Urban flood resilience in Jakarta

An historic analysis of institutions

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For my prince in shining armour

Voor mijn prins

Preface and acknowledgements

When I thought about what my thesis topic should be, I thought about the things that fascinate me the most. After much rumination, I thought about my love affair with the city of Jakarta, a dynamic city that houses the dreams of more than 10 million inhabitants, a complex playground of the rich and the poor. Moreover, I thought about the planning theories that have been the subject of disgust for many but a subject of infatuation for me. The complexity of planning theory have made me delve into the deeps of planning and made me have a deeper understanding of the field of study that have governed most of my still short academic life. Funnily enough, I discovered that I have a knack for theory and was able to see connections between theory and its potential for understanding the world. This ultimately led me to choose social ecological resilience to understand the complex urban reality.

This study would not have been possible without the love and support of the people in my life. Before I start thanking these wonderful people, I would first like to thank God Almighty for His never ending love and blessing in my life. Next, my biggest supporter and the love of my life, mijn lieverd, Martin. Due to his support in my time of weakness and never ending belief in my capability, did I find the strength to soldier on even in my time of illness. Also to my sweet mother who supported me during my stay in Indonesia, thank you for support, Jakarta is 'conquerable' because of you. My father for what he arrogantly says, his good genes and his constant reminders to finish my thesis. And all my family in Indonesia who keeps reminding me to come back to Indonesia, soon. To my Dutch family who have loved me and accepted me with open arms, Ik houd van jullie.

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Overview of the most commonly used abbreviations.

API (Adaptasi Perubahan Iklim) — Climate Change Adaptation

BAPPEDA (Badan Perencanaan Pembangunan Daerah — Regional Spatial Development Planning Agency DKI Jakarta

BAPPENAS (Badan Perencanaan Pembangunan Nasional — National Development Planning Agency

BKSP (Badan Kerjasama Pembangunan) — Cooperation Board for Development

BPBD (Badan Penanggulangan Bencana) Daerah) — Disaster Management Agency DKI Jakarta

BPLHD (Badan Pengawasan Lingkungan Hidup Daerah) — Environmental Protection Agency DKI Jakarta

Dinas UKM (Dinas Usaha Koperasi Masyarakat) — Community Micro-credit Agency

DKI (Daerah Khusus Ibukota) Jakarta — Special Capital Region Jakarta (provincial level)

DPRD (Dewan Perwakilan Rakyat Daerah) — Local representative counsels

DTR (Dinas Tata Ruang) — Spatial Planning Agency DKI Jakarta

Jabotabek — Former Jakarta metropolitan area consisting of JAkarta-BOgor-TAngerang-BEKasi

Jabodetabek — Current Jakarta metropolitan area consisting of JAkarta-BOgor-DEpok-TAngerang-BEKasi

Jabodetabekpunjur — Emerging Jakarta metropolitan area consisting of JAkarta-BOgor-DEpok-TAngerang-BEKasi-PUNcak-cianjUR

KPP (Komite Pengarah tingkat Provinsi) — Provincial Directing Committee - originated by MercyCorps to channel community initiatives

RANMAPI (Mitigasi dan Adaptasi Perubahan Iklim) — National Action Plan on Mitigation and Climate Change Adaptation

Musrenbang (Musyawarah Perencanan Pembangunan) — Jakarta's public forum

PDPP (Program Dasar Pembangunan Perkotaan) — Urban Development Area Programme

PERDA (Peraturan Daerah) — Regional Legalized Regulation

POKJA (Kelompok Kerja) — Working group

PRB (Pengurangan Resiko Bencana) — Mitigating Disaster Risk

RAD (Rencana Aksi Daerah) — regional action plan

RDTR (Rencana Detail Tata Ruang) — Detailed Spatial Plan DKI Jakarta (this plan is the basis for the District Spatial Plan)

RTRW (Rencana Tata Ruang Wilayah) — Regional Macro Spatial Plan DKI Jakarta (this plan is the basis for the RDTR)

SKPD (Satuan Kerja Pemerintah Daerah) — Regional Working Unit DKI Jakarta

Summary

Cities play an increasingly important role in the current globalized world, they are the centres of our physical, economic, social and political capital. Cities are fragile in nature prone to disturbances such as flooding and climate change. Due to this it is important to build resilience in order to deal with these vulnerabilities.

This thesis attempts to discuss resilience towards flooding in an urban context. Resilience is seen in terms of social ecological systems. This is a relevant theoretical perspective because it focuses on human-nature relations; cross-scale spatial dynamics in complex systems; and is interested in sustainability (Wilkinson, 2012). Planning also recognizes bio-physical boundaries, but it also focuses on substantive matters, how things can be carried out in practice. If planning is linked with the perspective of social-ecological systems, this can be used to research urban governance, how the cities as social ecological systems are governed.

In understanding social-ecological systems in cities, historical developments need to be considered as the structure and use of space in cities could be seen as a result of processes of decision making. These process of decision making, laws and regulations that regulate the system, and set way of behaviour are an integral part of institutions. Through time, these institutions have become embedded in urban governance systems. To understand this process, an historical approach is important because an historic analysis is more likely to reveal specific contextual circumstances needed for effective policy making. An historic approach is also better at capturing dynamic changes and has the potential to clarify context well. Historic processes of policy development cause path dependencies and lock ins that have set the course of cities' institutions to behave a certain way. Therefore, cities have to learn from the past in order to break away from the constraints and lock-ins that hinder them and develop resilient policies that can support them (Zevenbergen et al., 2008).

Understanding institutional circumstances for a city is essential for establishing effective policies. This thesis sets out to show how historic analysis can help achieve this goal. This thesis operationalizes resilience by looking at the process of planning (analyzed through institutional capacity building). It further specifies resilience for urban regions, focusing on place based planning policy aspects of flooding.

The main question of this thesis is: "how can the concept of resilience be specified for urban planning in Jakarta while taking into account flooding as well as the relevant path dependencies that play a role?" This thesis shows that based on international literature that indeed path dependencies of institutions influence urban flood resilience. Governance of institutions can be structured using criteria, as developed by Davoudi and Strange (2009), to build up a framework of resilience indicators. The criteria that they mention are: perceived role of planners; knowledge and skills employed; methods of engagement; institutional structures/ power relations; and modes of implementation. Institutional capital such as intellectual, social and political capital is a way to operationalize the capacity of governance.

The history of Jakarta shows that much of its current resilience could be explained by path dependencies and lock ins that influences its institutions. Many path dependencies can be traced back

until the colonial era. The most influential path dependencies are: expert based planning; low stakeholder involvement; leaders-based planning; low cooperation between different levels of government as well as inter-governmental; not learning from previous experiences (the same causes of flooding and responses to it); ineffective bottom-up planning due to strong institutional embeddedness of top-down planning and no building of social capital/building networks and relationships in order to deal with floods.

Besides these lock ins, the study shows new path formation after the Indonesian reformation that signalled the end of the thirty year long New Order regime of Suharto. Calls for more inclusive government system have led to new path formation in the shape of regulatory reform (fiscal decentralization and local autonomy); new partner arrangements (embedding of public participation in law and start up of public forums); recent political support and insight (forced by law); and taking into account knowledge of the public and communities.

Currently, Jakarta is only partially resilient to flooding. Jakarta's current situation shows high intellectual capital but low social and political capital. In practice this can be seen in resilient policies such as the inclusion of expert knowledge; high variety of knowledge being used by the government; attempts to gain knowledge from as many sources as possible; the inclusion of communities and citizens in plan making; and the emergence of forms of higher learning in the shape of improvement of routines, and new ways of thinking that include awareness raising efforts among citizens. Aspects of Jakarta's planning that are still non-resilient are related to low engagement in partnerships, either with citizens, NGOs, other government agencies or horizontal partnerships with other localities. Moreover, Jakarta's government seems unable to mobilize resources effectively and to take into account local knowledge of citizens and communities which leads to one-directional information flows. The research shows that these communities, however, have self-organizing potential that the government can tap into, if there is willingness to empower them. One way how this could be achieved is through enlightened leadership. The current governor of Jakarta is a prime example of the effects that leadership can have on policies, implementation of programs, as well as increased efforts for law enforcement.

Chapter 1: Introduction

1.1 Background

Cities play an increasingly important role in the current globalized world. They are places to invest, consume and live in. Cities are the centres of our physical, economic, social and political capital. Due to these capitals, cities play a pivotal role in today's society. However, cities also have a fragile infrastructure and many areas have seen a lack of concern about patterns and processes of development, exposing people and investments to environmental risks. Especially in the case of cities, this can lead to devastating effects (White, 2010). Because of this, cities need to deal with a number of risks. One way of doing that is to build resilience toward the consequences of environmental risks. One form of environmental risk that cities need to deal with is the problem of flooding. Historically, cities are usually located at strategic locations, such as in coastal regions, near waterways or at deltas. Most of the time these cities developed on flood free higher grounds, but often urbanization directed growth into low-lying areas with added risk of flooding. Urban planning can attempt to manage this vulnerability through implementing strategies of resilience.

Jakarta is a useful example to illustrate the need for expanding our policies and our understanding of resilience. This is because of the complexity of Jakarta's situation. The city hosts multiple interests that are often conflicting. On top of this, its physical environment makes the city vulnerable to flood risk. Jakarta is a large urban agglomeration of around 650 square kilometres. The city is located in a low laying delta where a couple of rivers flow into the Jakarta Bay. It locates the seat of the national government, and consists in itself five municipalities (North, East, South, West and Central Jakarta) that together form a provincial level of government. Added to this, parts of the urban area are located in the provinces of West Java and Banten. The complete urban region that Jakarta consists of had a population of 23.6 million inhabitants in 2008 (Salim and Firman, 2011).

The Indonesian government and the municipalities of DKI Jakarta currently try to deal with the challenge of making Indonesia's capital more sustainable. DKI Jakarta faces many planning related problems that it has to deal with to be able to move forward in the future. Jakarta has always experienced flooding, however lately this is getting more serious. This shows that the problem of flooding has to be dealt with. For instance, the flooding of Jakarta in January 2013 inundated 30 percent of the city, including its commercial centre (The Jakarta Post, 2013a).

Climate change proves to be another problem that Jakarta faces and will have to face in the future as this will lead to more problems, particularly sea level rise. This will put a strain on Jakarta's resilience to flooding that already appears to be low. In this case Jakarta mostly faces problems related to climate change in terms of sea level rise and flooding. Human activities lead to the emission of greenhouse gasses which causes to global climate change. According to Prasad et al. (2009), this climate change affects temperatures, causes sea level rises and induces a higher frequency of storms. Cities and urban regions will feel the impact of these occurrences, especially coastal regions such as DKI Jakarta. The whole of Asia has even faced over 550 floods that affected more than 850 million people since the start of this century.

Prasad et al. (2009) add that urban areas will experience the worst impacts of climate changes as these regions have the largest concentration of people and infrastructure. By 2030 Indonesia is expected to add 80 million people to its population. It is the duty of the urban governments and their communities to deal with the impacts of climate change and to the threats that they cause the region. Prasad et al. (2009) suggest that the essence of the response to climate change impacts are urban governance and management issues.

Sari et al. (2007) summarize some of the projected effects of climate change for Indonesia. According to them, climate change leads to an increase of two to three percent more rainfall per year in a shorter rainy season, which increases the risk of flooding. They also state that sea level rise will flood productive coastal zones, as melting ice caps in the Polar Regions lead to higher sea levels. In the Jakarta bay, the average sea level rise is projected to be 0.57cm per year while these effects are strengthened by land surface decline of 0.8 cm per year.

Social-ecological resilience is a relevant theoretical perspective to deal with Jakarta's problems at hand. There are a couple of reasons for this. Firstly, Leichenko (2011) mentions that literature on the subject of adaptation and mitigation in urban regions emphasizes improvement of resilience as key to reach this goal. Wilkinson (2012) names several other reasons why social-ecological resilience – that focuses on governance of social-ecological systems –is important for the field of planning. Firstly, it is recognized more generally that ecological considerations are of critical importance for urban studies, mostly due to the great impact of cities on the global environment. Besides this, planners more strongly recognize bio-physical planetary boundaries. Secondly, researching resilience focuses on substantive matters and not just on the process of planning. Thirdly, it is important to critically examine the theoretical assumptions of social-ecological resilience as the topic is becoming more and more influential in the discourse of urban policy. Finally, social-ecological resilience and planning offer a good possibility for inter-disciplinary learning as both subjects concern human-nature relations; cross-scale spatial dynamics in complex systems; are interested in sustainability and are directly related to domains of practice (urban governance and natural resource management).

Moreover, in understanding the social-ecological systems in cities it is important to take the historical developments into consideration. Cities, their structure and use of space, could be seen as a result of processes of decision making. These process of decision making, laws and regulations that regulate the system, and set way of behaviour are an integral part of institutions. Due to this of this, an understanding of institutions is crucial for understanding the possibilities for resilience-oriented policy making. Through time, these institutions have become embedded in urban governance systems. To understand this process, an historical approach is important because an historic analysis is more likely to reveal specific contextual circumstances needed for effective policy making. This enables a more context specific approach to embed resilience thinking in a way that is most suited for the city. An historic approach is also better at capturing dynamic changes and has the potential to clarify context well. Therefore, cities have to learn from the past in order to break away from the constraints and lock-ins that hinder them and develop resilient policies that can support them (Zevenbergen et al., 2008).

Despite the fact that cities are physical in nature, and exist within space, studies about resilience thus far have not fully addressed this. Resilience thinking has not taken into account that cities are

part of a larger system that consists of the physical, social and ecological aspects and that these aspects interact in a dynamic context, with continuous reciprocal nature. Space is considered only as a matter of "being", research so far has not touched upon the fact that space itself continuously changes and in the process affecting all internal aspects, such as the allocation of space. This impacts the way activities are structured and how the environment is shaped and also affecting the type of mobility that is produced.

The activities in cities are undertaken by multiple actors with differing interest and needs. This means that spatial plans should accommodate and should be a translation of these differing needs. Planning processes require effective governance, as governance is essential for building consensus and coordinating the planning strategies of all actors (Khakee, 2001). Furthermore, through these learning processes cities can learn and become more resilient. Folke at al. (2005) write that governance as purposive collective action can improve the city's adaptive capacity. They suggest that this adaptive governance is operationalized through concepts of social capital, networks and trust. These concepts are commonly known as institutional capital or institutional capacity building. Scientific literature therefore suggests institutional capacity building is a way to analyse processes of planning in the context of governance.

Despite the good reason why the concept of resilience can be a solution to Jakarta's problems, currently it is still a fuzzy concept: while it is increasingly being used in planning, it often has an engineering focus of ecological aspects that fails to properly take into consideration social aspects as well as aspects of space. Understanding institutional circumstances for a city is essential for establishing effective policies. This thesis sets out to show how historic analysis can help achieve this goal. This thesis operationalizes resilience by looking at the process of planning (analyzed through institutional capacity building). It further specifies resilience for urban regions, focusing on place based planning policy aspects of flooding. This thesis also takes into consideration the historical context that influences Jakarta's lock-ins, as understanding Jakarta means understanding its social-ecological system. Currently there are no systematic ways to analyze resilience of cities from its historical path dependencies. Because of these reasons, this thesis has theoretical and societal relevance.

1.2 Objective

The objective of the research is to establish a framework with indicators for water-resilient urban governance (of cities) to be used by researchers and policy makers, that clarifies resilience for cities and flooding and that can be used as a generic framework to identify the relevant lock-ins and assess resilience of cities.
A second objective is to use this framework for the case of Jakarta in order to identify and understand Jakarta's path dependencies, lock ins and current resilience.

1.3 Key research questions

Main question:

How can the concept of resilience be specified for urban planning in Jakarta while taking into account flooding as well as the relevant path dependencies that play a role?

Sub questions:

1. How do path dependencies influence urban flood-resilience?
   This research question analyses why path dependencies are useful in talking about urban flood-resilience. It explains from a theoretical perspective how resilience or non-resilience would lead to path dependencies that influence the current situation, institutional behaviour and possibilities in a city.
2. How does Jakarta's historic context influence its resilience to flooding?
   This research question will explore Jakarta's historic context and path dependencies that influence Jakarta's current lock-ins and factors that determine possible future solutions to Jakarta's problems.
3. How resilient is Jakarta to flooding?
   This research question will describe the currents state of Jakarta's resilience in the context of flooding.
4. What are implications of this research for Jakarta's resilience to flooding?
   This research question is a synthesis of the previous sub questions.

1.4 Methodology

The general process that was used in writing this thesis involves collecting qualitative data based on literature, policy documents, and interviews as well as analysis. In collecting the data based on interviews first the target group was determined. Purposive sampling was used which means that key informants were interviewed due to their high level of knowledge on the issue of this research. Initial key experts, stakeholders and target experts were determined based on their position in relevant organizations. After this snowball sampling was used based on further recommendations made by the initial respondents. Snowball sampling is particularly useful in reaching hard to reach and identify key informants.

Research question 1 is answered purely based on review of scientific literature. The literature was chosen using key words that are specific for this research, such as social-ecological resilience, governance, institutional capacity building, path dependency, lock in, water resilient cities. Through this literature review it was possible to form a framework of analysis. Through literature review it is possible to develop an overview of current and past scientific thinking about the aforementioned keywords, as well as to build a strong theoretical basis for the analysis.

Research question 2 is answered through the findings of the literature review and document analysis based on the stages of path dependencies in the context of the framework. The data that was used was historic data, which was gathered through articles in Indonesian magazines, scientific publications on the historic development of Jakarta, books that discussed Jakarta's planning history. This historic data shows the historical context of Jakarta, which is important because this makes it possible to get an overview of the limitations that influence Jakarta's future planning options.

Research question 3 is answered through interviews, policy documents, newspaper articles and government and NGO published magazines. The interviews were undertaken with:
- the provincial development planning agency (BAPPEDA)
- the Bureau of Spatial Planning and Environmental Protection
- the provincial Spatial Planning Agency (DTR);
- stakeholder in the Ministry of Public Works, Planning Division
- the provincial Agency for Disaster Management (BPBD);
- the provincial Environmental Protection Agency (BPLHD);
- the provincial Public Works Agency (specifically the managing unit of the East Flood Canal);
- the Indonesian Planning Association;
- MercyCorps, an NGO that deals with flooding and climate change in Jakarta;
- Indonesian planning experts from the Institute of Technology to ask them about the possibility in the case of Jakarta to use resilience and the policy problems that arise to implement this idea in Indonesian planning system.

The policy documents consisted of government regulations, the provincial spatial plan (RTRW 2030), documents released by the Ministry of Public Works. Policy documents show the current legalized and institutionalized government policies and practices that influence decision making. Interviews are essential in uncovering the current practices and experiences of key actors in Jakarta's planning. This gives a real portrait of the current situation. Newspaper articles also paint a picture on the most recent situation.

Research question 4 is answered through a synthesis of the previous research questions.

1.4.1 Method(s) of data analysis

The information that was collected will be analyzed through interpreting the interviews and classifying the interviews based on framework of resilience indicators. The process of analysis involves the transcribing of interviews, classifying the interviews, and interpreting the interviews. Classifying interviews means that the results from the interviews can be easily identified, compared, and analyzed (Hennink et al. 2011).

Literature analysis

Based on scientific literature a framework of analysis of resilience indicators was developed. This framework was used in the latter chapters as guidance for analysis.

Historical analysis

This analysis was carried out in order to identify the path dependencies and lock ins in Jakarta as well as the historic development of the measures to deal with flooding. First, an overview of Jakarta's planning history was made, where the analysis was partitioned based on the 4 major periods in Indonesia's history: Colonial Era, Sukarno Era, Suharto Era, and Post-Reformation Era. Then, based on the framework of resilience indicators the governance or processes of spatial strategies were discussed. These discussions lead to the identification of path dependencies in Jakarta as well as its

lock ins. This in turn could be used to enrich the discussion leading to the implications of this research.

Descriptive-interpretive analysis

Based on the framework of the resilience indicators, the resilience of Jakarta in present day is analysed. The analysis focuses on information from interviews, which are more current in nature than written documents, illustrating a portrait of the current situation regarding resilience on flooding. The interviews are supported by policy documents, as policy documents are the legal basis upon which planning in Indonesia should be based on. A descriptive-interpretive analysis allows for implications to be drawn which will help to answer the main research question and question 3. On top of this, this analysis forms the basis for the conclusion and policy recommendations.

1.4.2 Reflection on data collection

Data has been collected throughout 2013. In the months January until March, scientific articles were collected that formed the theoretical basis for the interview protocol. Interviews were undertaken in the months March and April during field observation in Jakarta. Information from interviews with planning experts, policy makers and practitioners was essential in answering the research questions. It was, therefore, necessary to visit these sources in Indonesia. Policy documents were also accessed during the stay in Indonesia in March and April. It proved hard to download all policy documents that were necessary for answering the research questions. Thus, it was necessary to access this information at the institutions that wrote them. As interviewing involved visiting these institutions in person, this was combined with accessing policy documents. This also proved a convenient way to access old issues of magazines on the topic of flooding, as these were collected at the institutions. Besides at these institutions, it proved that old magazines and books could only be found at special book markets that sell old magazines and books that were out of print. Throughout the time span of this research, a range of websites of Indonesian newspapers were accessed as these provide the most recent information on government actions related to flooding. This made it possible to access new information, even after returning from the field observation.

The range of data is sufficiently broad to be able to draw scientific conclusions. A wide range of actors from different governmental institutions has been interviewed which made it possible to compare information given by sources at one institution about another institution at the institution that has been talked about. This enabled a more critical perspective on the data as the information given could be checked for accuracy with other information. The interview contacts were determined based on the network of Indonesian planning experts, some of which acquired a PhD from the University of Groningen. After these initial contacts, snowball sampling was used to widen the range of interviewees. This proved was a good way to gain access to Indonesian institutions as it proved essential to have the right contacts. Due to this, it was impossible to arrange interviews at the national disaster management agency (BNPB), the national metrology agency (BMKG) and the centre for climate change studies. Undertaking interviews at these institutions would have made the sample of interviews more rich. The combination of undertaking interviews and reading policy documents proved a good way to discover the real practice of Indonesian governance. This can be seen from the

fact that many policy documents included certain policies, but information from the practitioners showed that the implementation in the field of these policies is absent. One aspect that would potentially enrich the information on the historic context would be to access old policy documents, government regulations and governmental guidance documents. It proved difficult to access these documents, even for government officials themselves.

1.4.3 Ethical Considerations

The main considerations for this research are the possible harm this research may incur to those involved. The participant responses will remain confidential and recordings of interviews will be protected in order to stay private. Access to data is limited to the researcher and any attempt by outside parties to access such data will be done with the consent of the participants.

Interviews were undertaken in offices of the respondents. This enabled the interviewees to feel at ease in their own surroundings and it gave them the opportunity to chose a convenient interview location in their office. Another reason for the interviewees to be open was because the author/researcher was recommended by people in their social network. Moreover, as a young researcher they were not intimidated and they connected with the researcher as a mentor-student relationship where they felt at ease to teach, explain and share their experiences.

Chapter 2: Theoretical Framework

2.1 Theory

This chapter tries to research how cities are understood to be resilient to flooding, particularly given institutions and their history. It will also explore the relationship between path dependencies and urban flood-resilience. Furthermore, urban flood resilience is also explored from the perspective of adaptive governance and the associated concept of institutional capital/capacity building. The literature was chosen from different sources of field of study such as ecology, evolutionary economics, and planning. Key words that were used are among others social-ecological resilience, governance, institutional capacity building, path dependency, lock in, water resilient cities. The objective of this chapter is to develop a framework of analysis that can be used to discover the flood resilience of cities and their historic path dependencies.

2.2 Literature review

2.2.1 Resilience for cities

This thesis focuses on social-ecological resilience, with urban regions as topic of research. This focus on urban regions relates to the term resilient cities as posed by Godschalk (2003). He argues for the need of resilient cities, mentioning the United Nations background paper on natural disasters from 2001, which states that sustainable development, international poverty reduction and environmental protection instruments need to take into account natural hazards and their impacts. According to Godschalk (2003), cities – due to their complexity - are vulnerable at many aspects such as infrastructure, energy and buildings.

Godschalk (2003:136) defines resilient cities as "capable of withstanding severe shock without either immediate chaos or permanent harm." Resilient cities should prepare for and anticipate the impact of hazards and get stronger and more resilient by learning from past disasters. Resilient cities should also develop resilient communities that can manage disasters. In this study, however, resilient city is not seen as recovering from shocks but as the ability of the city to adapt and learn from its changing system.

According to Godschalk (200:137) "a resilient city is a sustainable network of physical systems and human communities." The physical systems are the constructed and natural elements of the city, such as roads and buildings. These systems should be able to function under severe stress; otherwise a city will be very vulnerable to disasters. Human communities are the city's social and institutional components such as schools, organizations and agencies. Human communities need to be resilient to ensure a city's decision making ability; otherwise this also makes a city vulnerable.

Leichenko (2011) states that urban resilience of an urban system relates to the capability to keep its identity, key processes and structure functioning while dealing with disturbances. These shocks or stressors can be extreme climate situations as well as gradual changes in climate. Leichenko argues that in general cities not only face climate change but also economic, political and other

environmental problems at the same moment. For an urban system to be resilient, it therefore has to deal with many different types of pressures simultaneously. Leichenko lists some important characteristics that resilience cities need. They need to be flexible, diverse, have adaptive governance and should be able to learn and innovate. This is in line with the motivations underlying this research. Leichenko argues that urban systems need comprehensive resilience planning by including mitigation and adaptation plans for climate change with general development policies within the urban system. The characteristics discussed by Leichenko could be explained by the theory of social ecological systems.

Concluding, due to their complex nature, cities need to deal with many vulnerabilities. Resilience is a way for cities to deal with these vulnerabilities and to be able to withstand shocks as well as gradual changes without falling into chaos. Resilience has not only a physical aspect but also considers communities and institutions. After a shock a resilient city needs to adapt and learn from its changing environment.

2.2.2 Resilience of social-ecological systems in terms of cities

The previous section on resilient cities shows that cities need to be able to adapt to shocks and changing environments. In order to do this, cities need to be flexible, diverse, have adaptive governance and should be able to learn and innovate. Social-ecological systems (SES) theory explains these characteristics of adaptive and resilient cities through linking social and ecological systems. The study of SES began when ecologists started to research the social dimensions of ecosystem management (Jansen, 2011). Folke et.al. (2005:443) state that "the human dimension reflects properties of complex adaptive systems, such as a diverse set of institutions and behaviours, local interactions between actors, and selective processes, that shape future social structures and dynamics." According to Folke (2006), the term social-ecological system emphasizes that humans live within nature. It further emphasizes that separating the concept in both social and ecological resilience is artificial.

Definitions of resilience in SES
Folke (2006:259-260) interprets social-ecological resilience as "(1) the amount of disturbance a system can absorb and still remain within the same state or domain of attraction, (2) the degree to which the system is capable of self-organization (versus lack of organization, or organization forced by external factors), and (3) the degree to which the system can build and increase the capacity for learning and adaptation."

According to Adger (2000) the resilience of an ecological system relates to the way the system functions, not how stable component populations are or whether or not the system can stay in one ecological state. Adger (2000) relates the resilience of ecological systems to resilience of social systems. These social systems are related to resilience of the ecological systems on which they depend. Adger, however, mentions that there are essential differences between ecological systems and socialized institutions in terms of behaviour and structure. His definition of social resilience is "the ability of groups or communities to cope with external stresses and disturbances as a result of

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social, political and environmental change." (Adger, 2000: 347). According to Adger (2000: 349) "The resilience of an ecological system relates to the functioning of the system, rather than the stability of its component populations, or even the ability to maintain a steady ecological state. "

In conclusion, social-ecological systems link human and nature systems, as a separation of social and ecological systems is artificial and these systems mutually depend on each other. Literature distinguishes three types of social ecological resilience, but this thesis builds on the foundation that this resilience relates to the degree to which a system can build and increase the capacity for learning and adaptation. This relates to the whole system in contrast to only components of it.

2.2.3 Other branches of thought in human-nature relations

There are similar fields of study that discusses the importance of the understanding of human-nature interactions in cities. Such as ideas of urban political ecology and politics of urban metabolism, as developed by Heynen et al. (2006). These writers aim to untangle the economic, political, social and ecological processes that make up the current urban landscapes. Heynen et al (2006) use the metaphors of metabolism and circulation to describe how socio-metabolic processes urbanize nature. Both metaphors were associated with modern transformations of the city. The authors use the metaphors to see urbanization as a dynamic socio-ecological transformation process that fuses together the social and natural in the production of distinct and specific urban environments. Politicization of socio-physical circulation and metabolism processes is the core of their attempt to develop an urban political ecology and its associated politics of radical democratization.

2.2.4 Perspectives of resilience: three types of resilience

Resilience is a term that was originally used in the context of ecological systems (Gunderson, 2003). There are three different ways to look at resilience: engineering resilience, ecological/ecosystem resilience and social-ecological resilience (Folke 2006). Folke (2006) compares the different concepts of resilience that exist. This comparison is shown in figure 2.1. Holling (1994) distinguishes the same three paradigms in thinking of ecological behaviour of social-ecological systems, although he describes them slightly differently, he distinguishes: an equilibrium centred view, a dynamic view and an evolutionary view.

