caused by Gungun Merapi. After that the interview guide is dived in the three different sections. Each section treats one of the three study objectives, including a section about vertical housing. Because the study objectives of Casper and Ruud are related to this research the data obtained from their questionaries’ is also useful for this research. For understanding the question that are asked during the interviews you can take a look in the interview guide of this research, see Appendix I.
The next step to think about was the way of sampling the respondents; in order to get diverse perspectives and answer respondents with different backgrounds needed to be found. Beforehand it was decided to interview respondents from three different kampungs located in three different sub-districts of Yogyakarta. In chapter 4 the choice of the three different kampungs is explained and the characteristics of the kampungs are discussed. As discussed before interviewing respondents from different sub-districts will improve the validity of this research. Another aim of selecting respondents from three different sub-districts is to reach a certain heterogeneity among this group. The selected respondent are sorted out on different ages, gender and education level which possibly lead to different perspective towards vertical housing. In this way potential differences in perspectives can be connected to demographic fact like someone’s place of living near the Code River.

Unfortunately the selected research group is too small to give a representative perspective of all residents towards vertical housing. But this heterogeneity can tell something about the relation between the respondent’s economical background, education level or place of residence and the perception of the respondent towards vertical housing. And what kind of consequence this relations has towards their daily practices, but this relation cannot be generalized to the whole population. Additionally three experts are interviewed and asked to share their expertise about the subjects. The interviews with the experts are conducted after the interviews with the residents. The underlying purpose is that the question in the interview guide could be adjust to the information collected in the interviews with residents. In this way experts can clarify interesting matters introduced by the residents. Furthermore some of the interview question are made for residents of the Code area and not relevant for the experts. That is why an alternative interview guide is made for the experts, see Appendix II.

The experts interviewed for this research are three different professors of UGM who also engaged the roll as supervisors during our stay in Yogyakarta. Dr. Djaka Marwasta, Dr Rini Rachmawati and Dr. Estuning Tyas Wulan, were pointed out as our supervisors because of their expertise about our subjects. So it was very useful to ask them about their expertise and if they want to share their knowledge. All of the respondents and their characteristics can be seen in appendix III.

3.1.2 Fieldwork and literature study

The field of research is another important resource of data for this research. By conducting fieldwork and visiting the research-site a lot of data is collected for this research. Two empirical techniques are used for collecting data during the site visit; doing observations and collecting visual data. By doing observations on the site you can place yourself in the minds of residents of the area. It will give a first impression of the residents and an insight in their daily practices. The main focus point in the observations are the daily practices of residents, presence of Rumah Sunsun and the remained available space in the area. Furthermore the presence of the five capital of sustainable livelihood have been taken into account during the observations. Therefore claims made in the existing literature like the population density in the area and presence of irregular settlement, will be checked. Fieldwork is conducted in the three different sub-districts of Yogyakarta important for this research. All the kampungs that are visit during the field work are located near the Code area. The area of research is explained furthermore in chapter 4.

In addition to the observations visual data is collected during the fieldwork. Pictures are taken for the purpose of detailed documentation of the observations for analysis later on. The visual data will help this research in two ways. First of all it help to portray the livelihood of the residents and to get a clear image of their daily practices. On the other hand it can help to make the perspectives of residents more tangible.
Rose (2016) stated; “Images interpret the world; they display it in very particular way; they represent it”. Pictures support the words written down in this research and help to understand the underlying meaning of them.

<table>
<thead>
<tr>
<th>Observations schedule</th>
<th>LedokCode Kampung</th>
<th>JogoJudan Kampung</th>
<th>Tukangan Kampung</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wednesday 22 march 2017</td>
<td>11:00 – 14:00</td>
<td>15:00 – 18:00</td>
<td></td>
</tr>
<tr>
<td>Saturday 25 march 2017</td>
<td>16:00 – 18:00</td>
<td></td>
<td>12:00 – 14:00</td>
</tr>
<tr>
<td>Monday 28 march 2017</td>
<td></td>
<td>10:00 – 13:00</td>
<td>14:00 – 17:00</td>
</tr>
</tbody>
</table>

Table 1: Observation times and dates in Yogyakarta

There is one data obtaining technique, that is used in this research, left that is not discussed in the research strategy. Literature study is also been a really important information source to gather data from for this research. Of course this research started with a literature review about the most important concepts like urban renewal, vertical housing and livelihood. But also during the processes of gathering data, analysing data and even after the data analyse literature have been an important source to fill up missing data. Furthermore data from existing literature can explain or support the claims made from the empirical part of this research. Which will make this research overall stronger.
3.2 Research Material & Analysis

All the interviews are recorded, with permission of the respondents, to avoid lost information or any miscommunication about the data. The interviews with the experts took place in/ are held in English. To make sure that the information can be analysed sufficiently the software Atlas.Ti is used to make transcript of the interviews.

Since this research is interested in the perceptions of a group that is low-educated most of the respondents in the Code area did not or only spoke a little bit English. In collaboration with two students of the Gadjah Mada Universitas this language barrier is overcome. The students helped us during the interviews by serving as a translator. By telling the headlines of the answers of the respondents during the interview we were still able to ask further question to get into deeper insights. During the interviews we made notions of the answers. After the interviews the students send us a summary of the interviews in form of an interview report. There are no real transcripts in Bahasa Indonesia, of the interviews with the residents.

So the primary data consist of three interview-transcripts with experts and an interview-report including summarized version of the interviews with residents. In addition to that photographs made during the fieldwork, interview recordings with residents and experts and notion are collected as primary data. The secondary consists of literature.

In order to make sure that primary data is analysed correctly this research made use of the open coding strategy by Glaser and Strauss (Creswell, 2013). This method is used to make sure that every sentence is read line-by-line and Coded ad hoc (Creswell, 2013). During the open coding process one sentence can provide multiple Codes consisting of words or phrases that are relevant for this research, keeping in mind that a Code is not only a representative keyword of a text but rather an explanatory (Creswell, 2013). After the open coding the next step is axial coding to make sure that the theory is conceptualised. The axial Codes have a meaningful and substantial role in the text of this research and will help to connect the collected data to the founded theories (Creswell, 2013). The open – and axial Codes used during the analyse are stated in the Code book (see Appendix IV).

In this research only the interviews with experts are appropriate to analyse with the open coding strategy. The open coding strategy could not be applied on the interviews with the residents because there are no transcripts of these interviews. However axial Codes were kept in mind during the analyse of the residents interview summaries in order to make sure that the results of these interviews are analysed in a proper way.

Picture 2: Author of this research with fellow researchers C. de Vilder, R. de Louw and respondent Mr. Sugeng Purwanto after the interview.
3.3 Methodology reflection

Although the chosen strategy for this research worked out and enough data is collected to analyse, there are flaws in this research that need to be reviewed. First of all it need to be underlined that the language barrier during the implementation of the interviews is a limitation for this research. Most of the interview were held in Bahasa Indonesia. This has a negative influence on the intern validity and reliability of this research. Incorrectness in translation can lead to wrong interceptions of the data collected by interviews. First of all because question can be misinterpret by the respondents.

A concrete example is the use of urban renewal in the interview guide, even the geography students from UGM, who function as interpreters, weren’t familiar with this term. So it is a logical assumption that respondents got an explanation and translation of urban renewal in another way then meant by this research. This could have be prevented by thinking about this problem on beforehand, and describing the term urban renewal in another, more understandable way, in the interview guide before doing the interviews.

On the other hand mistakes in translation can also lead to misinterpretation of the given answers by residents. In addition the lack of transcriptions of the interviews with residents let down the reliability of the research even more. The analyse of an interview-transcript is more reliable than the analyse of an summarized interview-report. Because an interview-transcript provide a fundament in which the interview can be analysed word by word to prevent any miscommunication. A summarized interview-report only contains the main points of an interview but the context surrounding the given answers is missing, which could lead to a wrong interpretation.

A second research limitation encountered is the lack of the right visa papers. To conduct this research I obtained an tourism visa to enter Indonesia. Nevertheless as a foreigner I needed an research visa if I wanted to interview experts from government agency. Regretfully it wasn’t possible now to interview a staff member of the Ministry of Public works, who are responsible for developing Rumah Sunsun. This could have given interesting insights for this research on vertical housing in Indonesia and Rumah Sunsun in particular. Unfortunately most of the documents of the Ministry of Public works are written in Bahasa Indonesia and due to the time limitation of this research there was no time left to translate them. The last research limitation that need to be mentioned is the change of research-subject during the research process. At first sight this research was focussed on urban renewal divided in three different urban renewal intervenes; open green area, relocation and vertical housing. During my stay in Yogyakarta I encountered that my research topic was to wide and it was better to focus on only one intervention; vertical housing with is the most relevant for this research area. Afterwards it would have been better for this research to interview some more residents of Rumah Sunsun.
4. Demographic and geographical background; introducing the area of research, the Code Riverbanks, Yogyakarta.

As an introduction to the empirical part of this research this chapter will discuss the work field where the data for this research is obtained. First the geographical setting of this case, which is an important driving force behind the suggestion for urban renewal, will shortly be explained. In addition the demographic – and geographic characteristics about the visited kampungs will be discussed. This chapter only describes a general portrait of the research case. By providing this context it is intended to create a better understanding of the case that is used for this research. In chapter five the livelihood in the kampungs is extensively discussed. This chapter is built on information from existing literature but also consist empirical data retrieved during the fieldwork. The empirical data used for this chapter mainly consist out data retrieved during the observations.

