IHS
Making cities work

IHS is the international institute of urban management of Erasmus University Rotterdam

MSc Programme in Urban Management and Development

Rotterdam, The Netherlands

September 2016

Thesis

Title: Identification of Best Practices for Climate Planning Using Comparative Case Study at Pilot Cities in Indonesia

Name: Yulie Budiasih

Supervisor:

Niki Frantzeskaki, PhD (DRIFT)

Co Supervisor:

Stelios Grafakos, PhD

Specialization: Urban Environment and Climate Change

UMD 12

MASTER'S PROGRAMME IN URBAN MANAGEMENT AND DEVELOPMENT

(October 2015 – September 2016)

Title

Identification of Best Practices for Climate Planning
Using Comparative Case Study at Pilot Cities in Indonesia

Name

Yulie Budiasih

Country

Indonesia

Supervisor:

Niki Frantzeskaki, PhD (DRIFT)

Co Supervisor:

Stelios Grafakos, PhD

UMD 12 Report number: 911

Rotterdam, September 2016

Summary

The pilot cities are defined as the municipalities in Indonesia which have been developing adaptation and mitigation action plans since the early initiatives in 2009 until today (2016). The approaches of the arrangement of the adaptation and mitigation actions of the cities may vary from being either a stand-alone or a combination of both actions of approach.

This study focuses on cities with the combination of adaptation and mitigation approach and observes the level of integration of adaptation and mitigation objectives in the cities' climate action plan. In this study, the integrated action plan is defined as the policy and program to implement the combination of adaptation and mitigation action plans.This study also explores the various driving forces which have brought the cities to arrange such plan.

There are four selected pilot cities with each having its own urban area characteristics, based on the variation of locations, expert bodies involved behind the process of arrangement, and the time of release for the first action plan documents. Those cities are Bandung City, Malang City, Palembang City and Semarang City.

This study finds that, the driving forces of the majority of the selected pilot cities to arrange integrated plan are similar with the driving forces of city to arrange a climate action plan in general. Those driving forces are also a combination of some variables and context specific. They range from the awareness of climate change impact, the awareness of co-benefit to climate change issue, public demand, environmental factor, political leadership, awareness of adaptation-mitigation relationship until marketability orientation. To some extent, they are influenced by the level of knowledge and experiences owned by local governments with the integrated action plan concept.

In the climate actions they have, it is identified that all cities have synergy and co-benefit interrelationship other than actions with single adaptation or mitigation objective. Although having an integrated plan, most of cities unable to avoid trade-off interrelationship in their actions due to insufficient information about the interrelationship.

However, the four cities have built the enabling condition as an initial part for integration of adaptation and mitigation objectives in their governance system. It can be seen from the readiness of the institutional arrangement to execute and coordinate both actions, the linkage program between climate planning with spatial and city development planning, the sustainable resource funding for both adaptation and mitigation actions, and the equal opportunity for the execution of adaptation and mitigation programs. Yet, the pilot cities need to emphasize more on the capacity building for their working group members, keep maintaining the function of climate working group to reach its optimum level, and also define clearly the special unit to conduct evaluation and monitoring to the implementation of climate action plans.

Keywords

Integrated action plan, inter relationship, climate action plan, driving forces, trade-off

Acknowledgements

First of all, I would like to express my gratitude to Allah SWT, the Most Gracious and Merciful.

Special thanks to my husband, Doni Berni Pritama, for truly supporting me throughout this Master Program period and together with Mother and Father caring our lovely children.

I am grateful to the Dutch Government, NFP program for funding my master in the Netherlands.

I am also grateful to my supervisors Niki Frantzeskaki from DRIFT for her precious assistance and guidance and also Stelios Grafakos who guided me since the beginning. Not to forget, Lorenzo Chelleri as the second reader who gave me many valuable inputs to improve this thesis.

I also acknowledge all the people that assisted me during the field data collection, especially the national government from Ministry of Environment of Indonesia and Secretariat of National Adaptation Action Planning, the local governments from Bandung City, Malang City, Palembang City, and Semarang City. Without their contributions, this thesis is just nothing.

Finally, a warm thank to all of my friends from UMD 12 who made the one year Master program more fun and memorable. I believe we will pursue our own stars anywhere on this earth.

Foreword

“Let every soul considers what it has forwarded for tomorrow”

(﴾Quranic verse, Al Hashr; 18﴿)

Abbreviations

IHS	Institute for Housing and Urban Development
ACCCRN	Asian Cities Climate Change Resilience Network
CCROM-SEAP	Centre for Climate Risk and Opportunity Management in Southeast Asia Pasific
URDI	Urban and Regional Development Institute
ISET	Institute for Social and Environmental Transition
RAN API	Rencana Aksi Nasional Adaptasi Perubahan Iklim
ADB	Asian Development Bank
GHGs	Green House Gases
GDP	Gross Domestic Product
OECD	Organization for Economic Cooperation and Development
VA	Vulnerability Assessment
EMA	Environmental Management Agency
RPJMD	Rencana Pembangunan Jangka Menengah Daerah (Mid Term Development Plan)
RTRW	Rencana Tata Ruang dan Wilayah (Spatial Planning)
GWP	Global Warming Potential
CRS	Climate Resilience Strategies
GIZ	Gesellschaft für Internationale Zusammenarbeit GmbH
Paklim	Policy Advice for Environment and Climate Change
NGO(s)	Non-Governmental Organization(s)
CSR	Corporate Social Responsibility
APEKSI	Asosiasi Pemerintah Kota Seluruh Indonesia
JICA	Japan International Cooperation Agency
MoE	Ministry of Environment
AR4	4^{th} Assessment Report
IPCC	Intergovernmental Panel on Climate Change
LPG	Liquid Petroleum Gas

Table of Contents

List of Tables

List of Figures

Chapter 1: Introduction

1.1 Background

Climate change as the implication of global warming has shown tangible impacts worldwide. More frequent extreme weather that causes flood and drought, the typhoon that destroys many housing and settlements, and other climatic hazards across the globe. The lagging response by global community potentially leads to decline of human life quality and future economic loss. In Indonesia, the economic impact is estimated significant although it is very hard to be estimated accurately. Based on the data of World Bank in 2010, the direct and indirect impacts of climate change can reach 2.5 % of national GDP in 2100 (Ministry of National Development Planning 2012).

Many initiatives from short term until long term have been done by countries whether in national level, regional and city level to respond the issue of climate change. The National Government of Indonesia has shown the commitment to climate change adaptation and mitigation action by incorporating it in The Constitutional Law number 32 year 2009 regarding Environmental Protection and Management. As the commitment of Indonesia for taking part in mitigation action voluntarily for global community, there is The Presidential Decree about The National Action Plan to Mitigation Action to achieve the target of greenhouse gas emission reduction by 26 % below Business As Usual in 2020 and the National Execution of Green House Gas Inventory for multi-level government to reach the goal (Sekretariat Kabinet Republik Indonesia 2011). In adaptation action context, the National Planning Board has issued the National Action Plan for Adaptation Action in 2014.

To execute such issue successfully, it requires involvement and cooperation from many stakeholders. The national government per se cannot apply the national strategy effectively without the support from its provincial and local governments. On the other side, the measures done by cities cannot be separated from other parts of the governments, for instance the area authority of the city to perform action plan is usually fixed in legal and framework of higher level institution (Teasdale, 2010)

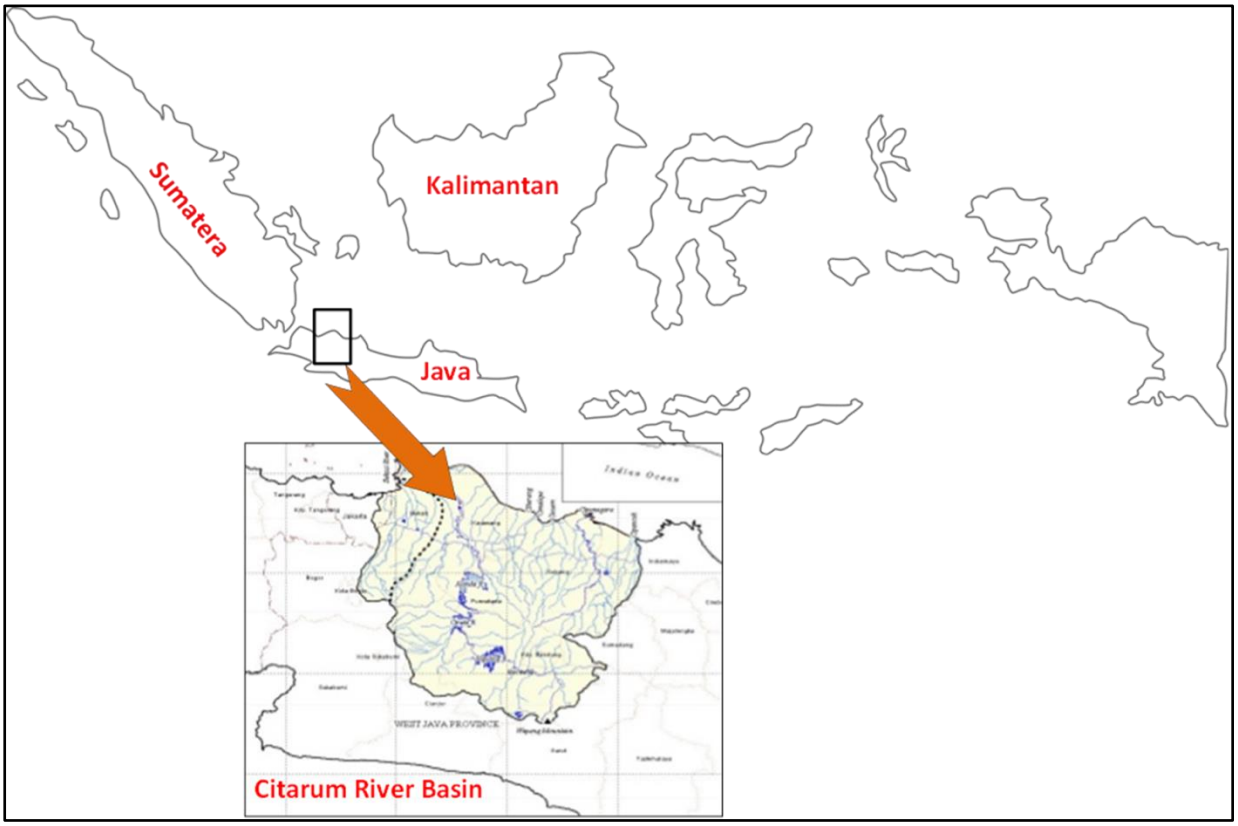
Based on the latest data from The Ministry of Home Affair in 2013, Indonesia lists 93 cities with the characteristics of urban area and 412 regencies with the characteristics of combination between urban and rural area. Until mid-2016, there are approximately 20 out of total cities and regencies which have already developed adaptation and mitigation action plan in last 5 years after the issuance of The Constitutional Law as long as growing acknowledgement to climate change among local governments. The earliest cities which developed such action plan are called by ‘Pilot Cities’. The locations of those cities lay on Sumatera, Kalimantan, and Java Islands including Citarum River Basin at West Java (figure 1).