A sequence of resilience concepts, from the more narrow interpretation to the broader social–ecological context

Resilience concepts	Characteristics	Focus on	Context
Engineering resilience	Return time, efficiency	Recovery, constancy	Vicinity of a stable equilibrium
Ecological/ecosystem resilience social resilience	Buffer capacity, withstand shock, maintain function	Persistence, robustness	Multiple equilibria, stability landscapes
Social–ecological resilience	Interplay disturbance and reorganization, sustaining and developing	Adaptive capacity transformability, learning, innovation	Integrated system feedback, cross-scale dynamic interactions

Figure 2.1. Source: Folke (2006:259)

Engineering resilience

According to Gunderson (2003), engineering resilience refers to the return time to a steady state after a disturbance. This implies a single, global equilibrium. Folke (2006:253) describes engineering resilience as an old dominant perspective that has "implicitly assumed a stable and infinitely resilient environment where resource flows could be controlled and nature would self-repair into equilibrium when human stressors were removed.' In this view the system returns to normal after a disturbance." According to the this equilibrium view, behaviour is constant over time, the SES is homogenous and causation is linear (Holling, 1994)

Ecological/ecosystem resilience

Ecological resilience "is defined as the magnitude of disturbance that can be absorbed before the system redefines its structure by changing the variables and processes that control behaviour (Gunderson, 2003:34)." In this case instabilities can change the behaviour of a system, making it go into a different state of stability. Ecological resilience looks at multiple stable equilibriums. Therefore, it is possible to have more stable states where resilience does not mean a situation has to go back to exactly the state as before the disturbance. Researchers think in this way want the second equilibrium to be better than the first one. This is more useful than to only think of a single equilibrium and the way to get back to the previous state (Walker 2002). The dynamic view describes a heterogeneous situation and causation is non-linear (Holling, 1994). According to Davoudi (2012), the difference between engineering and ecological resilience is that ecological resilience acknowledges the existence of multiple equilibriums, and the possibility of systems to move to alternative stability domains.

Social-ecological/evolutionary resilience.

This is the perspective that this thesis follows. According to Wilkinson (2012:154-155) this view "recognizes that the nature of cross-scale interactions means that human stressors cannot simply be removed as human–nature relations are increasingly complex and generate global as well as local and regional ecological impacts which cannot simply be reversed." The evolutionary view puts emphasis on organizational change. "Evolutionary change requires not only concepts of function but concepts of organization that concern the way elements are connected within subsystems, the way subsystems are embedded in larger ones, and the way in which such organizational structures emerge. …Rather, ecosystems are ones of continual sharp, discontinuous change that are organized internally by movements among stability domains that can shrink and disappear only to reappear as slow variables first increase then decrease. This is a view of ecosystems with a dynamically stabilized set of stability domains whose structure is maintained by variability." (Holling 1994:601). According to Folke (2006), a disturbance in a resilient social-ecological system can potentially lead to innovation and development. The evolutionary perspective gives a more realistic explanation of the world around us. Many things work at different scales.

The basic underlying thought of this thesis is grounded in the evolutionary perspective. However, it uses parts of the other old ways of thinking when these are useful to increase understanding and researchability in this thesis. For instance, Walker (2002) emphasizes the importance of defining ecosystems by looking at the variables that describe the state as well as the size and nature of shocks to the system. According to him, this enables an analyst to see if a system has recovered from a shock. Despite the fact that this is considered a static way of seeing resilience it is useful for the

purposes for the thesis because it allows for boundary creations and making more specific what is discussed.

Folke (2006) further emphasizes that it is important for cities to be prepared for uncertainty and to prepare for it rather than to only react to change. Individuals and small teams play an important role in this. This perspective is completely different to the equilibrium perspective that emphasizes control of the variability of a resource. This view leads to homogenous and vulnerable systems. Folke (2006) stresses that resilience of complex adaptive systems involves dynamic and cross-scale relations between sudden changes and sources of resilience. It is clear to him that resilience is more than simply resisting change and conserving existing structures.

Social ecological systems, SES, are systems that are a result of human-nature interactions (see Berkes and Folke, 1998 in Pendall et al., 2010), where social transformations within a system shape the ecosystem within which it is embedded; the same is true for ecosystem transformations. SES are considered to be complex adaptive systems as they also involve multiple scales which operate through feedbacks(non-equilibrium dynamics) and deals with the uncertainty faced through learning and adaptation (see among others Folke (2006), Pendall et. al (2010), Holling (1994)) . Resilience is a concept that is found within the SES literature which discusses the interactions between scales in a system both geographically and in time (Folke, 2006). The concept of Panarchy best describes the evolutionary perspective that underlies this thesis. Panarchy is a concept formed by Gunderson and Holling (2002), which states the multi scale interactions that occur in SES and these interactions are interdependent. Panarchy illustrates a world where uncertainty and complexity is seen as a rule rather than the exception (Folke, 2006). A visualization of the concept of panarchy can be seen in figure 2.2.
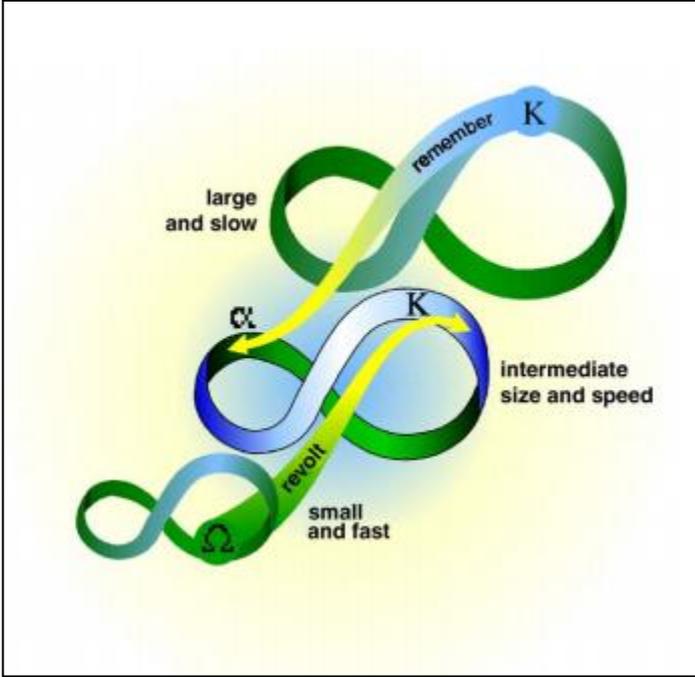
Figure 2.2: Panarchy. Source: Folke (2006:258) adapted from Gunderson and Holling (2002)

From this concept, it can be understood that the disturbance within a system is also an opportunity for changes to the system, emergence of new possibilities and allows for continuous development which balances between maintaining and evolving (Folke, 2006). However, Norberg and Cumming in Folke (2006) suggested that it is difficult to change the system into a desirable state as the transformation after disturbances are dependent on the self-organizing capacity of the system. Davoudi stated that in the evolutionary perspective there is a non-linear relationship of cause and effects (Davoudi et al, 2012), which means "past behaviour of the system is no longer a reliable predictor of future behaviour even when circumstances are similar" (Duitet al., 2010, p. 367). This according to her, forces planners to rethink their view of extrapolating the past to predict the future as it is increasingly clear that uncertainties cannot be reduced in such a way. In line with Folke (2006), Davoudi (2012) suggest that planning should turn to crisis into an opportunity through imagining and alternate futures through innovative transformations.

2.2.5 Adaptive governance

Key to reaching resilience in social ecological system is the ability to adapt and learn. This could be achieved through the use of adaptive governance. This is because through adaptive governance, SES would be able to self-organize and respond to the disturbances to its system (Folke et al., 2005). Adaptive governance is used by Dietz et al. in Folke et al. (2005), to expand from adaptive management which focuses on ecosystems to include larger social contexts. According to Folke et al. (2005: 533), governance from resilience perspective is collective action which "can be thought of as purposeful collective action (among state, private, and civil society stakeholders) to either sustain and improve a certain regime, or to trigger a transition of the system to a more preferable regime; these are referred to as adaptive capacity and transformative capacity, respectively."

Among the prescriptions given by Huitema et al. in Wilkinson, 2012 for adaptive governance of social-ecological systems are public participation, experimental approach to resource management, and collaboration. This implies that features found to be integral part of 'good' governance is important such as polycentric organization, social justice, participative, deliberative, accountable, empowering, and representative. According to Goldstein in Wilkinson (2012), this type of encourages collaborative learning and decision making processes.

Governance can be seen as a way to enable processes of spatial strategies to occur. Davoudi and Strange (2009) name five criteria for analyzing the processes of spatial strategies, namely the perceived role of planners, knowledge and skills employed, methods of engagement, institutional structures/ governance/power relations, modes of implementation. When these criteria are combined with the relevant capitals of capacity building and their associated indicators, these criteria can give a relevant structure to analyze resilience of social-ecological systems. Davoudi and Strange further divide processes of spatial strategies in positivism, structuralism and post-structuralism/post-modernism. An overview of their criteria can be seen in table 2.1.**.**

Table 2.1: criteria for analysing the processes of spatial strategies

Criteria	Positivism	Structuralism	Post-structuralism/post-modernism
Perceived role of planners	Predicting future development trends as a basis for controlling and creating order/ producing blueprints	Advocacy, community activists, defending 'space of places' against 'space of flows', producing alternative 'people's plans	Exploring shared notion of place and common understanding of space, consensus seeking
Knowledge and skills employed	Expert scientific knowledge, skills in quantitative modelling	Community empowerment, skills of social activist	Expert and experiential knowledge, visioning and mediation skills
Methods of engagement	Top-down tokenistic consultation	Adversarial/public inquiry	Discursive deliberation
Institutional structures/ power relations	Hierarchical, formal government systems, enforcing power over private property rights, privileging of technical knowledge	Corporatism, power of structure	Multi-level governance generating power to enable private and public action, power of agency
Modes of implementation	Command and control through land use regulation	State-managed redistribution of recourses and relocation of activities	Implementation through collaborative practices, social learning

Source: Davoudi and Strange (2009:41)

Folke et al. (2005:444) suggest that adaptive governance is "operationalized through adaptive co-management systems and that the roles of social capital, focusing on networks, leadership, and trust, are emphasized in this context." The concepts of social capital, networks and trust are concepts which are commonly used in planning to evaluate the institutional capacity of governance. The inter-linkage of these concepts suggests that the literature on institutional capital can be used to operationalize the concept of adaptive governance. Moreover, it is also suggested by co-management literature (Olsson et al., 2003), which are found under the adaptive governance literature, that co-management involves institution building.

Adaptive governance is linked to institutional capacity building or also known as institutional capital. Capacity building is an important aspect in implementing sustainable management, as stated in Agenda 21 (WSSD, 2002; UNCED, 1992). Capacity building is particularly important for developing countries, especially those environmentally vulnerable (UNCED, 1992). Capacity building is often understood as the efforts to increase the knowledge and skills of organizations and individuals, their capacity for mobilization and relational resources in order to create effective institutions. Examples of building institutions are the establishment of appropriate policy and legal frameworks; open decision making processes that allow for better participation of wider stakeholders; community participation; and the establishment of management relationships between different organizations and sectors.

Institutions can be understood in terms of Giddens' theory of structurisation (Giddens in Healey, 1997). This theory states that institutions are part of the structures of the system that help shape the society to function and guide the routines of the agency. It is however also able to be influenced by the agency themselves (individuals, people, organisations, etc.). The relationship between structure and agency is dynamic, with continuous influence between the two. Considering this possibility to influence institutions through this agency, it is interesting to focus on capacity building of local actors as the agency in making changes in institutions. Real transformative change in a system can happen when the organisations and people make a conscious effort to make this change transpire.

2.2.6 Institutional capacity building

Nowadays, governance is the means of transformative change proposed by planners (Davoudi and Evans, 2005; Healey, 1997; Khakee, 2001). This can happen through coordinating planning strategies of all actors involved in a planning sector. Including a wide variety of actors, from different backgrounds, can generate the learning process needed to implement the sustainability principles that are able to fundamentally change the social system (Khakee, 2001). Consensus building, as a form of social mobilization, has the potential to transform the social system (Healey, 1997). The effective coordination and involvement of stakeholders depends on the way the process of consensus building is managed (Bifulco and Bricocoli, 2010). It is dependent upon the effort made to sustain the process, thus the viability of the consensus building in the long run should be considered. The learning processes involved in consensus building have the potential to build institutional capacity (Khakee, 2005). Many sources of literature regarding institutional capacity building use the term institutional capacity and institutional capital interchangeably (Healey et al in Khakee, 2005).

Literature on capacity building comes from various sources such as academic discourse and international practice of capacity building by international organizations. Within international practice done by international organizations the definition of capacity building emphasizes the way a process is able to increase the performance of individuals, organizations, and public sectors in carrying out certain tasks to achieve a common purpose (Measuring capacity building, 2001; Handbook on Capacity Assessment Methodologies, 1994; UNDP, 1998). In academic discourse, capacity building or better known as institutional capacity building consists of more than performing certain tasks in order to achieve a common goal. It is about the overall quality of a place which is embodied in the collective resources and social relations (Healey, 1997; Khakee, 2001). This is because complex relational links between places mean that local actions in one place affect what happens in a larger scale (nationally and eventually internationally) (Healey, 1997). Therefore, the institutional capacity of a place has an effect on other places.

Innes et.al. in Davoudi and Evans (2005) studied the use of consensus building in California, where they were able to conclude that to achieve successful consensus building, there should be a conscious effort in building three types of capital which are social, intellectual, and political capital. In consensus building, individuals are able to reflect upon their points of view through their interactions with others, which will ultimately build up a store of mutual understanding – that is a form of institutional capital (Innes in Healey, 1997). Social relations create relational bonds and mutual trust

which creates relational resources that forms institutional capital (Innes et al in Healey, 1997). Institutional capacity is therefore a result of a process of social learning (Khakee, 2001).

Intellectual Capital

Intellectual capital can be understood as socially constructed, non-linear, interactive knowledge resources which is a result of the process of interaction among actors (Davoudi and Evans, 2005; Healey, 1997). These knowledge resources are seen as an accumulation of the knowledge that is acquired through social interactions, which is based on experiences and scientific inquiries (Khakee, 2001). In order to build up intellectual capital all kinds of knowledge should be included, not only scientific knowledge but also local knowledge, tacit, and experiential knowledge held by the public (Davoudi and Evans, 2005; Khakee, 2001). Tacit knowledge is the implicit knowledge that people acquire through personal experience and skills accumulated through the acting competences (Geldof et al., 2011). This means a diverse range of actors should be involved from diverse social backgrounds.

The frame of knowledge or frame of references is also important because this shapes meanings and interpretations that provide knowledge (de Magalhaes et. al. in Davoudi and Evans, 2005). A common frame of references is essential in social and collective learning and the degree of understanding between different parties involved (Davoudi and Evans, 2005). According to de Magalhaes et. al., the existence of mutual learning is essential to the development of collective learning, since it can only happen when actors are willing to be open about their knowledge and are willing to sharing that knowledge.

Moreover, the willingness of the actors to learn – or their learning capacity - will determine their openness to new ideas and information. The extent of social learning can be seen from the type of learning that they are able to do whether it is single loop learning or double loop learning. Single loop learning is the ability of people or institutions to learn from the past experiences to be able to perform better routines (Schon in Healey, 1997; Olson et al., Folke et. al., Carpenter et al., Marshall and Marshall, Pelling et al., Argyris and Ormond in Gupta et al., 1010). Double loop learning is an organizations' ability to change the conditions restricting them, which means that there are fundamental changes in their assumptions (Schon in Healey, 1997; Olson et al., Folke et al., Carpenter et al., Marshall and Marshall, Pelling et al., Argyris and Ormond in Gupta et. al., 2010). In effect double learning is a type of learning that is more desirable because it has the potential to fundamentally change the perceptions and conceptions of actors that ultimately affect their course of actions (Davoudi and Evans, 2005). Triple loop learning intends to refine the influence of governing assumptions and values. It transforms the structural context and frame of reference of the system. This means that this type of learning transforms regulatory frameworks, risk management practices as well as norms and values. New actors will come into play which reforms power structures (Pahl-Wostl, 2009).

Social Capital

Social capital is vital in *consensus building* due to the fact that a sense of mutual interdependency or belonging is essential for actors to be willing to do collective action (Davoudi and Evans, 2005). According to Healey (1998), social capital is the *quality of the social area* which can be seen from the *range* and *translatability* among diverse social realities experienced by actors. This implies that a

wide range of actors should be involved in order to build social capital; different social networks should be included, such as community organizations, interest groups, and etc. (Davoudi and Evans, 2005; Khakee, 2001). The different character of these networks, such as how these networks function, should also be well represented in consensus building.

In social capital building, it is therefore important to identify the stakeholders – that is actors that should be involved in the policy area of concern through stakeholder mapping (Healey, 1997). If the members of the networks' composition constantly changes, the feeling of mutual interdependency will be affected, as well as the sense of shared purpose of the members (Davoudi and Evans, 2005).

Social network resources enable collective action through enhancing the capacity to coordinate it (Khakee, 2001). Social capital consists of social networks interlinked with their activities and where location) (Khakee, 2001; Mehmet, 1990). This implies that the characteristic of the linkages and the density (how many people are linked together) should be taken into account as this would have an effect in mobilizing resources (Davoudi and Evans, 2005; Khakee, 2001).

Mehmet argues that due to its inter-linkage, mutual interdependency between the individuals and/or groups of people is expected. Social capital dependents on trust, mutual interdependency, and reciprocation (Healey, 1997; Khakee, 2001; de Magalhaes et al., Innes et al., and Stone in Davoudi and Evans, 2005). Lastly, social capital also dependents upon existing power relations. An imbalance in the power relations would cause a failure in collective action, thus to counteract this, knowledge is necessary regarding the forces and relations that link the networks as well the way to access them (Khakee, 2001).

Political Capital
The term politics implies the importance of power relations and power to act (Healey, 1997; Dyeberg in Davoudi and Evans, 2005). Power is, in this perspective, used for social production in place from control (Davoudi and Evans, 2005). It is therefore fitting to use the definition given by Davoudi and Evans (2005) that states' political capital is dependent on power relations and is about the ability to mobilize action. It entails the commitment and willingness among all actors to mobilize collective action (Khakee, 2001). Political capital building is, in other words, linked to the effort of social mobilization in order to achieve collective action (Healey, 1997).

Social mobilization can be understood in terms of structure of mobilization, methods of mobilization, and change agents (Khakee, 2001). According to Khakee (2001), structure of mobilization involves the collective identification of the issues that will be dealt with and the accessibility of the collective activities for all actors involved. For methods of mobilization, he suggested that it can happen through the use of consensus building and the creation of partnerships as well as focus groups. With the use of these methods it is believed that collective action can better be coordinated along with the shaping of agendas. Finally, Khakee (2001) argued that there should be change or transformative agents, individuals or groups of people who are involved in directing the social mobilization. These agents are people who are responsible for maintaining the networks and steering the mobilization.

Levels of analysis in institutional capacity building

In international practice of capacity building, different levels of analysis are recognized. Since the issue of governance is involved in institutional capacity building, many international organizations differentiate between the levels of vertically to make a clear distinction of what actors are involved and/or should be involved. Besides identifying the levels of actors participating, it also has the purpose of identifying the level of the coordination's forms, for example networks, associations, and etc. (Borghi and Meschiari, 2010). Most of the literature of the international practice of capacity building, the levels of analysis is divided into three broad levels which are macro, meso, and micro levels which are better known as the broader system (macro), the entity or organization (meso), and the individual (micro) (UNDP, 1998). According to UNDP, (1998), the broader system is defined as the external conditions or the enabling environment that influences capacity building. The commonly used method to identify the system or the enabling system is through SWOT analysis. This level of analysis typically involves the macroeconomic situation, regulatory environment, and the historical and contemporary development of the political will regarding the policy issue (Pacific learning, 2008). The UNDP (1998), states that the entity or organization is typically defined through stakeholder analysis and the individuals through performance indicators. In the entity level, the focus is usually on the sub national governance, collaborative mechanisms, civil society participation, strategies and plans, and etc. Meanwhile, the organizational level involves capacity in management and operational context and leadership capacity (Pacific learning, 2008).

Complex adaptive systems experience issues path dependence and lock in, because of this it is important to know and understand the system, its historic context and its constraints. Adaptive governance has the possibility to change the institutional system through reform and transformation. It has the potential to induce regime shifts by shaping the planning agenda towards a more resilient planning. Institutions are known to experience lock-in and path-dependence, whereby the institutions preserve the current structure of institution and cause the retardation of restructuration processes (Pendall et al., 2010). Lock-in is also said to be triggered by the high costs of switching to a new form of regime compared to its short term benefits. Through the use of creativity and foresight changes in resilience can be anticipated and, thus, adaptation to the future is possible (Pendall et al., 2010).

2.2.7 Path dependencies and Lock Ins

As Zevenbergen et al. (2008:85) state, "much of the urban fabric and structures we see today is the result of decision-making periods of the past. Understanding the role of time and the way it shapes the urban fabric and structure is crucial. Consequently, cities also have to learn from the past in order to develop and implement effective resilient approaches. They have to eliminate unsatisfactory practices through evaluation, investigation, experimentation and, if successful, anchoring and scaling-up of new approaches in guidelines, procedures, policies or regulation." Considering the importance that Zevenbergen et al. lay in understanding the role of time it is important to understand the theory behind this in order to understand the path dependencies and lock ins that a city experiences.

Certain patterns of socio-economic development can become cumulative and exhibit persistence or path dependency (Martin and Simmie, 2008). This thesis argues that this theory can also be used for the development of government policies. Martin and Sunley in Martin and Simmie, 2008:185) define path dependence as "a probabilistic and contingent process (in which) at each moment in historical time the suite of possible future evolutionary trajectories (paths) of a technology, institution, firm or industry [*or government practice*] is conditioned by (is contingent on) both the past and the current states of the system in question. The past thus sets the possibilities while the present conditions what possibility is to be explored." According to David and Arthur in Martin and Simmie (2008), the emergence of self-reinforcing processes 'lock in' certain trajectories in preference to others, leading to path dependencies. Some of the processes that they describe which are relevant for using the theory of path dependence for government policies are:

- Routines;
- Associated benefits of a technology [*or government practice*], relative to others;
- Dynamic learning effects, as learning by doing strengthens the practice;
- Self-reinforcing expectations, here the increased popularity of a practice raises belief in further popularity;

Martin and Simmie (2008) describe two important characteristics of path dependency: human decision making and irreversibility. Human decision making is an important basis for the emergence of path-dependency, as humans will re-enforce past achievements in cases of uncertainty, leading them to follow and preserve existing structures and paths. According to Beinhocker in Martin en Simmie (2008), in cases of uncertainty, humans will apply past decision-making rules and mental models. Martin and Simmie (2008) state that evolutionary and path dependent development of history is irreversible. The current state of an economy will always depend on the historical steps taken towards it.

Path dependency follows a four-phase model of evolution, as described in Martin and Simmie (2008). The four phases are:

- *Pre-formation phase* (the context of institutional arrangements, existing structures and paths stimulate and determine the scope of new opportunities);
- *Path creation phase* (a path [*or government practice*] achieves dominance, either by chance or by choice. Other paths [*or government practices*] are now relatively disadvantaged);
- *Path lock in or dependence phase* (cumulative and self-reinforcing processes and development along the path) and;
- *Path decay phase* (the path loses momentum, either due to external competition, negative lock ins or the purposive choice of a new path).

When projecting path dependence theory of evolutionary economics on government practice, the decay of a path is not necessarily as bad as the collapse of a local economy. It would be analogous with the move from technocratic planning to a more collaborative form, with the different policies related to it.

Martin and Sunley (in Martin and Simmie, 2008:187), list five, not mutually exclusive, sources of path dependence: "dependence on initial chance events, technological lock-in, increasing returns effects, institutional inertia, and social embeddedness."

Cities need to create new paths, in order to be evolutionary. For the purpose of this thesis the basis for the creation of new paths can be seen analogous with the circumstances to develop new government practices. Martin and Sunley in Martin and Simmie (2008: 188) name five possible reasons for new paths to start: Indigenous creation (key element   is the organization of the production and transfer of new knowledge); heterogeneity and diversity; diversification into technologically related industries; upgrading of existing industries; and transplantation from elsewhere.

The key of evolutionary path dependent development is the ability to acquire, understand and generate new knowledge. This depends on their local innovation systems and their absorptive capacities. The key aspect of a local innovation system is that it provides a view on knowledge external to an organization so that organizations in the local system can use both internal as well as external knowledge. Absorptive capacity is "the capacity to recognize, understand and use relevant knowledge" (Martin and Simmie, 2008:191).

2.2.8 Institutional capitals relevant for flooding

According to Pendal et al. (2010) regions face two main categories of disturbance, namely shocks and 'slow burns'. In resilience thinking shocks are usually not considered to be part of the social-ecological system. Slow burns are challenges that are part of the system and therefore internal factors affecting processes and outcomes of resilience. Flooding can be understood as an acute shock to the social ecological system, a region therefore needs continual adaptation to deal with problems of flooding. This is supported by White (2010:167) where he stated that "…flooding is rapidly experienced risk – a shock." Figure 2.3 shows the categorization by Pendal et al. (2010:81).

Figure 2.3: Evidence of Resilience (source: Pendal et al., 2010:81)

It is complicated to plan entire systems for flood risk (White, 2010). White explains this by emphasizing the fact that all human settlements are part of a larger socio-ecological system that includes environmental (such as watersheds), as well as social and cultural features.

The first and foremost reason for natural floods to damage human settlements is the fact that these settlements were built on floodplains. It is one of the fundamental principles of a watercourse to exceed their bank capacity and utilize their floodplains in the case of long periods or particularly intensive rainfall. This is exacerbated by a combination of climate change and rapid urbanization in the developing world which leads to the formation of more settlements in risk areas. Urban areas that are most vulnerable to climate change are those that are located on coasts and river flood plains, as well as those that are at risk of extreme weather events. Besides this, population growth puts more pressure on drainage system leading to more vulnerability to flooding (White, 2010).

Minnery (2013) emphasizes the problems of implementing physical measures to flooding in an already built up area. These problems are important to take into consideration as many areas that currently suffer from flooding are urban areas. Minnery (2013:126) names the following problems: the social and economic commitment residents and owners have made to their properties, people's resistance to change, poor public understanding of flood risk, the limited resources of owners and governments, unclear legal powers and problems of social justice."

According to White (2010), it is important to realize the limits of technocratic planning as the ultimate way to control water and acknowledge uncertainties that will always be around in dealing with flood risk. One flaw of this method is that floods are commonly expressed as a 1 in a x-year event, as this calculation is based on historic data and does not take into account changing environments. Due to this it is important to move away from a solely engineering way of water defence to a form of water management that is more sustainable. White (2013) adds that there needs to be political will to accept the necessity of this unsure position.

In this new form of water management, the role of planners becomes more important, as spatial planning is realized as "the most sustainable and effective method of intervention over the long term in order to both minimize costs and limit impacts" (Evans et al. in White, 2010:43). Planners play a role in influencing location choices and types of future developments, construction and the relationship of developments with their surroundings. This makes it important to see planners not only as facilitators of growth and development but also as managers of potential risk (White, 2010). Institutional capitals are necessary for the governance of flood resilience. "Creating resilience is therefore most appropriately thought of as a process of social learning, using human capacities and knowledge to reduce vulnerability and risk in the face of the unknown and unexpected" Hudson quoted in Scott (2013:104). This quote reflects how adaptive governance is necessary for resilience of flooding.

Knowledge is the basis of any city to be water resilient, according to White (2010). He argues for the inclusion of actors from different backgrounds in order to compile a large variety of expert knowledge from different disciplines, as this is needed to be able to makes strategic land use decisions. Despite the fact that it is necessary to realise and deal with uncertainty it is important to build an evidence base by collection as much information as possible. According to White (2010:113)

"agencies that deal with weather forecasting, environmental protection, geological organizations or water and sewerage providers, for example, are all important to accurately assessing risks of flooding and scarcity". Moreover, learning processes that are iterative is essential for organizations to affect change Kulhlicke and Steinführer (2013). White (2010) gives an overview of all layers of knowledge that are needed to develop a water resilient city. These can be seen in figure 2.4.