4.1 Geographical setting
Yogyakarta is a city located on the central-south of the Island Java. The city counts almost 415,000 inhabitants and is the capital of the special region of Yogyakarta, which is one of the 33 provinces in Indonesia. The municipality of Yogyakarta consist of the city of Yogyakarta and four district; Sleman, Bantul, Gunung Kidul and Kulon Progo (see Figure 5). Due to the pace of development, Yogyakarta city and a part of Sleman and Bantul are recently becoming an urban agglomeration area (Arum, et al, 2006). Beside this urban agglomeration area the municipality of Yogyakarta contains a big rural area which is dived to agriculture. Situated in the most northern part of the municipality you have Gunung Merapi.

Figure 5 Map of Yogyakarta Municipality
Source (Hudalah, D., Firman, T. & Woltjer, J., 2013)
Gunung Merapi contains one of the most active volcano of the world. The Merapi volcano is located 30km north of city Yogyakarta and is a threat for the densely populated Northern part of Yogyakarta (Lavinge et al., 2000). In the last two decades the Merapi erupted two times. The eruption in 2010 is determined as the strongest eruption of the last century. Due to the effects of the eruption nearly 400 people lost their lives (Surono, et al., 2012). The last activity of the Merapi volcano was detected in 2013, it produced big clouds of ash which fell down in the slopes of the Merapi.

The origin of thirteen different rivers are established at the gunung Merapi. More than 120.000 people are living along the thirteen rivers draining to the lowlands. Three of the thirteen rivers are flowing through the city of Yogyakarta. The Gajahwong river flows through the east of the city, the Winogo river flows through the west of the city and the Code River, the one that is important for this research, flows through the centre of the city (Sukoco, 2013). Observed from a physical geography point of view the main function of these rivers is to transfer the rain and let trough the volcanic mudflow after an eruption, called lahar (Seftyoyo, 2012). Lahars is an Indonesian term to describe a flowing mixture of mud and volcanoclastic material like ash, pumice and solid lava which typically enter river valleys (USGS, 2016). Rachmawati (2016) points out that physical function of the Code River is really important; since the beginning of the 20th century over 30 lahar have occurred and caused a great deal of damage on the slopes of the Merapi.

However the rivers contain, obviously, social, political, cultural and economic functions as well which are discussed in chapter five of this research. Especially along the riverbanks of the Code River which flows all the way from the Northern part of the Sleman district, through the city centre of Yogyakarta to the Southern part of the Bantul district. For this research only the part of the Code River that flows through an urbanised area is important. In 2014 Gusma and Soermadiono did research about the development of the Code River area in Yogyakarta with a sustainable urban landscape asset. For this research they made a map which shows the part of the Code River that flow through the urban area of the municipality of Yogyakarta (Figure 6). They divided the Code River area in nine different sections and categorized them into five urban sections. This research is focused on the most urbanised part of the Code area, which lay in the city centre of Yogyakarta and can be seen in section 5 and 6 (Figure 6).

![Figure 6: Nine different sections of Code River categorized into five urban sections Source: (Gusma & Soermadiono, 2014)](image)
4.2 Field of interest: the riverbanks of the Code area

Like many cities in Indonesia the city of Yogyakarta is dived in several sub-districts, where each consist of several area’s/neighbourhoods and even you can even dived the neighbourhoods in different kampungs. As stated in the glossary a Kampung is from origin an Malaysian term which commonly denotes “village”. However in Indonesia and especially in Java it is more often applied in urban areas and it evokes “home community” (Sullivan, 1986).

The settlement across the board of the Code River is also dived in different kampungs. Three (2017), one of the respondents of this research, told us that most off the kampungs near the Code River contain 100 to 200 inhabitants. As stated before most of the residents of the Code River kampungs belong to the category low-income and most settlement in this area is associated as slum. Only the Northern Code area, located in the Sleman district, is known for a middle-lower community with middle-upper settlement (Arum et al., 2006). One of the interviewed experts, Dr. Djaka Marawasta lives in this part of the city. Dr. Djaka Marawasta (personal communication, March 27, 2017) stated that most of the residents of the Code Riverbanks in the city centre are former-residents of the rural area outside the city.

Nowadays the population density in the low-income kampungs in the city centre is really high. In 1995 Faturochman & Kumorotomo already noticed that the density of population near the Code River was increasing fast. The density of the Code area in 1995 was around 143 people per hectare (Faturochman & Kumorotomo, 1995). They also warned for the worsening quality of life in the sub-districts near the Code River. Some of them had a building coverage up to 80%, with very minimum environmental and health qualities.

“Today, the areas along the border of the Code River and its surroundings have developed into one of the most densely populated areas in the city of Yogyakarta. These areas are inhabited by up to 35.000 people per square kilometre. Meanwhile the land use for building/yards reaches 78% of the total area ” (Budiarti & Rachmawati, 2016). High pollution, dense and unplanned settlements and narrow river bank space are the most comment problems in this area (Gusma & Soermadiono, 2014).

For this research residents from three kampungs, located in different neighbourhoods from three different sub-districts but all in the city centre of Yogyakarta, have been interviewed. In all three kampungs the population density is really high and the average income off the residents is low.
4.3 Visiting the research field: LedokCode Kampung, JogoJudan Kampung and Tukangan Kampung

The first Kampung visited for this research is called the **LedokCode Kampung** and is part of the Tegalpanggun area (Figure 7), which lays in the Danurejan district, and is located close to the **Malioboro**. Because the research of Budiarti & Rachmawati (2016), which is one the underpinning articles who inspired this research, was conducted in the Danurejan district it is a logical choice to visit this site for interviews and fieldwork. The Danurejan district is dived in three areas; Suryatmajaan, Bausasran and as last Tegalpangggung which is visit for this research. The Tegalpanggun area has a population of 9.217 residents and is the smallest neighbourhood with the highest density in Yogyakarta. The area is 35 ha big and consist of dense settlement (Gusma & Soermadiono, 2014). Research of Sukoco (2013) shows that the highest level of population density in Tengalpanggun is 595,53 people per hectare, the lowest population density in Tegalpanggun is 123,01 people per hectare. Even between parts of this neighbourhood there is a big difference in people density. Figure 7 shows that the most dense parts of Tengalpanggun are located near the Code River. The LedokCode kampung has one of the highest people densities and is categorized as number I in Figure 6 In 2009 the poor community in Tegalpanggun reached up to 50% of the residents. The most important driving force behind the economy in this area are tourism on Malioboro and home industries whose products are sold in **Malioboro** (Gusma & Soermadiono, 2014).

![Figure 7 Tegalpanggun Population Density Map. Source: Data analyse of Sukoco (2013).](image)
The other two visited Kampungs are called; JogoJuden Kampung and Tukangan Kampung. The JogoJuden Kampung is part of the Gowongan area, which lays in the Jetis district. The Tukangan kampung is located in the Kota Baru area, which is part of the Gondokusurman district. There can’t be found many information about these two kampungs and the districts they are located in the existing literature. Only Hapsari (2013) wrote that the Jetis district had 28,401 inhabitants in 2013. At that time the Gondokusma disitrict was home to 44,405 people. Together the Gondokusuman and Jetis sub-disitricts contain 1,132 informal houses, mostly located in banks of the Code River, and have a population density of 13.721/km² (Haspari, 2013).

![Map of the visited Kampungs and the location of Malioboro street](image)

*Figure 8: Map of the visited Kampungs and the location of Malioboro street. Source: De Louw (2017).*
5 Livelihood of the Code Kampungs

In this chapter the practices of the inhabitants of the Code Riverbanks are discussed and the daily routines in the kampungs are revealed. It will provide a look into the life of the residents of the Code area who example the life of the urban poor in Indonesia. This chapter tries to reveal how the urban poor copes with shocks and stresses such as lahars in this particularly case. Some of the findings in this chapter will be case bounded but others can might be drawn to a broader picture. This chapter mostly contains empirical data retrieved during observations or by analysing the interviews. First the presence of the five capitals of a sustainable livelihood in the Code area is analysed. Each capital will be individually discussed. Subsequently the coping and adaptive strategies unloaded from the five capitals are detected and discussed in detail.

5.1 Financial capital

The financial capital determines stock of money or other savings in liquid form, but also income levels and other disposable assets such as access to credit, distribution within society of financial savings, livestock, debt levels and variability over time.

As this research is interested in the perspective of low-income obviously the financial capital in the field of research will not be sufficient for many people. As shown in Appendix III most of the respondents from the Code area do not have a high income. Except for one they are all categorised as low-income according to the income criteria discussed in the theoretical framework. In chapter four and some other parts of this research it is already discussed that the financial capital of most residents in the Code area is really low. As dr. Estuning Tyas Wulan Mei (personal communication, March 30, 2017) stated about the Code area:

“It is cheaper compared to the other area and most of the people who are living there, they have a job with a very minimum incomes so it will be easier for them to use the Code area river as a settlement area.”

During the fieldwork it was made clear that the residents in the Code Kampungs do not own many financial assets and do not belong to the most wealthy people of Yogyakarta. However most of them have a place to sleep, looked healthy and maybe the most important, seemed happy. But if you compare the properties, possessions and environment of the residents in the Code area with other neighbourhoods in Yogyakarta you can see that the Code area is a place where the urban poor of Yogyakarta lives. A quote of dr. Djaka Marwasta (personal communication, March 27, 2017) about spatial planning is remarkable for the distribution of income in the Indonesian society:

“You know yeah the expert is very rich man and the people is very low economic condition. You know you got a lot of money to make spatial planning but I do not get any money to do the projects so that is the thing also (Djaka Marwasta, personal communication, March 27, 2017).”