Having a broader global network, the cities shows their abilities to arrange action plan by support from many stakeholders such as multi-level government, academician, local and international NGO, and so on.

The example of collaboration among stakeholders in arranging action plan in the pilot cities is done by ISET under the Asian Cities Climate Change Resilience Network (ACCCRN) with the support from the Rockefeller Foundation that coordinated a study on vulnerability and adaptation assessment to climate change which was conducted by Mercy Corps, URDI and CCROM SEAP- Bogor Agricultural Institute (IPB) at several cities in Indonesia in Sumatera,

Kalimantan and Java. Based on ACCCRN website, there are total nine cities which are included in the network. The other example is collaborative action among CCROM IPB, West Java Environmental Agency as the representative of provincial government and Ministry of Environment by using scheme of technical assistance from Asian Development Bank (ADB) that have already arranged mitigation and adaptation action plan at eight cities and regencies which lay on Citarum River Basin, West Java Province, the ultimate river that supplies livelihood of Jakarta's citizen.

Figure 1: The location of Pilot Cities in Indonesia on Three Main Islands (Source: Jasa Tirta II Public Corporation 2013)



As policy products, those documents play important roles for decision makers and stakeholders at city level because they can give guidance to achieve reduction of GHGs emission from various sectors and or to adapt to climatic impact as what is the aim of adaptation and mitigation action in general.

1.2 Problem Statement

The growing of knowledge implicates a shifting from perceiving climate change as natural science to practical science that supports political decision (Biesbrok, Swart, et al., 2009). In fact, people find many ways to arrange adaptation and mitigation action plan and they grow rapidly as well as the development of science. In the past time, the arrangement of mitigation and adaptation action used two different approaches. This is what is called by dichotomy adaptation and mitigation, however scientific community lately discusses the possibility to combine both of the approaches (Biesbrok, Swart, et al., 2009). Besides referring scientific knowledge production that defines the adaptive and mitigative measures, the approaches of

constructing climate action plan can be enlarged to some specific variables such as time horizon, spatial scale, stake holder involvement, and institutional complexity (Biesbrok, Swart, et al., 2009).

Depending on driving forces and the real conditions on the ground, the cities which have finished formulating the action plan may have different approaches in their documents. It can be stand-alone of adaptation or mitigation action, or the combination between the two actions (Klein, Huq, et al., 2007). However, the trend of stakeholders tends to put adaptation and mitigation actions together in one document for some reasons (Duguma, Wambugu, et al., 2014) then it is called by integrated action plan.

Yet, the number of local government in Indonesia which develops climate action plan relatively small and still insignificant whereas the policy is certainly required as the guidance for the grass root to contribute in global climate action. After all, the impact of climate change is real urgent problem faced by people. Therefore, the contribution to global action is not only how to decrease GHGs emission but also how to reduce disaster risk or to make more resilient to disaster. Considering both actions are important, taking integrated action plan for policy framing is interesting to take into account.

Speaking about integrated action plan specifically, the knowledge about what exact factor that encourages some cities to formulate this kind of plan may be highly important to attract more cities do similar movement otherwise the previous national commitment to deal with climate change impact can be non-sense. Since the concept of climate policy is relatively a new line in Indonesia and still growing to some extent, the study on existing action plans from the pilot cities can be the lesson learnt for many other cities with possibility to replication in order to accelerate the national target achievement.

Perhaps, the state of the art approach of integrated action plan that combines both of two actions can be appropriate to be applied in Indonesia's cities. In line with spirit of decentralization, the attention of city to adaptation action may increase the reputation of city mayor and give short term advantage while mitigation action talks about invisible measures that yield in long term although it has stronger endorsement from national regulation. Therefore, this study needs to learn the driving force of the city to make such planning and also to see any further efforts done by the local government to implement the plan.

In brief, the study will analyse the driving force of the city to formulate integrated action plan and to see level of its implementation in the context of urban governance from some different pilot cities in Indonesia.

1.3 Research Objective

The aim of this research is to explain how the level of integration of adaptation and mitigation objectives in the local climate change action plans so far in the selected pilot cities in Indonesia. Furthermore, the thesis is also exploring what are the main driving forces that lead cities to integrate adaptation and mitigation in their climate action plans.

1.4 Provision Research Questions

The main research question of this study is:

"How does the arrangement of climate action plan at the pilot cities in Indonesia and to what extent its implementation in city development?"

To answer the main research question, the sub research questions are as the following:

- What type of approach did construct the existing climate action plan in some pilot cities in Indonesia?
- What was the driving force for the pilot cities to arrange climate action plan?

1.5 Significance of the Study

Using cities in Indonesia as the cases, the research wants to explore a new knowledge by finding driving force of city to integrate adaptation and mitigation objectives that definitely written in single action plan document while previous researches are more intensive to mention driving forces for stand-alone plan. Therefore, the study can contribute to body of knowledge in social science and policy analysis related to climate change.

Moreover, the study also reviews level of implementation of an action plan to city governance after its issuance and the result of analysis may reveal the connectivity between certain driving force and certain degree of implementation.

1.6 Scope and Limitation

The research focuses to explore the main driving force for a municipality to integrate adaptation and mitigation action and explain how its implementation in city governance but it does not deeply explore "barrier" which may be faced by the municipalities to take integrated action plan in their climate policy. The study only refers to front runner cities which are identified combining adaptation and mitigation actions in the policy documents. The terminology of city here is indicated to an administrative boundary with dominant character as urban area.

The research methodology uses case study that mainly gathers the data by desk research and interview the key person from national and local governments.

Considering the time constraint and the length of distance among cities of study, face to face interview cannot be applied to whole resource persons therefore it primarily uses phone call interview and WhatsApp text and call. It may reduce an intact data in some way because sometime there are troubles in the process of interview such as lost signal, unclear voice, or low battery.

Besides that, the period of field work coincidently overlaps to Ramadan fasting in when affects most government offices close earlier than their normal office hour and at the edge of field work day meets Eid Mubarak, an ultimate holy day for Moslem, where most workers have their long holidays. It causes number of effective days for data gathering more limited. It may impact one respondent cannot be accessed at all until the end of field work period. However, pre-field preparation has been done by contacting some relevant colleagues and compile climate action plan documents from them other than collecting phone number or email address of potential resource person.

Chapter 2: Literature Review / Theory

2.1 Climate Policy and Action Plans

As the awareness of climate change impact grows rapidly, people understand that both adaptation and mitigation actions are two kind of doable actions to face climate change. The adaptation action particularly aims to reduce the impact of climate change while mitigation action reduces the emission of Green House Gases (GHGSs) from their sources (Klein, Huq, et al., 2007). The scale of impact is definitely extensive therefore more collaborative actions among multi stakeholders are needed to resolve the problem. Speaking to the implementation, at the institutional level, adaptive and mitigative measures can be applied through technological developments, financing, innovations, or spatial interventions (Biesbrok, Swart, et al., 2009). Supporting to that, Klein, Huq, et al. (2007) mention some options to implement that adaptation and mitigation actions through technological, institutional and behavioural aspects and also the penetration of economic and policy instruments; and a set of research and development as well to achieve the effectiveness and efficiency of the actions (Klein, Huq, et al., 2007).

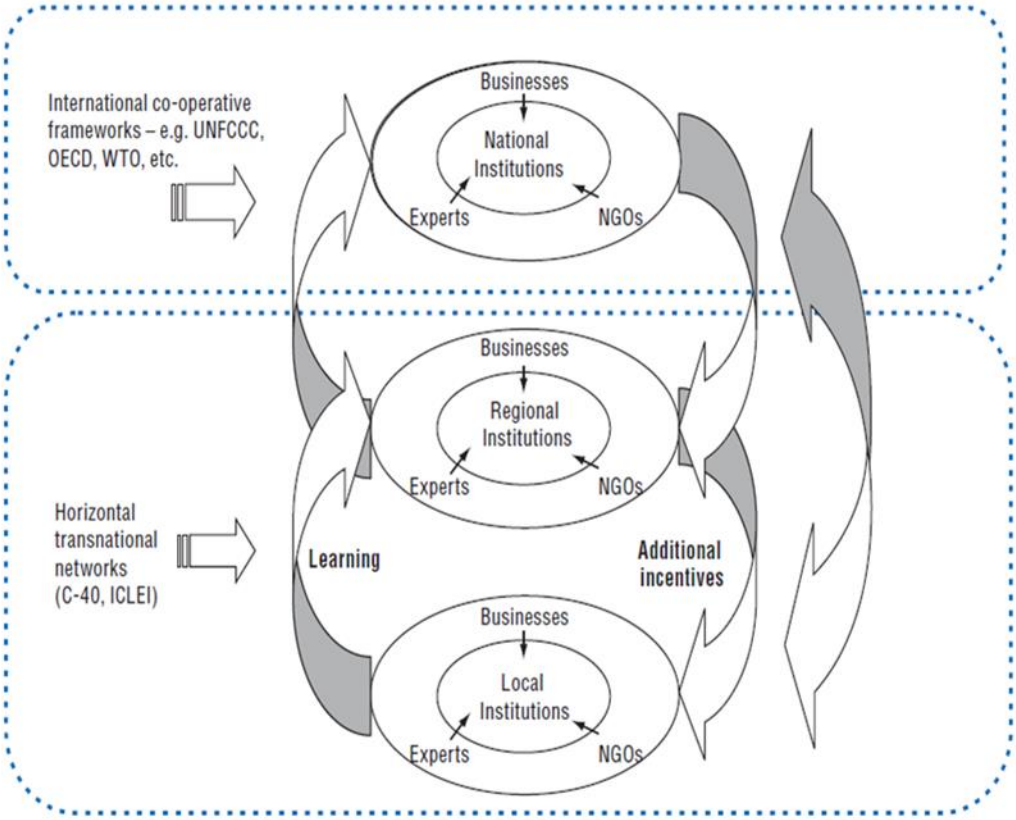
In term of government sector, the climate policy is a kind of response of government entity that incorporates the climate change issue into decision making process mainly for public interest. However, to develop the coherent policy is a complex activities since it consists of coordinating institutions under the same authority level, developing policy strategies and elaborating achievable frameworks of multi-level governance to mainstream them into both sectoral and cross-cutting sector (Biesbrok, Swart, et al., 2009). Therefore, to formulate climate policy needs involving stakeholders horizontally and vertically. By doing so, it increases the ownership to the policy product that leads greater chance to the implementation (Tompkins and Adger 2005).

The relationship of multilevel governance can be described as follow. Generally, multi level governance of climate policy maintains a sustain cooperation among multi level governments that are stratified into national, regional or provincial and local governments which respectively be a part of international networks. Each stratification engages NGOs, experts that commonly are as academicians, and privates to produce climate policy. The complex relationship among those actors both in horizontal and vertical level can be seen in the next figure 2.

There are two forms of performance-orientated planning which are flexible but orientated to specific requirement; they are action planning and strategic planning. Both have strong similarities therefore there is no strict definition to distinguish them. In some cases, action plan is likely a step stone to strategic planning (Davidson, 1996).