Zevenbergen et al. (2008) specifically point out the use of compiling flood-risk maps as these can be used in order to raise awareness among stakeholders so that they can have adaptive responses to flood risk.
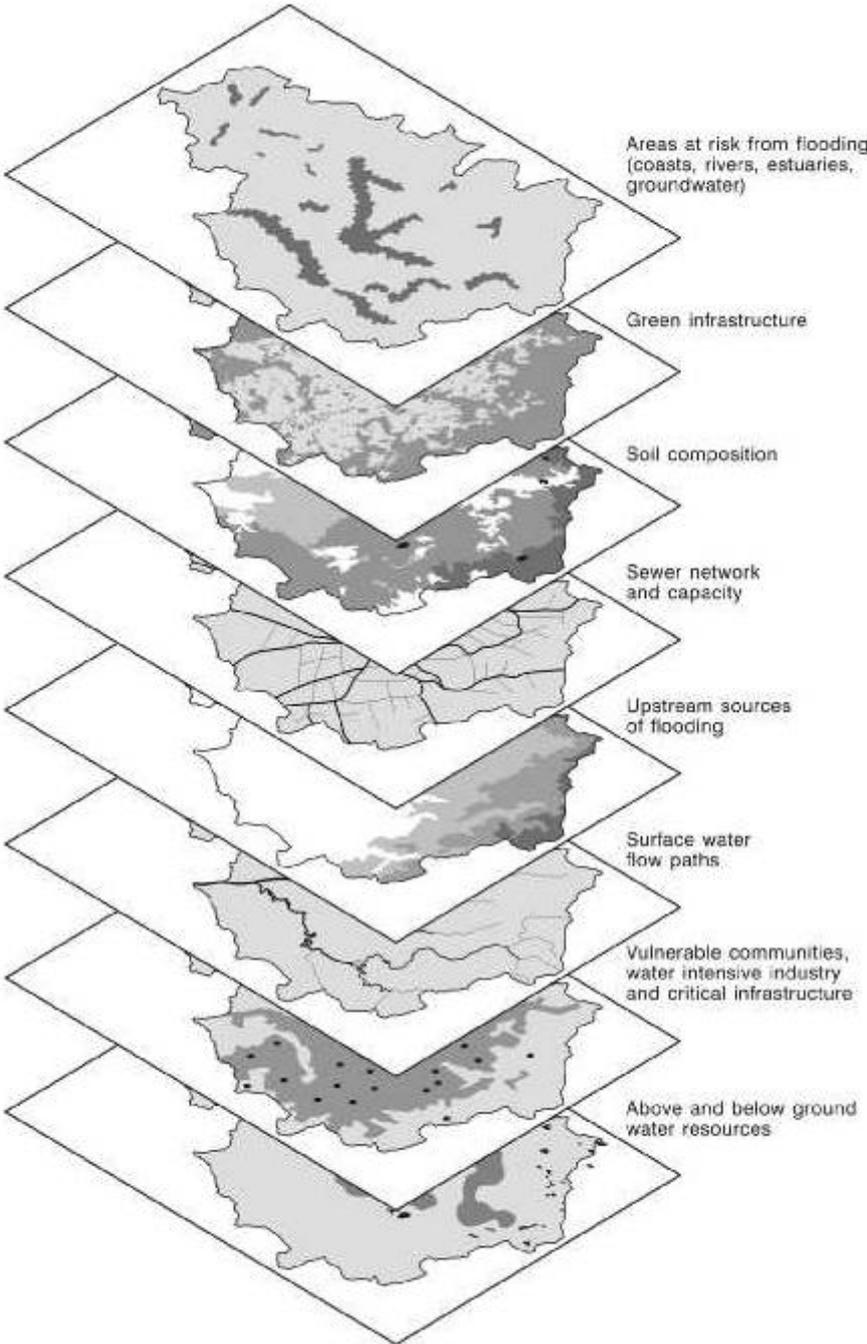
Figure 2.4: The differing layers of knowledge needed to move towards a water resilient city (Source: White, 2010:116)

Besides the different sources of information, White (2010) also emphasizes the importance of data to be transferred without restriction between different agencies. In practice information often is collected by several agencies while no agency will have all available information. It is therefore important that agencies work together in order to effectively carry out resilient planning.

White (2010) further emphasizes the connection of water resilience with institutions and governance. According to him it is essential to have effective partnerships. Parker in De Bruijn (2004) states that social networks are important because they lead to better organization and access to information. Penning-Rowsell and Fordham in De Bruijn (2004) mention the importance of cooperation among stakeholders and relevant flood management agencies.

Christoplos et al. in Kulhlicke and Steinführer (2013) notice a shift in management in composition and type of collaboration in flood management. These shifts consist of a widening of actor diversity, the re-configuration of roles as well as forms of collaboration that involves multiple hierarchies of government and also within the same government level.

Zevenbergen et al. (2008) emphasize the need to strengthen political capital for flood resilience in order to mobilize resources. They point out a few ways to this, namely to engage stakeholders and to implement a flexible, decentralized, bottom-up way of governance. Kulhlicke and Steinführer (2013) write that this should empower both local levels of government as well as communities. This public involvement and functioning dialogue allows for governance to be effective. O'Neill (2013) adds to this the need to identify joint visions on how to adapt the city to the future and awareness regarding the necessity for change.

2.3 Operationalization of the literature

2.3.1 Analysis of historical context

It is important to explore Jakarta's historic context and path dependencies that influence Jakarta's current lock-ins and factors that determine possible future solutions to Jakarta's problems. An historic analysis has the potential to capture the dynamic nature of decision making throughout Jakarta's past. The historical development of Jakarta of resilience in terms of flooding and climate change needs to be analysed in order to understand the context of Jakarta as a system. This is essential to understand the current situation in Jakarta while it also offers guidance about which aspects of institutional capacity building are suitable for the Jakarta situation. It is needed to understand institutions in their specific context, to understand their constraints, such as the reasons behind certain set behaviours and ways of government. Knowing a institution's context brings out the potential to change the institution in a way that is most suited to the specific context. Historic analysis can potentially clarify this context well.

The historic analysis in this thesis will be carried out by using historic sources such as books that discussed Jakarta's planning history and Jakarta's history in dealing with flooding; interviews; old articles in Indonesian magazines; and scientific publications on the historic development of Jakarta. These sources will be used to draw a general view of Jakarta's history. This general view of Jakarta's history includes major planning events, government responses to events of flooding, an overview of

general planning documents and those relevant for the topic of flooding as well as general ways of governance by the Jakarta government. This information will be analysed based on a set of indicators that can be found in the next sub section. Many of these indicators are explicitly mentioned in the historic sources while others are more implicit and have to be logically deducted.

2.3.2 Framework of analysis

Jakarta is a social ecological system
Jakarta can be considered as a social ecological system, as Portugali (in Wilkinson, 2012) concludes that cities behave in the same way as complex adaptive systems. According to him even parts of the city are complex adaptive systems themselves. These parts learn, think and make decisions which help shape the city.

In discussing the resilience of a system there is the challenge of defining the boundaries in terms of time and space (see Pendall et. al, 2010), just what spatial region is being discussed and what period in time. In evolutionary perspective, spatial boundaries are not of particular concern since social ecological systems (SES) are seen as an open system with multiple scales which are interdependent. Despite the fact that this thesis is based upon the evolutionary perspective, for pragmatic reasons, the spatial boundary of the SES discussed is delineated to only concerning Jakarta province (DKI Jakarta), aggregating the different municipalities within Jakarta into a whole Jakarta region. The reason for this is because in reality the provincial government's reach of influence in terms of planning and resource management pertains to only the Jakarta provincial region. Municipalities which are located outside of Jakarta and in reality dependent on Jakarta for services are not included in the study as they fall under the administrative boundaries of other provinces. Furthermore, this delineation would mean that in this thesis the concern is at the local-regional level instead of looking at Jakarta as part of a system of cities. Ernstson et al. (2010) differentiated between two scales in urban resilience, resilience in cities and resilience of cities.

The temporal boundary discussed in this thesis is more flexible, historical evolution of Jakarta is observed as well as the present development; in this way time is seen as fluid, which allows for discussions to include present and the past. The long time span gives an illustration of the policy and decision making which have influenced and shaped Jakarta as it is today. The historical overview also provides the necessary knowledge needed to understand the path-dependencies that exist in Jakarta. Besides this, it also allows us to understand the extent of the transformation Jakarta incurs as a result of the repeated shocks due to flooding.

2.3.3 Table of analysis for planning process /governance- resilience indicators for flooding

Table 2.2 is a combination of the findings from the literature review. It shows the processes of spatial planning combined with the matching intellectual, social, and political capitals as found in the theoretical framework. From this it was possible to develop resilience indicators that policy makers can use to find out how resilient their city is. In answering the sub questions, this table is used to analyse the resilience of Jakarta.

Processes of spatial strategies		Resilience indicators
Perceived role of planners	Mutual learning: - Information exchange, ideas and experiences - Common frame of references - Openness towards new knowledge	- High variety of ideas is given in public participation meetings - Formulation of report that produces common goal and objectives which involves all of the actors involved in the planning process - Identification if there are rejections in new ideas and/or concepts for resilience
Knowledge and skills employed	Range of knowledge: - Variety of knowledge - Sharing of ideas	- Multi-directional information flows - High variety of expert knowledge from different disciplines - Knowledge of local residents and communities is taken into account - Seizing the opportunity to use knowledge from as many sources as possible (e.g. NGO projects, university research)
Methods of engagement	- Range of actors involved - Network linkages (type of linkage: horizontal or vertical) - Relations between different social networks - Building trust - Mutual support between stakeholders	- Inclusion of actors from different backgrounds (e.g. community organizations, interest groups) - Combination of grass root initiatives and government driven initiatives - Existence or non-existence of conflicts between actors - Efforts to build relationships between stakeholders - Efforts from government to include communities in plan-making and agenda setting - Raising awareness among stakeholders (e.g. government agencies)
Institutional structures/power relations	- Forces that link networks (reasons for actors to participate) - Type of collaboration and partnerships formed (inter-governmental and between government and stakeholders) - Mechanisms that promote collaboration (existence of different arenas for public participation, creation of partnerships in between government agencies for flooding management)	- High awareness by all actors about the eminence of the topic - Sharing of knowledge between different government agencies. - Existence of partnerships between government agencies and between different government hierarchies (national, provincial) - Existence of partnerships between government agencies and non-government actors - Existence of projects developed by actors from diverse backgrounds - Existence of public forums, meetings, public agenda shaping efforts, etc. which involves different actors

Modes of implementation	- Learning capacity (type of learning: single loop, double loop, or triple loop) - Channelling social networks to mobilize resources.	- Higher types of learning exist - Accessing research centres and NGOs in order to successfully carry out programs

Table 2.2: Table of Analysis. Source: Author (2013)

Analysing current resilience

A cities amount of resilience is researched based on the indicators that are developed in this table of analysis. The indicators are expressed in terms of their existence or non-existence. If there are sources that support or deny the indicators. This is not determined by a set minimum amount of sources; however it is dependent upon the reliability of the source. Furthermore, it is not possible to use real quantitative analysis based on these indicators as complex urban situations can lead to a situation where some indicators are only partly or ineffectively existent. All indicators that were developed signify a positive relationship with resilience, which implies that for every indicator its existence in an urban situation is a sign of resilient institutional capital. In line with this, the absence of one of these indicators is a sign of non-resilience. The fact that the table of analysis is divided by five different types of processes of spatial analysis means that it is possible to distinguish if cities are resilient only in certain aspects of their governance.

Analysing historic resilience, path dependencies and lock ins

As was described earlier cities, their structure and use of space, could be seen as a result of processes of decision making. Therefore, cities have to learn from the past in order to identify and break away from the constraints and lock-ins that hinder them and develop resilient policies that can support them (Zevenbergen et al. 2008). As institutional capital is a way to operationalize governance (Folke et al. 2005), an historic institutional perspective would be the way to discover path dependencies and lock ins related to governance. The same institutional perspective for current as well as historic institutional resilience in order to allow for comparison of the two situations as well as to enable the analysis of the complete situation from history until present.

In order to be able to measure the resilience indicators in an historic perspective it is needed to develop an historic overview of urban development from an historic institutional perspective. This allows to observe in what time frame the use a certain indicator emerges. Historical analysis may be difficult to be discussed in the specific context of the resilience indicators; therefore it might be necessary to logically deduct the resilience indicators when analyzing the processes of spatial strategies and the linked institutional capital.

In order to be able to analyze lock ins regarding the resilience indicators the four-phase model of evolution needs to be used, as described in Martin and Simmie (2008). The four phases are:
- *Pre-formation phase* (the context of institutional arrangements, existing structures and paths stimulate and determine the scope of new opportunities);
- *Path creation phase* (a path [*or government practice*] achieves dominance, either by chance or by choice. Other paths [*or government practices*] are now relatively disadvantaged);
- *Path lock in or dependence phase* (cumulative and self-reinforcing processes and development along the path) and;

- *Path decay phase* (the path loses momentum, either due to external competition, negative lock ins or the purposive choice of a new path).

This model allows for a study of the resilience indicators by analysing which of the four aforementioned phases is most appropriate for the historical situation of each resilience indicator.

2.3.4 Conceptual model
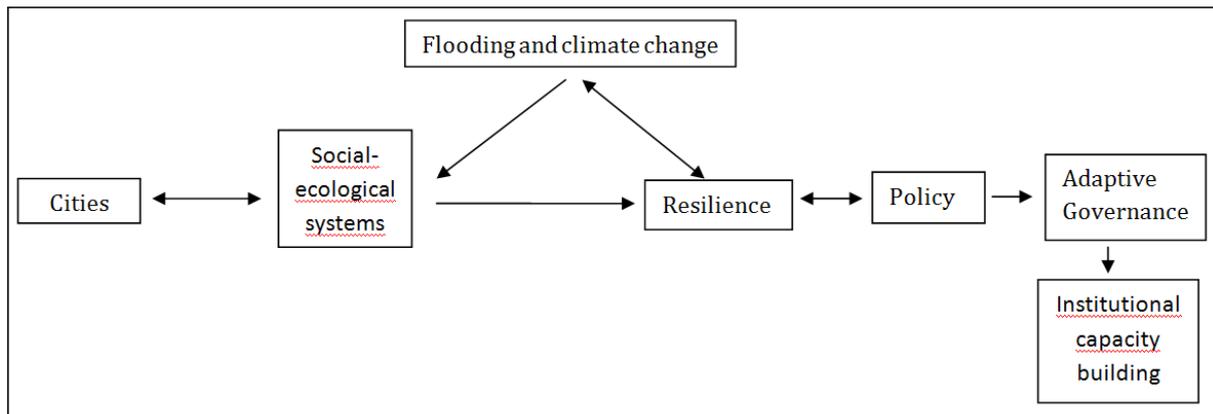
Figure 2.5: conceptual model (Source: Author, 2013)

The different concepts that this research discusses can be seen in the conceptual model (figure 2.4) with their mutual relationships. Cities are considered as social-ecological systems. The social-ecological system of Jakarta is influenced by flooding and climate change and has to deal with these disturbances. However, when resilience improves, it reduces the effect of disturbances on the social-ecological system (DKI Jakarta), hence the two-pointed arrow. This research aims to find policy improvements to improve Jakarta's resilience. The perspective to develop these policy improvements is adaptive governance. Institutional capacity building is the operationalization of the concept of adaptive governance.

Chapter 3: Jakarta's historic context, path dependencies and lock ins

This chapter gives an overview of Jakarta's historic development. It gives the context that is needed to understand the path dependencies and lock-ins that shape the current planning in Jakarta. The overview in this chapter describes emphasis in planning in the past and recent past. This offers an understanding of the current focus on resilience against flooding in Jakarta and gives an overview of the possibilities and challenges that Jakarta faces to improve its resilience against flooding. This chapter offers a chronological overview of planning in Jakarta, based on the resilience indicators that were developed in the theoretical framework of chapter 2. Figure 3.1 gives an overview of these resilience indicators.

Table 3.1: Resilience indicators
- High variety of ideas is given in public participation meetings - Formulation of report that produces common goal and objectives which involves all of the actors involved in the planning process - Identification if there are rejections in new ideas and/or concepts for resilience
- Multi-directional information flows - High variety of expert knowledge from different disciplines - Knowledge of local residents and communities is taken into account - Seizing the opportunity to use knowledge from as many sources as possible (e.g. NGO projects, university research)
- Inclusion of actors from different backgrounds (e.g. community organizations, interest groups) - Combination of grass root initiatives and government driven initiatives - Existence or non-existence of conflicts between actors - Efforts to build relationships between stakeholders - Efforts from government to include communities in plan-making and agenda setting - Raising awareness among stakeholders (e.g. government agencies
- High awareness by all actors about the eminence of the topic - Sharing of knowledge between different government agencies. - Existence of partnerships between government agencies and between different government hierarchies (national, provincial) - Existence of partnerships between government agencies and non-government actors - Existence of project developed by actors from diverse backgrounds - Existence of public forums, meetings, public agenda shaping efforts, etc. which involves different actors
- Higher types of learning exist - Accessing research centres and NGOs in order to successfully carry out programs

3.1 Colonial Jakarta

For around 300 years Jakarta was ruled as a colony of the Netherlands, before that it was a trading post of the VOC. The first major planning in Jakarta happened in 1619, after the Dutch Governor-General Jan Pieterszoon Coen demolished the original settlement of Jayakarta (Silver 2008). This is the first case of technocratic planning as Steinberg (2007) and Cybriwsky and Ford (2011) write: the Dutch tried to create an Amsterdam in the tropics by rebuilding the city as Batavia, in a European style that included a system of streets and canals named after Dutch cities and provinces and straightened the Ciliwung river to make it into a large canal. This shows a government driven top down way of planning with a strong focus on technical measures. Despite the efforts to build a planned city in the tropics, Batavia also experienced unplanned developments. This mostly happened in the non-European parts that housed ten times more people than in the European part. According to Cybriwsky and Ford (2001) these areas developed spontaneously, without formal plans. Some of these kampungs were built outside the city walls where they are the first examples of unplanned expansion inland. This shows that stakeholders such as private parties and citizens are not included in planning efforts.

Besides this expansion, government driven initiatives can also be seen from the way the Dutch colonial government also planned out-migration for Batavia. Most Europeans moved away from the old city to new elite districts, particularly to the garden suburb Weltevreden. Between 1808 and 1811 the seat of colonial government was moved here as well (Cybriwsky and Ford 2001). The planning efforts in this time seem to be aimed at the elite and ignore a large part of the public.

Already at the early stages of planning in Jakarta the canals have caused problems. Caljouw et al. (2005) mentioned that already in this century Jakarta faced stench when canals were laying dry at low tide as well as flooding at spring tide. Steinberg (2007) and Cybriwsky and Ford (2001) also mentioned that the canals functioned as a waste dump, were polluted and therefore part of the causes for regular malaria, dysentery and typhoid outbursts. This shows a clear lack of awareness about the eminence of the need to deal with the environment in a resilient way.

Planners in colonial time already thought of causes and solutions for flooding that Batavia regularly had to deal with. Caljouw et al. (2005) mentioned a publication by De Haan in 1922 who lists the causes of flooding in Batavia: the low level of the land; small tidal differences; cutting down of trees upstream on the Ciliwung; crumbling of canal banks; the use of river and canals for solid waste dump. The main cause was the sinking of mud at places where the current of the river was not strong enough or was stopped by trash. The solutions that were thought of to deal with the causes of flooding included dredging, attempts to stop waste being dumped in the canals and diverting the Ciliwung River through different canals. Most of the solutions it appears are technical, but the attempts to stop waste being dumped also show the emergence of social measures. This could also be seen as a way to raise awareness. The realization that the cutting down of trees upstream on the Ciliwung river leads to more flooding shows the need to take into consideration planning efforts in a large area.

Government and inhabitants already showed a fatalist acceptance to flooding in the 19th century. Caljouw et al. (2005) mentioned a publication by Abeyasekere who wrote that even though Jakarta

faced a high frequency of flooding in the nineteenth century, the government did not undertake action and seemed to just accept the existence of flooding. The government only undertook drainage works after very bad flooding. The involvement of stakeholders is only after the event of a flooding (Gunawan, 2010). This shows a lack of public forums or meetings, nor real efforts to build relationships with relevant stakeholders that can prevent flooding.

In 1918, a big flood occurred in Jakarta where it caused all activities in Jakarta to come to a halt, transport infrastructure was ruined and mobility was hampered (Gunawan, 2010). Efforts to overcome flooding from the government were only undertaken after the big flood, i.e. in the form of emplacing water pumps in inundated areas. Furthermore, only after the occurrence of this big flood the government reacted by pushing for the construction of flood canals. Before this the development of these canals had happened slowly. This slows a lack of learning from experiences; therefore no higher types of learning exist.

According to Gunawan (2010), the problem with flood management during the colonial era is the lack of funding, which caused many plans that were made unable to be implemented. The amount of funds needed to build proper flood measures is almost equal to the total budget to run the city of Jakarta at that time. The flood canals that were built during the colonial era were focused on servicing the elite areas of Batavia. The development of measures of flood prevention showed a tendency of ignoring the lower class. Political action was only undertaken if the flood affected the elite. This can be seen in the example of Gunawan (2010) who described that only the elite enjoyed better protection from the measures that were implemented after the 1918 flood. This attitude hampers efforts to build relationships with stakeholders as this leads to a distrust of government, since it favours some areas over others in its servicing.

According to Salim and Firman (2011), the development of formal planning for Batavia started in 1910 where comprehensive planning was established. In 1930 another plan was developed following the framework of the previous, however, Silver (2008) notes that these plans were ineffective as Batavia lacked powerful and rich sponsors to give support or fund the preparation of a plan. The people concerned with better plans for Batavia were architects, not the business elite. This shows exclusion of relevant actors that are needed for the implementation of plans.

The last plan that was developed for Jakarta, before The Netherlands recognized Indonesia's independence was the plan for the satellite city of Kebayoran Baru. In 1948, Professor Ir. V.R. van Romondt from the Institute of Technology Bandung designed the satellite city of Kebayoran Baru. This plan included several components to alleviate flood risk. It was designed on the high ground between two rivers. These rivers and the adjacent underdeveloped land were planned to be a green belt. Due to regular flooding the lower area was planned to be preserved as open space. However, the greenbelt area suffered unregulated developments which flooded regularly during rainy season. The development of this plan shows direct involvement of expert knowledge from universities in planning. This can also be concluded from many of the interviews undertaken for this research. It demonstrates a reliance on experts and technocratic-scientific approaches.

In general, planning in the colonial era shows a strong focus on government driven initiatives. These initiatives were mainly based on expert knowledge. This knowledge appears to have lead to the

development of plans that were mostly technical, based on structural measures and did not include social measures. The nature of the strong colonial state seems to have not involved partnerships whatsoever. Due to this, government initiatives seem to have excluded relevant stakeholders such as business elites and citizens that experienced the effects of flooding. The favouring of certain groups over others hampered relationship building efforts. Public forums were also non-existent which led to one-directional information flows that did not take into account knowledge of local residents and communities.

3.2 Jakarta in the Sukarno Era

In the years after Indonesia's Independence most urban developments in Jakarta happened because the leaders of Jakarta and Indonesia (Salim and Firman, 2011). Government driven initiatives can be seen from Indonesia's first president, Sukarno, who had a very ambitious vision for the future of Jakarta. He wanted Indonesians to "*build Jakarta into the greatest city possible*," that its greatness should be visible in all aspects from skyscrapers, monuments and grand boulevards to "*the little houses of the workers*," and that the city should be "*the beacon of the whole of humankind*" in struggles against imperialism (quoted in Abeyasekere, 1989: 168 in: Cybriwsky and Ford, 2001). To do this, Sukarno modernized Jakarta and built many prestigious projects such as the National Monument (Monas), Masjid Istiqlal, sports facilities for the Asian Games of 1962, a new residential district called Kebayoran Baru, new government buildings, hotels and shopping plazas, connected by wide avenues (Cybriwsky and Ford, 2001). Salim and Kombaitan (2009) added that Sukarno physically and symbolically homogenized the different parts of Jakarta, while using unifying symbolic layers, and enormous statues and buildings for nation building.

In the era of Sukarno, several spatial plans were developed, such as a concept plan of 1952 that designed Jakarta with rings of highways and a greenbelt to physically separate Jakarta from the surrounding cities Bogor, Tangerang and Bekasi. According to an outline plan of 1957 these were the cities where further development should take place (Silver, 2008). This shows awareness by planners that Jakarta needs to use planning measures to protect Jakarta's most vulnerable areas in order to be resilient.

In 1966, the Jakarta government established the Master Plan of Jakarta 1965-1985. It envisioned a metropolitan region where the cities of Tangerang, Serpong, Depok and Bekasi would function as satellite cities (Steinberg, 2007). According to Silver (2008), the plan attempted to deal with the five most eminent problems, with flooding as one of these. In order to do this, a comprehensive flood-control plan was designed, on a regional level that included infrastructure investment to improve drainage regulation of new settlements. The outer limits of the region were the Cikarang River on the east, the Cisdane River on the west and Bogor's Puncak mountain range on the south. Later this region would be known as Jabodetabek, with 65 kilometres of urban development to the south, east and west of Jakarta's centre. The comprehensive approach to planning in this plan shows a high variety of expert knowledge applied. Within the Master Plan flood mitigation is not based on an administrative border but was directed a more on a river basin approach, seeing not only the floods in Jakarta but also the areas outside of Jakarta. The river basin approach shows a realization of the need to include multiple governments that need to work and coordinate together in order to achieve

resilient planning. The government of Jakarta also mapped the areas that have the potential for flooding, which was in accordance with the Spatial Plan of Jakarta in order to know what areas should have limited development (Gunawan, 2010).

The government's awareness regarding the importance of flood management started in 1965, with the release of the Presidential Decree 183/1965 that stated that all works regarding flood mitigation is seen as vital. This illustrates just how serious the government considers flooding, especially seeing the importance of Jakarta as a national capital. Since it is considered vital, if flood management was not carried out properly, those involved could face legal sanctions (Gunawan, 2010).

Planning in the time of Sukarno was characterized by a particularly strong central state, which leads to government driven initiatives. According to Hudalah and Woltjer (2007), this is seen from the 1945 constitution that states that in order to offer the greatest benefit for Indonesia's citizens, the government needs to control the use of land, waters, spaces and natural resources (Art 33, par. 3). In the Basic Agrarian Act of 1960 this is translated into the authority to use and develop land and to regulate legal relations between people and land. This shows a one-directional information flow from the government trying to exercise control over the public and stakeholders.

A technocratic way of planning has been established in Indonesian formal planning system since independence, through presidential decree 3/1947 regarding the committee for scientific strategy. This shows a strong emphasis on expert knowledge. One of the outputs of this committee is a planning document that considers key components for planning the Indonesian economy (Mustopadidjaja, 2012). This gave way for the technocratic planning tradition, based on scientific knowledge that is still in place now.

The strong central state during the Sukarno Era was characterized by government driven initiatives. These government initiatives were supported by a high variety of expert knowledge. This led to a one-directional information flow as the state was the source of information for its citizens. Throughout this period intellectual awareness about the need to be resilient was high. This can be seen from the development of comprehensive plans that take into account the need to develop a green belt around Jakarta in order to protect the city from flooding. This awareness can also be seen from the realization in the master plan for flooding that there is a need to coordinate with other governments outside of Jakarta. It seems that planning in this era still focussed on technical and structural measures that did not include social measures. Due to the top down style of planning, policy arrangements seems to not have included partnerships with stakeholders and NGOs but focused on drawing technical knowledge from experts that could be either from universities or foreign consultants. Knowledge of residents and communities seemed not to have been taken into account, leading to an absence of public forums, efforts to include communities in plan making and agenda setting and attempts to produce common goals and objectives. This could perhaps be explained by low levels of general education after the colonial time.

3.3 Jakarta in the New Order regime of Suharto

Indonesia's next president, Suharto (1967-1998), continued constructing Jakarta as a city with many high-rise buildings, mega malls, industrial estates, luxurious hotels, new toll roads, broad avenues, and electric rail-ways connecting the different parts of the metropolitan region. He wanted Jakarta to be an example of the success of him and Indonesia to become part of the modern world (Salim and Kombaitan, 2009; Cybriwsky and Ford, 2001). This shows a continuation of Jakarta being shaped by a strong state's government driven initiatives.

Planning in the era of Suharto was technocratic and focused on economic development that used neo-liberal economic ideas of market mechanism. It was based on the economy with major financing from overseas (Mustopadidjaja, 2012). President Suharto moved away from state-directed approaches to market-driven economic liberalization (Cowherd, 2005). Neo-liberal economic systems promote free markets as the only effective system. The neo-liberal ideas that came up in the time of Suharto lead to the removal of government roles from many policy areas. Government should guide investment and promote development, instead of influencing the realization of plans (Hudalah and Woltjer, 2007). Examples of the focus on economic development are the development of the industrial zones of Tanjung Priok and Pulo Gadung that should attract foreign investment and the international airport Sukarno-Hatta (Cybriwsky and Ford, 2001). This signifies a move away from government driven initiatives and a beginning of more market driven initiatives. It also shows a shift towards the inclusion of other actors, specifically the private in developing Jakarta.

In the 1970's a body was a created to manage flooding in Jakarta called Jakarta Flood Management Project (Proyek Pengendalian Banjir Jakarta, PBJR). This flood management project succeeded in cooperation with Nedeco, consultant in the Netherlands, in creating Master Plan 1973. In the master plan, flood management would be carried out through a "horse shoe system", a system of water where the water from upstream would be caught by a half-circle canal that is placed outside the city (Gunawan, 2010). This shows that high expert knowledge is engaged in planning the management of floods. It is also the first time that in Jakarta's planning after independence, that the government seizes the opportunity to use knowledge from international consultants. In order for the plan to be able to be realized major infrastructures for managing floods in Jakarta were planned, such as the construction of the East Flood Canal and widening the West Flood Canal. According to Gunawan (2010), even though the East Flood Canal has been planned since as far back as 1973, the construction only started in 2006, this shows a gap of about 30 years between the plan and its implementation.

During 1970-1980s, flooding occurred more often, e.g. in the year 1976, flooding occurred 4 times (Gunawan, 2010). The reason for the increase of flood occurrences was linked by Jakarta's government with the encroachment of the rivers in Jakarta due to illegal housing. This linkage between encroachments with increased instances of flooding could be seen as awareness of the causes of flooding. The increase of illegal housing could be seen as a result of the massive developments in Jakarta, which causes influx of people seeking for better life opportunities. He also mentioned that besides the higher frequency of flooding, Jakarta started to also experience flooding in areas further away from the rivers.

In 1983, the instance of flooding caused much of Central Jakarta and West Jakarta to be inundated (Gunawan, 2010). The flood inundation caused the disruption of governmental activities because it entered the area of Kebon Nanas, one of the centres of government in Jakarta, where both central and provincial government is located. After this occurrence, he said that the government of Jakarta, funded by the central government and Japanese aid, implemented projects that is meant for managing floods, e.g. cleaning the rivers, land acquisition, and improvement of the drainage system. This could be seen as efforts to access research centres from overseas in order to implement the necessary measures to prevent flooding occurrences.