The point that he wants to make is about the importance of involving local people in planning projects about their area. However if the people are in very low-economic condition they do not have time or do not see the sentence to do help with such long-term projects. They are already busy with their daily difficulties like earning a small living to feed themselves and their families. In the end this section want to point out one asset that is an important topic in chapter six of this research. Most residents own a small plot of land where they have built there house on. In Indonesia you need an land certificate if you want to apply for a credit at the bank. This is a really important asset for the livelihood of the residents and will be discussed neatly in chapter six.
5.2 Human capital
As discussed in the theoretical framework the human capital consist education, skills and health of individuals, in addition the quantity and quality of available labour is important for this asset. A quote of one of the experts Dr. Djaka Marawasta (personal communication, March 27, 2017) covers a great part of the present human capital among the residents in Code Kampungs:

“And also we tried to switch the program of renewal the building but give them an investment, we give them money to invest. With the money they can make warungs or a store. But because they are not educated, they are not skilled so some of the business is not success and they cannot return the investment as we expected (Djaka Marawasta, personal communication, March 27, 2017)”

Since this research is interested in the low-income or urban poor of Indonesia it was suspected that the level of education and skills are low. Most of the residents only attended elementary – or high school and did not study for a particular profession (see Appendix III). The low level of education and the reason why most of the residents are unskilled can be declared by looking at the origin of the residents. Dr. Estuning Tyas Wulan Mei (personal communication, March 30, 2017) explained that most of the residents in the Code Riverbanks are from the rural area. Started in the late sixties, jobs in the rural area where so low that many former farmers sold their land and migrated to the city. Subsequently most of the former-rural residents ended up in the riverbanks of the Code River because the land in this area was affordable (Dr. Estuning Tyas Wulan Mei, personal communication, March 30, 2017). Most of the former-rural residents are not educated and the ability of farming is roughly useless in an urban area like the city centre of Yogyakarta. However in the city centre of Yogyakarta there a lot of (informal) jobs that do not require any education. The economy of the Code kampungs relies for the greater part on the tourism sector. As stated in the literature the most important driving force behind the economy in Danurejan district is the tourism on Maliboro and home industries whose products are sold in Malioboro (Gusma & Soermadiono, 2014). The Maliboro street can be found in the Danurejan district and is located really close to the Code River. The street is known as the biggest and best shopping place in Yogyakarta and is located at the heart of the touristic centrum of Yogyakarta. Obviously many hotels, touristic attractions, warungs and other facilities are located close to Maliboro. Therefore Maliboro is a huge source of employment for his surrounding area, including the Code Kampungs. During the fieldwork and interviews the statement from the literature; that tourism is really important for the economy of the Code kampungs, got confirmed.

For example, the seventeen year old respondent Tristan Three (personal communication, March 30, 2017) resident of the LedokCode kampung was really glad that he could help with this research in order to improve his English. His intention is to get a job on Maliboro when he is finished with his study. Sugen (personal communication, March 23, 2017) an 33 year old freelancer and community leader of the LedokCode kampung makes handcraft that is sold on Maliboro. During the interview both respondents told proudly that the LedokCode kampung is known by the locals as the ‘artist village’. Community leader Sugen (personal communication, March 23, 2017) stated that the LedokCode kampung wants to organise a lampion festival in order to promote the LedokCode kampung as artist village among the tourist. Sugen (personal communication, March 23, 2017) thinks LedokCode kampung could be an touristic attraction, after all it is only a couple of steps away from Maliboro (see Figure 8). As seen from a geographic-economic point of view the riverbanks of the Code River seem to be an advantageous place to live. It does not only provide work it also embraces economic possibilities and chances, like organising a lampion festival what can boost the local economy.
Next to the jobs provided by tourism there is a local economy that is operative on a really small scale. All of the three visited kampungs possess a view warungs and small retail shops. These activities are operated in small portable food stands or just in front of local residences. However the catchment area of this local shops are really small. Most of the audience that uses this services do live in the same kampung or a neighbouring kampung. Due to the presence of, the touristic heart of Yogyakarta, Maliboro we can state that quantity of available labour is high the Code area. During the interviews unemployment in the area was not mentioned and it easy to clarify that two of the respondents do not have an income. Ms. Fitri Aminah (personal communication, March 23, 2017) do not have an income because she is a housewife and Mr. Trisan Three (personal communication, March 30, 2017) first need to finish his study before he start working. However the quantity of the available labour is high the quality of the labour is as expected low.
5.3 Physical capital
The physical capital includes all the infrastructure such as electricity, houses, irrigation works and roads in the kampungs. During the fieldwork the notion of the density of buildings (and people) is directly confirmed. As stated by Budiarti and Rachmawati (2016) 78 percent of the Code River area is used for housing which results in a complicate system of narrow alleys and houses built close to other settlement. Although the streets are narrow and most of them are not accessible with a car the quality of the streets is pretty well and some of them are even from asphalt. However the accessibility of the kampungs is pretty low due to the density which has some certain disadvantages. First of all a better accessibility would help with attracting tourist to the kampungs which is desired by the residents and discussed in the section about human capital. Even so the kampungs are located to one of the main roads they are still hard to reach. This is partly the result of the crowded traffic where the entire city need to deal with but the inaccessibility is mainly caused by the density in the kampungs. In addition the inaccessibility of the kampungs make the inhabitants extra vulnerable for floods and lahars. Respondent Three (personal communication, March 30, 2017) of the Ledok Code Kampung mentioned that there is only one exit route out of the kampung for the 112 people living here. Obviously this could lead to dangerous situations during an natural hazard. One exit route which are hard to move along in due to the narrow alleys does not contribute to a good evacuation.

The quality of the settlement in the Code kampungs is really diverse but that is simple to clarify. Like Fitri Aminah (personal communication, March 23, 2017) said:

“It is an habitat for some Indonesian people to build their home by themselves with their family”.

However it can be expected that Code kampung inhabitants need to build their own houses due to their low-economic condition. Nevertheless expert Dr. Djaka Marwasta (personal communication, March 27, 2017) confirmed that building your own house is more of a cultural thing in Indonesia and is practiced by people from all economic classes. Dr. Djaka Marwasta (personal communication, March 27, 2017) also construct his building by himself.

“Here in Indonesia you can buy land easily. And you can construct a house also easily, it looks like there is no regulation for building houses here” (Djaka Marwasta, personal communication, March 27, 2017).

So most of the residences in the Code area are built by the inhabitants themselves. This has an impact on the quality of the construction since not everybody has proper knowledge of construction-work. In addition the age of the building stock in the Code kampungs differs greatly from each order and has also influence on the quality of the settlement. Since all the settlements are built by the inhabitants themselves there is an big range in data of construction between the settlements. Some settlements are just renovated or completely rebuilt after that they were damaged of destructed by an lahar. For example the house of the family of respondent Three (personal communication, March 30, 2017) was hit by the lahar of 2010. A sediment-layer up to two or three meters covered up almost the whole house and only the second floor and rooftop are still accessible (see picture 3).
After the lahar of 2010 Three’s family decided to build a new house on another place in the LedokCode kampung. The first floor of this building is established to remain empty with an eye to the next lahar. Not all lahar victims choose for an new location, more often than not a new building is construct on the top of the old building (Three, personal communication, March 30, 2017). It is remarkable for the livelihood of the inhabitants near the Code River. After a lahar- the daily practices are established to overcome the disaster and get back to a normal house as soon as possible. The building-construction of new houses are adjust as the first empty floor of Three’s house, in order to cope with floods and lahars in the future.

In the end it can be stated that the quality of housing in the Code kampungs differs greatly. Most of this physical capital is created by the inhabitants themselves without help from other stakeholders like the government. Except for the Rumah Sunsuns in the JogoJudan kampung which are built and financed by the central government (Dr. Rini Rachmawati, personal communication, April 3, 2017). In 2007 four Rumah Sunsun (see picture 2) were built in the Jogojudan Kampung by the Department of Public Works at Yogyakarta, as part of a slum-upgrading program near the Code River (Swatso, 2012). The walk-up flats in Yogyakarta city were built along the Code River because this area was considered as the most densely populated area, compared to the other two riverbanks Winogo and Gadjahwong (Swatso, 2012). It can be stated that the accessibility of the JogoJudan kampung is way better than the accessibility of the LedokCode kampung on the other side of the river. The JogoJudan kampung is accessible for cars, which can provide the shops, due to the space that is created by building the Rumah Susuns. The surrounding area of the Rumah Sunsun is remained as open area.

*Picture 3: Remains of Three’s house after the lahar of 2010.*
However according to Dr. Rachmawati (personal communication, April 3, 2017) the inhabitants of the Jogjudan kampung who live in one the Rumah Sunsuns can still be prone to a lahar.

“But from the regulation, actually zero to six meter from the river. For certain reasons we need more than six meters from the river. We need 20 or 25 plus meters, because when the flood happens, the impact is for about 25 meters in 2010. Thus for zero to 25 meters should be free from the flood. But it is not easy, we can see that. The Rumah Sunsun very close to the river” (Dr. Rini Rachmawati, April 3, 2017).

The nearest Rumah Sunsun in the Jogjudan kampung is located only three meters away from the Code River. Obviously this Rumah Sunsun was also hit by the lahar of 2010. However Sureng Purwanto (2017) who rents an apartment in this Rumah Sunsun told that the damage done by the lahar for him and the other dwellers in the Rumah Sunsun was limited. There are no apartments on the first floor and the lahar did not reach the apartments on the second floor. The housing in the Code kampungs is discussed extensively but the physical capital contains more in this area. Beforehand only outdated literature was found about other physical facilities in the Code area like access to clean drinking water, electricity and sewerage. This old literature stated that the physical capitals in the Code River area were worse than the infrastructure conditions in other area’s in Yogyakarta. So only 15 percent of the Code residents had access to clean drinking water and most of the residents used the river as a garbage disposal and as a public toilet (Kumorotomo, et al., 1995). Most literature about the Code River confirmed the statement that the river was strongly polluted. Nevertheless during the fieldwork this statement was firmly tackled, as can be seen in picture 4 the river seemed not polluted at all.