Davidson (1996, p.454) defines the action plan as follows: “Action planning is the participative process of development of a relatively short term plan to use available resources to meet limited objectives, normally in a defined area”.

Figure 2: Multi Level Governance of Climate Policy
(Source: OECD 2010)



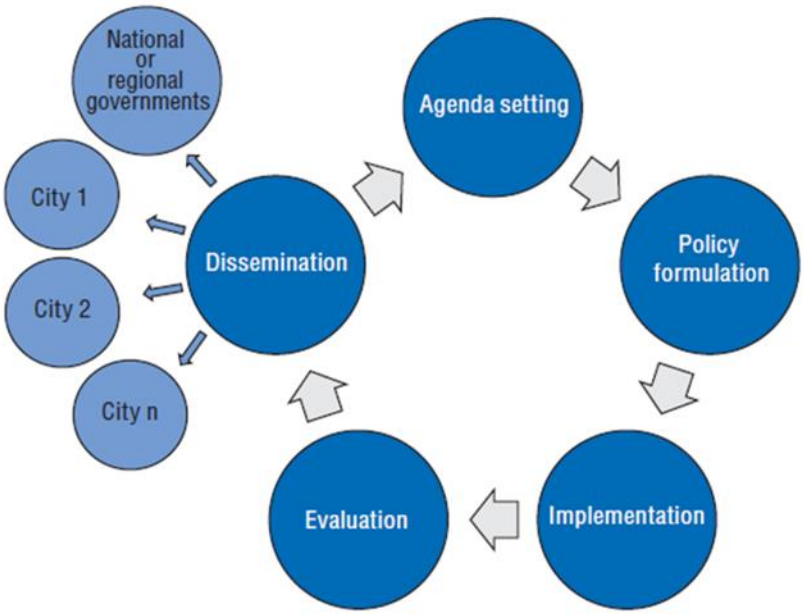
Having the action plan as a policy instrument gives the advantage such as effectiveness in relatively short term. Furthermore, it enables innovative and flexible actions, however, the disadvantage is the shortage of legal support, unless it is connected to a statutory plan. In addition, it has a possibility of being used as only a single purpose. It is important to get the support of people or other stakeholders through the process of planning mainly to achieve the target (Davidson, 1996). Similar with the above definition, Klein, Huq, et al. (2007, p.749) mentions a different terminology "a set of actions to achieve a particular goal" as 'portfolio'.

Considering the theoretical concept above, in this study, the terminology of action plan that address climate change issue will use 'Climate Action Plan'.

2.2 The Process of Climate Action Plan

In general, the processes of climate action plan at regional and local level pass through several phases which occur in sequence, starting from agenda setting where driving factor is as the key point here, policy formulation, implementation, and evaluation for getting feedback. The feedback plays role for improvement and replication to other cities and regions by dissemination (OECD 2010). Adopted from OECD (2010), the phases are figured as following;

Figure 3: The Phases of Climate Action Plan Process
(Source: OECD 2010)



There is a terminology of 'driver' or 'driving force' that may vary across contexts, but in the context of climate policy, it is defined as activities, process or patterns that give positive stimulus for the action which is opponent to barrier (Reckien, Flacke, et al., 2015).

There are some possibilities of driving force of a city to arrange climate action plan. In specific adaptation process, Moser and Ekstrom (2010) mention that the driving force would be an effective leadership; it is not restricted to the role of formal leader and not only individual person at certain position such as mayor, but also collective leadership. The leadership capacity is highly tested whenever there is no mandate or law that underlies the action. Adequate resources also play important roles in every stage in adaptation planning process. It consists of financial, technology, information, skilful human resources, and time. The other factor is effective communication and information among policy makers, stakeholders, and public society. Next, value and belief also impact to how people perceive and think the risk and then to respond to what information and belief they have (Moser and Ekstrom, 2010).

Linking to that, OECD mentions some motivations and driven factors of local government to arrange climate action plan. Generally, political leadership is the main importance in arranging climate action plan. It usually is based on the legal mandate. Both adaptation and mitigation may be guided by national mandate although the implementation will depend on the local contain. The result of this experimentation enriches the structure of national climate policy as the feedback. Furthermore, support of business sector and the demand of public society as the result of positive public opinion are other drivers. Next is the economic motivation, for instance, the promotion of energy independence and security in the middle of increasing oil prices. In addition the greening of cities can lead to create new jobs. Finally the increasing understanding of the side effect of climate change such as health issue and

livability city may drive the local government to place the action as the urgent local agenda (OECD 2010; Reckien, Flacke, et al., 2015).

There are some formulations how to treat the position of climate action plan in city and regional governments in the world. OECD and some researchers define three kinds of them. Firstly, it is just an ad hoc that concerns in short-term visible actions. Secondly, it is integrated to existing or new urban development plans ranging from transport, finance, education and spatial planning. Thirdly, it is a distinct policy issue (Sugiyama and Takeuchi, 2008) or stand-alone plan (Klein, Huq, et al., 2007; OECD 2010). The last type only addresses the climate change issue, whether adaptation, mitigation, or combination of them.

Integration to existing or new development plan is considered to enable more effective actions. For instance, by integration with spatial planning, the action plan can address more compact city with integrated public transportation that reduce the fossil fuel consumption and also manage urban sprawl at the same time (OECD 2010). Instead of separating climate policies into each sector, policy makers mainstream both adaptation and mitigation action into existing policies to create effective and efficient utilization in term of financial and human resources (OECD 2010). Supporting for that statement, Klein, Huq, et al. (2007) states that integrating climate change issue now not only refers to existing urban planning but also into sustainable development and across disciplinary perspective (Klein, Huq, et al., 2007). Climate change is a part of sustainable development issue since use the congruent indicators include social, economy, and environment (Goklany, 2007) although this kind of strategy still has remain challenges to coordinate the action, otherwise it can strengthen the dichotomy (Biesbrok, Swart, et al., 2009).

2.3 The Approaches of Climate Action Plan in Term of Adaptation Mitigation Relationship

In this session, two types of approaches to formulate climate action plan are explained and the tendency of multi-level government from countries using which approaches are given.

2.3.1 The Separation of Adaptation and Mitigation Action

In the past time, adaptation and mitigation actions to climate change were perceived as two separated things without largely considering synergize and trade-off between them. This concept is called dichotomy approach (Biesbrok, Swart, et al., 2009).

The argumentations of strict separation between adaptation and mitigation measures are stated by Biesbrok (2009); Goklany (2007); and Klein et al. (2007); based on the different characteristics between the two. Firstly, the time dimensions for the effectiveness. Adaptation action is short-term investment which gives short-term results to the impact of climate change while the mitigation action is short-term investment with relatively long-term impact (Goklany, 2007) because eventually it aims to stabilize the GHGs concentration on the atmosphere (Swart and Raes 2007). Secondly, the administrative scale (Klein, Huq, et al., 2007). In this character, adaptation action tends to be local scale while mitigation action is dominantly national or international scale (Klein, Huq, et al., 2007). Thirdly, the stakeholders involved. The source of GHGs mostly comes from fossil fuel combustion that turns economic

sectors such as energy, transportation, domestic, and industry (Swart and Raes 2007). Therefore, mitigation action can be done by various levels, from individual until international scope, while adaptation measure is more likely to be the responsibility of government sector or special interest group (Biesbrok, Swart, et al., 2009). In addition, based on the IPCC report, the effective mitigation action needs major GHGs emitters world-wide while adaptation action requires only local to national scale (Klein, Huq, et al., 2007).

In addition, the mitigation action is easier to be monitored by any stakeholders since there is a clear instrument to see the achievement by using Green House Gas emission indicator whilst there is no standard measurement to define the target in adaptive measures. Furthermore, the clarity of mitigation action measurement leads to easiness to determine who pay what in term of financial responsibility whilst it is more difficult for implementing the similar way in adaptation action (Biesbrok, Swart, et al., 2009). Linking to that, the mitigation action is unselfish and may induce free riding. The incentive to attract global initiative is needed. On the contrary, adaptation action is egoistic and incentive may less significant (Swart and Raes 2007).

But, differ from the arguments mentioned above, many mitigation action can also have short-term benefits, for instance, in the form of reduced air pollution from the limitation of the use of private car, or in some 'no-regrets' options , in the form of economic benefits from the negative net cost of mitigative technology (Swart and Raes 2007). In term of administrative scale, adaptive measure also can impact to global scale, for example, the selection of drought-resilient seeds can benefit for global level (Swart and Raes 2007).

Although have different characters, adaptation and mitigation have common similarities. Both of them need sufficient capability of society to build the new technology and alter its behavior as the response (Swart and Raes 2007; Tompkins and Adger 2005). In short, the society requires response capacity for both actions.

Indeed, the adaptation and mitigation action refer to the same objective that is to reduce the impact of climate change. Although adaptation actions are more relevant to developing countries since they are more vulnerable in terms of availability of drink water and food, poverty, and so on, and the carbon emission per capita is low while mitigation actions are more appropriate to developed countries as the main emitters and they have adequate resources to handle it yet actually all countries have climate change impacts in common (Swart and Raes 2007).

Until The Third Assessment Report of IPCC, the link between adaptation and mitigation action is not fully clear on how it can be captured then. However, Swart and Raes (2007) and Biesbrok (2009) find that urban and infrastructure planning, water resource management, land use and forestry can accommodate to reduce both GHGs and vulnerability in tandem.

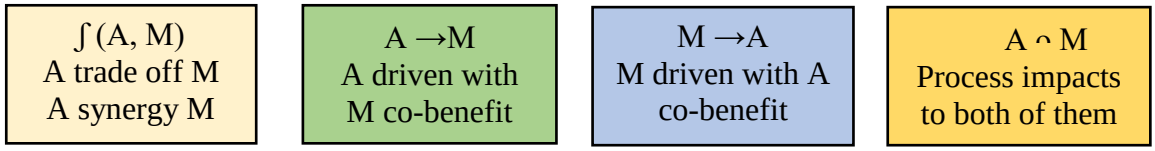
2.3.2 The Combination of Adaptation and Mitigation Actions

Recently, the approach to combine both of adaptation and mitigation actions in one policy document is considered and elaborated by scientists and policy makers. In the literature, Klein, Huq, et al. (2007) define the connection of combined adaptation and mitigation actions with the term 'interrelationship' then distinguish it into four types as following:

• Selections which incorporate trade-offs or synergies between adaptation and mitigation,

• Adaptation actions having mitigation co-benefit,
• Mitigation actions having adaptation co-benefit,
• Processes having consequences for both actions.

Figure 4: Four types of interrelationship
(Source: Klein, Huq, et al., 2007)



Synergy in climate policy is achieved whenever the action can control of GHGs emission but at the same time the reduction of vulnerability is pursued. It tends to be more effective and efficient and prevents trade-off between them. Besides, both actions are addressed without prioritization but more win-win achievements (Duguma, Wambugu, et al., 2014).