On top of the encroachment of the rivers, another cause of the higher frequency of flooding and increase in places that are inundated is the increase of built up areas in Jakarta. A prominent urban land development during the regime of Suharto is the development of new towns. These housing developments were constructed by large private developers at the edge of the city and were mostly aimed at middle and upper class of society. The first project of this kind was the development of Pondok Indah in the 1970. This is despite the fact that much of South Jakarta was allocated as water catchment areas and as a green buffer for the satellite cities (based on interview with staff of Ministry of Public Works, 2013). After this area, many new housing developments were constructed along the toll roads towards Tangerang, Bekasi and Bogor as from the 1980s, such as Bumi Serpong Damai. Many of these new towns were originally planned to be self-contained communities, but they have turned out to become dormitory suburbs that create a large stream of commuters to the centre of Jakarta (Cybriwsky and Ford, 2001). This is an example of conflict of interest between the government and private sector as the development that was implemented by private deviate far from the original plan which in turn compromised the resilience of Jakarta towards flooding.

Cybriwsky and Ford (2001) emphasized another spatial shift that Jakarta is experiencing. DKI Jakarta has an increased specialization on services and finance, while manufacturing industries were leaving to the surrounding cities. Since the 1980s also kampung areas have been demolished and replaced by high rise buildings and new highways. Many original residents were relocated to flats built by the government. This is a strong illustration of how the development of Jakarta is driven by the market and the government.

The most important spatial plan for Jakarta developed in the time of Suharto is the Master Plan for the Special Capital Region (DKI) of Jakarta (RUTR 1985-2005). This document aimed to integrate regional and city strategies and addressed the balance between economic and physical solutions. It aimed at stronger community participation in the implementation of the Kampung Improvement Program and planned to reduce chaotic development in the fringe of the city. This could be seen as a first attempt to include the community in planning their own area. The practice however shows that market developments have overtaken the intentions of this document (Steinberg, 2007).

In the Master Plan of the Special Capital Region (DKI) of Jakarta 1985-2005, allocated water catchment area was reduced to 25.85% of total area in Jakarta from the original 37.2% which was targeted in the Master Plan of 1965-1985 (Tempo, 2007). However, the reduction of the allocated land for water catchment areas was further reduced in the revision of Spatial Plan of Jakarta 2000-2010 where 13.94% land was allocated for green open spaces that could act as water catchment areas. The revision of the spatial plan was based on the reality in the field where much of the

allocated areas for green open spaces was transformed to built-up areas for commercial and housing purposes. An example of this is the change in land use of Pulo Mas which according to the governors Soemarno and Ali Sadikin was meant for green open spaces (Tempo, 2007). This change of land use patterns continues until now. According to the analysis by a prominent NGO, Walhi Jakarta in Tempo (2007), during the period of 2000-2004, every year 90 hectares of green open spaces were transformed into built-up areas. This shows conflict over the use of space, where green spaces meant for the public interest is defeated by market interests, through the transformation of these green open spaces to commercial areas.

Moreover, other examples of conflicts of the use of space can be seen from the prioritizing of developments over the need for allocating land for protecting the resilience of Jakarta. Firman and Dharmapatni (1994) showed how many developments have actually been violations of the land use plan. Examples of this are a new town project with housing for high income groups and commercial areas through land reclamation in wetlands that are of ecological importance; the development of villas, hotels and tourist resorts in the Puncak Strip which is designated as water recharge area for Jakarta; and industrial estates being developed in prime agricultural land or preservation areas, despite that it is not according to Presidential Decree 54/1989. This decree lacks specific regulations though. The designation of areas for ecological purposes needed for the resilience of Jakarta signifies awareness by the intellectual community and planners. A major reason for violations of the land use plan, according to Firman and Dharmapatni (1994), is the fact that policies aimed to spur economic development such as deregulation and de-bureaucratization of investment procedures were much more effective than the policies to regulate land-use. This makes sense because creating economic development was the core priority of the New Order regime. This left the market mechanism to run its course. Through that welfare increased and economic growth accordingly.

Another problem that Firman and Dharmapatni (1994) noticed in that year is a lack of communication between different layers of government. For instance, central government planned development in the area of a local government but failed to communicate this to planners at the local level, which makes it difficult to design a good integrated development plan. Because of this, local government participates and supports the plan only a little. This is a blatant case of conflict in the coordination between different hierarchies of government in developing plans. It also shows how information is one-directional in flow, from the highest government level to the lower level with no feedback mechanism in place and the regional governments have little say in how development is carried out in their area.

3.3.1 Clientalism and informal negotiation

Winarso and Firman (2002) emphasized the practice of informal negotiation and a tradition of clientelist governance as essential in the practice of urban development, particularly during the time of the New Order regime of Suharto. They elaborated on this by explaining how most large developers are interlinked by means such as joint ventures and intermarriage. This leads to an oligopolistic land markets controlled by a few businesses. Winarso and Firman (2002) further showed that almost all major developers are have close relations with the financial sector, government and perhaps most importantly with the family of ex-president Suharto. In Indonesia's centralist and

corrupt government that offered chances to influence the planning process, especially because it essential to consult planning authorities to obtain location permits. Hudalah et.al. (2007) pointed out that Indonesian society has a long tradition of clientelist governance, but they think it is strengthened by current concentrated growth. This causes difficulties to build relationships with stakeholders outside the 'inner circle'. The practice of land development during the new order regime, as described by Winarso and Firman (2002) clearly shows cooperation between stakeholders. This offers possibilities for cooperation between stakeholders in planning when this happens more in the context of the law.

Cowherd (2005) described yet another aspect of Suharto's reign, that of corruption. Suharto developed a system where his family and a group of Chinese-owned conglomerates were at the top of a pyramid of tribute and corruption. His inner circle quickly collected a fast amount of the country's resources. Every significant business transaction was linked to his pyramid of corruption through actions such as bribes and shares in order to get licenses, positions, monopoly rights or exemptions from regulations. Even the Indonesian government became a tool of Suharto's kingdom of corruption, through regularly distributed unofficial income to add to low government wages. This causes distrust of government.

3.3.2 The 1997 crisis

In 1997 Indonesia suffered a currency crisis that hit most of East Asia but Indonesia in particular. According to the World Bank Indonesia was "*in deep crisis. A country that achieved decades of rapid growth, stability and poverty reduction, is now near economic collapse. No country in recent history, let alone one the size of Indonesia, has ever suffered such a dramatic reversal of fortune. The next years will be difficult and uncertain"* (World Bank, 1998: 1). According to Silver (2008), this economic crisis stopped all infrastructure projects from the government, destroyed the real estate market and stopped most foreign investments. He continues that the economic crisis also caused a political crisis. This lead to the fall of the Suharto regime in the year 1998, and caused 4 years of political instability, but according to Firman (2002) also offered Indonesia the possibility to develop new legislation on regional autonomy (Law number 22/1999) and fiscal decentralization (Law number 25/1999). Secondly it changed the political and socioeconomic conditions after Indonesia's first president following Suharto was elected in 1999. This offers possibilities for the formation of a more inclusive system with related indicators such as relationship efforts between stakeholders, grass root initiatives, public forums and multi-directional information flows.

The Suharto regime was characterized by government driven initiatives, paired with the emergence of market driven initiatives. The command and control style of planning directed by the central government caused one-directional information flows and conflict between different hierarchies of government. Inclusion of private interests predominated planning, causing many cases of conflicts of spatial use, between public interests defeated over private interests. Developments in the name of economic growth were prioritized over the need to allocate water catchment areas needed for the resilience of Jakarta. This is despite the awareness among the planners and intellectual community about the need to become more resilient to flooding. It appears that Jakarta had a dichotomised way of thinking in relation to flooding, in one side it used high technical expert knowledge and accessed

research centres to deal with flooding, on the other side it prioritized development over land allocation for ecological functions needed for resilience to flooding. Planning rules and regulations were characterized by low enforcement, due to the strong focus on economic development and low priorities that were given to developing land use control mechanisms. Moreover, planners started to become aware of the necessity for community participation. The clientelist governance system strengthened relations between an inner circle that governed and developed Indonesia. Partnerships included this group but excluded outsiders and stakeholders. Due to this practice, the Suharto regime seemed not to focus on developing an inclusive way of planning, therefore knowledge of local residents and communities was not taken into account, nor were they involved in plan making and agenda setting. This can be explained from the clientelist approach that does not involve the formulation of report that produces common goals and objectives with all actors involved in the planning process. This is not surprising as most of the plans developed were technical, focussing on structural measures to deal with flooding while not including social aspects.

3.4 Jakarta after the reformation

3.4.1 Decentralization

Suharto's successor, Habibie, reformed Indonesia's government and decentralized power as well as responsibility from central to local governments. Local governments, city as well as district now received significant administrative autonomy. The changes meant that urban and regional planning now needs to be planned and implemented according to the needs of local government and communities. This used to be under strict central government control. The new Regional Administration Act of 2004 regulates that the national government only has five policy fields that are under its control: foreign affairs, defence, national security, justice, monetary affairs, and religion. All other government responsibilities are now under the authority of provincial and local government (Hudalah and Woltjer, 2007). All these changes also fuelled the movement for improved democracy (Silver, 2008, Firman, 2002). These changes allow for more participatory approaches to be internalized within the government's institutions.

3.4.2 Public participation

Public participation is clearly embedded within Indonesia's legal framework. Hudalah and Woltjer (2007) showed that decentralization and public participation was started with the release of Spatial Planning Act of 1992. In this act it is mentioned that all levels governments have the authority to undertake spatial planning at their own level. Public participation is also mentioned as *"[e]very citizen has rights: to know spatial plan; to involve in spatial plan making, spatial development process, and development control... (Spatial Planning Act 1992, Art 4)."* The rights are strengthened by the Government Regulation of 1996 (No. 69), Art. 2: *"In spatial planning, the citizen has rights: to participate in the processes of plan-making, development, and development control; to know transparently the general spatial plan, detail spatial plan, and detail engineering design; to enjoy the benefit of space and its added value as the result of spatial planning; to obtain fair compensation impacted by the implementation of development activities based on the spatial plan.".* The current

Spatial Planning Act of 2007 names society's role in spatial management among others as 'participating in the preparation of a spatial plan (Spatial Planning Act 2007, Art. 65). Hudalah and Woltjer (2007) concluded that since decentralization, public participation in spatial planning has improved from informing to consulting. The changes in regulation before reformation did not have any effect on the inclusion of stakeholders and communities. After reformation Indonesia entered a more inclusive era where governmental regulations enable multi-directional information flows, public forums to be formed and mechanisms to execute more participatory approaches in spatial planning.

In the 1970s there were already some attempts to establish cooperation between stakeholders, as is shown by Hudalah et al. (2007), who mentioned the formation of coordinating forums. In 1973 the BKSP (Badan Kerjasama Pembangunan or Cooperation Board for Development) Jabodetabek (Jakarta–Bogor–Depok–Tangerang–Bekasi) was formed. Hudalah et al. (2007:515) list a number of problems that these coordinating forums faced which made them unable to function well. *"Unfortunately, the establishment of these institutions tends to be voluntary and symbolic in nature without a clear agenda for systematic collaborative action. Their presence is politically weak and not supported by sufficient resources. They can only facilitate communication arenas through coordination meetings. They have no legal authority to coordinate local governments in order to be able to manage spatial development effectively at the regional level. Their functions also often overlap with those carried out by local governments."* Another example of the lack of coordination between different relevant government institutions can be seen in the big flood of 2007. After this flood the governor of Jakarta, Sutiyoso, attributed the problem of flooding of the development of villa's upstream in the Puncak Strip, belonging to province of West-Java. Meanwhile, the governor of West-Java, Setiawan, attributed the causes of the flood to the uncontrolled developments in Jakarta which reduced the amount of green spaces as well as the lack of adequate infrastructure for managing floods (Tempo, 2007). This is of particular interest for resilience of flooding as many of the rivers in Jakarta originate in Jakarta's neighbouring cities. Good coordination between different stakeholders within the stream area of the rivers cutting through Jakarta is essential, but it can be seen that historically this has not been the case.

In their 1994 article, Firman and Dharmapatni (1994) emphasized the potential of community participation for sustainable development in the Jakarta metropolitan region. They show this based on the example of Prokasih, the Clean River Program of the DKI Jakarta. Here the provincial government worked together with communities and manufacturing estates in close to the Ciliwung River to dramatically reduce pollution levels in this river in only 3 years time (between 1989 and 1992). Besides this, Firman and Dharmapatni (1994) mention that NGOs and community-based organizations organized many programs for small-scale community and housing development. In general these problems failed because of lack of coordination with government programs as well as with other communities.

This clearly shows that there is potential in involving the communities to build resilience for flooding, especially when the government helps with coordinating these programs. However according to Firman (2004: 352) *"In the past, urban spatial planning in Indonesia neglected the public as stakeholders. This was a largely top-down process in character, dominated by initiatives of both central and local government. There has been almost no negotiation process to build up consensus*

among various parties and stakeholders involved in urban development." He gave some other reasons why public participation did not work in Indonesia, namely that many cities in Indonesia conceal urban spatial plans from the public, which makes it impossible to participate in urban land development controls. On top of this, most local development planning boards (BAPPEDA) that should undertake stakeholder coordination lack qualified personnel.

The era of reformation has given rise to some initiatives that could help establish the practice of public participation and grass root initiatives. Firman (2004) mentioned Laws 22/1999 and 25/1999 on fiscal decentralization that recognize the autonomy of local government and communities in their own area for urban land development, where local communities can voice their needs through local representative counsels (DPRD). After these reforms, the private sector can play a larger role and local government now should have the role of administrator instead of authority, a good example of multi-directional information flows. In 2004, according to Firman, some city governments had their first attempts on developing participatory urban development action plans, with all stakeholders as equal partners. In 2004 these programs were still learning by doing and aimed at very small areas.

Silver (2008:224) gave an example of improved public and community participation with the introduction of a new planning approach: "*The urban development area programme (Program Dasar Pembangunan Perkotaan or PDPP) introduced a participatory element into local capital improvements planning that involved local stakeholders in the plan-making process."* In this program the US Agency for International Development, the Coordinated Local Environmental Action Network in Urban Areas (CLEAN-Urban) was involved to improve local governments' capacity for financing environmental services. "*Between 1998 and 2000, CLEAN-Urban worked in 818 individual communities (415 in East Java and 302 in West Java) including 14 cities, to create and use a community participation process; to conduct community needs assessments; to identify opportunities for small-scale infrastructure projects and micro-enterprise projects to create jobs; and to address infrastructure needs"* (Silver, 2008:224). This is an example of the government accessing research centres and NGOs in order to successfully carry out programs.

All these developments since the reformation are positive signs for public participation; however the practice still does not incorporate public participation from the start of the planning process. This can be seen from law 25/2004 on the national development planning system. This describes four phases of the planning process (Mustopadidjaja, 2012).

- Phase 1: preparing a plan that is technocratic, comprehensive and measurable;
- Phase 2: every relevant government institution has to prepare a draft work plan, based on the draft development plan that was prepared in phase 1;
- Phase 3: involvement of stakeholders to synchronize the development plans as made in phase 2, through planning deliberation;
- Phase 4: formulating an end-draft for the development plan.

This practice shows that stakeholders are only involved in phase 3, only after technocratic, comprehensive and measurable plans have been developed. This limits the influence of the public as they are not involved from the start, while besides that they lack the technical knowledge to fully understand the plan that has already been developed.

Steinberg (2007) gave another example where the practice of public participation still needs to be developed further. When the Strategic Development Plan 2002-2007 was designed, this happened behind closed doors and ignored the public that actually wanted to participate in formulating the plan. Many people saw this unwillingness to involve urban stakeholders as a ridiculing the movement of decentralization which called for a more democratic planning process. This is an example where no inclusion of actors was carried out in the planning process, which is actually essential in producing common goals and objectives.

3.4.3 Development of plans is slow, lags behind development

Much of the scientific literature about Jakarta shows that formation and implementation of plans is slow and lags behind the developments. Caljouw et al. (2005:470), in their discussion on spatial developments in the colonial age already mention that "These plans and projects had to follow the tremendous expansion of the city that took place over the centuries and clearly lagged behind it."
This can also be seen in the development of the East Flood Channel. This channel has recently been completed, in 2010, even though according to Salim and Kombaitan (2009) the Dutch East Indies government already planned to build it, in order to anticipate flooding. This could be seen as a lack of awareness in the need to prioritize flood management efforts.

3.4.4 Inertia of the government towards flooding

This problem of inertia within the government towards flooding that was already apparent in colonial times seems to still be apparent, as Caljouw et al. (2005:462) in their article also discussed the severe flooding that Jakarta faced in 2002. They notice that *"now, several years after the flood, it is interesting to note that the tragedy of 2002 seems to be almost forgotten, or perhaps memory of it has been suppressed. It was only after the flood had really taken hold that bureaucrats finally reacted, but notwithstanding ongoing projects, it is still not clear to the general public what decisions have been taken and what plans have been realized to protect the city from another, probably worse, rainy season. (…) Nowadays the people of Jakarta give the impression of having forgotten the tragedy. The Rp 15 quintillion plan is no longer mentioned in the press. NGOs are busy with other matters that are more sensational than floods in a floodless period. The names of housing estates that fell victim to the water are rarely mentioned. People have stopped thinking about it. The garbage that was blamed as one of the factors causing flooding has now ceased to be a topic of debate, and garbage is still floating everywhere in the rivers and canals of the city. Boats for the evacuation of victims have been stored away. The Puncak area is still considered an attractive place to build villas. There is no more public debate about the problem of water-catchment areas."* This shows a lack of higher types of learning. The Jakarta government has not learned from previous experiences and continued to make the same mistakes.

Two years after their publication, their worries proved correct, as in 2007 Jakarta was hit by an even bigger flooding. Steinberg (2007) discussed this flood that affected 60 percent of the city, forced 430,000 inhabitants to evict and cost 80 persons lives, while the total costs were estimated at US$ 453 million by the National Development Planning Agency. The fact that this flooding was even

worse than the one in 2002 proves that no effective measures were implemented. However, this could be due to the problems met by the government of Jakarta in constructing the East Flood Canals which was built with the intention to reduce the flood inundations in eastern part of Jakarta. The funding of this project was the responsibility of the central government together with the government of Jakarta: central government was responsible for the physical construction and the government of Jakarta was responsible for land acquisition (Tempo, 2007). The big flood of 2002 caused the discussion of the East Flood Canal to become eminent since large areas of Jakarta were inundated. The development of the canal was riddled with problems of land ownerships, whereby multiple land owners were found for the same plot of land and problems of land speculation causing the prices of the land for where the East Flood Canal was planned to rise. The 2007 flood made the issue of the East Flood Canal to once again become public discourse since it then became of political importance. This shows a lack of awareness by every actor involved, as personal interests proved to be more important than the greater good. This could also be caused by the fact that the government has never tried to build relationships with stakeholders, nor has the government carried out enough awareness raising.

Steinberg mentions the words of Jakarta's governor at that time, Sutiyoso, that money is allocated in the city's budget for managing the repercussions of flooding, as the government considers these floods "a natural phenomenon that comes every 5 years'. (Steinberg, 2007:361). His words show that unwillingness of Jakarta's government to really try to solve the problem of flooding. City budgeting was focused on other matters until flood management was deemed absolutely necessary. The above illustrates the government's reactionary response to events and non-anticipatory stance on flooding. This signals a lack of higher learning.

It can be seen in Tempo (2007) that the inertia of Jakarta's government to really solve the problem of flooding leads to community initiatives. Tempo describes how the inhabitants of the area of Pluit felt that they could not depend on the government to solve their problems. During the flooding of 2002 this area severely flooded. Due to the residents' distrust of the government to take appropriate measures, they decided to collect money among local stakeholders and buy pumps to deal with their issues of flooding. The success of this approach can be seen from the fact that the area of Pluit did not inundate during the severe 2007 flooding. This is despite the fact that the major flooding that occurred in 2007 was said to be one of the worst floods in Jakarta's history (Tempo, 2007), with areas inundated with floods as high as 3 meters in some areas in South Jakarta. Moreover, more than 60% of areas in Jakarta were inundated. After this, the inertia of the Jakarta government could be seen again in the instance of the 2013 flooding. According to an interview with a planning expert the area of Pluit had severely flooded, according to him this happened because Pluit's water catchment area was not functioning anymore due to illegal encroachment of buildings. Apparently the Jakarta government did not stop illegal buildings, which led to the community initiatives to be annulled. This shows a conflict where community initiatives were not supported by the government.

Another cause of community initiative can be seen in the 2002 flooding in the area of Sunter and Kelapa Gading. Caljouw et al. (2005) described how closing of a certain floodgate would mean the area of Kelapa Gading would flood, while opening the floodgate would mean the area of Sunter would flood. Because of this, car factory Astra, on the Sunter side, hired soldiers to ensure the floodgate would stay closed. This meant that the area of Sunter was safe and the area of Kelapa

Gading flooded. Here the lack of efficient flood measures of the Jakarta government lead to a conflict between actors.

The post-reformation era can be generalized by the formation of legal frameworks that embed participatory approaches such public participation, multi-directional flows, public forums and grass root initiatives. The practice of these frameworks in reality appeared to face problems and was ineffective. Perhaps this is the case because Indonesian planning has entered a new phase that still needs to be institutionalized and embedded within the planning system and the governments mindset. What has not changed compared to previous times is the tendency to keep making technical, measurable and comprehensive plans that focus on structural measures instead of social aspects. Another aspect of planning that was still present after reformation is the inertia of the government to really deal with the deeper causes of flooding.

3.5 Planning culture in Indonesia

Hudalah and Woltjer (2007) discussed the most important informal-cultural forces that explain the planning culture in Indonesia. These are the aspects of political culture, governance tradition and the relationship between state and society as they have existed through Indonesian history and have shaped development of the nation. According to Hudalah and Woltjer (2007), Indonesia has at least three important political cultures: Javanese, colonial Dutch and Outer Islands. Considering its location, Jakarta is most likely to be influenced by the Javanese and colonial Dutch tradition. The Javanese cultural tradition offers an explanation for the traditional strong role of the central state with strong government control. The Javanese culture is highly paternalistic, where rulers have the ultimate power to make decisions. They can theoretically not make a wrong decision, which leads to a strong hierarchical system and an obedient perspective of citizens towards their leaders and their decisions. In the case of spatial planning it leads to discretionary practices and an arbitrary system of decision-making. Besides this, 350 years of Dutch colonial rule have imprinted within Indonesian culture the Dutch corporative governance tradition of bureaucracy and normative approaches. Imperialist ideas maintained the hierarchical system that existed in Indonesia. The combination of Javanese culture and Dutch bureaucracy explains for a strong role of leadership with corresponding indicators such as government driven initiatives, one-directional information flows, and low efforts to build relationships between stakeholders or to include communities in plan-making and agenda setting.

Another cultural aspect that is apparent in many of the interviews that were undertaken is the lack of an urban culture. Many of the interviewees refer to this problem for Jakarta. The core of the problems, according to the interviewees, is that many of Jakarta's residents still behave the same way as they did in the village where they originate from. In a city with this many residents this leads to problems such as the disposal of trash in the rivers. This problem can be explained by the fact that Jakarta is often described as a city of kampungs (Steinberg, 2007). According to him, around 60 percent of Jakarta's residents lives in kampungs. Some of these urban villages date back to colonial times, but besides this many kampungs have developed unplanned in the urban fringe and along riverbeds, reducing the size of the rivers. As an example he mentions the Angke River. Over the years this river shrunk in size from 40-60 meters until 5-10 meters. This is often blamed on the illegal

squatters that live along the river beds. They are not covered by public waste collection, which is another cause of their waste dumping. This is a case of a lack of awareness on causes of flooding and on the need to adapt to a new environment.

3.6 Path dependencies and lock ins

This section will give an overview of the lock ins and path dependencies that were lock ins that were found in the historical analysis. This section starts with an overview of the resilience indicators as they were found in Jakarta's history. This shows the tendencies in the resilience/non-resilience of governance based on institutional capacities in Jakarta's history. Finally this section will conclude with a short overview of the path dependencies and lock ins that were found.

3.6.1 Perceived role of planners

The perceived role of planners in Jakarta can mostly be categorized as positivistic: predicting future development trends as a basis for controlling and creating order/producing blueprints.

Planning in Indonesia is heavily expert-based. Most of the ideas in planning can be traced back to the experts in fields related to planning. Over the course of Jakarta's history, there is no real evidence of ideas that were brought forward in public participation meetings by communities. Based on the historic analysis it can be seen that experts formulated plans and that public meetings were only forms of consultation/mere justification of plans that have been formulated by the experts. Planning was basically the realization of the visionary ideas of Jakarta's national and provincial leaders. Jakarta was transformed into a showcase of Indonesia's success in the modern world. Developments such as important infrastructure improvements and symbolic layers happened due to the vision of a leader, i.e. Sukarno and Suharto, and were then transformed into a plan by the experts.

Spatial plans which could be seen as a report producing common goals and objectives for the future of Jakarta seem to be formulated apart from the relevant stakeholders. Spatial plans were disjointed from the reality of how developments were realized in Jakarta. This can be seen from the spatial plans that have been formulated over the years. The business elites and powerbrokers were not involved in the process of formulating the spatial plans; therefore, the spatial plans did not reflect the direction of the development that was occurring in Jakarta. There was a dichotomy in thinking about the way development should be carried out. The lack of obedience towards spatial plans could be explained by the fact that the spatial plans did not accommodate the needs of all relevant stakeholders.

The historic analysis did not identify evidence of rejections in new ideas and/or concepts for resilience. Over the centuries there seem to be no new ideas, which can be seen by the fact that plans to overcome flooding have been similar throughout history. It appears that the way of thinking on resilience and how to make Jakarta resilient towards flooding has consistently been in the framework of engineering resilience. This implies that efforts were aimed at trying to recover after a disturbance instead of adapting to a new situation.

3.6.2 Knowledge and skills employed

The knowledge and skills employed in Jakarta can mostly be seen as positivistic: expert scientific knowledge, skills in quantitative modelling.

Jakarta's history has not shown multi-directional information flows. It appears that most information was derived from government and was directed to the other stakeholders. This could be seen from the technocratic way of planning that was undertaken in Indonesia. Plans that were developed needed to be technocratic, comprehensive and measurable. Already in colonial times Jakarta saw technocratic planning when the Dutch tried to develop Jakarta according to a technical plan that resembled city planning in the Netherlands.

Jakarta has always been rich in intellectual capital as it has always had the highest concentration of highly educated people. This could be seen from the fact that many master plans that were developed were multi-dimensional and forecasted future developments far ahead of their time. This shows the strong intellectual capital base.

The history of planning in Jakarta shows that comprehensive plans, i.e. Master plans of 1965-1985 and the Master plan of 1973, were made to tackle different problems in Jakarta, such as water and transportation. The plans included different fields of knowledge in order to tackle complex problems such as flooding. This suggests a variety of knowledge has been available at hand in Jakarta.

Over the period of Jakarta's history little evidence was found on governments attempts to use knowledge of local residents and communities. For example in the case of Pluit, the residents had knowledge of what areas needed to be dealt with in terms of flooding, but the government did not take that information into account. In the early 1990s many promising community-based programs failed because of lack of coordination with government programs as well as with other communities.

Jakarta seems to have seized the opportunity to use knowledge from as many different sources as possible. This can be seen from the cooperation with foreign consultants for formulating and implementing programs which has been done in the period of Sukarno and Suharto. Also the major national universities were highly involved in plan-making. The experts have been involved in the first phase of plan making, in later phases government agencies have adjusted the plans. This was institutionalized in the national development planning system. Jakarta has accessed universities to gain knowledge but the historic analysis has not shown efforts to gain knowledge from NGOs.

3.6.3 Methods of engagement

Over the course of history the methods of engagement seem to have been mainly positivistic: top-down tokenistic consultation. Lately there has also been symbolic structuralism: adversarial/public enquiry.

In general, the historic development in Jakarta shows little inclusion of actors from different backgrounds. The first attempt to include community participation started in the Suharto era, with

the Kampung Improvement Program; however, this was unsuccessful due to the government prioritizing economic development over the actual participation of communities. In the end, public participation was minimal as it only meant to inform people of what would happen without considering their input. Planning in Indonesia could be characterized as top-down, as plans have been developed in four phases: first a technocratic, comprehensive and measurable plan was developed by planners, then relevant government institutions could make draft plans based on that, only the phase after this stakeholders were involved (Mustopadidjaja, 2012). Due to this, the stakeholders have had little influence on shaping the plan. From colonial times planning has been top-down. Since reformation this has become a negative lock-in as Indonesia since then have become per law obliged to use public consultation and community participation, which has been ineffective.

Planning in Jakarta proved to be more of a combination of government and market driven initiatives rather than grass root initiatives combined with government initiatives. This is due to the centralistic nature of Jakarta. Jakarta historically has been more government controlled which in effect gave little room for people to grow and use their creativity. Lack of democracy restricted people in starting community initiatives, as the whole society was controlled, not just in the field of planning. Market driven initiatives dominated because of clientelistic system of politics and the policies of the time that favoured free market mechanisms. Bureaucratic procedures enabled the market to develop with little restriction causing land use control mechanisms to not function. Restricting development was seen as restricting progress.

There have been many apparent conflicts in Jakarta between different actors. One of the most prominent conflicts in dealing with floods in Jakarta has been the conflict between the government of Jakarta and West-Java. Both governments seemed unwilling to cooperate and reach a mutual agreement on how to tackle the problem of flooding together. Besides conflicts history has also shown an apparent distrust of citizens towards the government. This led to citizens taking their own initiatives in dealing with floods. This could be positive as in the case of Pluit where citizens worked together to buy pumps, while for the case of Sunter it was a negative example when a company hired para-military to protect their area from flooding.