Picture 4: Sight on the four Rumah Susuns in the Jogojudan kampung and the Code River
Appeared from the interviews it was made clear that last decade a lot of action is executed to clean up the Code River. An important part of those actions is consisted of improving the facilities in the area near the river. The usages of the river as a public toilet is reduced since a private company (CSR) invested in sanitary facilities for the kampungs (Dr. Rini Rachmawati, personal communication, April 3, 2017). Three (personal communication, March 30, 2017) confirmed that the sanitary facilities in the Kampungs have improved lately.

“First everybody washed themselves in the river, but things are getting better. The government made some water wells in the last years. It would be nice if they even make more facilities (Three, personal communication, March 30, 2017).

The last decade the livelihood of Code resident seems to be changed because of some new physical capital. Instead of washing and doing your need in the river facilities can be used which have a great impact on the daily practices.

There are two more physical structures present in the Code area that need to be discussed. In fact all the three visited kampungs possess a wall that protect them against flood and lahar, however the wall is not the same on both sides of the river. As you can see in picture 4 the wall consist off an (old) grey part and a recently built green part, on the other side of the river, where the LedokCode kampung and Tukangan kampung are located, the wall only consist of the old part. In the section about the social capital the underlying reasons for this remarkable fact is discussed.

During the lahar of 2010 a bridge, crossing the Code River, between the LodekCode Kampung and a neighbour-kampung of the JogoJudan was destroyed (Three, personal communication, March 30, 2017). Seven years later the bridge is still not restored. This missing piece of infrastructure has an huge influence on the daily practices of some inhabitants of this area. According to Three (personal communication, March 30, 2017) elderly people have a hard time now in moving between the two sides of the river. In order to clarify this situation the only way now to cross the river is via an road that is bulging out from traffic. During the fieldwork we experienced some huge traffic congestions at this point and we can state that the accessibility for pedestrians is really low.

Picture 5 (Kadir, 2011): Former bridge between LedokCode kampung and JogoJudan kampung
5.4 Natural capital

The natural capital contains availability of land, water and biological resources such as Threees, pasture and biodiversity. Human management may have an improving or degrading effect of the productivity of these resources. It seems to be that last decade human management have had an improving effect on the natural resources in the Code area. Due to the high density of buildings the Code area does not contain many available land anymore, the area still contains some trees but these can’t be seen as providable asset for the residents in the Code area. However the Code River flowing right through the heart of the area is of course an really important asset. During the fieldwork housewives where washing their clothes, children were playing and men were fishing all in the same river. Obviously the river has a massive role in the livelihood of the Code residents.

As discussed in the section of physical capital the Code River is way cleaner than an decade ago. This is partially realised by building new facilities but also another government intervene has been important. Dr. Rachmawati (personal communication, April 3, 2017) explained that education also helped to improve the awareness about pollution among the residents;

“Yeah yeah education also work, i think we have a story in preparing them throwing the garbage in the river. I think they have awareness not to do that, better than before (Dr. Rini Rachmawati, personal communication, April 3, 2017) “.

However education is more of a human capital, it helped to improve a natural asset namely the Code River. The improvement of this natural resource might frames new chances for the Code area. As mentioned in the introduction of this research one of the proposed urban renewal strategies is to widen the path of the Code River and provide ecotourism near the Code River. According to the literature it was stated that local citizens believe that ecotourism constitutes as an appropriate plan to increase the economic activities in the area (Rachmawati, 2016). During the fieldwork this view on ecotourism by the Code residents got confirmed. All the respondents respond enthusiastic on the question if they see opportunities for ecotourism in the area. Some explained why their kampung would be a good place for ecotourism and others respond that ecotourism would be very good for their business (See question 3.b in the interview-report). However the experts responded a little bit differently.

“Ecotourism in Code area, first we have to think about the river, we cannot show the river with that kind of condition even though it is that much better than twenty years ago, but I think we will need very large ..how do you call it.. infrastructure development if we want to like ecotourism or whatever or it can be also be done gradually perhaps in the next five years we can just use that kind of situation by for example explaining to the tourist that this area blah blah blah and then the next ten years.. It needs a very long term planning in order to have ecotourism (Dr. Estuning Tyas Wulan Mei, personal communication, March 30, 2017)”.

Ecotourism can might not be established in the short term but it is definitely clear that the Code River is an really valuable natural asset and might can become even more important in the future. One of the underlying phenomenon’s behind this research can also be considered as a natural capital. The villain behind the vulnerability of the Code kampungs is according to a resident way more than a destructive hazard;

“After a lahar occurred many sediment will be left behind, the residents of the Code area will sell this sediment and make a good profit about it (Sugeng Purwanto, personal communication, March 23, 2017)”.
During the interview with Sugeng Purwanto it was made clear that a lahar not only has disadvantages but also bring some benefits for the area. The sand that a lahar leaves behind turns out to be an excellent material for construction, and that makes it valuable. According to Mr. Purwanto (personal communication, March 23, 2017) the lahar of 2010 brought some advantageous economic opportunity for the residents in the Code area. The lahar of 2010 left a lot of sand behind and the Code resident did make a nice profit by selling it. Apparently the lahars do not only bring destruction and misery to the residents but it also serves as a valuable capital for the area.

*Picture 5: The picture above (Senin, 2010) shows the sediment that is left behind after a Lahar*
5.5 Social capital

The social capital includes the ability to call on family or friends in times of need, support from trade or professional associations and political claims on chief or politicians to provide assistance. This section first discusses the assistance from the government or other stakeholders to the Code residents. After that an insight in the bond between the residents in the Code community is given.

During the interviews with the experts different examples of assistance from the government or other independent organisations were given. As discussed in the section about physical capital an private company invested in sanitary facilities for the kampungs near the Code area (Dr. Rini Rachmawati, personal communication, April 3, 2017). In addition to that another private investor funded another project to improve some kampungs in the area. In collaboration with participation from the community houses got painted in different in cheerful colours to bright up the area (Dr. Estuning Tyas Wulan Mei, personal communication, March 30, 2017). Also discussed in the section about physical capital the government provided in the context of slum upgrading program four Rumah Sunsun in the Jagojudan kampung. According to Rachmawati (personal communication, April 3, 2017) the government still has budget to build more Rumah Sunsun in the area, however there is no building space left in the area.

“The minimum, the minimum size 400 square meters, is minimum size. I will try to look at my note. 400 square meters minimum size to build Rumah Sunsun (Dr. Rini Rachmawati, personal communication, April 3, 2017)”. The budget for Rumah Sunsun is might there but the community need to provide space for a building site. However the government want to provide assistance in realising Rumah Sunsun this help first need to be adopted and accepted by the residents in the Code area. Still in time of need the government did help the Code residents who were victim of the lahar in 2010.

“Okay yes the government actually during the 2008, sorry 2010, eruption they allocate a, I forget the exact number of the money, but they allocate some budget for renovation. Yeah for the people (Dr. Estuning Tyas Wulan Mei, personal communication, March 30, 2017).”

The allocated budget might did not cover the total amount of damage but still all the little things help. However it is always better to help prevent a disaster then help recover from a disaster. As discussed in the section about physical capital the wall next to the Code River is not the same on both sides of the rivers. According to Three (personal communication, March 30, 2017) the new part of the wall was financed by the government, this would be a positive social asset because politicians seem to provide assistance. Nonetheless as the other side of the river does not have this wall it seems to be a bit more complex than that. Three (personal communication, March 30, 2017) told that his Kampung also would like such a wall because a higher wall means that the kampung is better protected against a Lahar. However so far the government have not done any effort to realise the same wall as on the opposite of the river. In the past there have been some conflicts between the LedokCode kampung and the government (Three, personal communication, March 30, 2017). This might be the underlying reason that the realisation of a new wall on this side of the river stayed out so far. So the ability to claim assistance from the government is not the same for every Kampung.

Of course social capital can not only be find in assistance offered by government or private investors. One time during the fieldwork in the LedokCode village Three was busy with instructing children from the community how to read. After the lesson was over Three (personal communication, March 30, 2017) told that he gives education to the children two times a week. This example demonstrates how strong the connection of the community is. The empty first floor, discussed in the physical capital section, of Three’s families house is used as classroom. And there
are even more signals that do emphasize a strong community in the kampungs. During the lahar of 2010 many residents of the LedokCode took shelter at the house of Three. Most of the buildings in the LedokCode Kampung had only one floor but Three and his family made their house two storages high. The second floor was high enough to hide from the lahar (Three, personal communication, March 30, 2017).

In the end it seems that there are a lot of different social capital that can give ground to the residents in the Code area. However it seems that the assistance by the government is not divided equally among all the different kampungs. And there seem to be a different view between the government and residents on the prime points that need to be improved in the Code area.

5.6 Coping and adaptive strategies

Now we know all the ins and outs of the present and missing capitals of the kampungs in the Code area this research can make some statements about the coping – and adaptive strategies which are characteristic for the livelihoods of the residents in the Code kampungs. The two strategies determine the short – and long term behaviour of the residents in order to cope with the lahars and floods.

One of the most remarkable assets in the Code kampungs is that most of the work that the resident execute is related to the tourism on Marioboro. The Code area is not only a place to live but it also provide work for them. Most respondents stated that they would like to live at an safer place but still in the city centre. Sugeng (personal communication, March 23, 2017) argued that he would lose his current job if he would move to another part of the city. In addition the residents argued that they feel comfortable in kampungs where they live and that they have many friends over here.

"Even if I had the money I wouldn’t like to move. My kampung is close to Maliboro and I feel comfortable at this place “ (Three, 2017).

The strong community bond and source of employment in the form of Maliboro makes that the residents accept their vulnerable situation. During and after a lahar they help each other to recover from the shock so they can move on with life and get back to work again. It seems that the impact of lahar disaster does not impress the residents among the Code River enough to decide to move. Some of the respondents experienced more than one lahar during the time that they have lived in the Code area. According to Djaka Marwasta (personal communication, March 27, 2017) Indonesian people easily forget the experiences of a natural hazard. Especially the people with a low income like the residents of the Code area.