On the contrary, Swart and Raes argue that at the local level, instead of exploring to combine optimally adaptation and mitigation actions, it more makes sense to include mitigation consequences in many adaptation actions and to put vulnerability and adaptation consequences as single component into mitigation actions by still considering the economic and environmental aspects. Besides that, the stakeholder engagement among local governments, citizen, and the private sector to increase adaptive and mitigative capacity is still required beside participatory process (Swart and Raes 2007).

2.3.3 The Trend of Approach in Worldwide Multi-Level Governments

Generally, international and national institution developed those dichotomy strategies while local institution starts to build the combination one (AMICA 2008; Tompkins and Adger 2005). Nevertheless, Duguma, Wambugu, et al. (2014) argue, based on the research regarding trend of policy strategy, the rapid growing economy countries such as Brazil, Indonesia, China, tend to choose the synergy approach. Their motivations are to improve the good image in global context, to gain funding project from international institution, to resolve the higher GHGs emission per capita because of emerging industrialization and also the climate hazard at the same time (Duguma, Wambugu, et al., 2014). In addition, Robinson, Bradley, et al. (2006) state that integrated approach can be the way for government institution to open cooperation and partnership with other stakeholders such as private, NGO and academician (Robinson, Bradley, et al., 2006).

On the regional scale, climate policies and institutions do not favour to take inter-relationships between adaptation and mitigation. For instance, in the European Union, mitigation and adaptation policies are conducted separately in which adaptation strategies are more specialized for water management, coastal management, agriculture and public health (Klein, Huq, et al., 2007).

Turning to city level, based on OECD data in 2010, in most cities in the world, the arrangement of climate change policies are lacking of adaptation content. Indeed, they more focus on mitigation. It is only a few cities in the US such as; New York, Seattle, Portland and Boulder which incorporate both of them (OECD 2010). Besides that, in Japan, most cities

only put the mitigation measure into their climate change policies (Sugiyama and Takeuchi 2008).

2.3 The Implementation of the Action Plan

After the policy formulation results its product, the phase will go to the implementation of the plan on-the-ground. In the context of urban governance, there are some necessary enabling conditions before applying the integrated action plan any further. OECD mentions two key points regarding it, firstly how to make institutional arrangement which is administratively responsible for local climate policy issue. Secondly, how to put the position of climate action plan with other sector plans (OECD 2010). Duguma, et al. (2014) add two more points; the availability of a sustainable financial support and the existence of program and project that address both adaptation and mitigation (Duguma, Wambugu, et al., 2014).

The variants of institutional arrangement regarding climate policy in a city are as following:

1) A special unit conducting supervision with regard to the climate policy in other departments;
2) A formation of climate change unit in each relevant department to climate issue;
3) A steering group special for climate policy;
4) A coordination group for climate protection;
5) A single skilful and knowledgeable unit that mainstreams the climate change policy into development programs;
6) A unit under environmental protection or management department or agency. There is a weakness in this type due to environmental agency usually does not have strong position to coordinate other equal level institution and also less resources, this kind of model possibly has limitation to integrate and implement climate policy (OECD 2010).

Regarding to the position of the climate action plan among other plans, there are various ways of them, such as;

1) The integration with other plans such as water and waste management, urban planning, transport, and building. For example; the City of Madrid, Spain.
2) The integration with general plan of development; some municipalities in the US are the examples.
3) The concentration of climate policy per se without any integration to other plans. The cities in Japan until 2008 are the examples for it (Sugiyama and Takeuchi 2008; OECD 2010).

Yet, the implementation of the actions are operated on a range of distinct spatial scales depend on the actors and their interests, therefore the priority of the policy and measure focus on either adaptation or mitigation, rarely are given in similar portion and in conjunctive consideration (Klein, Huq, et al., 2007).

In many cases, there are situations whenever local governments cannot meet the target of the plan because of implementation deficit. The moment when the plan is introduced for the first time to the local stakeholder plays important role in order that they can really understand the

substance (OECD 2010). It can be a part of capacity building. Yet, Duguma et al. (2014) argue that the capacity building program has to be emphasized by government institution during the implementation period (Duguma, Wambugu, et al., 2014) . OECD finds several reasons for local government to have the deficit; incompatible internal institution, lack of capacity and skill, insufficient funding, insufficient jurisdiction, and absence of support from national government (OECD 2010).

2.4 The Conceptual Framework

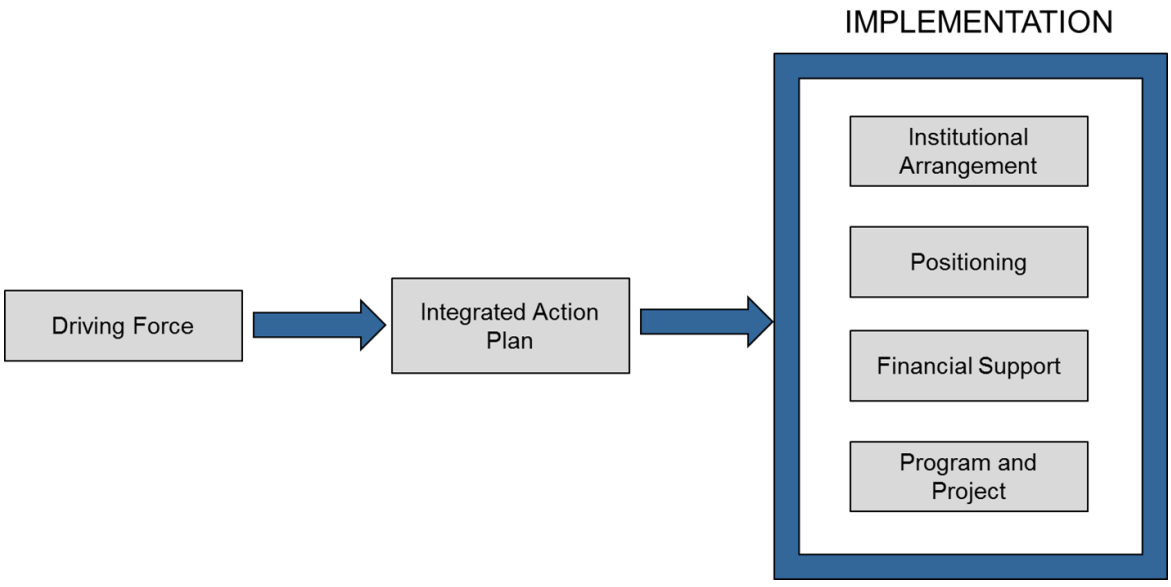
In order to explain the level of integration and what driving force of a city to choose an integrated approach, this study basically elaborates the flow chart of climate action plan process (figure 3) from agenda setting until implementation stage. It shows the connectivity between driving force at agenda setting phase and level of integration from an integrated climate action plan at a city at implementation phase.

The 'driving force' here is defined as the stimulant factor that encourages the city to issue an integrated action plan (Duguma, Wambugu, et al., 2014). In this relationship, driving force is an independent variable that affects the approach to formulation of action plan as dependent variable in which this study highlights integrated action plan.

Level of integration is shown by the implementation of the plan in the city governance system. This concept can be seen from four variables; institutional arrangement, positioning of plan among other existing plans, financial support to fund the execution of planned actions, and the last point is the execution of programs and projects at city level that address adaptation and mitigation to climate change (Duguma, Wambugu, et al., 2014; OECD 2010). Those variables are possibly affected by the substance of an integrated action plan therefore they are defined as dependent variables.

Those above connectivity among variables can be seen from the following conceptual framework;

Figure 5: The Conceptual Framework



Chapter 3: Research Design and Methods

3.1 Revised Research Questions

The main research question of this study is:

"To what extent do the pilot cities in Indonesia integrate adaptation and mitigation objectives in their climate action plans and what are the driving forces of this approach?"

To answer the main research question, the sub research questions are as the following:

- How do cities identify the necessary adaptation and mitigation actions for their cities?
- Which are the approaches and relationship with planning tools?
- How do the cities address climate actions plans objectives in their governance system?

3.2 Operationalization: Indicators for the Concept Used

The operationalization of concept, variables and indicators are explained in the table below:

Table 1: Breakdown of Operationalization

Concept	Variable	Indicators	Type of Data
Driving force Definition : Driving force is defined as activities, process or patterns that give positive stimulus for the action, which is opponent to barrier (Reckien, Flacke, et al., 2015). It is defined as motivation, impetus, power,	Political leadership	• Climate alliance current • Covenant of Mayors member (Reckien, Flacke, et al., 2015)	Qualitative
	Legal mandate (OECD 2010)	• Law/regulation from national government (OECD 2010)	Qualitative
	Support from business sector (OECD 2010)	Cooperation with business sector	Qualitative
	Public demand (OECD 2010)	Aspiration from NGO/social community	Qualitative
	Economic motivation (OECD 2010)	• New jobs created • Unemployment rate • Increasing oil price (Reckien, Flacke, et al., 2015)	Qualitative/ Quantitative
	Awareness of co-benefit (OECD 2010)	Knowledge of relationship to health issue/pollution/livability city (OECD 2010)	Qualitative

energy to choose integrated action plan as the approach in developing climate action plan	Environmental factor (Reckien, Flacke, et al., 2015)	• Location of city • Past climate impact event (Reckien, Flacke, et al., 2015)	Qualitative
	Social factor (Reckien, Flacke, et al., 2015)	Norm/belief (Reckien, Flacke, et al., 2015; Moser and Ekstrom, 2010).	Qualitative
Integrated action plan Definition : Integrated action plan is defined as integrated policies and programs to mitigate climate change and to alleviate adverse impacts of climate change (AMICA 2008, Swart and Raes 2007).	Synergized adaptation and mitigation actions	Synergized : actions decreasing GHG emissions, enhancing sinks, protecting carbon stocks and decreasing exposure and sensitivity (vulnerability) to climate change (Swart and Raes 2007)	Qualitative
	Trade-off between adaptation and mitigation actions	Trade-off : actions decreasing GHG emissions, enhancing sinks, protecting carbon stocks but increasing exposure and sensitivity (vulnerability) to climate change or actions increasing GHG emissions, reducing sinks, destroying carbon stocks but decreasing exposure and sensitivity (vulnerability) to climate change (Swart and Raes 2007)	Qualitative
	Adaptation action with mitigation co-benefit.	Actions decreasing exposure and sensitivity (vulnerability) to climate change but have unintended consequences to actions decreasing GHG emissions, enhancing sinks, protecting carbon stocks (Klein, Huq, et al., 2007)	Qualitative
	Mitigation action with adaptation co-benefit. (Klein, Huq, et al., 2007)	Actions decreasing GHG emissions, enhancing sinks, protecting carbon stocks but have unintended consequences to decreasing exposure and sensitivity (vulnerability) to climate change (Klein, Huq, et al., 2007)	Qualitative

Implementation Definition : Implementation here is defined as one phase of urban policy process to apply the plan on the ground. (OECD 2010)	Institutional arrangement (OECD 2010; Duguma, Wambugu, et al., 2014)	• Unit/agency/institution/department executes both M+A actions. • Unit/agency/institution/department supervises both M+A actions. • Unit/agency/institution/department coordinates both M+A actions. (OECD 2010). • The local-level committee that address both M+A actions (Duguma, Wambugu, et al., 2014)	Qualitative
	Positioning of the plan (OECD 2010; Duguma, Wambugu, et al., 2014)	• Joint program to other strategic plan (SDG, waste and water management, urban plan, building and transport) (OECD 2010)	Qualitative
	Sustainable financial support (Duguma, Wambugu, et al., 2014)	• Special budget resourced from local government to execute the M+A programs. • Climate fund resourced from out of local government to execute M+A programs.	Qualitative
	Program and Project (Duguma, Wambugu, et al., 2014)	• Joint program addressing M+A • Capacity building program; workshop/training/seminar reserved to local stakeholders. (Duguma, Wambugu, et al., 2014)	Qualitative

3.3 Research Strategy and Methodology

The study uses a case study as the strategy by combining desk research and empirical research. Case study focus on a contemporary phenomenon within its real-life context & boundaries between phenomenon and its context are not clearly evident but it has since evolved and includes different approaches regarding phenomenon and context. In fact, the number of research unit used in this study is relatively small and the number of variable is large, therefore this strategy is suitable for being used in an explanatory research to explain the phenomenon of integrated action plan in pilot cities in Indonesia. It works on in-depth study instead of breadth and mostly uses qualitative methods (Van Thiel, 2014).