The government seemed to have only built relationships between experts from universities and large developers. Universities were involved in developing master plans while developers were given access to great amounts of land, even when this was not according to the land-use plan. During the New Order regime of Suharto, the type of relationship between government and developers became a form of clientelism and informal negotiation. In this type of engagement little public participation was involved. The most common type of relations was between the business elite that had close relations with the ones in power. It led to the handing out of building permits in areas that were designated as green space, making this a negative-lock in. The historical overview shows no apparent relationship building between the government and NGOs and citizens, as many NGO programs failed due to lack of government support. Also citizen initiatives were often counteracted by a lack of law enforcement and government support in dealing with illegal developments that led to flooding, i.e. encroachment of water reservoirs and building of houses on riverbanks.

The government seems to have not included communities in plan-making and agenda setting, as communities and stakeholders were only involved in later stages of plan development. Even this type of involvement happened fairly recent in Jakarta's history, namely since reformation era.

In Jakarta everyone seems to be been aware of the problem of flooding, but there have been no complete attempts to raise awareness. Since colonial times the riverbanks have been encroached and people have been throwing trash in the river. Citizens have been unable to see the direct relationship between their actions and the consequence of flooding. This is probably due to a lack of urban culture, as mentioned by many interviewees.

3.6.4 Institutional structures/power relations

Jakarta has shown positivistic institutional structures/ power relations: hierarchical, formal government systems, enforcing power over private property rights, privileging of technical knowledge.

The historic analysis has shown a high awareness about the importance of flooding, but mostly seen in terms of technocratic flood measures and not focused on resilience. The action closest to resilience that the Jakarta government has undertaken could be classified as engineering resilience, aiming to bounce back to a previous state. Meanwhile, there seems to have been generally low awareness among the citizens themselves about how their actions can worsen the problem of flooding.

The historic analysis has not shown sharing of knowledge between different government agencies. This could be due to a lack of partnerships between government agencies. When there have been attempts to build partnerships such as the BKSP, these partnerships were ineffective due to lack of coordination, lack of legal power and conflicting interests among members. An example of a partnership that did work was the partnership between National and Provincial government to construct the East Flood Canal. The reason that this worked could be because it was based on political agreement between central and provincial government. Besides this, the completion of the East Flood Canal was of national interest and was developed as an infrastructure showcase for Jakarta. It was a prestige project. Furthermore, the historic analysis has shown little existence of partnerships between government and non government actors. Based on the analysis it appears that all partnerships that have existed could be characterized as short term. An example of this is the Prokasih program where the Jakarta government worked together with communities and industrial estates to clean the Ciliwung River.

The historic analysis has shown many projects developed either by government, real estate developer or NGO, but has not shown projects developed by actors from diverse backgrounds working together.

Since the reformation era public forums, meetings and public agenda shaping efforts have been put in place by law. This has allowed for actors to have a say in the formulated spatial plan. However the implementation of these efforts seems to have only involved the public in the later stages of

planning, while the public could have been more effective in agenda shaping if they were involved from the start of the planning process.

3.6.5 Modes of implementation

Based on the historical analysis there is no evidence of learning that exists in dealing with flooding. Single loop learning requires routines to be improved, however, throughout Jakarta's history the same causes of flooding were evident, from colonial times, and the way to deal with it has not significantly changed in time. For example, throughout history, Jakarta has been highly dependent on flood measures such as canal systems and polder system. Meanwhile it has been proven to not work in Jakarta. Furthermore, the behaviour of people to throw trash in the river has been known as one of the causes of flooding since colonial times while there have not been significant programs to deal with this behaviour. Furthermore, from colonial times up until the 2002 flood Jakarta's government has shown inertia towards dealing with flooding and has only reactive measures to flooding instead of a thorough program to deal with the problem before it occurs.

The historic development in Jakarta has not shown the undertaking of experiments and research projects together between government with NGOs and universities. Jakarta did not access these institutions to carry out programs. This seemed to have happened separate of each other. This can be seen from experience of the early 1990s where many NGO programs failed due to lack of coordination by the government.

3.7 Path dependencies and lock ins

Pre-formation phase
- Set structures from Dutch colonial time and Javanese cultural influences
- Technocratic planning
- Flooding as a normal consequence of living in Jakarta
- Developments aimed at serving the elites
- Fatalist acceptence to flooding
- Plans as architectural documents
- Lack of urban culture

Path Creation Phase
- Techno-Scientific approach to planning
- Reactionary way of dealing with flooding
- Top-down, centralistic approach to planning
- Irresponsible behaviour (river as a waste dump)
- Modernization is synonymous with physical development
- Corruption

Path Dependence Phase/Lock Ins
- Inertia of government in dealing with flooding
- Canal and polder system as the main flood measures
- Expert based planning
- Clientelistic approach with informal negotiation
- Leaders-based planning
- Low stakeholder involvement
- Low cooperation between different levels of government as well as inter-governmental
- Distrust towards government

Path Decay Phase/Negative Lock Ins
- Not learning from previous experiences (the same causes of flooding and responses to it)
- Dependence on (ineffective) technical flood measures
- Ineffective bottom-up planning due to strong institutional embeddedness of top-down planning
- Implementation of plans lags behind development
- Unplanned developments
- Land-use control subsidiary to market mechanisms
- No building of social capital/building networks and relationships in order to deal with floods

Note: decentralization formally institutionalized public participation in the planning process, which can be seen as the potential to form a new path. However, still many negative lock ins restrict this.

Figure 3.1:Path Dependencies and Lock ins. Source: author (2013)

Decentralization formally institutionalized public participation in the planning process, which can be recognized as the potential to form a new path. Still many negative lock ins exist that prevent these potentials to already reach the phase of path dependency and lock in, but positive signs can be seen.

New Path Formation

- regulatory reform (fiscal decentralization and local autonomy)
- new partner arrangements (embedding of public participation in law and start up of public forums)
- recent political support and insight (forced by law)
- taking into account knowledge of the public and communities

Figure 3.2: New Path Formation after reformation. Source: author (2013)

Chapter 4: Jakarta's current resilience to flooding

This chapter describes the current state of Jakarta's resilience in the context of flooding. It does this by analysing each of the resilience indicators that were found in chapter 2, that are based on interviews, policy documents and articles in newspapers and magazines. The chapter is built up of several subsections based on the criteria for analysing processes of spatial strategies as developed by Davoudi and Strange (2009). These are the perceived role of planners, knowledge and skills employed, methods of engagement, institutional structures/power relations, and modes of implementation. Each of these sub sections starts with a table that gives an overview of the relevant resilience indicators.

4.1 Flooding and climate change

The chapter on Jakarta's historic development has shown that the problem of flooding has been present since colonial times, however, based on information from the interviews undertaken for this research, most research on flooding now happens in the context of climate change, as this is now one of the buzz words in planning. One respondent says that the topic of climate change has become one of the major topics in spatial planning since the climate change conference in Bali in 2007. Tumiwa (2010) describes that the Indonesian government for the first time developed a legal document regarding climate change after the climate change convention PBB, COP-13 (UNFCCC) in Bali in December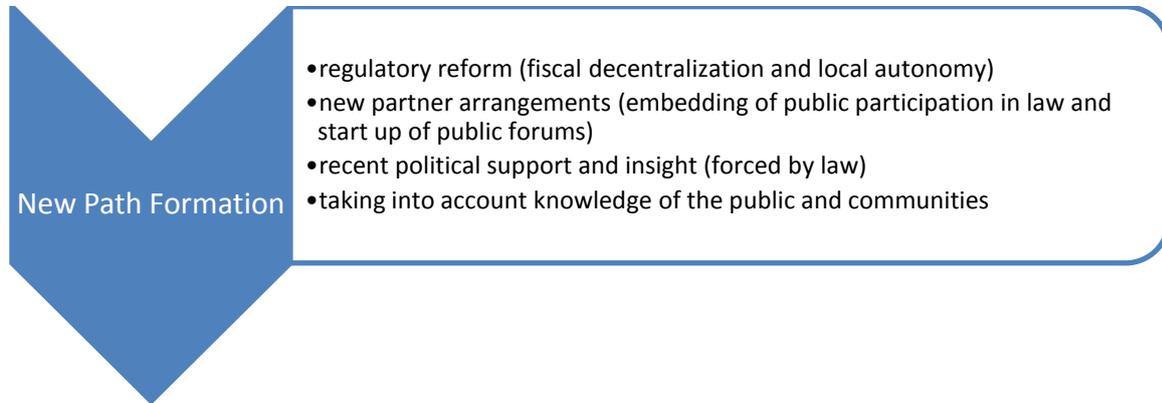 2007. Since then, climate change has become a national discourse in spatial planning in Indonesia. Due to this, in spatial planning – particularly in Indonesia – the term climate change is often conflated with flooding. However, according to one interviewed government official, climate change and also sustainable development are just jargons, ways to think about the environment and take it into consideration. In Jakarta climate change adaptation is tackled in a way to also include flooding. The consequence of this for this research is that some of the resilience indicators as developed in chapter 2 are now mainly used in the context of climate change. When talking about resilience most Indonesian policy documents always link flooding to climate change.

4.2 Jakarta's structural measures

Jakarta's way to deal with flooding is still very dependent on technical measures. Figure 4.1 and 4.2 (taken from RTRW 2030) give an overview of the major structural measures that can be found in Jakarta. Figure 4.1 shows Jakarta's existing and planned water reservoirs while Figure 4.2 shows Jakarta's polder system.
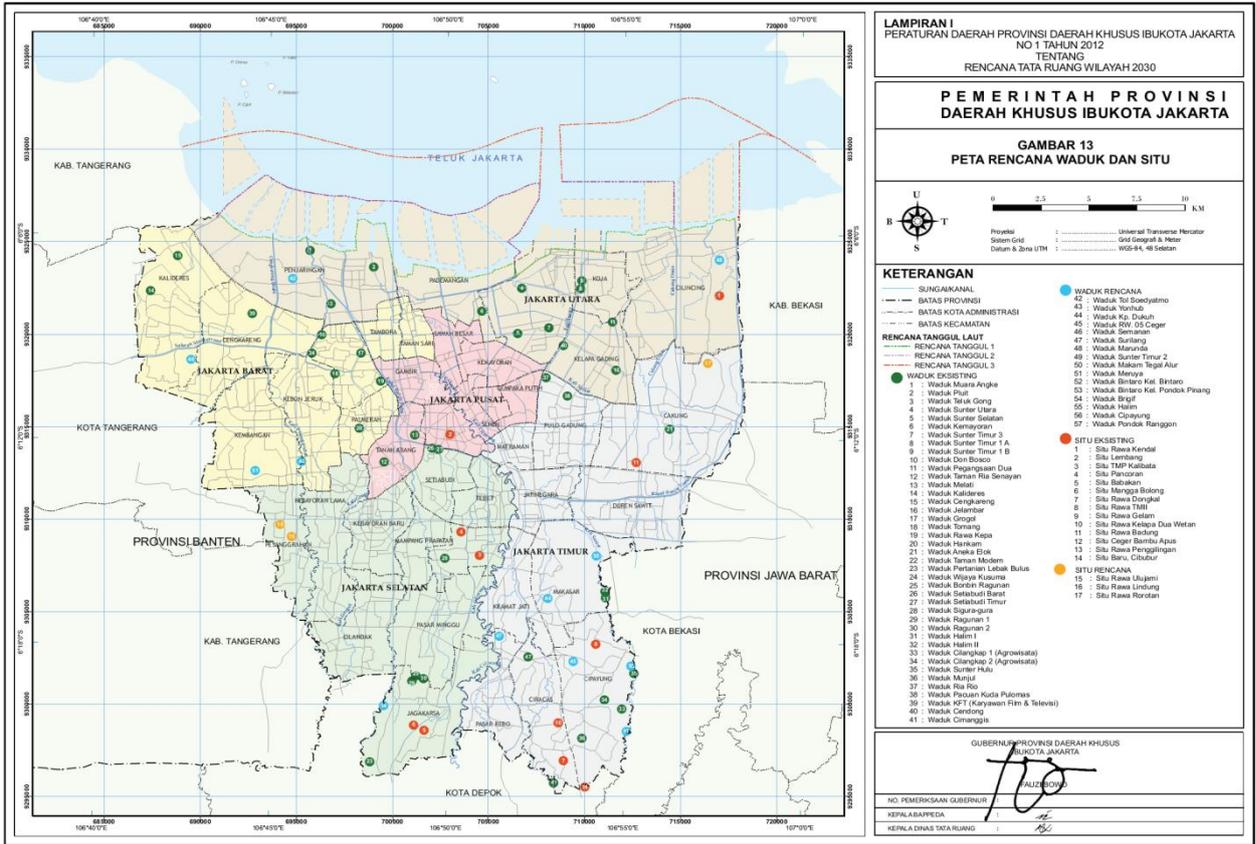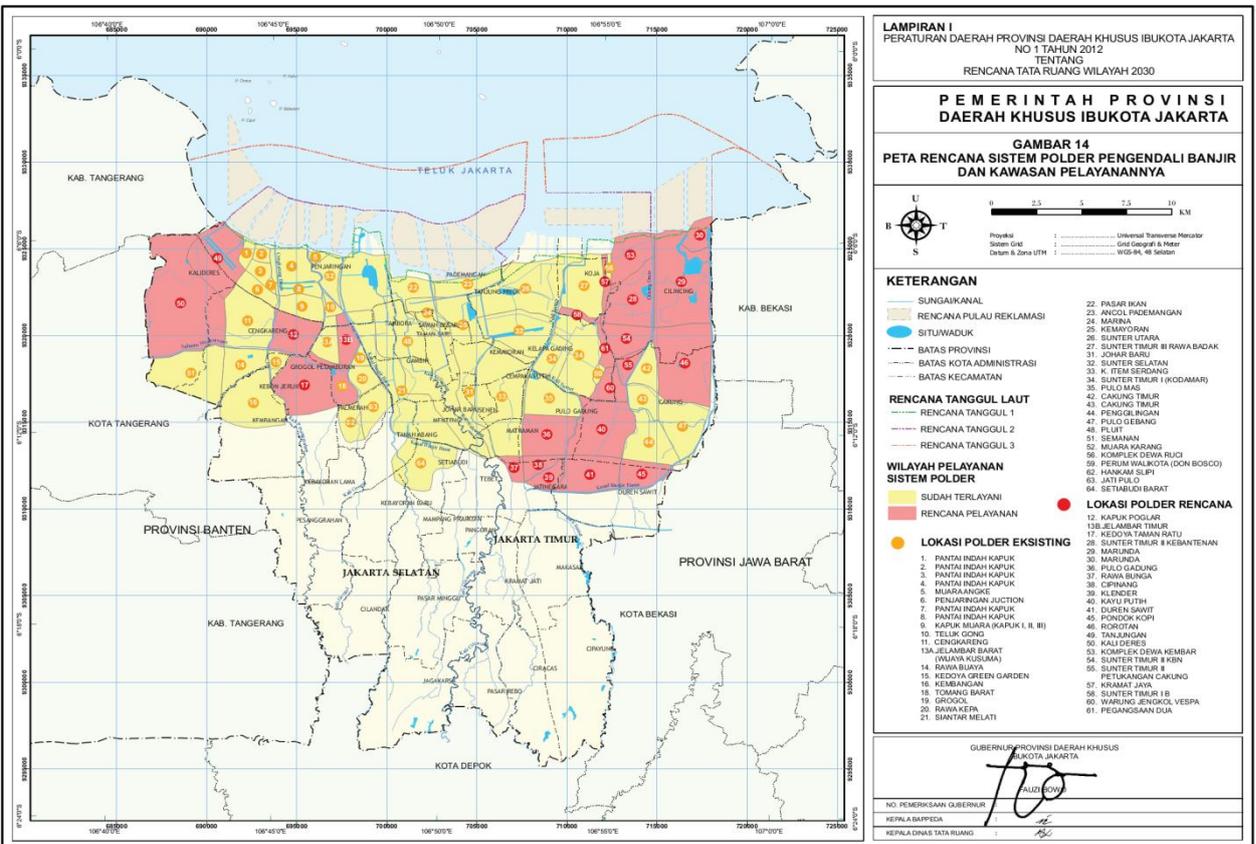
Figure 4.1 (above): existing and planned water reservoirs. Figure 4.2 (below) Jakarta's polder system

4.3 Perceived role of planners

Perceived role of planners	Mutual learning: - Information exchange, ideas and experiences - Common frame of references - Openness towards new knowledge	- High variety of ideas is given in public participation meetings - Formulation of report that produces common goal and objectives which involves all of the actors involved in the planning process - Identification if there are rejections in new ideas and/or concepts for resilience

Table 4.1: indicators related to the perceived role of planners. Source: author (2013)

The perceived role of planners in Jakarta is less so about the planners themselves, because there are more nuances in planning, as appeared from an interview with a planning expert. Multiple actors are involved in shaping Jakarta with reconfigurations of their roles. Even though there is now regional autonomy, it was difficult to make some form of partnership between the different levels of government. This led the Jakarta governor Widodo to take it up to the highest government. This took away the freedom of the local governments to be creative and find their own solutions to their own problems. This minimizes the role of regional governments. It is taken over by the central government. An example of this is the provision of transportation which connects multiple regions.

4.3.1 High variety of ideas is given in public participation meetings

DKI Jakarta uses Focus Group Discussion in order to obtain a high variety of ideas. According to one interviewed government official who was involved in making DKI Jakarta's RTRW (the provincial spatial plan) many people have originally initiated using the theme of resilience in the RTRW, as it came up in the focus group discussion. After this, DKI Jakarta's spatial planning and development agency (BAPPEDA) formulated this idea on such a way that it could be included in the provincial spatial plan.

4.3.2 Formulation of report that produces common goal and objectives which involves all of the actors involved in the planning process

The government of Jakarta tries to include opposing groups of actors into the formulation of plans that are intended to shape Jakarta. According to an interviewed planning expert this allows for the opening of dialogues to seek common 'platform' or frame of references in the way to deal with what is happening in Jakarta. Conflict management is carried out through the inclusion of strong government opposition groups.

This planning expert continues by stating that Jakarta adopts an open call for participation for its formulation of Regional Spatial Plans (RTRW, Rencana Tata Ruang Wilayah) and Detailed Spatial Plans (RDTR, Rencana Detail Tata Ruang). Non selective participation is adopted; however, this involvement is limited to the formulating stage and socialization phase in the planning process. However, this open call for participation does not ensure an inclusive participatory process, where

the public is included in the decision-making and implementation of the plans. This is caused by the fact that major decision making is done behind the screen, between the Jakarta provincial government and the regional parliament.

4.3.3 Identification if there are rejections in new ideas and/or concepts for resilience

According to one of the interviewed government officials there are no limiting factors for putting climate change in the RTRW because this has already become a common public term. However, not every institution fully understands the term resilience, as appears from another interviewee. Due to this, some agencies might not object the concept, but due to lack of understanding, they actually do not implement it well. This is particularly the case with the more technical agencies, as they make the assumption that whatever they do is resilient, as their policies try to follow the RTRW 2030 which discusses resilience. As a logical consequence, they think this makes their policies resilient.

4.4 Knowledge and skills employed

Knowledge and skills employed	Range of knowledge: - Variety of knowledge - Sharing of ideas	- Multi-directional information flows - High variety of expert knowledge from different disciplines - Knowledge of local residents and communities is taken into account - Seizing the opportunity to use knowledge from as many sources as possible (e.g. NGO projects, university research)

Table 4.2: indicators related to knowledge and skills employed. Source: author (2013)

4.4.1 Multi-directional information flows

The RTRW 2030 describes multi-directional flows accordingly. Article 231, paragraph 1 can be summarized by the role of the people is to help in the formulation of spatial plans by giving inputs and identifying potential and problems in development within a certain area (point a-d); people have the right to give their opinion in spatial plans and to oppose and give their opinion about changes to the draft plan (point e and g); and cooperation in research and development with the help of experts (point f). According to paragraph 2, point b and c, the spatial plan takes into account local wisdom. Paragraph 3 point c and f describe that citizens can report to the relevant government institution and/or official as well as give their thoughts and consideration regarding controlling the use of space. This is in line with the National Action Plan on Mitigation and Climate Change Adaptation (RANMAPI). This document describes one of its sub targets as campaigning for the role of local community wisdom within climate change adaptation.

Based on an interview with a planning expert, it seems that the Jakarta government has a tendency to 'direct' or influence the society through socialization via media. However, there is a lack of focus on community outreach programs, programs which involve communities directly. From policy

documents it seems that the general way of dealing with communities is directing and influencing, instead of working together.

4.4.2 High variety of expert knowledge from different disciplines

According to one interviewed planning expert the Jakarta government attempts to make planning more resilient towards climate change and internal changes such as flooding with the help from outside knowledge. Jakarta includes experts from the outside to formulate plans, as they feel that they cannot develop those plans alone. Many experts are involved such as transportation and demographics experts from University of Indonesia, planning experts from the Institute of Technology Bandung, hydrological experts from the Netherlands, as well as Indonesians that work for Dutch consultants. All potential knowledge from the outside is used.

From an interview with the BPLHD, Jakarta's environmental protection agency, it appears that they develop their regional action plan in coordination with BPPT (the national research agency, specifically focused on technology) and the Institute of Technology Bandung. They also receive input from LIPI (a national governmental research centre on environment) and NGOs. By doing this they attempt to compile the best experts that are available in Indonesia, according to the interviewee.
The use of expert knowledge is necessary as an interviewed government official points out that within the government of Jakarta there is a lack of planners. Jakarta needs to hire more planners in order to use this expert planning knowledge within their organizations. In this interviewee's experience the experts that helped with developing the RTRW 2030 and the RTRW 2010 were the same, no new experts emerged. On top of this, on the bureaucratic side, in Jakarta, the Spatial Planning Agency experiences a shortage of people that understands about city planning. This interviewee could only count 10 planners in Jakarta's government. The Spatial Planning Agency is one of the organizations that need more people who understand spatial plans. In this interviewees opinion, in the bureaucracy everyone can be taught to implement, but the Spatial Planning Agency is more detailed and therefore needs more planners and architects. In there the development of plans needs to be done by people who understand this well. The problem found in that agency is that people who do not understand the philosophy of a plan need to interpret this plan and then give out building permits.

4.4.3 Knowledge of local residents and communities is taken into account

According to the interview with the Jakarta's Disaster Management Agency (BPBD), there are many potential resources in the field. The BPBD regularly uses knowledge of local residents and communities. According to them there are communities that have knowledge about disaster and they also are interested in being involved in BPBD programs. For example, The BPBD was able to attract 80 volunteers in January 2013 to deal with the big flood that struck, as well as with the aftermath of this flooding. They were involved in collecting data, people with rescue-qualifications were involved in the direct response and those who have the ability to use GIS were involved with calculating the economic loss in the post-disaster phase. This shows the great potential of tapping into knowledge of local residents. This can also be seen from the interviews with the Planning Association and MercyCorps. From these interviews it appeared that the local residents already have

ways to deal with flooding and all that is needed is for them to be empowered (by the government). Pilot studies showed that the communities already independently thought of their adaptive capacity. This, however, was more sporadically executed, not in a planned and systematic way. The Planning Association helped to design an adaptation plan based on the residents' own experiences and capacity. The communities came up with their own hard and soft infrastructure solutions. For example, they request pumps from the Jakarta government to pump water out of their low laying area and for the river in their area to be dredged. In return they are committed to keep the river clean of waste.

According to a source from the Jakarta government, BAPPEDA takes community knowledge into account by inviting many people to give their opinion during the development of spatial plans; however there is no systematic way of dealing with these comments. Besides this, there also is no feedback mechanism to report back to the sources what has been done with their input.

4.4.4 Seizing the opportunity to use knowledge from as many sources as possible (e.g. NGO projects, university research)

According to one of the planning experts, the Jakarta government attempts to use all potential outside knowledge. The Jakarta government involves experts in the formulation of academic material that is the basis for the original plan. Some of the experts involved in the formulation of RAD (Rencana Aksi Daerah, regional action plan) are from the centre for climate change in the Institute of Technology Bandung. After this stage political forces will shape and adjust plans in their decision making. At the time of PERDA, the forces that influence it are only from the regional 'governments'. DPRD (local representative counsel) changes the document after debates surrounding it. Besides this, the DPRD also involves their own experts, after this the parliament will also ask their own experts. Political decisions of the parliament and government will then lead to the formulation of a PERDA (Peraturan Daerah, regional regulation). Experts who advised on the academic concept are not involved in that, so sometimes a result is changed in such a way that influential aspects are adjusted, such as the adding of a Giant Sea Wall.

In BKPRN (2011), the governor in charge of developing the RTRW 2030, Fauzi Bowo, denies that the Giant Sea Wall was not taken into account in the draft of the RTRW 2030. According to him it was not mentioned explicitly, but the draft of the RTRW had a special statement regarding controlling sea water intrusion. The need to deal with sea water intrusion has, therefore, always been present, only the way to do this (a Giant Sea Wall) was not specified.

Several interviewees agree on the fact that the Jakarta government has knowledge of studies that are undertaken by academic institutions and consultants, but many studies are not taken into consideration. Two of the interviewees point out the inclusion of the Giant Sea Wall into the RTRW of DKI Jakarta. According to them, this idea was proposed by Dutch consultants who brought their idea straight to the governor of Jakarta, who went straight to the parliament which agreed on it and therefore it ended up in Jakarta's RTRW. They state that academics were not involved from the start of this plan, only after it was already decided on. Many academics, however, oppose the plan as according to them it does not solve problems of land subsidence or even flooding. They disagree with

the assumptions on sea level rise and flooding that were adapted by the consultants. These academics have undertaken studies that pointed out other main causes of flooding in Jakarta that are not solved by building a Giant Sea Wall. The two interviewees point out that in many occasions studies conducted by academics are not used by the government in policy making, or policy makers seem to have a narrow minded way of following up advice only from certain institutions.

One of the interviewed planning experts continues on by pointing out another aspect of planning for flood resilience where the Jakarta government apparently does not take into account academic studies, namely regarding the problem of land subsidence. Many researchers describe this problem and one of the solutions of that is stopping the land use changes in Jakarta. They argue that a continuous urban development in Jakarta leads to land subsidence. However, according to this interviewee it appears that this problem is not internalized in policy, as developments in Jakarta are still apparent all around.

Based on the interviews undertaken it appears that while academic studies are not always taken into consideration when developing policy, this is even worse in the case of drawing knowledge from NGOs. The aforementioned planning expert thinks that this is the case due to some kind of image or stigma by the government in dealing with NGOs and grass root community organizations. He assumes they are afraid to be criticized for using studies conducted by the NGOs.

4.5 Methods of engagement

Methods of engagement	- Range of actors involved - Network linkages (type of linkage: horizontal or vertical) - Relations between different social networks - Building trust - Mutual support between stakeholders	- Inclusion of actors from different backgrounds (e.g. community organizations, interest groups) - Combination of grass root initiatives and government driven initiatives - Existence or non-existence of conflicts between actors - Efforts to build relationships between stakeholders - Efforts from government to include communities in plan-making and agenda setting - Raising awareness among stakeholders (e.g. government agencies)

Table 4.3: indicators related to methods of engagement. Source: author (2013)

4.5.1 Inclusion of actors from different backgrounds (e.g. community organizations, interest groups)

Community involvement is mentioned in the Spatial planning act 26/2007. The rights, liabilities and roles of the society are described in article 65:

(1) Spatial management administration is executed by the government with society's involvement.

(2) Society's role in spatial management as referred to in paragraph (1) is carried out, among others, by:
   a. Participating in the preparation of a spatial plan;
   b. Participating in the spatial utilization; and
   c. Participating in the control over spatial utilization.
(3) Further stipulation on criteria and procedures of the society's role as referred to in paragraph (1) will be stipulated by government regulation.

Public participation is further mentioned in DKI Jakarta's RTRW 2030, for instance:
- Article 79, paragraph 3, point k discusses an active role of the public in development and maintenance of green spaces;
- Article 81, paragraph 4 mentions many structural measures to deal with flooding, but point f mentions the development of a polder system based on public anticipation. This is a direct example of the role of citizens into flood prevention: making sure that the polder can still function;
- Article 99, paragraph 2, point f describes an increase of the role of the public in managing the flood corridor and river through public economic empowerment, providing infrastructure as well as increasing the awareness of the public in the areas of the West Flood Canal, East Flood Canal and the Ciliwung river;
- According to article 212 paragraph 1 point b, the governor needs to raise the capacity of stakeholders in managing spatial planning. According to point c the governor also has to increase the role of the public in managing spatial planning. According to paragraph 2, point b rules, regulations and guidance documents about spatial planning have to be socialized. Point c emphasizes that the governor needs to guide, supervise and consult about the implementation of spatial planning; while point d emphasizes the need to give education and training. According to point f the governor needs to develop an information and communication system about spatial planning; to (point g) distribute information on spatial planning to the people; and (point h) develop awareness and responsibility of the people.

According to an interviewee from the Bureau of Spatial Planning and Environment, stakeholder involvement in Jakarta involves as many parties as possible: NGOs, all communities - even until the detailed spatial plan (RDTR) - and people linked with this RDTR. When formulating plans, experts, specialists, public interest groups, local communities and local organizations are involved. A problem that this interviewee points out, however, is how to formulate the inputs from the stakeholders into a plan that can be implemented. BAPPEDA has a difficult task, namely to first design integrated planning and then coordinate with many sectoral agencies, such as Dinas UKM for economic affairs, the environmental protection agency, public works agency for physical works or the housing agency. BAPPEDA has to check all of these agencies to see if the planning happens on an integrated way.