"I think, sorry for saying, the most important thing to the people who live there is about the economic-condition” (Djaka Marwasta, personal communication, March 27, 2017).

The daily practices of the residents of the Code area are not about how to cope with the next lahar, in addition dr. Djaka Marwasta told what the shocks and stresses, next to the lahars and floods, in the Code area are:

"They are not interested even if the expert come to the people, please come we can make a very good spatial planning but oh no my stomach still hungry and my children still crying if have to think about that please give me prospect first and maybe after that I can think about spatial planning (Djaka Marwasta, personal communication, March 27, 2017).

As stated by Djaka Marwasta (personal communication, March 27, 2017) the Code residents are busy with short term problems. They do not have much time to think about long-term problems as their vulnerability towards a lahar due to their economic situation. It seems that the lahar is
not the biggest shock for the Code residents to cope with. It are the small daily things like earning money for food that are shocks that first need to be dealt with. According to the fact that most respondents say that they live in the area due to the availability of work you can reckon them among the group bridgeheaders, which is explained in the theoretical framework. There is only one respondent who doesn’t belong to this group and that is Sri Wijilestari. Sri is the only respondent from the Code area who cannot be considered as low-income. With 5.000.000 RP a month she almost earns five times more than some other respondents. Sri Wijilestari (personal communication, March 30, 2017) stated that she would like to live in a safer place outside the city centre.

“Because I would like to live in a more calm atmosphere (Wijilestari, personal communication, March 30, 2017)”.

This in contrast with the other respondents who do not want to move or want to move to another place in the city centre. It seems that the theory of Turner (2012) is valid for the Code case. As a consolidator, Wijilestari want to establish in a more comfortable environment to live. Where the other respondents as bridgeheader are dedicated to stay nearby their working area. In the end it can be state that the low economic condition are an important driving force behind the choice of the residents to stay in the Code area despite of the vulnerability of the area.

Still the Code area is very vulnerable to be prone of a lahar even though it seems to be a calm place to live nowadays. After seven year most of the harm and damage that was done by the lahar in 2010 is wiped out of the Code kampungs. Beside some small marks like roofs on eye level (see picture 3) there are hardly any remarks of the lahar-disaster of 2010 left, and it seems that de kampung Code community is fully recovered from the shock. However as Three (personal communication, March 30, 2017) noticed the former bridge between the LedokCode Kampung an the opposite of the Code River is still missing. The shortcoming of the bridge has a huge impact on the daily practices of the residents. The accessibility of the Kampungs in the Code area decreased and the environment of life especially for the elderly shrunk. That the bridge seven years later still not is repaired is the result of shortcoming in the social and economic capital. They community cannot fix it on their own as most of the residents barley earn enough to cope for themselves, let alone that they would have savings that they can donate to the community. So far the community in the Code area did not receive any help from other stakeholders like the government or private parties to rebuild the bridge which tend to be a shortcoming of the social capital.

The social capital of the Code Kampungs does not look to be worthless. In the contrary it seems to be pretty valuable. Certainly on the short-term individuals can appeal to the community to cope and recover from lahars like sheltering at the home of other community members. But the government and private investors are stakeholder that offer opportunities to change things on the long term. Either way the community can decide if they want to make use of this social capital, like they did with the implementation of new sanitary facilities. The facilities are not only implemented but the community also makes use of them which has resulted in a cleaner Code River. Nevertheless not all opportunities that are offered by the government is made use off by the community. As stated by Dr. Rachmawati (personal communication, April 3, 2017) the government has an available budget for new Rumah Sunsun in the Code area but it seems that the community does not want to make space for them. In chapter six of this research the underlying reasons are delivered by analysing the perception of Code residents about Rumah Sunsun.
Moreover the residents in the Code area seem to begin building vertical as well. Through long-term thinking they discovered some ways to be better protected against a lahar in the future. The house of Three is an example for this. by building an extra floor and remaining the first floor empty this family hopes to prevent the damage when the next lahar occurs. According to Dr. Djaka Marwasta (personal communication, March 27, 2017) this form of housing in called Rumah Pangggung in Indonesia:

“And some people uhm... built high level.. housing like we call it Rumah Pangggung, they construct with two storey building, the first floor is not used and the only use the second floor. You can look at the Code River that some, have very high building.”

This is not the only long-term thinking by the residents of the Code area. As the community leader of the LedokCode kampung Sugen (personal communication, March 23, 2017) his Kampung organises an yearly event in the form of lantern festival. They are busy with in getting more awareness among tourist in hope more tourist will visit the LedokCode kampung in the future. This will maybe result in an increase of the financial capital that can help to improve the other capitals. And in this way the community is doing an attempt to cope with the shocks and stresses of daily live but it can also lead to more capitals that will help to cope with a shock like a lahar in the future.
6 Perception of the low-income about vertical housing and the influence on their livelihoods

In this chapter the results of the perception about vertical housing in the Code area are presented. This section will discuss the findings of about the three forms of perception of the residents in the Code area. During the literature review of this research it was stated that the Indonesian population does not adapt that easy to live vertically instead of on the ground. However in 2010 it was explored in Yogyakarta that the community, both the surrounding and the residents, relatively having no difficulty in adapting their habit when shifting their daily life experience from horizontal situation to vertical housing (Swatso, 2012). The findings in this research challenge that statement, during the interviews with the Code residents it was made clear that the residents see a lot of drawbacks about living in a Rumah Susun.

6.1 Social-cultural perception

“Because it is not common in our country, in Yogyakarta also. We want only to have single houses, not stay in Rumah Susun. It is difficult for our culture to do that. But you know that now the situation in Yogyakarta is changing, so many apartments now built in this area. It is a result of the development of Yogyakarta I think, a part of the people especially for the high-income family. Now they want to move, to stay in the apartment. But not for the low-income family I think. It is religion and culture”. (Dr. Rini Rachmawati, personal communication, April 3, 2017)

The quote mentioned above was the answer of Dr. Rachmawati to the question why most of the respondents said that they do not like to live in a Rumah Susun. This quote shows briefly that the Indonesian culture is an important underlying aspect of the perception of the low-income towards Rumah Susun. During the analyze some social-cultural aspects why the low-income of the Code area do not want to live in a Rumah Susun were found.

Starting off with the fact that the daily lives of Code residents mostly take place outside and not inside their houses. During the fieldwork the activity on the Kampung streets was remarkable, people were hanging with their neighbours in front of their houses, others were training their pigeons and people were working in there shop or warung located on the streets. A quote of Dr. Estuning Tyas Wulan Mei (personal communication, March 30, 2017) describes an important housing priority in Indonesia:

“If you talk about houses in Yogyakarta especially we always think about house and yard and something which is really in the ground”.

As pointed out in the quote the people in Yogyakarta do no only think about the house itself but also its surroundings, like a yard or place to sit in the front of the house. It is part of their culture do undertake most of their daily practices around their house instead of in. As discussed most of the Code residents are former farmers who came to Yogyakarta in order to find work. Keeping this in mind it slightly clarify other activities on the streets of the Code kampungs. For example, many residents still own some poultry for own consumption. It would be hard to maintain practices like this on the second floor of a walk-up flat. The composition of the Rumah Susun seems not to match with the current livelihood of the Code residents, due to the fact that the transition from a rural – to an urban lifestyle is still in process in Indonesia. There is another cultural aspect that has a negative influence on the perception toward Rumah Susun. As discussed in the section about physical capital in chapter five most of the residents built their own house. Dr. Djaka Marwasta (personal communication, March 27, 2017) confirmed that not only low-income residents built their own house due to their poor economic condition, but people from all income classes construct their own residence. It seems to be part of the Indonesian culture and not a phenomenon that only occurs in the Code area.
According to the Ministry of Housing the Republic of Indonesia (2009) about 67% of the households in Indonesia construct their own house. In opposite, only 3% of the household bought their house from a developer (Ministry of Housing the Republic of Indonesia, 2009). Constructing your own house seems to be common and an important aspect of the Indonesian culture instead of renting or buying a house fabricated by the government, developer or another stakeholder. This cultural aspect is noticed in the livelihood of the Code residents, as explained in chapter five most of the settlement in the Code area is built by the residents themselves, and some of them even had to rebuild it after the lahar in 2010 without making a big deal about it.

The last social-cultural aspect is also slightly devoted to the economic perception. During the interview with Dr. Estuning Tyas Wulan Mei (personal communication, March 30, 2017) she mentioned:

“People have negative perspective of Rumah Sunsun which is dedicated for those who have no or less income”.

As discussed in the theoretical framework Rumah Sunsun are apartments provided by the government for the low-income. Rumah Sunsun are established by the government in order to provide proper housing for the (economic)-poor part of society. However the social cause of proving Rumah Sunsun is positive, there is also a negative social effect in relation to status glued to living in a Rumah Sunsun. According to Dr. Estuning Tyas Wulan Mei (personal communication, March 30, 2017) people have an negative association with Rumah Sunsun because they are only determined for people with no or less income. Living in a Rumah Sunsun can be seen as a reflection of the low-economic situation that the residents need to deal with. So it is imaginable that people are not proud to admit that they live in a Rumah Sunsun or are too proud to move into a Rumah Sunsun apartment.
6.2 Social-economic perception

In chapter five under the section financial capital it is already mentioned that a small plot of land is a really valuable asset for the people in Indonesia. On forehand of the interviews, the importance of this asset was unknown. During the interviews with the Code residents it was remarkable that most of the residents reacted fiercely against hiring an apartment in a Rumah Sunsun. Logically most people would choose to own above hiring but the antipathy against hiring was remarkable. This antipathy was point out during the interviews with experts and they made some important thing clear about hiring in Indonesia.