The type of case study used is co-variational analysis that dominantly compares the cases over space to explain independent variable causes dependent variable (Blatter and Blume, 2008) by using multiple cases in several pilot cities in Indonesia to be compared.

3.4 Sample Size and Selection

The research mostly uses qualitative data to answer the research questions. The number of sample size in qualitative research is relative, depends on intended purposes of sampling and intended qualitative result (Sandelowski, 1995). The number of respondent in qualitative data is as many as possible to reach saturation, but due to limit of time period and to maintain in-depth research, the minimum respondent is set as many as three people who are selected mainly from those who are involved in climate policy working group from different unit or department in each municipality and or they who are in charged in climate change issue. Two people from national government are selected because of their relevant tasks in climate policy issue.

The city has been selected basically because based on preliminary study of accessible climate plan documents; it is identified having combination adaptation and mitigation actions inside. The amount of selected cities is totally four that represents space variation, time release of action plan, and expert team involved behind the process. Easiness to access the potential respondent is also taken into account. Those selected cities are;

1) Semarang City, Central Java;
2) Malang City, East Java;
3) Bandung City, West Java; and
4) Palembang, South Sumatera.

The profiles of cities above are described on the next chapter.

Figure 6: Location of Case Study

3.5 Data Collection Methods

The collection of data use mainly qualitative methods using primary data by interviewing two groups of respondents and secondary data from analysis the content of policy documents and report. This process is aimed to achieve triangulation of data.

3.5.1 Primary Data

Primary data focuses on interviewing actors at local governments as civil servants who are involved in the climate change working group, whether its coordinator, seecretary, or team member. Two respondents are chosen from national government who are in charged in climate change policy at ministary level to give broader perspective about the issue in Indonesia. In total, the number of interviewees is 13 out of 14 targets. One repondent from one agency in Malang City can not respond the interview until the end of thesis period.

Detail of interviewee profiles are as following;

Table 2: The Profile of Interviewee

Scale-level	Number of interviewee	Institution
Bandung City	3	• Environmental Management Agency, • Planning Agency, • Health Agency
Malang City	2	• Environmental Management Agency, • Solid Waste Management and Park Agency
Palembang City	3	• Environmental Management Agency, • Kelurahan (previously in Environmental Management Agency) • Health Agency
Semarang City	3	• Environmental Management Agency • two people from Planning Agency
National	2	• Ministry of Environment • Secretariat of National Adaptation Action Plan

Technically, considering limitation of time and resources, only the respondents from Bandung City and national government who have direct interview face to face while the others use phone call and WhatsApp since the location of cities is quite far away from one another. The method sampling at municipality use snowball sampling to find the right key informants effectively while at national government use purposive sampling. The question uses semi structure interview considering there is basic knowledge about the concept before doing interview but still open additional information to add new knowledge.

3.5.2 Secondary Data

The secondary data is ultimately using climate action policy documents from the pilot cities. They are used as preliminary study before selecting cities as the location of case study. In total, there are seven documents from distinguish cities used as preliminary studies. From those seven, four documents from selected cities are taken to be studied further. They are used to cross check answers from interviews and give additional information as complementary for those answers. Some cities evidently have several versions of climate action plan. It is noticeable after going through the interview process; accordingly, there are extra documents to be used as secondary data including one synthesis report from the national government.

The complete list of those documents and their year of publication can be seen in the Appendix 5.

3.6 The Validity and Reliability

The reliability of study is determined by two things, accuracy and consistency in defining the variable to be measured. Validity can be seen from internal and external perspective. Internal validity is determined by an adequate operationalization of the theory or concept and the actual existing of causal relationship between dependent and independent variables while external validity is more related to whether the result of study can be generalized to other circumstances.

A qualitative method has possibilities to have interference during the collection process. It can be prejudice and biased because of researcher's interpretation. Incomplete and invalid instrument also lead to this interference. Other can also come from the interviewee by stating a set-up answer that leads to inaccurate information. Therefore, to control validity and reliability of data in this study, each step of method is made transparent and coherent as well as possible. Besides formulating a triangulation of data, the peer debriefing with thesis supervisor is used to prepare the instrument.

The case study may have lack of external validity that can cause the result cannot be generalized to other similar situation but the use of multiple case using several cities as the cases may discover the trends from the findings. To increase the internal validity, the triangulation is used in the study. Triangulation means more than one method is used to double or more checking on data collection and results of the research (Van Thiel, 2014). In the application, data sources do not only depend on people but also from policy documents and report. The respondents are divided into two groups, municipality and national governments. Besides, the research methods combine conducting interviews and analyzing the policy documents as well (Van Thiel, 2014). At the end, the result of analysis will be dispatched to the respondent for having feedback from them for validating result.

To deal with reliability issue, the data collection plan is arranged before field work. The interview guide captures the variable measured as precisely and correctly as possible for sure. Every step of research is documented and all data are saved in data base before processing. The last is applying peer review with researchers who are familiar with the experience and strategy (Cresswell and Miller, 2000).

3.7 The Data Analysis

This study purely uses qualitative data. The data mainly comes from two different sources: policy documents and interview. Data from policy documents are analysed manually while data from interview uses software. The voice recordings of interview are transcribed one by one then the key messages are coded by Atlas.Ti program. Considering more than 10 interviewees, the data gathered from interview is processed using Atlas Ti. This program allows the researchers to codify the data and organize by groups in order to make easier the final analysis.

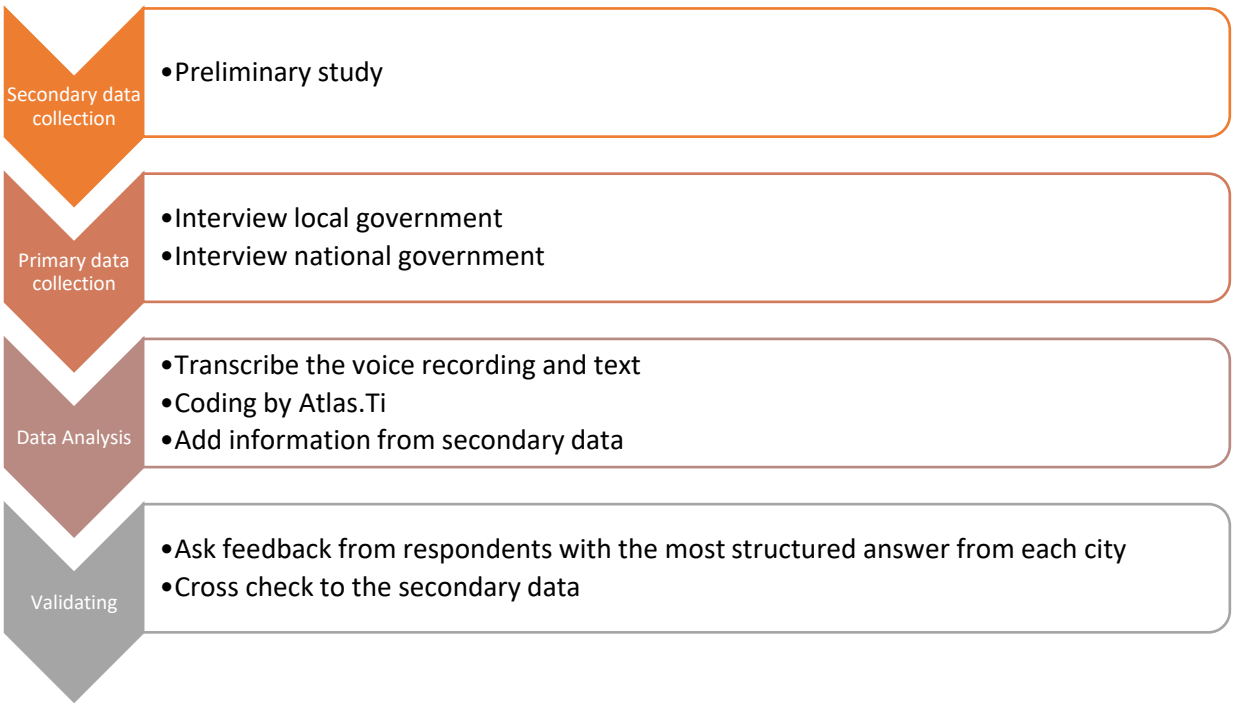
The codes are classified refering to research questions, sub research questions and conceptual framework to keep the code in effective way.

The Code List is displayed at Annex 4. Some important messages are also highlighted by memos although they do not answer research and sub research questions directly.

The outputs of coding process as quotes then are analysed and connected to secondary data and the literature. The conclusion is taken from the result of analysis to answer the research and sub research questions.

The sequence of research methodology is shown in the following diagram;

Figure 7: Flow Chart of Research Methodology



Chapter 4: Research Findings

4.1 Results

4.1.1 Bandung City

a. General Description

Bandung City is the capital of West Java Province. Based on the census in 2013, its number of population is 1,223,412 inhabitants. This puts Bandung in the third rank of cities by population after Jakarta and Surabaya. The area of the city is 167.31 km^2 and lays at 768 metres above sea level. Its highest part set on the northern part at the height of 1,050 metres while the lowest is at 675 metres which is on the southern part. In the early days, Bandung was mostly a farming and agriculture area. The shift of economy development has made a significant change that makes the modern Bandung to a more trading and service based. The largest workforces at 35.92 % comes from trading sector, 28.62 % is service based while from farming sector is only 0.82 % (Boer, Rizaldi; Rakhman, Adi; Ardiansyah, 2015).

b. Planning Context (documents)

Bandung has several series of policy document with regard to climate action plan. In 2012, there was a Climate Change Mitigation and Adaptation Action Plans under Framework Water Resource Management at Citarum River Basin done by ADB and MoE. The second series is mitigation action plan that incorporates adaptation action objectives. The third series is the Vulnerable Assessment of Bandung City in 2015 which accommodates the adaptation and mitigation action plans inside. This study refers to the second and third series of documents since they which are implemented by the municipality.

c. Driving Forces

There are two aspects in driving Bandung City to arrange climate action plan; first, the direction of national regulation; second, the awareness of the society to do something to deal with the climate change. The society conveys its aspirations to the municipality. Those reasons have led the local government to take necessary actions. Previously, the local government thinks that the most immediate response they can do by decreasing GHGs emission then how people can adapt to those impacts afterwards.