Another agency, the Environmental Protection Agency (BPLHD) formulated their Regional Action Plan together with the public. 'The public', as defined by the BPLHD includes not only direct stakeholders, but also associations such as interest groups that are concerned about the environment, for example, interest groups that are concerned about green building concepts.

According to one interviewed government official that helped develop the RTRW 2030, the Jakarta government faced the problem of choosing the form of public involvement. Being more representative and involving more people leads to higher costs and a longer time spend developing the RTRW. According to the Spatial Planning law 26/2007, every region needs to have an RTRW within 2 years time. Due to this obligation by law the development of the RTRW 2030 was not as representative as would be possible, and BAPPEDA will now try to increase methods of participation along the way. According this government official, experts are already involved in formulating policies, giving the government input and then discussing their inputs.

According to this government official, the Jakarta government has problems in determining who the stakeholders are for the Master Plan for flooding, which is made based on the RTRW 2030. In participation the government already involves communities, NGOs and World Bank, but there are weaknesses that still have to be perfected, such as the difficulties of kampung people that do not understand all concepts. Other weaknesses include the lack of feedback or clarification towards people that give input. Another weakness is the fact that people should be given the documents a couple of weeks ahead in order to be able to study it beforehand, which does not happen.

4.5.2 Combination of grass root initiatives and government driven initiatives

Many developments in Jakarta are top down, according to one interviewed planning expert. As an example he names the development of the east and west primary centres. This is a top down decision focused on attracting developments there.

An example of a multi stakeholder partnership is that of MercyCorps with Komite Penasehat Propinsi (KPP), a committee consisting of stakeholders from the government such as BPLHD, BAPPEDA, academics and international and local NGOs. Together they were able to have monthly coordination meetings, to discuss the progress of the activities and together select two pilot kelurahan (sub district) for Jakarta and were able to create a workgroup for the kelurahan and training for them. Based on the evaluation after carrying out the pilots projects they came up with some recommendations such as the involvement of other kelurahan in the same kecamatan (district) and possibly the whole of west Jakarta as a dissemination and effort of replication; the need for legal foundation of a strategy for continuation of the program; optimalization of media use; increase community capacity; and the creation of a roadmap program of climate change adaptation (API - Adaptasi Perubahan Iklim and disaster risk reduction (PRB - Pengurangan Resiko Bencana) in the province of Jakarta (MercyCorps, 2011)

As a result of the aforementioned efforts, MercyCorps (2012) describes how in one of the subdistricts during identification of stakeholders and relevant issues in that area, BPBD of the Jakarta provincial government was present. BPBD was appreciative of the effort and hopes that this will become a model for collective action in other communities in Jakarta. A local resilience action plan was able to be developed which is based on vulnerability capacity assessment undertaken by experts from University of Indonesia and the efforts that were already undertaken in the area. MercyCorps hopes that this document can be used in Jakarta's public forum Musrenbang. This is also confirmed by the interviewee from MercyCorps.

MercyCorps, in an interview, mentions some constraints in the cooperation with the government of Jakarta. This can be seen in a lack of commitment by the government in the cooperation. When MercyCorps presented a local resilience action plan, as developed by communities in two pilot sub-districts, the government only sent non-key personnel that have no decision making power. Another problem that MercyCorps encounters is the fact that the Jakarta government often change their personnel. This means that MercyCorps sometimes trains government officials, but three months later it is possible that this official is already rotated to another position and training has to begin from the start again.

Despite these efforts it appears that community initiated programs have difficulty in being institutionalized as there is a lack of political support, as was described in several interviews with planning experts as well as with a source in MercyCorps. Political support is extremely important in the success of institutionalizing community initiated programs. One of the interviewed planning experts mentions that many community initiatives such as urban farming and growing plants exist in Jakarta, but the government do not support these initiatives. Without initiatives from the government, such ideas cannot be scaled up into a certain level.

A government agency that seems active in supporting government initiatives is Jakarta's Disaster Management Agency (BPBD). When interviewed, the BPBD mentioned that they picked up an initiative from the community that had potential. The community Ciliwung Bersih had the initiative to form a local centre to make their community more resilient. They have made one centre, but the BPBD thinks that this is a good chance to make other centres along the Ciliwung river such as this, not only to monitor potential flooding but also for campaigning and potentially training as well. The BPBD plans to develop four more centres. The idea is from the community; the BPBD catches the idea and then attempts to find a source of funding. The problem of the BPBD was that their budget for 2013 was already fixed so this community initiative could not be put in the BPBD program for this year. Because of this, the BPBD is looking for private sources with a Corporate Social Responsibility program.

Another inclusive program is mentioned by an interviewee from the Ministry of Public Works. He describes the green metropolis project for Jakarta as a program with stakeholder involvement. The concepts of the program are participative, empowering and inclusive. The program is determined by the communities, not by the government although the parliament has to give the mandate before the program can be institutionalized. The interviewee mentions that many communities that care about urban problems are included. The communities have many initiatives that are facilitated and legalized by the ministry of Public Works.

4.5.3 Existence or non-existence of conflicts between actors

Jakarta experiences many kinds of conflicts between actors. This is mostly caused by the many actors that are involved in planning in and around Jakarta. Many of the interviewed sources point out that when more actors are involved this leads to more conflicts about responsibilities.

Interregional conflicts

Jakarta experiences interregional conflicts, because DKI Jakarta needs to deal with the fact that its metropolitan area consists of several regencies in two other provinces. All these governments have their own interests. This complexity of managing Jakarta has led Jakarta to experience a rescaling of power centres, according to one of the interviewed planning experts. Major decisions such as transportation allocation and the need for the common good are rescaled to the central government. According to one of the interviewed planning experts, Jakarta's governor, Widodo asked the national government to just arrange planning that involves multiple regions. The regions themselves were not able to arrange it and come up with good plans and solutions to their problems.

Many interests in Jakarta

The RTRW 2030 shows the special status of Jakarta and shows why the national government is involved. In a keynote from the governor about the function of Jakarta along with Bodetabek he writes that several things need to be taken into account with considering the spatial plan of Jakarta: (1) the status of Jakarta as the national capital, (2) Jakarta's function along with bodetabek as the centre of national activity, based on government regulation (peraturan pemerintah) 26/2008 about the national spatial management, (3) function of Jakarta as the core city in the megalopolitan jabodetabekpunjur (based on: presidential decree 54/2008 about spatial management of the jabodetabekpunjur area).

Conflicts of responsibilities between different hierarchies of government

An example of conflicts of responsibilities can be seen in the flood of January 2013 where an important levee broke in the Ciliwung River. According to an interviewee from the Bureau of Spatial Planning and Environment, responsibilities over waterways in Jakarta are clear. The central government is responsible for the West Flood Canal, while the provincial government is responsible for the small drainage in Jakarta. Rivers that cross two provinces or two regions are the responsibility of the Ciliwung-Cisadane Centre, of the Ministry of Public Works. The East Flood Canal is the responsibility of the central government. The central government is responsible for the technical realization of the canal, while the provincial government of DKI Jakarta is only responsible for the land acquisition.

Despite this seemingly clear overview of responsibility, one of the planning experts blames this on lack of maintenance caused by conflicts of responsibility. According to him, this comes back to the problem of management. The central government admits that low monitoring caused the breaking of the levee, which was part of an improvement program in the Ministry of Public Works (2013) bulletin 'Air, Media Informasi Sumber Daya Air'. Based on the Presidential Decree No.22/2012 (Keputusan Presiden No.22 tahun 2012) rivers that are interprovincial the authority is under the national government (Ministry of Public Works, 2012). However, because it is in Jakarta, in the OMN (Operation and Management), part of the national government lets it become the problem of Jakarta. Meanwhile, OMN is the most expensive, after the fixed cost to build it. Jakarta faces institutional problems of who has management authority, as Jakarta has central government and regional government. Due to this, government agencies should cooperate and determine who does what, but this does not happen. According to the interviewed planning expert, the Balai Besar Wilayah Aliran Sungai Ciliwung Cisadane (Centre of Ciliwung Cisadane Rivers) should cooperate, not

only coordinate. According to him, cooperation means that the rights and responsibilities of each party are clear, but this does not happen which lead to the levee to break

An interviewed source from the Bureau of Planning and Environment gives another example of conflicts between the provincial government of Jakarta and the national government. Often unplanned developments in Jakarta happen because of a lack of coordination between DKI Jakarta and the Ministry of Public Works. An example mentioned by this source is an area designated to be residential, until the Ministry of Public Works builds a road. Even when there is no road planned in the provincial spatial plans, the Bina Marga division of the Ministry of Public Works develops the road themselves. This improved connection of the region then attracts industrial developments to the area. The reason why the Ministry of Public Works can do this is because of the national interest in Jakarta, as can be seen in the aforementioned keynote of the RTRW 2030.

One area where conflicts of responsibilities shape Jakarta is in kampung improvement. Jakarta has had kampung improvement programs 'for centuries' according to the interviewee from the Bureau of Spatial Planning and Environment. However, the quality of the kampungs decreased more and more as time goes by. The provincial housing agency used to be concerned about this, but now they feel that the current MHT Plus kampung improvement program should be the responsibility of the technical housing agencies in the cities that Jakarta consists of. This could easily lead to a different approach in every part of Jakarta, especially because a major problem in Jakarta's planning is that there is no independent auditor that monitors and evaluates if the MHT Plus program is successful or not. Because there is no controller it is impossible to check the methods of kampung improvement. Currently many agencies try to make a list as long as possible to prove that they have done many things. However, the unsystematic way of working led to no significant improvements in the areas that they have handled.

Conflicts of understanding and vision between different provincial agencies
The source from the Bureau of Planning and Environment also discusses conflicts in understanding between different government agencies on the provincial level in Jakarta. This leads to a situation that does not execute the philosophies as determined in the spatial plans, an inconsistent situation. Due to this, the plans that were developed are different then the reality in Jakarta. An example of this is the change in land use from residential plots to services which means that the road capacity is no longer sufficient. When this interviewee asked the Spatial Planning Agency how they deal with handing out permits while the office ratio is already fulfilled, however, they could not answer this. The consequence of this is that the realization of the plans was very dependent on the market. This also leads to differences between the RTRW and the detailed spatial plan. This interviewee blames this on an insufficient understanding of the philosophies in the RTRW by officials in the Spatial Planning Agency. She assumes this is because they are focused on servicing.

This interviewee also points out that the Spatial Planning Agency often releases its detailed spatial plan before the RTRW is released. The Detailed Spatial Plan for the year 1997 was already released as a PERGUB (government regulation); meanwhile, the RTRW 2010 was only released in the year 1999. With the release of the RTRW in the year 1999, in 2000-2001 the Spatial Planning Agency should have made a detailed plan that follows it, but they only made a draft which they did not publish to make it official. According to the Spatial Planning Agency they can be (are) in line because the spatial

plans were formulated together but according to this interviewee the plans are still a bit different. The main thing is that the philosophies from the RTRW are not fully understood. So for example the RTRW talks about the principles of resilient city and green space but it is unclear what the definition of green space by the Spatial Planning Agency is. Another example that this interviewee gives is the development of MRT that is now developed in a north-south line. Meanwhile, development of an east-west line would be more in line with the general macro ideas of prioritizing north-east developments in Jakarta. This leads the interviewee to conclude that the Spatial Planning Agency does not have professional judgement. This is also shown in the way of developing spatial plans, which is based on experience, leading to the usage of old patterns. This way of thinking was also supported by an interview undertaken with the Spatial Planning Agency.

At this moment the Spatial Planning Agency is formulating a detailed plan. The Bureau of Spatial Planning and Environment is comparing the red thread between the RTRW 2030 and the draft of the detailed spatial plan. The interviewee from this bureau gives the example of open blue spaces that need to be a certain ratio according to the RTRW 2030. The Spatial Planning Agency is supposed to operationalize 'the how' of this ratio in their detailed spatial plan. The Spatial Planning Agency is supposed to support this so the two plans are in line with each other. This especially important because the RTRW 2030 gives the public the possibility to protest when the reality of the detailed spatial plan is not in line with the RTRW 2030.

The interviewee from the Bureau of Spatial Planning and Environment argues that in the implementation of spatial plans, Jakarta has difficulties to integrate physical, social and economic aspects. For example, North Jakarta experiences a higher vulnerability towards disasters, caused by a high amount of poor people there. This is based on a vulnerability map that includes social and economic aspects and is a basis for formulating the RTRW. Poor people have lower resilience to flooding than rich people because they receive a larger impact that they cannot recover from. This map should be a reason to increase resilience in those most vulnerable areas, in a structural program that includes not only physical structures such as dykes, but should also include social aspects. The problem is that 'physical people' only think about physical aspects, 'economic people' only about economic aspects and 'social people' only think of social aspects. All of these aspects are supposed to be combined in an integrated program. When sectoral aspects are clarified for employees of an individual institution they could be implemented differently due to a lack of understanding or focus on other aspects. The Spatial Planning Agency is very technically oriented; therefore they discuss resilience in a physical manner, about locations of polders and dykes. This often overlooks social aspects such as poverty levels. BAPPEDA is the agency that develops structured development plans that view resilience from all sectors, social, physical, and economic.

A source that worked at BAPPEDA points out problems of implementation that arise in Jakarta. The RTRW that BAPPEDA develops needs to be implemented with master plans and programming. All of these programs are developed by different agencies in Jakarta and need to take into account resilience. These plans need to become PERGUB, legalized governor's decree. Currently only people that understand the concept of resilience will include it in their program. This interviewee argues that a governor's decree should be published that makes it necessary by law to internalize the concept of resilience in programming.

Another problem that arises at BAPPEDA is pointed out by one of the interviewees that worked there. According to him BAPPEDA only formulates the policies; the budgeting is left to the regional working unit (SKPD). BAPPEDA is now different from the past. BAPPEDA previously used to be involved until the process of budgeting but now only focuses on policies and concepts. This severely hampers the ability of BAPPEDA to control other government agencies.

Conflicts with NGOs

One of the planning experts points out the problem that Jakarta's governor faces when making decisions is when NGOs 'kidnap' him, in his words. For example, the Urban Poor Consortium (UPC) often mobilizes the masses to demonstrate about something. Governor Fauzi Bowo first did not want to invite them to discussions about the RTRW 2030. When they were invited anyway they only disagreed with the proposed policies but could not come up with a vision of their own. Something similar happens with RUJAK Centre. This NGO challenges every proposed policy of Jakarta's current governor Widodo and are most vocal in terms of detailed spatial plans. They want public participation to be all the way until the neighbourhood level, but this proposed way needs funding of 40 billion rupiah. The Jakarta government does not have the budget for that and when asked, the NGO was not willing to do it themselves.

4.5.4 Efforts to build relationships between stakeholders

An interviewee from the Ministry of Public Works points out the need to build relationships with stakeholders in Jakarta's situation. Large amounts of land around Jakarta are privately owned. Because of this they are able to shape the development of Jakarta. The current structure of Jakarta is this way because of the private sector instead of the public sector. It is, therefore, important to form partnerships with the private sector instead of only making plans, considering the fact that there is low enforcement of regulations. However, these partnerships do not happen.

Another example of this lack of stakeholder involvement is pointed out by another government official. The Jakarta government does not work together with private owners when planning evacuation routes. These are simply determined in the RTRW, despite the fact that many business centres are privately owned and contain a large concentration of people.

A way to structure efforts to build relations between stakeholders would be to undertake stakeholder analysis. Jakarta, however, does not use this analysis. This appeared from an interview with a government official stating that the Jakarta government invited everyone that wanted to be involved with the preparation of the RTRW 2030: "*Choosing? We don't choose. We just invite them. If they come, that means that they want to be invited, if they don't want to come then what can we do?*" One of the interviewed planning experts points out that Jakarta should implement stakeholder analysis as he thinks it is counterproductive when anyone can be involved. This makes it difficult to have quality discussions about a topic. He argues that Jakarta should be selective in identifying stakeholders. The Jakarta government should think about who should be involved in decision making, who should be consulted, and who should be just given socialization. If Jakarta would have this, they would have platform for decision making regarding government affairs through good governance. Good governance means selecting who of the civil society are the ones with interest and who can

decide things so they can be seen as key stakeholders in civil society. Also in the business realm it is important to analyze, who are the stakeholders in what context.

4.5.5 Efforts from government to include communities in plan-making and agenda setting

The DKI Jakarta RTRW 2030, article 226, describes the rights of the public. This can be summarized by a wider role of the public in spatial planning activities that include the process of formulating the spatial plan, space utilization, controlling and monitoring the implementation of the spatial plan (point a and b); the public has the right to know the spatial plan and zoning regulations and enjoy the benefits of the added value that spatial planning gives to space (point c and d); the public has the right to protest against breaches of the spatial plan and zoning regulation (point f and g).

It should, however, be mentioned that the RTRW 2030 is a document of macro planning and the aspects of this spatial plan need to be operationalized in master plans and detailed spatial plans. During this operationalization some of the vision of the RTRW could be lost.

According to one of the interviewed planning experts, Jakarta has a task force that involves stakeholders from outside the government, but he claims that it is an obligated process that came into existence because the spatial planning law 26/2007 requires government regulation on community participation, so by law Jakarta is supposed to implement the community participatory process, but it has not been Jakarta's own initiative to have a forum for spatial planning or for development planning. Jakarta's past planning processes were not inclusive.

One of the interviewed government officials mentions inclusive policies specifically aimed at water, namely the board of water resources (Dewan Sumber Daya Air). That is a form of community involvement. According to this source the law requires that governments must form a board of water resources that consists of key figures in community, universities, NGOs to help in policy formulation, implementation, etc.

A source at the ministry of Public Works says that communities can make an impact, but in the case of Jakarta those who have more influence are what he calls green collar. Those who have money but think green, they are more significant. However, they are not touched upon in policies. They do not know how to communicate their ideas.

This interviewee at the ministry of Public Works notices that self-resilience is getting stronger in Jakarta. He argues this based on the response to flooding. When Jakarta flooded in 2002, a larger percentage of Jakarta inundated than was in line with history. This was the first flood after the reformation in 1998, and the reaction towards flooding is not the same as in 1972 and 1996: citizens have become more aware and demanding. They said that the government is too busy taking care of themselves; we can take care of ourselves, because in fact the government has never taken care of them. This interviewee thinks this is a good social capital and he argues that Indonesian society in general is accepting of suffering while not demanding rights and protesting about urban vulnerability. He argues that this offers a chance for the green collars to mobilize the social capital that exists: people who have knowledge, experience living overseas and know what is comfortable in Indonesia's

measure; that should be demanded. He says that the Indonesian government has never been demanded this, while its citizens should demand this.

4.5.6 Raising awareness among stakeholders (e.g. government agencies)

Jakarta attempts to raise awareness about the need to keep rivers clean by developing a waterfront city project. The East Flood Canal is made into a showcase of waterfront development for all of Indonesia. Jakarta plans to develop a smart green district along the East Flood Canal. This should not only protect build up areas but also conserve water in order to refill ground water as a green open space corridor with green housing, sport facility, eco city and a source of water that can be used for purification. The plan to construct the East Flood Canal is in the RTRW 2010 and also in the draft of the RTRW 2030. The planning area of the East Flood Canal is based on the smart green mixed use district that includes offices, commercial uses and housing. The development of this area should become an incentive to spark development of the east primary centre which has never really developed. Jakarta's goal is for the East Flood Canal to become an identity of the city. This should make it easier to keep the canal clean (Ministry of Public Works, 2011).

This waterfront project fits into the regulation in the DKI Jakarta RTRW 2030 that wants to build spaces that can discipline the public (Article 6 paragraph 9, point b). The RTRW 2030 contains many article related to raising awareness about more resilient uses of space and particularly water:
-   Article 15, paragraph 1, point b emphasizes the importance to use water bodies such as water retention areas, rivers, canals and the sea as orientation or the front yard of development. This waterfront development should make it more unlikely to throw trash into the river. Besides this, point c aims to prevent the misuse of public spaces and return the function to how it was, such as removing buildings that are built in water reservoir areas. Article 15 paragraph 2 describes a strategy that attempts to build urban culture and to discipline the people. The RTRW 2030 intends to manage community behaviour and recognizes how this behaviour can affect space.
-   Article 35, paragraph 2 describes the plan to make a river and canal transportation and crossing. This makes the rivers beneficial for the people. This should change the people's paradigm to use the river as a waste dump as it now has a function in increasing their mobility.
-   Article 79 paragraph 3, point f discusses the making of a green belt around water retention areas, point h discusses the development of green spaces around water bodies at places that are vulnerable to flooding and point k discusses public involvement in development and maintenance of green space. It can be seen that these policies are aimed at changing the way people deal with water.
-   Article 215 gives consultation, guidance and supervision in the implementation of spatial planning. Efforts to monitor, guide and give explanation to stakeholders in spatial planning, spatial utilization and management of the control of the use of space.
-   Article 216: Effort to increase the human resource capacity in the implementation of spatial plans. Making education and training for stakeholders in the field of spatial planning.

- Article 219: Dissemination of information to the public is an effort to publicize aspects of spatial planning through the use of information media and written media that is accessable for the public.
- Article 220: increasing the awareness and responsibility of the public in the implementation of spatial plans through giving information about spatial planning, public discussions and debate and forming community groups that care about spatial planning and providing a unit for complaints.

Jakarta's environmental protection agency (BPLHD) realizes that changes in lifestyle takes a lot of effort and time. That is why they have a subdivision called 'environmental education'. One of their programs is a campaign 'Stop Nyampah di Sungai', Stop Littering the River. To do this the BPLHD formed groups called Komunitas Peduli Ciliwung (communities that care about the Ciliwung). In these groups they chose what they call 'champions', key figures that are active in the area. These communities are formed around the Ciliwung River. They try to make activities for the people in the area and change their behaviour and habits. The BPLHD realizes that results are not to be expected in 1 or 2, or even 5 years. This is a long process to change the people's lifestyle.

It appears that the governor of Jakarta is currently using his power to raise awareness among Jakarta's citizens. Kuwado (2013) describes in her article in the newspaper Kompas some efforts of the DKI Jakarta Governor, Widodo, to reduce the amount of trash that is being thrown in the Ciliwung River, by socializing the public. According to Widodo, the condition of the Ciliwung River in Jakarta is already too full with trash; therefore the situation has to be stopped. Widodo attempts to reduce the amount of trash in the Ciliwung River by stating that the problem with the river has only been trash. In order to achieve his goal of a cleaner river, the army (TNI AD) will patrol the river in four sectors from Pluit in North Jakarta until Pintu Air Manggarai in South Jakarta. This is a method of socialization intended to show the seriousness of the issue. On top of this, 2500 people from the surrounding area and 500 people from the sanitation agency are employed for the success of the patrol.

Another way to stop trash causing problems of flooding is described by Jordan (2013) who writes about a measure of the Jakarta Governor to stop trash being thrown in the river and at other places in the environment. Citizens that will still do this can get the maximum fine of 500.000 rupiah. This regulation will come into effect on December 2013 or January 2014.

Jakarta also started to demolish four hundred small stores in the Petamburan area, based on perda 8/2007 on public order. The stores were built on government land, close to drainage channels (Saleh, 2013). The location near the water can hamper the flow of the water and also lead to additional trash being thrown in the water. The taking down of these illegal stores fits into the policy that the West Flood Canal should be a green corridor.

Jakarta seems to be stricter on illegal housing near bodies of water, as the Jakarta Post (2013b) describes the eviction of 258 families of squatters from their homes near the Ria-Rio reservoir in Pedongkelan. This also fits in Jakarta's policy to develop green areas around water reservoirs. It seems that things are getting under way because of Widodo's commitment. This form of awareness is described by one of the interviewed government officials as a key component for Jakarta's

planning for everyone, both from the community as well as from the government. He argues that this commitment means that everyone should follow plans and regulations well.

Besides this formal spatial plan that aims to raise awareness among citizens, an interviewee at the Bureau of Spatial Planning and Environment describes how this bureau attempts to raise awareness at the Spatial Planning Agency. The Spatial Planning Agency so far has the philosophy that Jakarta is very dynamic and thus people may change the plans. In order to change that thinking, the Bureau of Spatial Planning and Environment tries to make the Spatial Planning Agency aware that by allowing the spatial plan to be changed, this agency becomes responsible for the disasters that happen in Jakarta. For example, when discussing traffic congestion and flooding, the Spatial Planning Agency cannot say that they are not responsible for it, and blame problems on the public works agency. The interviewee at the Bureau of Spatial Planning and Environment hopes that Spatial Planning Agency develops a detailed plan that follows the macro plan, so that they can be urban planes that direct other agencies, i.e. public works agency, housing agency in order to realize the plan.

4.6 Institutional structures/power relations

Institutional structures/power relations	- Forces that link networks (reasons for actors to participate) - Type of collaboration and partnerships formed (inter-governmental and between government and stakeholders) - Mechanisms that promote collaboration (existence of different arenas for public participation, creation of partnerships in between government agencies for flooding management)	- High awareness by all actors about the eminence of the topic - Sharing of knowledge between different government agencies. - Existence of partnerships between government agencies and between different government hierarchies (national, provincial) - Existence of partnerships between government agencies and non-government actors - Existence of project developed by actors from diverse backgrounds - Existence of public forums, meetings, public agenda shaping efforts, and etc. which involves different actors

Table 4.4: indicators related to institutional structures/power relations. Source: author (2013)

4.6.1 High awareness by all actors about the eminence of the topic

Based on many of the interviews undertaken it shows that Jakarta currently experiences a lack of urban culture. Many of Jakarta's residents live in the same way as in the rural areas where they originate from. One planning expert names this as one of Jakarta's planning challenges, which leads to a lack of environmentally and disaster friendly culture. He emphasizes that it is useless to provide better, safer and more comfortable facilities when people do not utilize them well. For example, when the Jakarta government provides the necessary waste facilities, many residents still throw out their trash wherever they want. According to the interviewed source at MercyCorps, in two pilot projects that they undertake in kampung areas, the residents think flooding is a natural phenomena caused by high tide and intense rainfall. They feel that waste is only a secondary reason in exacerbating problems. The interviewed planning expert emphasizes that a problem of Jakarta is that

most of DKI Jakarta's residents are immigrants, probably 80 percent. On top of this, many commuters carry out activities in Jakarta. Due to this, large human resources are needed to ensure that facilities could be used properly/are functional and culture will become disciplined.

Despite the strong rural culture that many of Jakarta's residents have, an interviewee at MercyCorps describes that the public is very motivated. They want to have something new for their area. They like learning new information, especially in terms of why disasters happen more often now. When explained in non-scientific terms this is exciting for them as they learn new knowledge. They become engaged in the climate change discourse as they get a better understanding of their surroundings. This also leads to a higher awareness.

According to Tempo (2007) most of Jakarta's citizens understand that the cost of overcoming flooding completely is extremely expensive, therefore, their hope from the government is for an early warning system which allows them to receive information regarding when they should prepare for flood dangers and also evacuation routes that they should take in the event of flooding. Comprehensive information such as potential locations of flooding map and signs which warns the potential flood inundation that could occur in an area would allow citizens to form flood resilient communities which attempts to mitigate flooding and prepare themselves in the event of flooding.

According to one interviewed government official, there is high awareness of all government actors about the need to put resilience in the RTRW. He says that everyone agrees that Jakarta needs to be resilient towards different disasters. Because of this, he claims there are no limiting factors to include climate change as this has already become a common public term. This can also be seen from an interviewee at the Spatial Planning Agency. According to him, this agency is aware that flooding is one of the most important problems in Jakarta. This is the problem that influences the resilience of Jakarta the most. That is why it is important to make plans with a clear structure. Made together with other relevant agencies and prioritizing on which plan needs to be developed first.

However, Jakarta experiences low enforcement of regulations which can be seen from the illegal construction of buildings in water catchment areas and river banks. This shows a lack of awareness by the government about the eminence of the topic, or at least a lack of priority that is given to the solutions.

From an interview at the Bureau of Spatial Planning and Environment, it seems that the Spatial Planning Agency in Jakarta, that is involved with micro planning, is also not fully aware about the effects of their decisions on the bigger picture of Jakarta's planning. An example of this is the allocation of green open spaces. These have been have been plotted based on its individual regions, spread out in nature in order to catch water according to their own regions. That is why the south is determined to have low building coefficient with the assumption that this area needs the largest amount of green space. But in fact the Spatial Planning Agency does not follow this, according to this interviewee; If someone applies for a building permit in the south and suggests to develop green open space in the north of Jakarta as a compensation mechanism, the Spatial Planning Agency would often allow this to happen as well as allowing a higher building coefficient in order to accommodate the public. The interviewee further stated that until now the Spatial Planning Agency has the philosophy that Jakarta is very dynamic and thus people may change the plans. According to this

interviewee, the Spatial Planning Agency always says that it is the public right to have developments, but according to her, public right involves city planning. The public right should not be defeated by the private right. This perspective also appeared from an interview at the Spatial Planning Agency.

The physical nature of Jakarta is an important aspect to be aware of to be able to make Jakarta resilient to climate change, according to the respondent at the Bureau of Spatial Planning and Environment. She hears many people say that it is old fashioned to talk about geology, as that can be manipulated with technology. She doubts this and thinks that the basic physical nature of Jakarta should always be a point of attention, especially related to flood management. The main problem, she describes, is linked to the contours of Jakarta. It should always be a concern that water will try to find and equilibrium and because of this, low laying valley areas should not be built but should be developed into a water catchment area. A problem that this respondent sees at the Spatial Planning Agency is that they plan by feeling and with insufficient knowledge about these physical constraints. She thinks professional judgement is lacking. According to this respondent it is a weakness when the Spatial Planning Agency makes a plan while not every team member has a sense about the limits of physical nature and most feel that every part of Jakarta can be built up.