“The most important asset for a household is land here in Indonesia (Djaka Marwasta, personal communication, March 27, 2017)”.

According to Djaka Marwasta (personal communication, March 27, 2017) the housing system in Indonesia is totally different from Europe. In Indonesia it easy to buy a piece of land and apparently it is the most important asset for a household. Land is such a valuable asset in Indonesia due to the renting system of the banks in Indonesia. Without a land certificate the bank cannot give you a credit (Djaka Marwasta, personal communication, March 2017). In Indonesia banks only provide loans to people who own a piece of land. This plot of land acts as an insurance for the bank so that the bank can retrieve the plot whenever the receiver of the loan can’t meet the agreed requirements. However the possibility to acquire a loan from the bank can be very important for people, in order to realise a shop, warung or other small business. Especially for the people in the Code area because they do not have enough savings due to their low-income. It is not possible to get a land certificate when you hire an apartment in vertical housing (Djaka Marwasta, March 27, 2017). The result of this system is that people try to avoid renting a residence and prefer to buy a small piece of land instead.

“You have land everything you can do, but if you do not have land you have a lot of handicaps for taking credit. And so the renting is not familiar and not very popular in Indonesia. It means that you do not have an asset. So only a little piece of land that is not suitable for living... It is much more to have land like that comparing to renting a very good building (Djaka Marwasta, personal communication, March 27, 2017)”.

The quote of dr. Djaka Marwasta (personal communication, March 27, 2017) gives a good insight into the effect of renting an apartment on the daily practices of people. Whenever someone rents a (vertical) apartment and do not own a land certificate, the person will limit his own financial - and human capital. Because of the current renting system the possession of a land certificate is very valuable which makes it less appealing for the Code residents to move to an apartment in a Rumah Susun. And there is another reason why vertical housing affects the financial – and human capital in a negative way. During the interview with Mrs. Mulyani (personal communication, March 30, 2017) resident of the Jogoyudan kampung she mentioned why she would not like to live in a Rumah Sunsun:

“How higher you live how lower the rent; the rent at the second floor is 100.000 rupiah. But you can’t run a shop from the second floor (Mulyani, personal communication, March 30, 2017)”.

Mulyani (personal communication, March 30, 2017) owns her own shop that she runs on the street in the front of her house. This is a phenomenon that is really normal in Indonesia and occurs everywhere around the city of Yogyakarta. Logically it would not be good for the business of mrs. Mulyani (personal communication, March 30, 2017) if she would run her shop on the second floor of a walk-up apartment.
Most of her customers are people who pass-by her shop when they walk through the kampung. This street venues and business are part of the Indonesian culture and it is hard to maintain when residents move to vertical housing. And of course the Code resident does not want to give up their culture which makes their perspective towards vertical housing not any better. However one of the respondents is living in a Rumah Susun but he also owns a shop in another settlement located on a piece of land that he owns. In this case Mr. Purwanto can live in a Rumah Susun without the limitation to get a credit from the bank or to miss customers, because his shop is not located in front of his second floor apartment. Nevertheless Mr. Purwanto (personal communication, 2017) admits that he has a luxury position that most of the Code residents do not have.

Until now only disadvantages of living in a Rumah Sunsun are discussed but during the interviews also a positive aspect of living in a Rumah Sunsun was mentioned. The rents of the apartments are really low as stated in the quote of Mulyani (personal communication, March 30, 2017) above the rent at the second floor is only 100.000 Rupiah. The rent of an apartment on the first floor of a Rumah Sunsun is 150.000 rupiah, how higher you live how lower the rent (Mulyani, personal communication, March 30, 2017). As Appendix III shows most of the Code respondents earn around the 1.000.000 RP a month and as stated in the theoretical framework in Indonesia you are classified as low-income when you earn between the 1.000.000 and 2.500.000 RP a month. This means that the fixed living cost when hiring an apartment in a Rumah Susun are really low.

“For the urban people right now, especially living in the, near the Malioboro or near the central district area. They do not mind to live in Rumah Susun because it is a lot cheaper than rent houses and it is also subsidized by the local government however it is not easy for people to obtain the Rumah Susun. Why? because usually the Rumah Susun is designed for those who have the ID-cards from the area (Dr Estuning Tyas Wulan Mei, personal communication, March 30, 2017)”.

The low rents make the Rumah Susun apartments more attractive to hire in comparison with other rent houses. However you need to fit in to the set up circumstances.
6.3 Political perception
As stated in the quote of Dr. Estuning Tyas Wulan Mei (personal communication, March 30, 2017) in the economic perception section the Rumah Sunsun are intended for the people who already live in the area where the Rumah Sunsun is built. The government took in account that the Rumah Sunsun are built for the people who already live in the area instead of foreigners. So that the current residents will not be pushed out of their current living environment, which is honoured in the kampungs which contain a very strong community band.
Mr. Purwanto (2017) the only respondent who lives in a Rumah Sunsun explained that production of his Rumah Sunsun in the Jogjudan kampung was in cooperation with his community and the local government. Mr Purwanto (2017) seems to be happy with his Rumah Susun apartment;

“Before Rumah Susun there were many houses that were broke down for making space for the Rumah Sunsun. I like the Rumah Susun because I feel more safe in it. But I do not like the Rumah Sunsun because they feel less comfortable and you have to pay rents. The government wants to build more Rumah Sunsun, the community of this kampung feels oké about it (Purwanto, 2017).”

According to Purwanto (2017) who is the community leader of the Jogojudan kampung the community feels oké about it. The last words of this phrase seem to suggest that residents are not complete convinced of this building plan. This got confirmed by Dr. Rachmawati (personal communication, April 3, 2017);

“They already prepared funding for Rumah Sunsun. But the problem is, that there is not enough land, not only in the center of the city, not only in the Code area, but also in the sub district. That I already said to you before. In the other site of location, the problem only how to provide the land. To build the house. But government, central government. They have the money, ready to build Rumah Sunsun, but the problem is there is no land to build this (Dr. Rini Rachmawati, personal communication, April 3, 2017)”.

The government is struggling to get to an agreement with the Code resident to create a building site for new Rumah Susuns, however they already prepared funding for the construction of it. The realisation of the Rumah Sunsun in the Jogjudan kampung is an example of a successful collaboration between the Code community and the local government. However it is a time-consuming process if you consider that these four Rumah Sunsuns were built in 2007 as stated in chapter five. Until now, twelve years later, still not more Rumah Sunsun have been realised near the Code River although the budget is available. Nevertheless it seem that the government until now did not have succeed to come to an agreement with all the residents of the Code community to point a new location where space will be made to build some new Rumah Sunsuns. Yet it seems that the existing Rumah Sunsun did not have made enough impression at the Code residents in order to convince them to build more Rumah Sunsuns. In the end you could say that the government do bid some service for the Code Kampungs in the form of realising budget for new Rumah Sunsuns. However up to this point the Code residents did not have honoured this government service. So the question rise if this service suffice the aspiration of the Code residents. On the other hand it can also be neglection of the Code residents as Ms. Wijilestari (2017) stated:

“The government can’t improve the quality of live, it depends on how the individual itself react on it. The people need to improve the quality of live by themselves, you can’t improve it by an program of the government.”
Ms. Wijlestari (2017) is a respondent from the Tunkangan Kampung. According to her opinion the government cannot make the Code area a less vulnerable place to live by for example placing Rumah Susuns. In the end it are the people themselves that need to show willingness to improve their lives, but in the end many of them are too lazy to do something about it (Wijlestari, 2017). This might counter the argument that government service of funding budget to provide Rumah Sunsun does not suffice the aspiration of the Code residents. However there are also sound that tip to other desires provided by the government in the Code kampungs.
7 Conclusion

This chapter contains an answer to the central research question and tries to generate new insights in the perception of the low-income about vertical housing, the effect of vertical housing on the daily practices of the Code residents and the effect of vertical housing on vulnerability. This is done by answering the main research question and linking the empirical results of chapter five and six with each other and to the theoretical findings. In the two previous chapters the perceptions of the Code residents towards vertical housing and the livelihood in the Code area are discussed. In this conclusion the finding of both chapters are linked together and it analysed if the implementation of more Rumah Susun would change the livelihood in the Code area. Thereby it is discussed if building Rumah Susun can contribute in making the Code area a less vulnerable place to live. Furthermore this chapter contains recommendation for future studies, related to the main concepts of this research, and a critical reflection on the process and conduction of this research.

The main research question is outlined again in order to make clear what is particularly important for this research and to provide answers that are in correspondence with this question;

“What is the perception of the residents of the Code River about vertical housing, and how will this affect their practices?”

What can be derived from the analysis is that the perception from the Code River residents towards vertical housing is mostly negative. The current form of vertical housing for the low income seem not to fit their cultural as well their economic desire. Building your own residence is part of the Indonesian culture and still seem to be very valuable. Not only because of the cultural aspect but renting a fabricated apartment by the government is according to the Code residents also economically less appealing. The main cause therefore is the current renting system. This system makes it not possible for people without a land certificate to get a credit from the bank. While it is hardly possible to own a land certificate and rent an apartment in a Rumah Sunsun. A side cause is not only economic but cultural as well. In Indonesia, homes are used for (informal) economic activities which would be harder to conduct from an apartment in a multi-storey building. These informal economic activities are still an important part of the Indonesian culture and determine a tremendous part of the livelihood in the Code kampungs. In addition most of daily practices from the Code residents do not take place in their houses but in the surrounding of their residences. On the other hand there are also a few positive aspects in the perception towards vertical housing. The Code riverbank is a very popular area to live due to the proximity of Marioboro. Nevertheless the rents of apartments are still very low. The original inhabitants of the kampung are not driven out the Code area by new residents because the Rumah Susun apartments are designed for those who have a ID-card of the area. Overall the residents seem to be positive about the assistance that the government offer to the community. But in the end the overall perspective towards vertical housing seem to contain more negative aspects then positive aspects.