"The driving force is the impacts of the climate change have been felt by people. *The awareness* is there…at that time, we thought of something that could be done immediately to reduce the emission, along with the process, the impact is occurred, so how people can adapt to it," R#1.

Technically, the approach how to know the public's wish list to respond climate change is by combining adaptation and mitigation action. Therefore, they put some adaptation objective actions into planning document even though the title of the document is mitigation action plan.

"It is basically based on questionnaire to society, so it was conveyed on that time that for our actions to climate change, there are two things, *it is not mentioned whether adaptation or*

mitigation, so there was a questionnaire, what is required by people…they need infiltration well, bio pore…,"R#1

d. Formulation Process

The city identified the action plans based on the needs of the city to respond the climate change. The acknowledgement to those needs was technically explored by conducting public survey research and questionnaire by local consultant. The survey merely identified the public demand to face the climate change without mentioning any term of adaptation and mitigation in it. Next, they clustered questionnaire result in to adaptation and mitigation action. In mitigation issue, it was revealed that the biggest emitter of GHGs is fossil fuel therefore the actions taken by the municipality are two cases; reduction of GHGs from transport and also electricity. For adaptation concern, Bandung city has an issue with its water supply and high debit of rain water in short period causes inundation. The city then takes steps to apply bio pores to handle such issue. The results of survey questionnaire are brought to the climate working group afterwards for being discussed.

e. Relationships

The local government mentions there are trade-off and co-benefit relationships in the actions.

Trade-off

"Solid waste treatment using bio digester with outlet system. If it is over capacity, [the methane] will be disposed to environment. It is aimed to protect the tube explosion because of over capacity," #R1.

Figure 8: Bio Digester in Bandung City
(Source: Jurnal Bandung.com 2016)

Co-benefit

"[firstly] Enlargement of sidewalk to reduce air pollution and also GHGs emission…[secondly] outreach of eco driving, a coaching to driver in order to diminish air pollution,"R#1.

Synergy
From the list of executed actions, actually there is a potential of synergy from vertical garden program. It can reduce GHGs emission and the same time cool down the earth temperature.

f. Actions
Bio pore, infiltration wells, recycle bank, 3R, domestic wastes to biogas, campaign on TV, billboard, and pamphlet, control of larvae of mosquito, rain water harvesting, vertical garden, urban farming, outreach of eco driving, building sidewalk for pedestrian, urban farming.

g. Institutional Arrangement
In Bandung, the issue of climate change is handled by a working group under the Mayor of Bandung, the coordinator and the secretary is Bandung Planning Agency. It has several members; Environmental Management Agency, Health Agency, Waste Management Department, Housing and Public Work Agency, Road and Irrigation Agency, universities and NGOs. Planning Agency is the leader to distribute the task among other agencies regarding adaptation and mitigation actions which is adjusted to the main function and responsibility from each agency. For example: Environmental Management Agency governs the climate policy, Road and Irrigation Agency builds sidewalk, and so on. Unfortunately, not all of the members clearly understand this structure even one member does not know the existence of the working group since they provided different answers regarding this question.

h. Financial Support
Mostly, the funding comes from local government expenditure, small portion of CSR and national expenditure.

i. Positioning
The position of climate action plan is not same level as Mid Term Development Plan (RPJMD). Since last year, the working group starts to incorporate it into its RPJMD. But, it is felt still unconnected by agencies in Bandung City and not being a reference for their daily jobs.

4.1.2 Malang City

a. General Description
Malang City is a main destination for tourism in East Java Province which lays at 440-667 metres above sea level with an area of 110.06 km^2. Based on data of municipality in 2013, it has 836,373 inhabitants. During period 2000-2010, the rate of population growth was 0.8% per year while the rate of economic growth in 2010 was 6.25 %. Mostly, the land use is settlement area (70 %) and farming (14%) (Malang, 2013).
b. Planning Context (documents)
Malang has released Integrated City Climate Strategy covering from 2013 until 2020 which is facilitated by GIZ Paklim.

c. Driving Forces
Since the population of Malang City is increasing dramatically, it has entered the status of big city with its 850,000 inhabitants in evening and even more in daylight. Such condition pushes the municipality to more concern in environmental aspect and its natural resources.

“Malang City [now] becomes a big city. With its population as many as 850,000 inhabitants in evening, it is more in day light for sure, with its higher density of population, considering

environmental or natural resources is the most influencing [factor] to the action plan arrangement; because of environment condition,'' R#4.

d. Formulation Process

The experts from GIZ Paklim came to the city of Malang to facilitate the municipality in identifying the actions to respond the climate change. The actions come from existing regular program run by the agencies as long as the essence is in line with adaptation and mitigation objectives. Previously, the municipality itself was not well aware that what they had done in their daily job activities was actually a part of climate change responses. Eventually, after several meetings, workshops, and discussions, they could speak on the same page about the issue.

e. Relationships

The respondent mentions there are 3 types of interrelationship, synergy, trade-off, and co-benefit in the actions.

Synergy

"In the processing in landfill site, the solid waste is treated by controlled landfill [method] and the overflow [methane] gas is distributed to household and society living in surrounding landfill site to replace LPG [consumption] and it is free of charge. By distributing the [methane] gas, *there is abatement of GHGs emission from solid waste sector*. The volume of waste has been decreased therefore it will affect *to longer landfill lifetime*,"R#5.

Figure 9: Supit Urang Controlled Landfill at Malang City with Methane Pipe (Source: mctap.b2te 2014)

Co-benefit

"The people convert [energy source] from LPG (fossil fuel) to renewable energy of methane gas,"R#5.

Trade-off

There is potential conflict occurs in solid waste management system since there is one Rukun Warga (a small unit of community) that has to import the waste from its neighbour to treat. The trade-off also may appear whenever ever body has set a habit to treat its waste

production at home so that their waste will not go to landfill site any longer. Because of it, the program of Waste to Energy on the landfill site can be delayed or cancelled.

f. Actions
Waste to Energy (harness to methane gas), recycle bank, composting, 3R, greening space (activate passive park), outreach and competition about waste treatment and cleanliness.

g. Institutional Arrangement
The Mayor of Malang City issued official letter to point agencies in structure and their member in the climate working group. Previously, the leading sector of working group who tackles the climate change issue was Environmental Management Agency, unfortunately, the person in charged was passed away and the limitation of personnel in the agency made the function was taken over to Planning Agency although on the paper, the coordinator is EMA. The member of team basically was pointed based on function or position in structure of organization. However, there is inconsistency of personnel attendance during working group meeting. This is the reason why it is uneasy to contact the right person who is willing to be interviewed during field work.

The agencies which are involved as the members are; Environmental Management Agency, Planning Agency, Solid Waste and Park Agency, Transportation Agency, Health Agency , Agriculture Agency, General Affair Bureau, Drinking Water Enterprise, Social Protection Agency, Agency of Woman Empowerment and Family Planning, and Industry and Trading Agency (Malang 2013).

In the document, the evaluation and control function is embedded to the climate working group, but in fact, this function is not implemented yet.

h. Financial Support
The funding of the program comes from local government budget and state budget (Ministry of Public Work) and also private funding via CSR from some big companies.

i. Positioning
In Malang, the climate action plan captures already existing regulations and programs in each agency and already linked to RPJMD, spatial planning, and master plan of sanitation and solid waste management. In short, the action plan is not something new but it is like a repackaging from regular program run by municipality.

4.1.3 Palembang City

a. General Description
Palembang is one of metropolitan city as the capital of South Sumatera Province. It average height is 8 metres above sea level and size of area is 400.61 km^2 which most covered by settlement as 88.08 %. Number of population in 2012 is 1,503,485 inhabitants with rate of growth is 1.44 %. The most contributors for economic growth is manufacture industry, trading and service (Badan Lingkungan Hidup Kota Palembang 2013).

b. Planning Context (documents)
Under technical assistance by Mercy Corps, CCROM, Rockefeller Foundation and APEKSI, Palembang has released City Resilience Planning since 2014.

c. Driving Forces

The concern of the previous mayor of Palembang city to environmental issue and the need to overcome the flood in Palembang City has led the municipality to make this field as a work priority including climate change matter.

"[the driving forces is] from the Mayor himself, Environmental Management Agency is the initiator, but with high moral support from the Mayor [which motivates it]," R#8.

"We truly need [to arrange climate action plan], because based on an assessment, those things [climate change impact] have to be controlled, for example flood…no more points of inundation. It must be done to repair the environment [condition]," R#6.

Besides, at that time, the mayor was the head of the local government association in Indonesia (APEKSI) that might open access to further cooperation in climate change. But then in the process of discussion at city team level, the way on how to identify necessary actions to be taken was combining adaptation and mitigation action to avoid confusion among member of team about definition of adaptation and mitigation action itself.

"During the arrangement process, *we did not make limitation whether it is adaptation or mitigation*, all idea was just put [there]…because if we define it since the beginning whether adaptation-mitigation, it must be bewildering, because those words are not familiar [for the member of working group]…so the sentence of adaptation-mitigation was cut off," R#7.

d. Formulation Process

Before going through with the climate action plan, Palembang City has already made Climate Risk Assessment by the support from MoE and JICA, and then they conducted the VA and required actions to face it. Facilitated by experts from Mercy Corps, they hold several Focus Group Discussions to identification process. To make it more effective, team leader formed internal core team in the city team. Then, the core team invited all member of city team for brainstorming per sector starting from the existing condition, problem, until action plan itself. The brainstorming really explored what they had without explicitly divided them based on adaptation and mitigation terminology. They tracked root of problems and action plans using "the Problems Tree". Eventually, the core team wrapped up the result of the process and identified the required actions and also searched supporting data. Supported by Mercy Corps team, they all clustered the identified actions whether adaptation or mitigation action.

"…start from identification of existing condition, problem, and finally action plan, it was a continue [process]. All were acquired in "The Problem Tree", let's say, inside pieces of paper, all problems were written, all [action plans] we need are there,"R#7.

e. Relationships

The respondent of Palembang City mentions three types of interrelationship.

Co-benefit

"Greening program which has function as water reservoir by root of plants and also to slow down the rise of earth temperature,"R#6.

Trade off

"The utilization of livestock manure to be biogas which can be used to fulfil daily

consumption (for fuel or cooking),"R#6.

Synergy
"Retention pond as a catchment area, water reservoir and also flood control,"R#6.