4.6.2 Sharing of knowledge between different government agencies.

An example of sharing of knowledge between government agencies appears from the interview with someone at Jakarta's Disaster Management Agency (BPBD). According to him, the BPBD is involved in discussion of the detailed spatial plan that is developed by the DTR. Together with the DTR, they are given the task to revise evacuation plans and routes and also logistic centres as described in the RTRW 2030. BPBD helps to improve the draft document of the DTR's detailed spatial plan.

One way of sharing knowledge is to transfer human resources strategically in certain agencies. This can be seen from an interview with someone at the Bureau of Spatial Planning and Environment of DKI Jakarta. The Bureau of Spatial Planning and Environment is administrative in nature. Thus far, people who have been in this bureau have been people who do not have any knowledge regarding spatial problems but since the year 2001, in here, starting from the Head of the Division till the Head of the Bureau have been people who have been involved in the formulation of the RTRW DKI. When the predecessor of this interviewee was about to be placed in another position, he recommended more people who have been involved in the formulation of the RTRW Province to be placed in the bureau of spatial planning and environment. In Jakarta, BAPPEDA formulates the RTRW. Then the Spatial Planning Agency works in a more detailed level. In macro spatial planning everything is very policy-oriented and comprehensive; then the detailed plan by the Spatial Planning Agency (Dinas Tata Ruang) deals with the lower spatial levels of RT, RW, and Kecamatan. This interviewee saw a policy gap between the province and with the Kecamatan (District). As a whole it was difficult to see that there was a gap between the province and the district because the provincial plan is very macro. Therefore it was possible for the more detailed agency to say that their plans still fulfil what is stated in the provincial RTRW. This led the Bureau of Spatial Planning and Environment to think about personnel, instead of about the bigger system.

When placing people at the Bureau of Spatial Planning and Environment that before have worked in the macro spatial planning, this means permits are checked by people with experience on the macro level. Permits go from the Spatial Planning Agency to be signed by the Governor, but have to first through the Bureau of Spatial Planning and Environment to be checked. All the letters and maps that need to be signed by the governor have to go through this bureau as it is responsible for the administration before it is signed by the governor. Because the personnel here has worked before on the formulation of the spatial plan, this bureau can become a filter that gives input to the Spatial Planning Agency if things they do are not in line with the RTRW Province. The Bureau of Spatial Planning and Environment is a mediator between the macro level of BAPPEDA and the micro level of the Spatial Planning Agency. This bureau filters what form of accommodation can be tolerated and which ones are intolerable, because the people working there already understand the Provincial RTRW because they developed it. Since then the Spatial Planning Agency has a counterpart, says the interviewee, while before this Agency can do anything while no one protests.

Based on an interview with MercyCorps, it appears that there is an overlap between the activities of BPLHD and BPBD. The interviewee thinks that there is a need to synchronize their activities in the field. Besides this, when BPBD makes a document such as a disaster management/mitigation plan, they should address climate change in the document as about 70 percent of disasters are climate disasters, according to this source. Basically the overlapping shows that there is a problem in cooperation, as the two agencies develop their documents together.

A more serious hindrance to effective sharing of knowledge is the fact that Jakarta has no databases. According to one of the interviewed government officials, who was involved in making the RTRW 2030, the only information available comes from project data, but there is no systematic way of collecting this information. According to him this is weakness of not only Jakarta but also all around Indonesia there are problems to implement policies. He says Jakarta's administration is chaotic because they never make databases. For example, there is no database for the amount of groundwater extraction. This already makes their head spin. However, databases are needed. Different government agencies need to be able to look into these databases in order to be able to make well informed decisions. This hampers the sharing of knowledge between different government agencies.

4.6.3 Existence of partnerships between government agencies and between different government hierarchies (national, DKI)

Partnerships are a necessary part of planning in Indonesia, as can be seen in the Spatial Management Act 26/2007:
Article 10 paragraph 1 point d describes that the authority of local province government in administrating the spatial management consists of: (d) cooperation of spatial management on inter provinces region and facilitate the cooperation of spatial management on regency/municipality
Article 43 on urban spatial planning describes that
   (1) Urban spatial plan that consists of 2 (two) or more regencies/municipals on one or more province(s) constitute means of coordination in executing development with cross area characteristics.

(2) Spatial plan as referred to in paragraph (1) consists of directions on spatial structures and spatial pattern with cross administrative area characteristics.

Article 45 on urban spatial utilization describes that

(1) Urban spatial utilization which is a part of regency region is part of regency spatial utilization.

(2) Urban spatial utilization which consists of 2 (two) or more regencies/cities in one or more province(s) is carried out through preparation of development program along with its funding in cooperation between related inter regency/municipal region.

The previous provincial spatial plan RTRW 2010 also pointed out the importance of coordination with bordering regions. According to article 22, paragraph 2, the preparation of provincial spatial plan is carried out with respect to: point c: harmonize aspiration of development on provincial and regency/municipal region; and (point f) spatial plan on bordered provincial regions.

Another reason why partnerships are a necessary part of planning in Jakarta is due to the organization of the Jakarta as a provincial government layer, consisting of five cities, while the metropolitan area as well as the stream area of the rivers that flow through Jakarta also includes three other regencies and two other provinces. Because of this, there is a need to reach agreement for the management of common interests and a need to develop institutions that can manage those agreements. There are multiple power centres and scales which exist in Jakarta where decision-making takes place which shapes Jakarta as it is. Besides the fact that Jakarta's expanded urban areas have grown to include many cities and regencies that are administratively under the jurisdiction of other large provinces surrounding Jakarta, Jakarta as the capital of Indonesia is a host to the national government ministries which have vested interests in the city.

The RTRW 2030 article 12 paragraph 1 describes the need to control developments upstream to prevent the negative side effects of developments that are felt downstream in Jakarta. In order to do this good cooperation is necessary between different government agencies. This need is also described by the Ministry of Public Works (2002) in their report on role sharing between government institutions for managing the use of space. This report describes that there is a need to implement an integrated watershed management, as there are problems upstream and downstream. Therefore, it has to be coordinated. The report also reviewed the strong legal basis for cooperation between the different governments that are located within the watershed. The report mentions Ministerial Decree of the Ministry of Internal Affairs no. 107/1994, which talks about making the cooperation Badan Kerjasama Pembangunan Jabotabek (agency for development cooperation of Jabotabek) officially institutionalized with specified tasks, such as formulating and determining draft policies for coordination of plans, implementation and evaluation of development cooperation in the region. This shows that there is already a strong basis for cooperation.

Other bodies of cooperation are unsuccessful however. According to the two interviewed planning experts, efforts for regional cooperation have been made but were not effective. There are problems of decision making: each of the regions feels that they have separate autonomies and therefore decides to choose for what is best for their individual regions. This is the main problem in the context in how to manage a city that has physically expanded to other places. This leads to the emergence of other problems such as infrastructure, transportation, and roads, this is should be solved intergovernmentally and interjurisdictional between regions. An example of a body that attempts

this is the BKSP, Badan Kerja Sama Pembangunan. This body of cooperation exists for over 30 years but until has not shown any results. According to the two interviewed planning experts, this body is restricted by the fact that it has no actual power in decision making. It is just coordination, the sharing of information without decision making. According to one of the planning experts what usually happens is that there is a common understanding about the plan but at the time of budgeting the plans in different regions are not in sync anymore. This becomes the problem because the decision to carry out development or not, and the way of financing becomes the responsibility of the regions.

Jakarta's environmental protection agency (BPLHD) in an interview mentions the fact that Jakarta cannot stand on its own as one of Jakarta's planning challenges, as Jakarta is still influenced by the surrounding areas. Moreover, many large infrastructure developments that influence Jakarta's structure are within the authority of the national government. Also the Ciliwung River which is under central government responsibility is located in Jakarta and is managed by the Balai Besar Sungai Ciliwung Cisadane centre (Centre for Ciliwung-Cisadane Rivers) of the national government. Because of these reasons Jakarta is dependent on the correctness and implementation of the plans developed by the national government, in order for Jakarta to make more concise planning.

An example of a partnership between central government and lower levels of government can be seen in the initiative of Jakarta's governor Widodo, as described by one of the planning experts. Jakarta experiences many problems on an interregional scale. New legislation states that regional governments have authority over matters such as railways but Widodo had problems to arrange these infrastructure problems together with other provinces. That is why he brought the problems straight to the central government and asked them to solve it from above. This means Jakarta now has a governor that has the initiative to embrace other regions vis à vis the national government.

Within Jakarta there are partnerships between different government agencies. These are most frequently seen in the form of coordination with other agencies in the process of developing spatial plans. Many of the interviewed government officials give examples of this.

As is apparent from a source that has worked at BAPPEDA, this agency coordinates with other agencies in order to make RTRW. BAPPEDA coordinates with other agencies, if aspects that need to be included in their spatial plan are in the domain of that other agency. If an aspect is in the domain of the ministry of Public Works, such as flooding, coordination will happen with the ministry of Public Works as this ministry determine percentages of water bodies in Jakarta.

Jakarta's Environmental Protection Agency (BPLHD) and BAPPEDA coordinate or work together in order to formulate the development plan (RTRW). BPLHD gives contribution regarding environmental aspects that BAPPEDA needs to take into consideration. This contribution is also in formulating programs for the development plan. This shows that the coordination is very strong as program are actually very essential for activities. This shows a strong involvement by the BPLHD. BPLHD also involves all necessary government institutions in developing their regional action plan.

Jakarta's Disaster Management Agency (BPBD) is involved in developing the draft of the detailed spatial plan (RDTR). Besides this, BPBD also helps with making regional action plans together with

Jakarta's Environmental Protection Agency (BPLHD) by giving input on disaster threats based on climate change. In the RDTR, the BPBD was involved in the plenary discussion and was given the task to revise the evacuation routes, logistic centres and evacuation process that should be put in the RDTR. BPBDs own disaster management plan involved all of DKI Jakarta's government agencies, especially those that have tasks matching with disaster mitigation management. According to the interview with BPBD there are nine such agencies. According to a governor's decree, the BPBD consists of units from other organizations (about 31). Another example of cooperation with other agencies is a document that BPBD prepared together with other units or agencies. They were all asked to give their input. The final meeting was even led by the secretary of the government of DKI Jakarta, head of BPBD and the heads of the governmental units. Without the inputs of other agencies BPBD's document would not be so complete, says the interviewee from BPBD.

The disaster mitigation master plan as developed by Jakarta's Disaster Management Agency (BPBD) is coordinated with the Spatial Planning Agency; they are part of the BPBD team and actively follow meetings from beginning until finalization. This ensures that the Spatial Planning Agency knows what happens. After the document developed by the BPBD is finalized it is send to Spatial Planning Agency. Besides this, citizens can download the document straight from the BPBD website, according to the interview with the BPBD.

The Spatial Planning Agency (DTR), based on an interview with an employee, since the spatial planning act 26/2007 this agency includes short term and midterm action plans. In making these programs the relevant regional working unit (SKPD) and agencies are involved in making the prioritization of what tasks should be done in each of the terms in order to reach the overall goal of the spatial plan.

4.6.4 Existence of partnerships between government agencies and non-government actors

A good example of existing partnerships between government and non-governmental actors can be seen from an interview with Jakarta's Disaster Management Agency (BPBD), after the January 2013 flood, the BPBD received help from many parties. The World Bank lent GIS experts to help with mapping. Many parties and NGOs offered their help such as the Australian Institution for Disaster Reduction (AIDR). This organization made an analysis of the past flood so the BPBD could learn from it. Besides this, MercyCorps wants to train people at the local level to help with the BPBD plan for contingency in the sub-district (kelurahan) level. This is aimed at the districts that were hit by the January 2013 flood. According to the source at the BPBD, a provincial contingency plan takes three days to be developed so the BPBD sub-district contingency plan in cooperation with MercyCorps will enable the communities to deal with flood disasters right away. Indeed, the interview with MercyCorps confirmed this by stating that MercyCorps is planning to design training for facilitators (TOF) that will work in the districts of which BPBD plans to improve their capacity.

One of the interviewed planning experts describes a partnership between the Jakarta government and the World Bank to dredge its rivers that is less successful. This was proposed in 2007 and then was then supposed to be funded by the World Bank, but until now that plan has not been executed.

The implementation for this project has not started yet because of slow bureaucracy either on the World Bank side or the government of Indonesia, the national government. He assumes the slow process is caused by the big loan that is involved.

4.6.5 Existence of project developed by actors from diverse backgrounds

Most projects developed by actors from diverse backgrounds in Jakarta are largely initiated by a single organization, often non-governmental. Government agencies then send young professional urban planners that take part in the activities of the organization. An example is a project from the Indonesian association of urban and regional planners. This association has a program to facilitate communities to develop their climate adaptation plan. In this program young planners from the national development planning agency (BAPPENAS), the Ministry of Public Works and the Jakarta government participate.

Most programs seem to be in the form of a forum or partnership, as a problem with projects is that they require equal efforts by all parties. From interviews with people from MercyCorps and within government agencies it appears that the government feels too busy to invest in time consuming projects. For instance, at this moment BAPPEDA is busy developing new master plans based on the new RTRW. Perhaps they only focus on this, as they are formally accountable to fulfil the task of providing those master plans. Therefore, they only send their young planners to activities that are originally developed by other parties.

4.6.6 Existence of public forums, meetings, public agenda shaping efforts, etc. which involves different actors

Jakarta has a public forum called Musrenbang, Musyawarah Perencanan Pembangunan. Here communities can bring in their proposed activities that they want the government to fund or to support. This forum, however, is ineffective, according to a source at MercyCorps. Jakarta is forced by law to have a Musrenbang forum, but because of this the forum is mostly a formality where people can bring in ideas. This, however, does not mean that the ideas that people bring in are implemented. To achieve this, there needs to be political support, but community initiatives do not often become a priority by the government. To deal with this, there should be someone to guide the local communities through the whole Musrenbang process, until their proposed activity is included in a formal plan or receives allocated budget. In order to deal with this problem, MercyCorps formed KPP, Komite Pengarah tingkat Provinsi. This is a multi stakeholder committee consisting of NGOs, university experts, BAPPEDA and Jakarta's environmental protection agency (BPLHD). Communities can present the development document to a meeting of the committee that can assist them in further steps and bridge the communication between KPP and POKJA (working group). According to the source at MercyCorps, now the KPP will be upgraded into a PRB forum (mitigating disaster risk) which has a stronger function as it is under the umbrella of the BPBD, that is a government agency. This forum is strong because it involves multiple stakeholders: NGOs and government agencies.

Musrenbang, according to MercyCorps has the potential to increase resilience because it helps in improving the communication between grass root initiatives with the government. If this mechanism

is effective it has the potential to develop resilience without having to do particularly big efforts. It builds understanding in the local level as well as in the government level.

4.7 Modes of implementation

Modes of implementation	- Learning capacity (type of learning: single loop, double loop, or triple loop) - Channelling social networks to mobilize resources.	- Higher types of learning exist - Accessing research centres and NGOs in order to successfully carry out programs

Table 4.5: indicators related to modes of implementation. Source: author (2013)

4.7.1 Higher types of learning exist

Jakarta keeps making the same mistakes

One source from the Ministry of Public Works argues that no higher types of learning exist in Jakarta. He argues this by pointing out that the Jakarta government keeps on making the same mistake. According to him resilience implies that after a flood hits, one knows that there apparently is vulnerability. Due to this, the city has to form a structure that takes vulnerability into consideration. The city should be flexible to deal with these vulnerabilities. However, Jakarta is not, which leads actually to an increased vulnerability.

The Spatial Planning Agency (DTR), the agency that gives out permits and makes the detailed spatial plan based on the RTRW shows persistence in old ways of thinking, while the RTRW tries to implement new ways of resilience into Jakarta's spatial planning system. This can be seen from an interviewee at the Spatial Planning Agency, who claims that this agency analyzes and follows the general framework from the RTRW 2030, and to then "marry" it with the old plan that they have. The agency basically uses their old plan, which is based on old ways of thinking, and adjusts it where it is not in conflict with the RTRW 2030. This means that the agency does not attempt to design a new detailed spatial plan that tries to capture the overlaying essence of thinking that is shown in the RTRW 2030. This shows that new visions on the macro level are distorted in their implementation and new developments in thinking are not implemented.

A document that shows old ways of thinking is the guidance document of the Ministry of Public Works (2002) that deals with the process of re-evaluation of provincial spatial plans. One of the criteria mentioned in this document to re-evaluate spatial plans is external factor of the emergence of large scale property investment that affects the pattern and structure of regional development. This apparently is an acceptable external change, even though, they are not according to land use plans. Internal factors that cause the need for re-evaluation could be:
- Low quality of the provincial spatial plan so that it is unable to be used to accommodate development and growth of social economic activities that are fast and dynamic.
- As well as not really able to be used as a basis for giving out of location permits.
- A shift or change in the values in the community about the quality of space in the demand for quality of the environment and life that causes the increase in indifference towards

environmental destruction or damage and illegal squatting that is at fast rate that is in violation of structure and pattern of space utilization as determined.

Basically this document makes many excuses for developments that should not have happened in the first place. This is a hindrance for higher learning.

Absence of a spatial planning auditor

Based on an interview at the Bureau of Spatial Planning and Environment it appears that Jakarta does not have a spatial planning auditor. There is no control feedback mechanism that is necessary for plans to be controlled. This means that the quality of the plans cannot be controlled and that there is no one that can say that developments deviate from the spatial plan or that the detailed spatial plan deviates from the RTRW. This leads to unfocused and inconsistent execution of development.

Too much focus on structural measures

According to an interviewee from the Ministry of Public Works, a major problem is that Jakarta focuses on structural measures such canals while no action is undertaken towards influencing the behaviour of people. While according to him they are the problem in Jakarta. In his terms Jakarta does not continually adapt to a changing environment. It tries to recover to the original system which has proven to not work in Jakarta while added to this the changing environment makes the system continually more vulnerable. Another interviewee from the Indonesian planning association agrees with this as he says that it is not enough to build technological solutions and hard infrastructure, but the citizens have to be facilitated and prepared and trained to live with the disasters.

An example of the strong focus on infrastructure measures can be seen in the RTRW 2030. Article 44 shows a long list of structural measures, infrastructure to minimize flooding and flood inundation. The list consists of measures such as normalization of rivers and canals, extending the polder system in low laying areas, improving the debit capacity of the West Flood Canal and the Cengkareng Drain, and connecting the East Flood Canal with the West Flood Canal.

Another example of the way how the technocratic way of planning is directed from above and institutionalized in Indonesia's planning system can be seen from the document prepared by the directorate general of spatial management of the Ministry of Public Works (2007a). This is a guidance document on how to do technical analysis of the physical environment, economy as well as social and cultural aspects in the preparation of spatial plans. The ministry hopes that this guideline will give direction for provincial, regency and city governments and stakeholders within formulating and preparing of regional spatial plans. This shows persistence in the measurable. Even social and cultural aspects need to be measurable.

This way of thinking can be seen from an interview with the managing unit for the East Flood Canal (under the provincial Public Works Agency). This unit is very technical. They know waste management is a big problem, so they need to socialize this to the people, but they can only think in technical terms. Because of this, they do not know how to do this. Besides this, they do not take into consideration that their calculations could be wrong, and do not consider the possibility that there could be things they did not think of. Due to this, they have no program on how to communicate with the surroundings if something goes wrong.

A reason why this technical way of planning might fail is the fact that no database is readily available. The collection of data is only based on project data, but no routine work is carried out to keep the database up to date, as appears from an interview with a government official. This leads to the question how it is possible to make well informed spatial planning based on technical data, while there is no data to base a decision on.

The interviewee from the Ministry of Public Works gives an example of non-structural measures that are forgotten, namely insurance. Insurance is part of resilience. He finds it primitive not to have insurance. After emergencies people collect money in boxes but there is no accountable insurance system to be channelled in times of flooding that can be audited. According to this source, insurance is a prerequisite feature of a resilient city as it relates to social resilience.

An interviewee from the Bureau of Spatial Planning and Environment argues that Jakarta lacks systematic solutions to its problems. According to him, systematic from the perspective of water means to think not only of infrastructure, normalization of rivers and building water reservoirs, but also thinking about the awareness of the society in its use. He thinks it is a weakness that this demand side is not discussed in the RTRW 2030.

From the interview with the Spatial Planning Agency (DTR) employee it showed that the DTR also develops their own, more technical, ways to build flooding resilience that are not mentioned in the RTRW 2030. For instance they plan to allow houses almost in all of Jakarta to now be 3 floors instead of 2, where the first floor is meant for non-electric equipment and electrical fittings should be at the second floor. They also implement ways to first store water at plots of build up land in case of intensive rainfall. They do this by building infiltration wells and forcing bigger building complexes to have areas such as tennis courts to be able to store water before sending this water to the drainage system. This is a break with traditional ways of water management that involve moving water out of on area as soon as possible.

Problems with learning from experiences
One of the interviewed planning experts describes a problem that Jakarta has with institutionalizing and replicating of programs. According to him the government of Jakarta has to deal with counter forces when it articulates that a program proved to be a good experience and they wish to replicate the lessons learned. According to this interviewee there will always be some organization to challenge this by pointing out the differences in circumstances of other locations and pressing for the program to be adjusted. Jakarta cannot adopt but has to adapt. According to him, in DKI Jakarta there are many "smart" people: many civil society organizations are very vocal in trying to influence and teach the regional government of what they think is best for Jakarta. This source calls for knowledge management that can develop and replicate knowledge to use it in different situations.

More systematic thinking
Since the introduction of the Spatial Planning Law 26/2007, the Spatial Planning Agency is not allowed to change land use function from housing into commercial usage. In the words of an interviewee from the Spatial Planning Agency they are not allowed anymore to "increase the quality of land use". However, they are allowed to change commercial land uses into low class apartments and to change housing into schools. Now they have different considerations about if changes in land

use function are allowed. They often ask experts, analyze the impacts for the surrounding and look at the surrounding areas of the development to see if the new function is suitable for that activity. Different places are now treated differently and not all requests for change in land use are accepted. This shows an improvement in the way spatial planning is undertaken.

Negotiating with the private to help create good spatial patterns
The Spatial Planning Agency, according to an interviewee has problems reaching the minimum amount of 20 percent green space that the public sector is required to provide as is decreed by law. The Spatial Planning Agency has the innovative thought of creating semi-private green spaces. These are private owned space that can be used by the public. In this way, these spaces can be added up to the total amount of public green space. Usually the Spatial Planning Agency requires this from large land developments. The developers are allowed to create their own semi-private green space, but with the requirement that these spaces are located at the sides of the road where the public can enjoy the benefits.

New ways of thinking
Jakarta sees the first efforts to change the embedded social paradigms. There are efforts undertaken to change the way people think about water. Many of these have been described in the section about building awareness. The RTRW 2030 seems to be a first start to change people's mindset, and the first institutionalized way to develop an urban way of thinking for the citizens of Jakarta. This signifies a move forward from only implementing technical measures to also include non-technical, social measures.

Furthermore there are efforts from the Jakarta government, as explained by an interviewee from Jakarta's environmental protection agency (BPLHD) to enforce a different habit of water usage. This is done through enforcement of a higher tariff for extraction of ground water. In the past it was cheaper to extract ground water than to pay for water that is delivered through pipes. This past situation was enforcing ground water extraction that leads to land subsidence.

DKI Jakarta's RTRW 2030 article 56 now articulates efforts to deal with the problem of waste. This shows a realization that this is a serious problem that hampers Jakarta's flood resilience. It is a direct acknowledgement that in Jakarta flooding is caused by the piling up of waste in the rivers and canals and drainage systems that causes water flow to be restricted and causing overflow. This article discusses about developing the waste management facilities for drainage and river in order to clean the water bodies from waste and preventing waste to pile up downstream and in the Jakarta bay. It further shows the importance to look at the volume of waste and to see if there is enough land for temporary waste collection.

The Ministry of Public Works (2012b) has written a guidance document that aims to operationalize incentives and disincentives that were put forward in the spatial planning law of 26/2007. It gives a strong legal basis for sanctions. It describes what kind of incentives can be used in what situation, to the general public, from province to regencies and municipalities. This should further strengthen the enforcement of the law.

Lack of vision for the future

A problem in thinking that is apparent in Jakarta is mentioned by an interviewee from the Bureau of Spatial Planning and Environment. This interviewee points out that Indonesian planning in general lacks a vision for the future. Indonesian planners want to produce something in their own lifetime that shows direct results. Results that take a couple of hundred years will not be carried out. Indonesian planning cares about a certain image that they want to portray and planners rarely say they do something in order for future generations to be able to reap the rewards. Visions for the future are often just lip service.

According to one of the interviewees from the Ministry of Public Works, Indonesian planning is leadership based. Due to this, resilience has to be initiated by leaders as cities are very paternalistic. Whoever the leader is determines the course of planning; it is not the system that does this. Jakarta's current governor, Widodo, is pro-public, while the previous governor was pro-private, according to this interviewee. An interview at the Bureau of Spatial Planning and Environment confirms the importance of visionary leadership as leadership is important in being able to translate the vision and mission to become implemented in the field. This vision does not necessarily need to come from the governor as can be seen from an example given by this source. She thinks the mid 1990s were a period where planners developed the last phenomenally good spatial plan. Back then the Jakarta government was very strong in commitment and background. The civil engineers were real civil engineers, the planners were real planners, and the architects were real architects. And the commitment was the same even though the governors changed. Maybe back then the governor did not have a substantial vision but the level below had a strong vision that it has to succeed. They had commitment and consistency which was supported by sufficient knowledge. This interviewee thinks leadership vision in the New Order was the initiator that provided the circumstances to make extraordinarily good plans. According to this interviewee, when those at the level of leadership - not only the governor - have a strong vision to realise planning, commitment and have sufficient knowledge then these people at the leadership level can translate their vision and mission to the lower level until those key persons that implement. According to this interviewee, now the leaders have insufficient knowledge, so they cannot give guidance and direction

4.7.2 Accessing research centres and NGOs in order to carry out programs together.

Based on interviews with sources from the Indonesian planners association and MercyCorps, it seems that the Jakarta government does undertake experiments and research projects together with NGOs, but within these projects only participates as a stakeholder, overseeing the process of the activity being done and sometimes even co-financing the projects. Within these governments, the Jakarta government does not act as equal partner, which means they do not put in the same amount of efforts as the NGOs. In general, these activities are all organized by the NGOs and it seems that the Jakarta government is more than willing to let the activities and studies undertaken by the NGO. This means the Jakarta government has access to the study without undertaking it themselves. From the perspective of MercyCorps it is important to involve the government so that the government is informed of the activities of the NGO. This might give some legal support and perhaps the NGOs hope that some of the aspects of their study are internalized within the Jakarta government's wider policy framework.

One of the planning experts however points out that Jakarta does not have a task force within the government to deal with issues of climate change. He mentions the example of Semarang where a task force meets every two weeks and discusses issues related to flooding. It consists of government officials from planning agencies such as BAPPEDA (the regional planning and development agency), DTR (the technical unit of the regional Spatial Planning Agency which makes detailed plans that operationalize the macro level plan made by BAPPEDA), the ministry of Public Works, as well as experts from universities and NGOs.

In Jakarta, however, now there are efforts on their way to form a forum to mitigate disaster risks, as described by a source from MercyCorps. This is initiated by Jakarta's Disaster Management Agency (BPBD). MercyCorps recommended that people that were involved in the forum that they had formed earlier to be placed in the PRB forum of the BPBD. PRB is the Indonesian abbreviation of Penangulangan Risiko Bencana (Mitigating Disaster Risk).

4.8 Indicators showing resilience

Finally, this chapter will conclude in a concise overview of the resilience indicators for the current situation of Jakarta. Each indicator will be analyzed based on the information in this chapter, leading to figure 4.3 that gives an overview of Jakarta's resilience.

Indicators that show Jakarta's resilience	Indicators that show Jakarta's non-resilience
• High variety of ideas is given in public participation meetings, but the ideas are not always internalized • Spatial planning documents are produced by a variety of actors involved in the planning process, this includes pro-contra groups • No real rejections in the resilience concept, although not every actor fully understand the concept • High variety of expert knowledge from different disciplines • Information from as many sources as possible is taken into account • Inclusion of actors from different backgrounds • There are efforts from government to include communities in plan-making and agenda setting • There are awareness raising efforts, mostly aimed at citizens • Higher types of learning begin to emerge	• One directional information flows • Knowledge of local residents and communities is not fully taken into account (tokenistic) • Many government driven initiatives, grass root initiatives have difficulties in getting government support • Existence of many conflicts between actors • No real efforts to build relationships between stakeholders • Awareness only by some actors about the eminence of the topic • Ineffective sharing of knowledge between different government agencies • Lack of effective partnerships between government agencies and between different government hierarchies • There is existence of partnerships between government agencies and non-government actors, but with low commitment • Lack of projects developed by actors from diverse backgrounds • Ineffective public forums, meetings, public agenda shaping efforts, etc. which involves different actors • No accessing of research centres and NGOs in order to successfully carry out programs

Figure 4.3: Jakarta's current resilience Source: author (2013)

Chapter 5: Implications and conclusions

This chapter consists of a synthesis of the previous chapters and conclusion of the study. It will result in policy recommendations for Jakarta. The synthesis is based upon four types of discussion:

An overview of the present indicators will be given in order to see which of the processes of spatial strategies (perceived role of planners, knowledge and skills employed, methods of engagement, institutional structures/power relations, and modes of implementation) show resilience or non-resilience. This gives a clear overview of the criteria in which Jakarta's resilience is already advanced and which of the criteria still need to be developed

An overview of the resilience indicators for the historic situation will be compared with the current situation, where each indicator will show resilience or non-resilience. If there appears to be a strong correlation between the historic and current situation this could be regarded as empirical proof that path dependencies and lock ins shape the current situation of cities, in the context of Jakarta.