Although the residents do have a negative perspective towards vertical housing this research did also find positive aspects, for the livelihood in the Code area, that the implementation of vertical housing could bring. Vertical housing seem to have side effects that could affect the local economy in a positive way. By the implantation of vertical housing more open areas can be created. On the long term these spaces could function as green areas for ecotourism. This would not only provide new jobs but also have a positive influence on the current (informal) economic activities like local warungs and shops in the area. During the interviews it became clear that the residents support more touristic activities, like ecotourism, in their kampungs. In the current situation the accessibility of the kampungs is too low to attract or conduct more touristic activities, the space made free by the implementation can help to improve this. The advantages of
a better accessibility will not only be financial it will also result in a less vulnerable area. When the areas is less dense it will be easier to escape from a lahar disaster. In addition the Rumah Susun seem to be less vulnerable for damage by lahar then the current settlement on the ground. The residents would like to see the possible side effects of the implantation of vertical housing in their living area but in the end there attitude towards vertical housing, in the current form of Rumah Susun, is still negative. It seems that most of the residents would not like to give up their current ‘horizontal house’ for a ‘vertical’ apartment in a Rumah Susun. Although the implantation of vertical housing could lead to benefits for the whole community. There a few underlying reasons that clarify this situation, living in a Rumah Susun contains a few flaws that only will count for the person that lives vertical and not for the community as a whole.

As stated in the section about the social-economic perception living in a Rumah Susun has one disadvantage that has a very bad influence on the financial - and human capital of the Rumah Susun residents. Which is a result of the current renting system. Of course the financial capital will deteriorate due to the fact that the access to credit will disappear. This will also result in a decrease of the human capital due to the slink of the accessible labour. Without an loan from the bank it will be hard for the residents to start their own business like a small shop or a warung. If you see the current livelihood these small enterprises are really important for the Code residents. In addition a change from the current residences to Rumah Susun would have a major impact on the kampung culture which results in a disturbance of the current daily practices. According to the residents it would not be possible to maintain their ‘street-culture’ when they would live at the second floor of a Rumah Susun. It is conceivable that vertical housing fade away the current ‘street-culture’ which would influence the current social capital in a negative way. Because of this unique culture the social cohesion and the community bond in the kampungs are very strong. It would be a shame if this strong community bond would drop out.

The implementation of Rumah Susun seem to effect the cultural, economic and social vulnerability in negative way according to the perceptions of residents. However the physical vulnerability seem to improve by the implementation of Rumah Susuns. For example the residents from the Rumah Susuns in the Jogjudan kampung experienced less damage from the lahar of 2010 then the other Code residents. In addition the physical capital also improves because the implementation of Rumah Susun made the area less dense. For example the Jogjudan Kampung was the only visited kampung that is accessible by car (see picture 6). In addition the space created by the implementation of Rumah Susun can be used for new efforts as open green areas. Which can function as a fundament for the start of ecotourism near the Code Riverbank which is pursued by the residents. On the long term this could result in a positive effect on the financial, physical, and natural capitals in the Code area. Which would be the result of the side effects of implanting Rumah Susun.

But the low income has other priorities and does thinks less on the long term. The residents prefer to improve other vulnerabilities first before they defend themselves better against lahars. They take the high physical vulnerability for granted because they experience other vulnerabilities as more important to improve. For example their low-economic condition, they are happy that they can work at the Marioboro and feel okay with the fact that their homes can be prone to a lahar disaster. The Rumah Susun should contain more selling points then only providing protecting against a lahar. For the Code residents, the urban poor of Yogyakarta, the other vulnerability aspects are as important or maybe even more important than their physical vulnerability.
In the end the implementation of vertical housing, in the form of Rumah Sunsun, seem to make the Code area less vulnerable if you take in consideration that the physical vulnerability is the most important for this research. In addition the open areas that will be created as a side effect of the Rumah Sunsun can have a positive influence on all the five capitals due to the new opportunities like ecotourism. The Code residents seem to understand that vertical housing can offer good opportunities for the area. Only the current form of vertical housing, in the form of Rumah Sunsun, contains too many personal drawbacks for their residents according to the respondents. The living conditions of the Rumah Sunsun apartments are not in line with the daily practices of the residents and do not fulfill their needs. In addition the current renting system does not help to make living in a Rumah Sunsun more appealing for the Code residents. The adaption of vertical housing in the Indonesian culture will keep struggling whenever these two matters do not change.
7.2 Recommendations

In this sub-section recommendations for further research are given by looking at the most interesting findings and conclusion.

An important cultural aspect in this research is the fact that most Indonesian people from diverse income classes like to build their residence on their own bought piece of land. It seem that buying and especially renting a fabricated residence is pretty new for the Indonesian society and not completely naturalized in the Indonesian culture. This leads to two different assumptions which can be the base for further research in the future. On one hand you could say that you need to respect the culture and adapt new ideas that fit in the current cultural situation. The government is not the only stakeholder that tries to make the Code area less vulnerable by creating and providing budget for the built of Rumah Susun. Residents of the Code area also adjust their practices because of the lahar threat. For example by building an two floor apartment where the floor on the main ground will not be used for daily practices so that the damages of a potential lahar is minimalized. Instead of building Rumah Susun the government could help this forms of “bottom-up” planning. Further research should explore this field and find out how this kind of planning could be applied.

On the other hand the government can also look for another form of vertical housing that match better with the current livelihood an contains the most valuable aspects of the Indonesian culture. By adapting other unique selling points to the current form of Rumah Susun. This research point out that certain cultural aspects like hanging around in front of the house and keeping poultry are very valuable for the low income Indonesian society. The current form of vertical housing is not optimal for certain cultural aspect. Further research should point out if other vertical housing construction can be made more attractive by adapting certain important cultural aspects.

This research pointed out that it are not the rental prices that scare off to rent an apartment in a Rumah Susun but the fact that you cannot get a land certificate that is such a valuable asset. Further research could aim at finding a way how the vertical hire system could be interweaved in the current renting system in Indonesia.

In the end the question rise if vertical housing regulated by the government is the best way to make the Code area a less vulnerable place to live. The residents themselves are also changing their practices in order to decrease their ‘physical’ vulnerability. For instance the Tree family that made their house two storages high to avoid the lahar that will only hit the first floor. Instead of providing budget for the construction of Rumah Susun the government could consider to assistance initiatives like the one of Tree’s family. Further research is required if such bottom-up planned initiatives can be assist by the government.

Instead of building vertical this research wants to point a few infrastructural interventions that can help to decrease the vulnerability in the code area. Other physical interventions then building Rumah sunsun like improving the walls or deepen the river are expected as useful by the residents. The walls besides the river are not the same height on both sides of the river. On the side of the LedokCode kampung and Tukangan kampung the wall only contains an old part it would of course help if this wall get the same height as the wall on the side of the river. Instead of increasing the walls the government could also explore the options of dredging the river. This would help to process the lahar in a faster way. The residents pointed out that they also miss the bridge, between the LodekCode kampung and JogoJu dan kampung, that was destroyed during the lahar of 2010. By restoring this bridge the government would decrease the vulnerability of the Code area in many different aspects.
7.3 Reflection
This final section reflects on the whole process of this conducted research in Yogyakarta. I knew immediately that I wanted to do a research project abroad in Indonesia, when the opportunity crossed my path. To find an interesting and challenging research topic I started to read some articles of the Indonesian Journal of Geography published on the UGM website. Eventually an article from Budiarti and Rachmawati (2016), about the vulnerable situation of the settlement and their inhabitants in the riverbank of the Code River, had my attention immediately. In this article three forms of urban renewal are proposed as a possible solution to decrease the vulnerability of the settlements in the riverbank. Processes like urban renewal have always been one of my main interests in my field of study, so I decided to find out the perceptions, about these three forms of Urban renewal, of the inhabitants near the Code River. However during my stay in Yogyakarta it became clear that my topic was too wide and not relevant enough. According to the experts open green area and relocation are absolute not relevant for the current situation and are only plans that can be implement on the long term. However they also told that vertical housing is an actual topic at the moment due to small aversion against vertical that a part of the Indonesian society has. This was also remarkable during the interviews with residents which made it very interesting for this research to make the perspective of low income towards vertical housing the main focus of this research.

Of course this research experienced some disadvantages because of the change of topic. If I knew this change on forehand, the interview guide of this research would have been different. For example it would have been interesting if there was asked a question that would put a light on the positive sights of living in a Rumah Susun. In addition the selection of respondents would have been different. Now the findings of this research are generally based on the perspectives of residents who do not live vertically. Obviously it would have been more interesting to compare those perspectives with the perspectives of people who do live vertically. So afterwards it is a pity that only one resident who lives in a Rumah Susun has been interviewed and not more.

One of the main challenges of this research was the language barrier that had to be overcome, in order to receive answers during the interviews. In the end this turned out to be not a big problem at all. By the help of two UGM students and the respondent Tristan Three I was able to understand most of the conversations during the interviews, which made it possible for me to still make use of the semi-structured interview concept, and deviate a bit from the interview guide if it was helpful.

However the language barrier does have an (negative) effect on the interview results in a certain way. Due to the fact that there are no interview transcripts (in English) there is a chance that some useful insights and information is lost. Without the interview transcripts there is a bigger chance of a misinterpretation of the interview answers due to the fact that the surrounding sentences and context are unknown. In addition the fact that all the interviews with the residents are translated does not help to ban any miscommunication or interpretation in this research.