Figure 10: Design of Retention Pond in Palembang City
(Source: Deryardli 2015)

f. Actions
Kampong iklim as joint cooperation among city agencies, climate change outreach to school and most vulnerable society, networking of disaster countermeasure, control of disease vector, recycle bank, greening.

g. Institutional Arrangement
The Mayor of Palembang issued the official letter to perform Climate Change Working Group in Palembang City. Chairman and secretary positions come from EMA. The members are any public institutions related to impact of climate change control; Planning Agency, Transportation Agency, Agriculture Agency, Health Agency, Waste Management and Park Agency. Universities and NGOs are involved as well in the working group. However, since the last one year, besides some informal discussions, the regular meeting of the working group has been inactive since each agency is fully occupied with their own agendas. Talking about evaluation and monitoring unit, each agency supervises the program by itself without coordination.

h. Financial Support
The funding of the program comes from local government budget except capacity building from international donor during climate action formulation and implementation phase which may enable process of transfer of knowledge.

i. Positioning
Likewise other cities, the climate action plan of Palembang City is a strategic planning without legal binding. It basically tags the existing program planning from each agency with

the aim to ensure the content of the planning still on the same boat, consequently, the action plan is in line to RPJMD. The action plan also refers to spatial planning (RTRW).

4.1.4 Semarang City

a. General Description
b. The City of Semarang is the capital of Central Java Province with total administrative area of about 374 km^2. The topography of the coastal area is flat with elevation of less than 3.5 meters above sea level. In 2008, the population of Semarang City is about 1.5 million people with growth rate of about 1.85% per annum. The main livelihoods of Semarang City are industrial workers (25.13%) (Mercy Corps, ISET, URDI, 2010).

c. Planning Context (documents)
Semarang has updated the document of climate action plan in four series. The first version was Climate Resilient Strategies issued in 2009-2010 by support from Rockefeller foundation and Mercy Corps which mainly concerns in adaptation intervention. The second one was Mitigation Action Plan in 2011-2012.The third series is The Integrated Strategy of Climate Change 2013-2010 and the forth one is in 2015-2016, after the city was chosen as one of 100 Resilient Cities. On the third version, the city has integrated climate change to extended issue; leadership, governance, social, and economy.

d. Driving Forces
The municipality of Semarang City makes integrated action plan based on an understanding that adaptation and mitigation actions cannot work separately since mitigation action needs higher resources in term of time, money and energy while adaptation action needs less.

"How we combine both of them to be integrated because it is impossible for them to work separately since mitigation talks about big amount of time, expense, [and] energy while adaptation not too much spending expense and time,"R#10.

Previously, the city more focus to adaptation action since it is highly vulnerable to flood and land slide, then it is compounded with climate change shock. It is perceived the society would need more to adapt to this situation while mitigation action would not protect them immediately and climate change might be still occur in any case. But then the local government is aware that some adaptation actions actually have mitigate objective as well.

"We have several problems related to city vulnerability, we mention Semarang is a vulnerable city, [it is] beautiful but has many diseases inside, prone to flood, prone to land slide, vulnerable to climate change; then a new shock comes up that drive us to focus to adaptation in which we make as first priority because the essence of adaptation will be felt in society. In the case of mitigation, [if] we reduce the carbon emission, the climate change also occurs anyway, so we start with adaptation first. Integration to mitigation can be existed because *some adaptation programs actually have mitigation aspect as well*…so that we are aware that those programs have multi direction to be better integrated with mitigation," R#9.

In addition, the commitment of Semarang City has attracted many national and international partners to visit, therefore the local government initiates to put both actions together to make the document of action plan more marketable since it is more complete and has integrated program.

"There were two groups [separated], adaptation colleagues and mitigation colleagues. It is

better to be united in order that *the document more marketable*...[the idea] comes from us, Planning Board Agency, in order that the program will be integrated and the document will be more complete…it is like [comparing] separated menu with combined menu, [of course] the combined menu is more pleasant to read," R#11.

e. Formulation Process

Initially, in 2009, Mercy Corps came to Indonesia and chose Semarang City and Bandar Lampung as the pilot cities to arrange vulnerability assessment and CRS. The intervention of pilot project was next to it. Based on VA, there are 4 major disasters because of climate change impact in Semarang City; inundation in upper stream and coastal area; abrasion; drought; and land slide. Then from those results, the working group identified the necessary actions in CRS by holding several workshops to deal with the big challenges and problems faced by Semarang City; then elaborate them further by involving all local government institutions, universities, and local NGOs in the aim to see the case from different perspectives. They really highlighted an inclusive process with all elements of stakeholders. To help tracking the root of causes of the problems, mostly, it used meta-plan as the method. Any other assessments, mapping, and screening were done after the workshops to select and structure the list of actions before going to the final workshop for any feedbacks from the participants. In this session, private sectors were also involved. The result was the list of programs for short term until long term.

f. Relationships

Specifically, the municipality mentions that they have all three types of relationship;

For **co-benefit**, it has planting of mangrove whose function mainly to protect coastal area from abrasion but actually it can reduce GHGs and enhance carbon sink. It also mentions another form of co-benefit from this action in term of economic benefit among fishermen because the mangrove becomes the habitat for crabs as extra commodity for them.

Regarding **trade-off**, the respondent tells that the planting of Trembesi tree/Rain tree (*Samani saman*) for greening the city has disadvantage for water consumption.

Figure 11: Trembesi Tree (*Samani saman*)
(Source: Agro Bisnis Info.com 2015)

In **synergy relationship**, a respondent discloses rainwater harvesting that impacts to the abatement of electricity consumption from water pump operation at well.

g. Actions

Physical projects; micro finance for sanitation, bio pore, planting vetiver grass to protect land sliding, rain water harvesting, flood warning system, health care for dengue victims, reforestation with alternative livelihood at mangrove, green building with LED lamp, and Bus Rapid Transportation.

h. Institutional Arrangement

The working group was formed officially by letter from the Mayor of Semarang City. It is called a collaborative stakeholder involving public agencies, universities and NGOs. Now, the total number of member team is 18 from key agencies related to vulnerability to climate change, such as; Disaster Management Agency, Water Resource Management Agency, Energy Agency, Public Work Agency, Spatial Planning Agency, Fishery Agency, Solid Waste Management Agency, Park Agency, and many others.

The formation of working group was evolving in line with the progress of action plan itself. At the phase I, Environmental Management Agency was in charge as the team leader, but because of succession of city mayor, the function has been transferred to Planning Agency until nowadays phase III. Nevertheless, the personnel in the group are still similar with the former. The point of member based on 'name' not because of function or position. This kind of system enables stronger bonding among the members although it has disadvantage in regeneration aspect. Since phase II, all agencies at Semarang City have been involved in the working group and eventually at the phase III, they are all embedded with programs related to climate change. Now, the action plan emerges to extend to social economy and leadership issue, for example the Small Scale Enterprise Agency is included to manage the program of society empowerment at coastal area.

The working group also supervises the execution of program by doing monitoring evaluation forum and the result is reported to city mayor.

i. Financial Support

The city utilizes the climate action plan as a proposal to find a new resource for funding because limited finance from local government budget will make the program become less priority. The funding for capacity building and physical project mainly comes from grant of international donors and Ministry of Energy and Mineral Resources. Local government budget is used to replicate the pilot projects and small amount of internal necessities. Fortunately, this city has consecutive donors since the beginning until now. For example; the ACCCRN program will be finished at the end of 2016, but Zurich Flood Resilient Program has been waiting for 2017 intake.

j. Positioning

In the beginning, the Climate Resilience Strategies (CRS) was only covered generally in two statutory planning; Mid Term Development Plan and Spatial Planning of Malang City because it came after the two statutory planning. On that time, the member team did not deeply understand the concept of city resilience and thought that to accommodate the case meant creating a totally new program. But in the next 5 years for the latest Mid Term Development Plan and Spatial Planning, adaptation and mitigation principles in the CRS was

fully combined to those two plans and even more blended. However, the CRS itself does not have legal binding. It is a complement to statutory planning.

4.2 Comparative Analysis and Discussion

Before going through the comparative analysis and discussion for all variables, the discussion is started with clarification of the interrelationship of the actions referring to the previous results in the section 4.1.

Talking about synergy interrelationship, the comparison of actions from the cities can be reviewed using the following table prior to its discussions.

Table 3: The Comparison of Actions with Synergy Interrelationship

	Bandung	Malang	Palembang	Semarang
Synergy	Vertical garden	Solid waste treatment by controlled landfill which produces methane gas to be distributed to society living in surrounding landfill site	Utilization of livestock manure to be biogas which can be used to fulfil daily consumption (for fuel or cooking)	Rainwater harvesting

For the case of Bandung City, the vertical garden program can reduce GHGs emission and in the same time cool down the earth temperature which is part of human's adaptation action to climate change impact (Swart and Raes 2007).

In Malang City, the reduction of GHGs occurs when methane (CH_4) is burnt and used by house hold as energy resource such as cooking process. The burning process of CH4 yields CO_2 while the Global Warming Potential of CO_2 is lower than CH_4. According to Core Writing Team et al. of AR4 IPCC (2007, p.81) "The GWP represents the combined effect of the differing times these gases remain in the atmosphere and their relative effectiveness in absorbing outgoing thermal infrared radiation." At the same time, the treatment also reduces the volume of solid waste in the landfill site that influences efficiency in using landfill area. This efficiency saves the use of soil and water. IPCC 2007 mentions that synergetic option can be happened where soil conservation, lower water consumption and biofuel production can go in hand (Swart and Raes 2007).

In Palembang City, the respondent mentions the building of retention pond (figure 10) as synergetic actions, however, the function of retention pond to be catchment area, water reservoir, and also flood control have adaptation objectives to reduce the vulnerability to impact of climate change. Unfortunately, they have nothing to do with GHG_S emission reduction or enhancing carbon sink. So that it is purely an action with adaptation objective. Synergetic action is shown by the utilization of livestock manure to be bio gas and used for cooking is a mitigation action because it can convert CH_4 to CO_2 by the combustion. On the other hand, it can increase livelihood of the people as well by promoting new source of renewable energy which strengthens adaptive capacity (Klein, Huq, et al., 2007).

The rain harvesting in Semarang City provides an alternative water supply to community and also an abatement of electricity consumption in operating water pump on well. For that reason, rain water harvesting has synergy relationship between adaptation and mitigation since it diminishes the vulnerability to water shortage because of climate change impact and at the same time it can reduce the GHGs emission from fossil fuel because of electricity saving.

Turning to trade-off interrelationship, the comparison of actions from the cities can be seen in the following table prior to its discussions.

Table 4: The Comparison of Actions with Trade-off Interrelationship

	Bandung	Malang	Palembang	Semarang
Trade-off	Solid waste treatment using bio digester with an outlet system	Treatment the imported solid waste from neighbourhood at community level. People's habitual actions to treat their waste productions at home prevent the waste to go to the landfill site any longer.	Not available	the planting of Trembesi tree/Rain tree (*Samani saman*) for greening the city

In Bandung City, the outlet system of bio digester is installed to reduce the disaster risk because of tube explosion but at the same time it will increase the GHGs emission by releasing more methane. There is a conflict between adaptation and mitigation objective here. The outlet can decrease the exposure and vulnerability (Swart and Raes 2007) of local people there but at the same time it can release more GHGs emission.