The underlying reasons for the difference between past and current resilience indicators will be looked at. These reasons can be divided between empirical as well as theoretical. The theoretical explanation tries to explain this from the theory related to social-ecological system thinking.

For each indicator that shows non-resilience an overview will be given of the reason that these indicators show non-resilience. This will become a basis for the policy recommendations.

5.1 Comparison of past and present resilience

Table 5.1 gives an overview of the comparison of past and present resilience indicators. In the table, indicators that show resilience are written in bold font, besides this, for every indicator it is added if the indicator shows resilience of non-resilience.

Table 5.1: comparison of past and present resilience. Source: author (2013)

Processes of spatial strategies	Historic resilience indicators	Current resilience indicators
Perceived role of planners	- High variety of ideas is given in public participation meetings (non-resilient) - Formulation of report that produces common goal and objectives which involves all of the actors involved in the planning process (non-resilient) - **Identification if there are rejections in new ideas and/or concepts for resilience (resilient)**	- **High variety of ideas is given in public participation meetings (resilient)** - **Formulation of report that produces common goal and objectives which involves all of the actors involved in the planning process (resilient)** - **Identification if there are rejections in new ideas and/or concepts for resilience (resilient)**
Knowledge and skills employed	- Multi-directional information flows (non-resilient) - **High variety of expert knowledge from different disciplines (resilient)**	- Multi-directional information flows (non-resilient) - **High variety of expert knowledge from different disciplines (resilient)**

	- Knowledge of local residents and communities is taken into account (non-resilient) - **Seizing the opportunity to use knowledge from as many sources as possible (e.g. NGO projects, university research) (resilient)**	- Knowledge of local residents and communities is taken into account (non-resilient) - **Seizing the opportunity to use knowledge from as many sources as possible (e.g. NGO projects, university research) (resilient)**
Methods of engagement	- Inclusion of actors from different backgrounds (e.g. community organizations, interest groups) (non-resilient) - Combination of grass root initiatives and government driven initiatives (non-resilient) - Existence or non-existence of conflicts between actors (non-resilient) - Efforts to build relationships between stakeholders (non-resilient) - Efforts from government to include communities in plan-making and agenda setting (non-resilient) - Raising awareness among stakeholders (e.g. government agencies) (non-resilient)	- **Inclusion of actors from different backgrounds (e.g. community organizations, interest groups) (resilient)** - Combination of grass root initiatives and government driven initiatives (non-resilient) - Existence or non-existence of conflicts between actors (non-resilient) - Efforts to build relationships between stakeholders (non-resilient) - **Efforts from government to include communities in plan-making and agenda setting (resilient)** - **Raising awareness among stakeholders (e.g. government agencies) (resilient)**
Institutional structures/ power relations	- High awareness by all actors about the eminence of the topic (non-resilient) - Sharing of knowledge between different government agencies (non-resilient) - Existence of partnerships between government agencies and between different government hierarchies (national, provincial) (non-resilient) - Existence of partnerships between government agencies and non-government actors (non-resilient) - Existence of projects developed by actors from diverse backgrounds (non-resilient) - Existence of public forums, meetings, public agenda shaping efforts, etc. which involves different actors (non-resilient)	- High awareness by all actors about the eminence of the topic (non-resilient) - Sharing of knowledge between different government agencies. (non-resilient) - Existence of partnerships between government agencies and between different government hierarchies (national, provincial) (non-resilient) - Existence of partnerships between government agencies and non-government actors (non-resilient) - Existence of projects developed by actors from diverse backgrounds (non-resilient) - Existence of public forums, meetings, public agenda shaping efforts, etc. which involves different actors (non-resilient)
Modes of implementation	- Higher types of learning exist (non-resilient) - Accessing research centres and NGOs in order to successfully carry out programs (non-resilient)	- **Higher types of learning exist (resilient)** - Accessing research centres and NGOs in order to successfully carry out programs (non-resilient)

5.2 Partial resilience of Jakarta

From table 5.1 it can be concluded that Jakarta is resilient in some aspects, while non-resilient in others. Jakarta shows resilience for the perceived role of planners, while it shows partial resilience in the aspects of knowledge and skills employed, methods of engagement and modes of implementation. For the aspect of institutional structures/power relations, Jakarta, however, shows solely non-resilience. Based on this, it can be concluded that Jakarta is strong in intellectual capital (basis of knowledge). However, Jakarta is low in political capital (social mobilization through partnerships and consensus building) and in social capital (wide range of actors and social networks involved).

5.3 Empirical proof of the existence of path dependencies

This research uses 21 indicators aimed at showing the flood resilience of Jakarta. The majority of these indicators show the same outcome. This could be explained from the existent path dependency and certain lock ins that have been identified in chapter 3. Even as far back as colonial times when Jakarta was still Batavia, the decision making and behaviours in that time still persist until now. Examples of these as developed in chapter 3 are: a fatalist acceptance to flooding, technocratic planning and plans only as architectural documents that fail to be implemented.

This chapter shows that there are certain lock ins that have effectively created certain path dependencies in Jakarta. The lock ins that specifically shape Jakarta's governance are the following:
- Expert based planning
- Low stakeholder involvement
- Leaders-based planning
- Low cooperation between different levels of government as well as inter-governmental
- Not learning from previous experiences (the same causes of flooding and responses to it)
- Ineffective bottom-up planning due to strong institutional embeddedness of top-down planning
- No building of social capital/building networks and relationships in order to deal with floods

The high intellectual capital can be seen from the resilience indicators for the use of a high variety of expert knowledge and from different academic sources. Besides this, the type of knowledge used is one-dimensional, in that it is from experts but not taking into account local knowledge and also NGOs as practitioners in the field. The expert based planning is a specific lock in that explains the focus on technical measures and experts knowledge.

Top-down planning is a pervasive method of governance in Jakarta. It affects many of the problems that Jakarta currently faces. Despite changes in regulations with increasing regional autonomy, the government has problems in adjusting their behaviour to this new law, such as the difficulty to involve stakeholders and create partnerships with them, as well as the difficulty to build social capital in order to deal with floods. Low cooperation between different levels of government can also be explained by this.

Many problems related to implementation could be traced back to the lack of effective leadership. The leaders based planning is a specific lock in that is found for the case of Jakarta is linked to Javanese statecraft.

Urban flood resilience is linked to path dependencies, as could be seen from above synthesis of resilience in the past with current resilience.

5.4 Reasons for improvements in certain indicators

The comparison of past and present resilience indicators shows a shift of certain indicators that change from non-resilient to resilient. These indicators are the following:
- High variety of ideas is given in public participation meetings
- Formulation of report that produces common goal and objectives which involves all of the actors involved in the planning process
- Identification if there are rejections in new ideas and/or concepts for resilience
- High variety of expert knowledge from different disciplines
- Seizing the opportunity to use knowledge from as many sources as possible (e.g. NGO projects, university research)
- Inclusion of actors from different backgrounds (e.g. community organizations, interest groups)
- Efforts from government to include communities in plan-making and agenda setting
- Raising awareness among stakeholders (e.g. government agencies)
- Higher types of learning exist

The changes in the indicators above could be explained as transformation of Jakarta's institutional system as a result of the 1997 crisis. This can be explained by the theory of panarchy, see figure 5.1. As Folke (2006) states that disturbances within a system are opportunities for changes to the system, emergence of new possibilities and allows for continuous development which balances between maintaining and evolving. Moreover, Davoudi (2012) suggest that planning should turn crisis into an opportunity through imagining and alternate futures through innovative transformations. The crisis in 1997, has led to social mobilization that has forced changes to the decaying system. The social mobilization could be seen as changes in the social system that are fast and dynamic giving feedback to the slower paced institutional system that it is embedded in. The use of the crisis as a vehicle for transformation of the old system can be seen as the self-organizing capacity of Indonesia, especially Jakarta, to change the system into a more desirable system, a more democratic system.
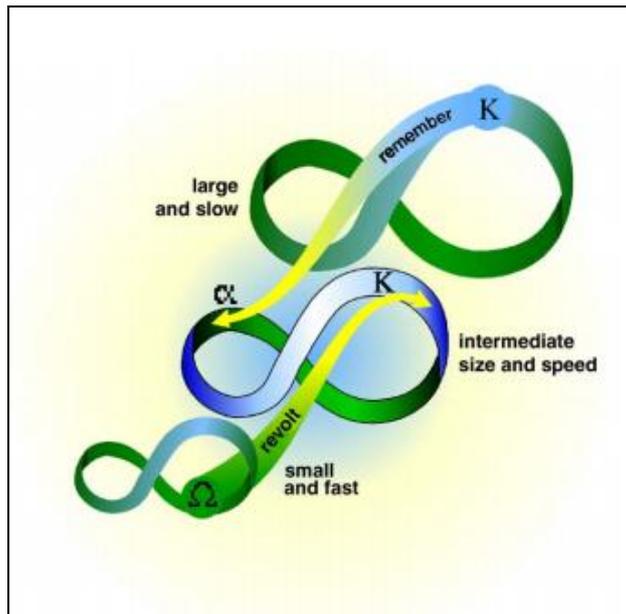
Figure 5.1: Panarchy. Source: Folke (2006:258) adapted from Gunderson and Holling (2002)

The empirical explanation for the aforementioned indicators to change from non-resilient to resilient is due to the crisis that led to the fall of the 30 year long New Order Regime of Suharto. This led to demands for reformation and an inclusive and transparent government. The reformation has caused substantial changes in the law and regulations. Decentralization have caused a momentum for change in the institutional system, as it requires further inclusion of communities and stakeholders as well as wider role of the regional government.

The beginning of changes in the planning system occurred with the release of Act 25/2004 regarding the national development planning system, where public participation was institutionalized. The Spatial Planning Act 26/2007 then further elaborated the inclusion of stakeholders, communities, and the public. This law gave the public more rights and acknowledge their role in planning. In order for this law to be operationalized, Ministerial decrees and regional government bylaws are required. However, this is a long process before public participation is fully incorporated in planning. It is now required by law the inclusion of the public; however, this is not yet incorporated in the mindset of all government officials and the governance culture of every government agency. This pervasive behaviour has been explained in the previous subchapter.

The indicators that were found to shift to resiliency could be linked to the more inclusive governmental regulations. Considering the laws that have been released which institutionalized public participation it can be a logical explanation for why the aforementioned indicators shifted. There are some indicators that are still non-resilient but the analysis also shows that there are first signs of potential changes towards resiliency.

The fact that these changes in inclusive government behaviour were required by law but are not yet fully internalized in governance culture can explain that the following resilience indicators, as described in the overview of chapter 4, are still non-resilient:

- Knowledge of local residents and communities is not fully taken into account (tokenistic);
- Many government driven initiatives, grass root initiatives have difficulties in getting government support;
- Ineffective sharing of knowledge between different government agencies;
- Lack of effective partnerships between government agencies and between different government hierarchies;
- There is existence of partnerships between government agencies and non-government actors, but with low commitment;
- Ineffective public forums, meetings, public agenda shaping efforts, etc. which involves different actors.

The main line that can be deducted from these indicators is that these practices are required by law, and see some first attempts to set up measures such as forums, partnerships and ways to institutionalize grass root initiatives. However, this faces problems related to the lock ins that were developed earlier, leading to a lack of government commitment and ineffective use of input from stakeholders, communities and the public.

5.5 Lessons learned

This subsection will give an overview of the main reasons for each indicator to show non-resilience, based on chapter 4. This will become a basis for policy recommendations.

Knowledge and skills employed

Multi-directional information flows
It is unclear how inputs from stakeholders and the public are taken into account. There is no feedback mechanism to the public on how their inputs are used. Besides that, there is no systematic way of dealing with these comments.

Knowledge of local residents and communities is taken into account
Before the RTRW 2030 there was no legal requirement to take knowledge of residents and communities into account. The fact that this is new regulation causes the implementation of how to deal with this knowledge to lag behind this. The RTRW first needs to be operationalized in detailed plans and governmental work instructions.

Methods of engagement

Combination of grass root initiatives and government driven initiatives
The Jakarta government shows a lack of commitment to act upon the grass root initiatives.

Existence or non-existence of conflicts between actors
The major problem with Jakarta is the fact that the political interplay in Jakarta consists of many actors with their own interests. This leads to conflicts of responsibilities. Interregional conflicts are caused by a problem of coordination with other governments in the region and a lack of legal power of cooperation. Besides this, there are conflicts in understanding and vision between different agencies. Conflicts with NGOs: some influential NGOs, with support from the masses, only think about themselves and lack a vision on how Jakarta could be improved.

Efforts to build relationships between stakeholders
Jakarta does not use stakeholder analysis. The selection of key stakeholders can lead to the building of trust and relationship, which could help mobilize resources.

Institutional structures and power relations
High awareness by all actors about the eminence of the topic
No all actors are equally aware of the necessity to overcome flooding through increased resilience. The knowledge about resilience is concentrated only in certain parts of the government.

Sharing of knowledge between different government agencies
Jakarta has no database that can be used and accessed by all government agencies. Besides this, coordination is ineffective.

Existence of partnerships between government agencies and between different government hierarchies (national, provincial)
Bodies of cooperation are ineffective due to conflicting regional interest and absence of legal power for inter-regional bodies of cooperation.

Existence of partnerships between government agencies and non-government actors
Governments lack commitment to invest time and money to make partnerships work. It appears that only new government agencies, unaffected by path dependencies, are willing to stake their time and funding.

Existence of projects developed by actors from diverse backgrounds
The existing projects are initiated by non-government actors while government support of these projects lacks commitment and support.

Existence of public forums, meetings, public agenda shaping efforts, etc. which involves different actors
The current public forum of the Jakarta government, Musrenbang, is ineffective as community initiatives find difficulties to be included in the government's plans and budgeting.

Modes of implementation
Accessing research centres and NGOs in order to successfully carry out programs
The Jakarta government only participates as stakeholder within NGO projects.

5.6 Conclusion

This conclusion answers the main research question: how can the concept of resilience be specified for urban planning in Jakarta while taking into account flooding as well as the relevant path dependencies that play a role?

Chapter two showed how path dependencies influence urban flood-resilience. It was found that urban flood resilience is dependent upon the past decision making and behaviour and the institutions that it is embedded in. Path dependencies influence urban flood-resilience through certain lock ins that become a set way of governance.

Chapter three showed how Jakarta's historic context influences its resilience to flooding. It was found that the past explains for the most part the tendencies that are found in current urban flood resilience in Jakarta. Jakarta's historic past creates path dependencies that become a constraint in changing the behaviour in governance of the current system. The most notable path dependencies that were found in analyzing Jakarta's historic context are: expert based planning; low stakeholder involvement; leaders-based planning; low cooperation between different levels of government as well as inter-governmental; not learning from previous experiences (the same causes of flooding and responses to it); ineffective bottom-up planning due to strong institutional embeddedness of top-down planning and no building of social capital/building networks and relationships in order to deal with floods. However, this research also found new path formations in the shape of regulatory reform (fiscal decentralization and local autonomy); new partner arrangements (embedding of public participation in law and start up of public forums); recent political support and insight (forced by law); and taking into account knowledge of the public and communities.

Chapter four showed how resilient is Jakarta to flooding. Due to the lock ins that were found in the analysis of chapter 3, Jakarta's current situation is only partially flood resilient. Jakarta's current flood resilience is characterized by high intellectual capital but low social and political capital.

The concept of urban flood resilience in the case of Jakarta needs to be focused on increasing social and political capital as this research has shown that the low level of these capitals causes problems in implementation in the field and hampers actual efforts to engage with the public. This study shows that flooding directly involves communities. The communities themselves show potential to self-organize themselves. The communities have a large potential of resources to be tapped into, if the Jakarta government is willing to empower them. This study also found that vulnerable areas are vulnerable because of low social-economical status of the communities that live there. Therefore, Jakarta should exert more efforts to focus on social aspects, besides the technical flood measures that have been undertaken since colonial times. One way to accomplish this is through enlightened leadership. All throughout history the influence of leaders can be seen on Jakarta's planning, either in policies or in projects. The current governor of Jakarta is a prime example of the effects that leadership can have on policies, implementation of programs, as well as increased efforts for law enforcement.

5.7 Policy recommendations

5.7.1 Knowledge and skills employed

Jakarta needs a clear and systematic way to deal with inputs from residents and communities
The RTRW 2030 includes more community involvement. If communities give input, a clear report should be made that states what inputs were received from the communities, and what was done with it including an overview of the specific actions that will be undertaken.

Priority should be given for making operationalizations of the macro policies stated in the RTRW 2030 regarding community involvement

It should be clear who is responsible to make the guidance documents on engagement with the communities and these documents need to be legalized by the governor in order to become a legal guideline that every agency has to follow.

In every district or sub-district the Jakarta government should place information centres
In these information centres the communities could give the most current update on their environment. Here the communities can give information on changes in their environment that could lead to flooding as well as possible solutions to flooding that the communities have thought of. These information centres should have clear guidelines and ways to deal with inputs.

5.7.2 Methods of engagement

The communication with grass root initiatives should be improved
The Jakarta government should make special forums for different important planning problems that Jakarta faces. For instance, a forum specifically for flood prevention. This can streamline the process of decision making about the initiatives that are brought in.

Every government hierarchy should have a commission that can intervene in conflicts between parties on a lower level of hierarchy
This ensures an impartial judgment as it is not clouded by self interest. These commissions should have legal power and should not only be a board of advice.

The government of Jakarta should undertake stakeholder analysis
This enables the government to identify key stakeholders that have the potential and willingness to help the government of Jakarta to fulfil its goals. More focused efforts could then be given to be given to the selected stakeholders in order to build trust and relationships.

5.7.3 Institutional structures and power relations

Public campaigning
The Jakarta government should use public campaigning to raise awareness among the public about their own responsibility to prevent flooding and to make them aware of the consequences of their actors.

Training of government officials
Jakarta's government officials should receive training on the topic of resilience. This should ensure a better understanding of the topic. This training should happen in all units of government, including the more technical units. This should lead to better professional judgment in the work of these officials.

Jakarta should build databases
Currently Jakarta saves data on projects, but there should be a systematic way of collecting data on many things. An example of a database that should be built is for the sewage system in order to identify the capacity and potential bottlenecks in flood prevention.

Jakarta's government officials should switch more between agencies

Government officials should be rotated between agencies that design macro policies and between agencies that design the more technical spatial plans. This ensures a better understanding of the work and the philosophies that these plans are based on. This should prevent a gap in understanding between the macro and the micro planning.

Jakarta should have a spatial planning auditor

This auditor should become a control feedback mechanism that is necessary for plans to be controlled. This means that the quality of the plans can be controlled so spatial deviations between RTRW and detailed spatial plan can be detected early on.

In order to deal with conflicts on the regional scale (Jabodetabekpunjur) a supra-governmental body should be formed

This supra-governmental area should be administratively higher level than the urban areas within it. Each region should send a representative that is a key decision maker in its own area. As Indonesia has problems with political willingness and horizontal coordination, the national government should help this supra-governmental body with coordination.

There should be a governmental decree that forces government agencies to spend a certain amount of their budget on partnerships with non-governmental actors

This ensures the governmental agencies have enough budget and commitment to engage with non-governmental actors. This should be an efficient use of resources, as the other parties also invest in the programs and projects.

The Musrenbang forum should be made more effective

The Musrenbang should be streamlines so that decision making is more efficient in order for good community initiatives to be supported. This could be done based on suggestions by NGOs that currently try to support community initiatives and therefore know what constraints hinder the community initiatives.

5.7.4 Modes of implementation

Governmental programming should consider alternative resources for carrying out programs

The government faces limited resources; these constraints could be partially overcome by working together with research centres and NGOs. Shared efforts can lead to lower government costs in fulfilling programs and reaching the programs target.

5.8 Reflection on the research process

This thesis has tried to find a niche that so far has not been touched upon in planning theory. Resilience has always been talked about in an engineering perspective. However, it lacks the power to really describe the complex situation in cities and address the problems within cities. It also addresses the current scientific debates that recognize that communicative rationality is insufficient to fully comprehend the urban reality. Complexity sciences emerge as one of the discourses that aim

to bridge the gap between two different rationality, i.e. technical versus communicative. Social ecological resilience is one theme that is found within the discourse. Any discussion about social-ecological resilience has remained in abstract form. The debates have remained solely theoretical without practical applicability. Another topic found within the complexity sciences in planning is that of path dependencies and lock ins. This has been used in the context of economic geography but has not yet been explored and applied in spatial planning, especially in the context of institutions. The above consideration has led the author to try to take the first step to bridge theory with practice, seeking empirical application for the topic.

Developing and perfecting of the framework of analysis proved to take longer than initially anticipated. Due to time restrictions a choice had to be made to either spend more time to perfect the framework of analysis or use the theory that was already collected to base the interview protocol on. The interview protocol was based on a set of governance principles that were deducted from the literature review about topics such as coordination, involvement of stakeholders, use and sharing of knowledge, accessing knowledge and including communities in planning. The interview questions were used as a guidance, but interviewees were invited to expand most upon their knowledge they were most expert in. This lead to much useful information, however, if the table of analysis would have been fully finished before undertaking the interviews, these might have yielded even more and more focused information.

5.9 Suggestions for further research

Perhaps it is possible to develop a method of quantitative analysis of resilience based on these indicators. Such analysis will require the indicators to be given a factor of relative weight signifying their importance for resilience. Currently this would be difficult with the base of literature and lack of a base of empirical studies that can be compared. A study could be undertaken in several cities with similar characteristics in order to achieve the empirical proof to base the weights on. Such study should have strict methodology of using a fixed interview protocol for every interviewee, needs to interview sources in similar positions and needs to analyze similar policy documents.

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Appendix A: Interview protocol

Resilience in Jakarta 's social ecological system

1. Apakah Jakarta dalam krisis – seberapa mendesakkah perubahan di Jakarta
2. Apakah tantangan dalam menyusun planning di Jakarta
   Apakah dalam menyusun planning untuk kota Jakarta perlu mempertimbangkan resilience sebagai tantangan utama .
3. Berbicara tentang isu resilience di Jakarta, bagaimanakah resilience terkait dengan aspek social ,ekonomi dan ekologi.
4. Apakah komponen kunci dalam perencanaan kota Jakarta
5. Apakah kontribusi dari institusi pendidikan dan institusi NGO dalam membangun resilience in Jakarta.
6. Hal-hal apa yang umumnya dikaitkan dengan resilience di Jakarta
7. Masalah air apakah yang dihadapi Jakarta (menjadi kunci utama dalam membangun resilience)
8. Dapatkah di jelaskan bagaimana Jakarta dapat beradaptasi terhadap faktor dalam yaitu populasi dan faktor luar seperti perubahan iklim
9. Dalam perjalanan sejarah kota Jakarta perubahan apa yang sangat mendasar dari aspek sosio-ekologi ,dan dalam periode apa. (contoh:pasar minggu dulu sentra produksi buah – buahan)
10. Dapatkah dijelaskan dalam periode apa terjadi perubahan yang besar pada kota Jakarta dilihat dari aspek politik .sosial , ekonomi (contoh reformasi tahun 1998) . dan apa dampaknya
    Apakah dapat juga diuraikan faktor –faktor pemicu perubahan.

KEBIJAKAN APA YANG PELU DIAMBIL OLEH JAKARTA UNTUK MENINGKATKAN RESILIENCE DARI JAKARTA

1. Usaha apa yang perlu dibuat oleh Jakarta terkait membangun resilience social
2. Kebijakan atau rencana apa yang harus ditempuh Jakarta untuk mencegah disaster
   Kebijakan atau perencanaan apa yang harus dibuat Jakarta untuk keluar disaster
3. Apakah kebijakan Jakarta terkait khusus masalah air.
   Kebijakan apa saja yang diambil Jakarta terkait isu air : Masalah banjir, Land subsidence, ketersediaan air minum, kekeringan, sungai yang tercemar
4. Siapakah yang berperan sebagai pencetus masalah resilience di Jakarta.

PERUBAHAN IKLIM

1. Apakah aspek perubahan iklim merupakan isu utama dalam planning Jakarta
2. Bagaimana perubahan iklim dapat mempengaruhi penyusunan planning sampai ketingkat penyusunan kebijakan, perundangan, tata ruang
3. Faktor-faktor apa yang terkait sebagai penghambat atau pendukung dalam membuat kebijakan, peraturan perundangan, renstra terkait perubahan iklim
4. Dapatkah dijelaskan bagaimana perencanaan yang mempertimbangkan perubahan iklim dapat mempengaruhi resilience dari Jakarta
   Bagaimanakah kenyataannya di lapangan dan bagaimana tanggapan dari masyarakat atas diterapkannya hal tersebut
5. Apakah pemerintah DKI Jakarta memanfaatkan studi dan riset perubahan iklim dari institusi pemerintah dan non-pemerintah

Apakah pemerintah DKI Jakarta memanfaatkan studi dan riset ini dalam menyusun kebijakan

Seberapa jauh keterlibatan institusi tersebut mulai dari proses perencanaan, penyusunan kebijakan dan perundangan sampai dengan implementasi

KETERLIBATAN STAKEHOLDER

1. Perlukah keterlibatan stakeholder2 dalam meningkatkan resilience in Jakarta. Siapa saja stakeholder yang terlibat.
2. Dapatkah dijelaskan apa saja usaha dari pemerintah DKI Jakarta dalam membuat perencanaan yang resilient. Dan seberapa jauh bantuan dari luar dapat diandalkan.
3. Bagaimana pemerintah DKI mendukung inisiatif dari komunitas terkait dengan usaha peningkatan resilience
4. Apakah keterlibatan inisiatif komunitas dalam membangun perencanaan dapat dilegitimasikan/ didukung
5. Bagaimana sikap pemerintah apabila inisiatif komunitas tidak ada

KEBIJAKAN YANG SESUAI DENGAN JAKARTA

1. Dapatkah dijelaskan berbagai kebijakan yang dibutuhkan untuk membangun Jakarta yang lebih resilient
2. Kebijakan apa yang sesuai untuk Jakarta agar menciptakan kondisi yang lebih resilient
3. Apakah resilient terhadap perubahan iklim lebih sesuai didekati dari aspek engineering atau social

TRANSFER KNOWLEDGE

1. Apakah perekrutan pegawai di posisi yang baru menyadari perlunya proses transfer pengetahuan dari yang sebelumnya
2. Bagaimanakah proses transfer pengetahuan didalam kepegawaian agar dapat mendukung terciptanya suatu planning yang resilient

Appendix B: English translation of the interview protocol

Resilience in Jakarta's Social-Ecological System

1. Is Jakarta in a crisis? – How urgent is it to have changes in Jakarta?
2. Does Jakarta consider resilience as an important planning challenge?
   Does Jakarta need to take resilience into consideration as the main challenge?
3. Does Jakarta consider social, economic and ecological issues considering in terms of resilience?
4. *What are the key components of Jakarta's planning*
5. What are the relevant government institutions *(NGOs, universities)* and other that are involved in resilience in Jakarta?
6. What are the resilience-related problems that Jakarta is facing?
7. What are the water-related problems that Jakarta is facing?
8. Is Jakarta quick to adapt to the changes from inside and outside? *(Outside issues such as climate change, inside the increase in populations and economic activities?)*
9. What periods in Jakarta history made substantial changes in terms of either political, social and economic changes? What periods were important and what are the impacts? For example 1998 reform. What were the driving forces of these changes?

POLICIES TO INCREASE JAKARTA'S RESILIENCE

1. What are the efforts made in Jakarta in terms of social resilience?
2. What policies or plans does Jakarta have to prevent disasters?
   What policies or plans does Jakarta have to recover from disasters?
3. What specific water-related policies does Jakarta have*? (against problems like flooding, land-subsidence, availability of drinking water, drought, polluted rivers)*
4. Whose initiative is it to have resilience to be taken into account in Jakarta?

CLIMATE CHANGE

1. Is climate change an important topic in Jakarta's planning?
   Does it affect and change the planning system?
2. To what extent can planning in Jakarta adapt to climatic change?
3. What factors are limiting planning to intervene in possible changes and what are the supporting factors? E.g. policies, regulations, strategic plans.
4. Have climate related plans and policies helped to improve Jakarta's resilience?
5. How does the Jakarta government use studies on climate change by institutions such as ITB, the Planning Association and NGOs?
   Is the Jakarta government aware of these studies and does it use these studies in their policies?
   Is there coordination and cooperation from the government for the implementation of the suggestion of the studies?

STAKEHOLDER INVOLVEMENT

1. Are stakeholders important for increasing resilience in Jakarta?
   How are they involved?
   Which stakeholders are involved?

2. Are the efforts of the government of Jakarta to have more resilient planning supported by outside help?

   Does Jakarta draw knowledge from NGOs and academic institutions?
3. Does the Jakarta government support community initiatives to increase resilience?
4. Is the Jakarta government willing to institutionalize community initiatives?

   If this is already happening, can you give examples of such cases?

   If this does not happen, what could be preventing the Jakarta government to do so?
5. What is the government's stance or action if there is no initiative from the communities

POLICIES THAT JAKARTA CAN ADOPT
1. What kinds of policies are needed to build more resilient changes?
2. Can the following policies work for the case of Jakarta? Why would they fit, why would they not fit?
3. Is resilience in terms of climate change better dealt with engineering response or social resilience?

TRANSFER OF KNOWLEDGE (For government officials)
1. Are employees that are posted in new positions aware or resilience related policies, do they know of previous efforts? How is knowledge passed on to new generations?
2. What kind of process of transfer of knowledge within government in your opinion can support the creation of resilient planning?