This research contains a lot of quotes and statements of the respondent Three in comparison to the other Code area respondents. Immediate cause for this is that all other Code area respondents only spoke Bahasa Indonesia, expect for Three who also spoke English. His English was not sufficient enough to do the whole interview in English but still he did answer some question in English, which made it more easy to note his quotes. In addition Three was really helpful during my stay in Yogyakarta, he accompanied us during the fieldworks and helped us finding respondents to interview. So there were many other moments beside the official
interview that I spoke with Three about this research topic. Of course it would have been better if this research contained more quotes from other residents as well. In the end I am very pleased with the final version of this research and with all the experiences this research brought me. I really enjoyed it to conduct this research abroad and to learn more about the Indonesian culture and get an better understanding of the livelihood near the Code River. One of the things that pleased me the most was the hospitality of all the people that I met in Yogyakarta. From the experts and students of UGM till locals and residents in Yogyakarta, they all did a huge effort to help me in finishing this research, which I am really grateful for.
Reference list


Photographs:


Figures:


Interviewguide Residents
First of all many thanks for participating in this interview. We are students from the Radboud University in Nijmegen, the Netherlands. We are currently doing different researches about the Code area which are related to Urban Renewal, Environmental justice and dualism in Spatial Planning. Before we start this interview, we would like to ask if it is okay that we record this interview (If the interview is in English). This way, it will be easier for us to analyse this interview and use it in our research. Everything you will say will be handled with care and will stay inside our research.

1. Background information about the interview participant
   - What is your age?
   - What is your profession? And in which area do you work?
   - What is your origin?
   - What for level of education do you have?
   - What is your average monthly income? (We are not sure if we can ask this. It might be rude, so that is up to your judgement.)
   - In which area of Yogyakarta do you live?
   - Why do you live here? (What was the reason that you chose to live here?)
   - If you had the opportunity to life somewhere else would you do that, and so yes where would you live?
   - Who is the owner of the building your live in?

2. General
   - What do you know about the dangerous caused by the Merapi in this area?
     o Did you ever experienced lahar/flood or other natural disasters?
     o How do you perceive the risk of lahar/flood?
     o Do you feel like you live in a unsafe environment?
     o Do you think that there can be done more about preventing your neighbourhood from those disasters?
     o What would you like to change in the area to decrease the amount of destruction caused by those disasters?
     o Did you experienced more floods or lahars last year’s then before?

3. Urban Renewal
   - Would you like it to live in a Rumah Sunsun, and why would you like it or why not?
   - Do you see opportunities for ecotourism in this area, and why do you see them? And would you like to participate in ecotourism, and why do you do so?
   - How do you think that the quality of life in the area could be improved by Urban Renwal?
   - Would you like to participate in making a urban renewal strategy for this area? What kind of urban development would you like to see in this area?

4. Environmental Justice
   - Did many people moved in the area last ten years, and how do you see this?
5. **Dualism in Spatial Planning**

- Do you think if you get more power in decision-making as a normal citizen, the awareness of the risks of the Merapi will get better?
- Do you think that more awareness of outcomes can lead to less vulnerability of the exposure of lahars?
- Do you think that a coalition between experts and local people could lead to better solutions against the outcomes of eruptions of the Merapi? (Do you maybe have any examples?)
Appendix II

Interviewguide Experts
First of all many thanks for participating in this interview. We are students from the Radboud University in Nijmegen, the Netherlands. We are currently doing different researches about the Code area which are related to Urban Renewal, Environmental justice and dualism in Spatial Planning. Before we start this interview, we would like to ask if it is okay that we record this interview (If the interview is in English). This way, it will be easier for us to analyse this interview and use it in our research. Everything you will say will be handled with care and will stay inside our research.

6. Background information about the interview participant
   - What is your profession in this university?
   - What for level of education do you have?
   - In which area of Yogyakarta do you live?
   - Why do you live here? (What was the reason that you chose to live here?)

7. General
   - What do you know about the dangerous caused by the Merapi in this area?
     - Did you ever experienced lahar/flood or other natural disasters?
     - How do you perceive the risk of lahar/flood?
     - Do you feel like you live in a unsafe environment? If the respondent lives in the Code River area
     - Do you think that there can be done more about preventing your neighbourhood from those disasters?
     - What would you like to change in the area to decrease the amount of destruction caused by those disasters?
     - Did you experienced more floods or lahars last year’s then before?

8. Urban Renewal
   - How is the perception of people in Yogyakarta about the Rumah Sunsun?
   - Does the government want to build more Rumah Sunsun in the future, and why do they do so?
   - Do you see opportunities for ecotourism in this area, and why do you see them? And do you think residents of the Code area like to participate in ecotourism, and why do they do so?
   - How do you think that the quality of life in the area could be improved by Urban Renwal?
   - Are people willing to participate in making a urban renewal strategy for this area? What kind of urban development would they like to see in this area?

9. Environmental Justice
   - Did many people moved in the area last ten years, and how do you see this?
   - Do you think the people are capable of building-up their livelihoods by themselves?
   - Is there any formal or informal cooperation between the residents to build-up their livelihoods again?
   - Do the people get any form of public support, so they are better able to build up their livelihoods again?
- Do you think that potential destruction of lahars restraints the development of the residents in an economical educative way?
- Do you think that climate change has any significant effect on the frequency or power of lahars?

10. Dualism in Spatial Planning
- Do residents participate in making planning documents?
- What do you think about the top-down planning that is used in Indonesia?
- Do you think if the residents of Code River area get more power decision-making, the awareness towards the risks of the Merapi will get better?
- Do you think that more awareness of outcomes can lead to less vulnerability of the exposure of lahars?
- Do you think that a coalition between experts and local people could lead to better solutions against the outcomes of eruptions of the Merapi? (Do you maybe have any examples?)
- What do you think about implication of bottom-up planning in Indonesia?
Appendix III

Resident of the Code River area

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<tr>
<th>Resident</th>
<th>Name</th>
<th>Sex</th>
<th>Age</th>
<th>Income</th>
<th>Education level</th>
<th>Kampung</th>
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<tbody>
<tr>
<td>1</td>
<td>Mr. Sugeng</td>
<td>Male</td>
<td>33</td>
<td>800.000 RP</td>
<td>Elementary school</td>
<td>LedokCode</td>
</tr>
<tr>
<td>2</td>
<td>Mrs. Fitri Aminah</td>
<td>Female</td>
<td>34</td>
<td>0 RP</td>
<td>Elementary school</td>
<td>LedokCode</td>
</tr>
<tr>
<td>3</td>
<td>Mr. Sugeng Purwanto</td>
<td>Male</td>
<td>58</td>
<td>1.300.000 RP</td>
<td>Junior Highschool</td>
<td>Jogojudan</td>
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<tr>
<td>4</td>
<td>Mrs. Sri Mulyani</td>
<td>Female</td>
<td>53</td>
<td>1.000.000 RP</td>
<td>Elementary school</td>
<td>Jogojudan</td>
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<tr>
<td>5</td>
<td>Mrs. Sri Wijilestari</td>
<td>Female</td>
<td>47</td>
<td>5.000.000 RP</td>
<td>University degree</td>
<td>Tukangan</td>
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<tr>
<td>6</td>
<td>Mr. Trisan Three</td>
<td>Male</td>
<td>18</td>
<td>0 RP</td>
<td>Vocational High School</td>
<td>LedokCode</td>
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<tr>
<td>7</td>
<td>Mr. Agus Sutanto</td>
<td>Male</td>
<td>42</td>
<td>2.500.000 RP</td>
<td>Junior Highschool</td>
<td>Tukangan</td>
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<tr>
<td>8</td>
<td>Dr. Djaka Marwastani S.Si, M.T.</td>
<td>Male</td>
<td>46</td>
<td>5.000.000 RP</td>
<td>PhD</td>
<td>Kampung is located in the Sleman Regency</td>
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<tr>
<td>9</td>
<td>Dr. Rini Rachmawati S.Si, M.T.</td>
<td>Female</td>
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<td>PhD</td>
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<tr>
<td>10</td>
<td>Dr. Estuning Tyas Wulan Mei S.Si, M.Si., M.Sc.</td>
<td>Female</td>
<td>-</td>
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<td>PhD</td>
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Participant Function

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<th>Participant</th>
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<tr>
<td>Sugeng</td>
<td>Community leader of the Ledok Code village, also known as ‘artist village’. Works as a freelance operator, private owner of his house.</td>
</tr>
<tr>
<td>Fitri Aminah</td>
<td>Resident of the Ledok Code village, unemployed, private owner of her house.</td>
</tr>
<tr>
<td>Sugeng Purwanto</td>
<td>Community leader of the Jogoyudan Code village, works as an entrepreneur, rents a Rumah Susun.</td>
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<tr>
<td>Sri Mulyani</td>
<td>Resident of the Jogoyudan Code village, works as entrepreneur, private owner of her house.</td>
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<tr>
<td>Sri Wijilestari</td>
<td>Resident of the Code Riverside, works as an entrepreneur, private owner of the house.</td>
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<tr>
<td>Tri</td>
<td>Resident of the Ledok Code village, is a student, his house is privately owned.</td>
</tr>
<tr>
<td>Dr. Estuning Tyas Wulan Mei S.Si, M.Si., M.Sc.</td>
<td>A supervisor of the project with UGM who has done her a master on the subject of Spatial Planning and Risk management. She wrote her thesis about: land use planning for settlements area considering flood and landslide hazards in Bagelen Sub-district in Central java.</td>
</tr>
<tr>
<td>Dr. Rini Rachmawati S.Si, M.T.</td>
<td>Another supervisor of the project who did her undergraduate in Geography and her master in urban- and regional planning at UGM. She already did research about the Code River Area.</td>
</tr>
<tr>
<td>Dr. Djaka Marwastani S.Si, M.Si</td>
<td>Another supervisor of the project who did his undergraduate and master on the topic geography.</td>
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(De Louw, 2017)
### Appendix IV

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