In Malang City, to keep up with the volume target of treatment, people at community level have competed to import some solid wastes from its neighbourhood. In one side it is positive for GHGs reduction but the potential conflict in the community because of the unnecessary competition tend to increase the indirect sensitivity of society to climate change (Swart and Raes 2007). The other trade-off is shown by the interrelationship between people's habitual action to treat their waste in home with the volume reduction of solid waste delivered to landfill site. If there is a massive home treatment, the program of Waste to Energy on the landfill site can be postponed or cancelled.

In Palembang City, the respondent describes the trade-off actions by the utilization of livestock manure to be bio gas and used for cooking. Actually, it is a mitigation action because the process converts CH_4 to CO_2 by combustion. On the other hand, it can increase livelihood by promoting new source of renewable energy which strengthens adaptive

capacity (Klein, Huq, et al., 2007). This action is more relevant to synergy relationship instead of trade-off.

For the case of Semarang City, Trembesi tree is effortless to plant and fast to grow, on the other hand, the tree also consumes higher amount of water comparing to other plants; this case can potentially escalate vulnerability to some area in term of water supply. Trembesi tree is good for reducing GHGs and enhancing carbon sink but it can increase the vulnerability of Semarang City to shortage of water.

Discussing about actions with co-benefit relationship, the comparison of the actions among the four cities can be seen on the next table;

Table 5: The Comparison of Actions with Co-benefit Interrelationship

	Bandung	Malang	Palembang	Semarang
Co Benefit	• Enlargement of sidewalk for pedestrian • Outreach of eco driving	Conversion of energy source from LPG (fossil fuel) to renewable energy methane gas	Greening program	Planting of mangrove

In Bandung City, the enlargement of sidewalk reduces GHGs emission due to volume reduction of vehicles passing through the roads and also air pollution. Unintentionally, the action brings a co-benefit in improving the citizen's health because of less air pollution (Swart and Raes 2007). For the case of the outreach of eco driving, the skill from the outreach make citizen drive a motor engine vehicle with lower air pollution and lower fuel consumption which impact positively to GHGs reduction and the city's health.

In Malang City, the conversion of energy source from LPG to methane gas mainly aims to reduce the GHG_S emission but coincidently it also lowers the dependency of people living in surrounding landfill site to fossil fuel energy. It has economic benefit to help people increasing their adaptive capacity (Klein, Huq, et al., 2007). Therefore, this is a mitigation action with adaptation co-benefit.

For the case of Palembang City, in the greening program, both function of water reservoir and slowing down the rise of earth temperature have adaptation objectives, whereas the action can be a carbon sequestration and reduce GHGs. According to Swart and Raes (2007), an expansion parks and other green spaces in/around cities is example of synergy (Swart and Raes 2007). However, if the city aims greening program mainly as a water reservoir, it also has mitigation co-benefit.

In Semarang City, the planting of mangrove has function mainly to protect coastal area from abrasion but actually it can reduce GHGs and enhance carbon sink as well. There is another form of co-benefit from this action in term of economic benefit for the fishermen there because the mangrove becomes the habitat for crabs as extra commodity for them. Because of this, it can be classified as adaptation with adaptation co-benefit since it can sustain

livelihood of people (Klein, Huq, et al., 2007).

The findings from each city in the previous section are compared and discussed in the next session. Perspective from national government and relevant literatures are added to enrich the analyses. As a review, the comparison of findings from each variable is presented in table 6.

Table 6: The Comparison of All Variables from the 4 Pilot Cities

	Bandung	Malang	Palembang	Semarang
Release of 1st Planning Document	2012	2013	2014	2009
Driving force	The awareness of climate change impact and public demand	The awareness of co-benefit to climate change issue	Political leadership and environmental factor	The awareness of interrelationship, the awareness both cannot work separately, marketable document
Formulation Process	Questionnaire survey by local expert	Discussion and workshop facilitated by GIZ Paklim	FGD with the Problem Tree facilitated by Mercy Corps	Workshop with meta plan facilitated by Mercy Corps
Interrelationship	Synergy Trade-off Co-benefit	Synergy Trade-off Co-benefit	Synergy Co-benefit	Synergy Trade-off Co-benefit
Institutional arrangement	Working group consists of government, NGOs, universities with Planning Agency as the coordinator.	Working group consists of government, NGOs, universities with EMA as the coordinator but it is transferred to Planning Agency. Supervisor is unorganized.	Working group consists of government, NGOs, universities with EMA as the coordinator. Supervisor is unorganized.	Working group consists of government, NGOs, universities, and private with Planning Agency as the coordinator Executors are related agency Supervisor is under Working Group.
Sustainable financial support	Local government budget, CSR, state budget for A+M	Local government budget, CSR, state budget for A+M	Local government budget for A+M	International donor, local government budget, state budget for A+M
Positioning of the plan	Incorporated in RPJMD and spatial planning	Tag the existing program, link to RPJMD, spatial planning, and master plan of sanitation and solid waste	Tag the existing program, in line with RPJMD and spatial planning	Incorporated in RPJMD and spatial planning
Executed program and project	Bio pore, infiltration wells, recycle bank, 3R, domestic waste to biogas, campaign on TV, billboard, and pamphlet,	Waste to Energy (harness to methane gas), recycle bank, composting, 3R, greening space (activate passive park), outreach and	Kampong iklim as joint cooperation among city agencies, climate change outreach to school and most vulnerable society,	Micro finance for sanitation, bio pore, planting vetiver grass to protect land sliding, rain water harvesting, flood warning system,

	control of larvae of mosquito, rain water harvesting, vertical garden, outreach of eco driving, building sidewalk for pedestrian, urban farming.	competition about waste treatment and cleanliness.	networking of disaster countermeasure, control of disease vector, recycle bank, greening, retention pond.	health care for dengue victims, reforestation with alternative livelihood at mangrove, green building with LED lamp, Bus Rapid Transportation, greening

4.2.1 Driving Force

Discussing about the driving force of city to arrange climate strategy in general, based on the explanation from national government, it can be seen in two different periods. At the beginning, before national had the road map of climate change policy in 2010, the driving force mostly came from international agency and donor who chose certain cities as the pilots of their projects. They came to Indonesia and brought money to invest complete with "the rule of the game".

"It [driving force] was merely knowledge issue…donor came [to Indonesia], actually they brought money then they want to make something in Indonesia. On that time, we did not have policy [regarding climate change] in 2009, wherever it would go, it was up to them,"R#13.

Semarang City is the example of the case. As the earliest projects in Indonesia which was funded by Rockefeller Foundation and Mercy Corps, the donors did not only apply physical development but also capacity building to local governments. The initiative and method simply came from them.

After release of The Indonesia Climate Change Road Map prepared to cover a time frame from 2010 to 2029 (Indonesia Climate Change Sectoral Roadmap-ICCSR, 2009) and some supporting regulations by national government, some pilot cities have been already familiar with climate change know how due to following several seminars, workshops, training and conferences. Consequently, the driving force for cities in Indonesia to arrange climate action plan becomes more diversified.

Discussing specifically about the driving forces of the selected cities to arrange an integrated action plan, it can be seen from table 6 that the driving forces may be various and almost no single casuality. They are similar with the driving forces of a city to arrange climate action plan in general (table 1). It can be a combination of political leadership, awareness of impact of climate change, awareness of co-benefit to climate change issue, public demand and environmental factors. Yet, Semarang City shows its deep understanding to the context whenever describe the driving force of integrated action plan although the three respondents give three different answers (sub-section 4.1.4 (d)). Above all, they can mention them straightforwardly even they choose that type of approach with full of consciousness by showing initiative and innovation to combine both actions in one menu while other cities may have unintentional motivation to do so, for example simply to avoid irritated confusion during group discussion among member of city team regarding adaptation and mitigation terminology.

The variation may reflect the level of knowledge and experiences owned by local governments about the integration issue. It is understandable occurrence for the case of

Semarang City since it is the oldest pilot cities in Indonesia which has done the work for more than seven years consecutively. Consequently, it may master the knowhow more than the others.

The finding above shows similar character with the literature talking about driving forces of a city to arrange a climate planning in general that there might be no single causality among factors like social conditions, natural process and physical phenomenon. Sometime they are not easy to be clearly defined because they are context specific and their degree of influences to response of climate change may modify across context (Reckien, Flacke, et al., 2015).

4.2.2 Formulation Process

From the description above in Table 6, it shows there is a similarity among municipalities that all are supported by local or international expert bodies when identify the action plans. The process involves multi stake holders; even Semarang City highlights the inclusivism in it.

Technically, they use various methods such as FGD, "The Problem Tree", and meta-plan to explore idea and inputs from working group member as the representative of different stakeholders. NGO is perceived as the representative of public society and capable to voice public interest. In fact, the number of local NGOs involved is very limited that causes ineffective society representation. On the other hand, a breakthrough is shown by Bandung City by conducting questionnaire survey as a media to involve society in defining problems and required climate actions before bringing the results to the working group. This technique may touch public demand more effectively and increase broader citizen ownership to climate action although it is definitely more time and money consumed.

According to OECD (2010), it mentions that the process of identification of action plans usually involves expert body consists of stakeholders and policy leader who meet to deliberate objective, focus of sector, priority, implementation strategies and monitoring mechanism (OECD 2010).
However, in the case of pilot cities, expert bodies are external organizations that work professionally in certain period to facilitate municipalities in formulation process. It does not mean they are really part of citizen or city stakeholders.

4.2.3 Interrelationship

According to table 6, it is shown that all cities have co-benefit and synergy interrelationship other than actions with single adaptation or mitigation objective and most of the cities also have trade-off except Palembang City. Yet, learning from the case of Semarang City whose trade-off because of conflict in water consumption by Trembesi plant in the greening program, Palembang City may also have similar relationship with the same program but then it might not be revealed because the type of plant is undefined there.

From the above analysis, accordingly, cities can pursue both adaptation and mitigation objectives by taking some actions with synergy and co-benefit interrelationship. Furthermore, synergy relationship may contribute to wider sustainable development goals (Swart and Raes 2007). However, the cities still unable to avoid trade-off in their actions whereas one of consideration from taking an integrated action plan is to diminish conflict between adaptation and mitigation objectives (Swart and Raes 2007).

Apart from that, it also discovers that some respondents unable to mention precisely the interrelationship of the actions they have although having a short explanation about the meaning of interrelationship of combination actions completed with some examples of the actions. On the other hand, there is a presence of knowledgeable respondents who can mention correctly the interrelationship within their actions at second round interview. Previously, they do not straightforwardly answer the same question without any explanation and sample. It is because the knowledge about interrelationship between adaptation and mitigation actions never been discussed intensively, even at national level. Moreover, the indicator of combined adaptation mitigation actions has not been formulated.

"*There is no national formulation regarding joint adaptation-mitigation indicator* even though it has conceptually…this co-benefit never been formulated as an indicator of a city,"R#12.

In conclusion, the knowledge about interrelationship between adaptation and mitigation objectives still unknown tremendously by local governments. There is a deficit information and know how to incorporate this concept into the plan because integrated action plan should be able to lessen potential trade-off actions and to optimize synergy ones.

4.2.4 Institutional Arrangement

From the table 6, it shows that all cities set up a working group under mayor decision. It consists of several relevant agencies to tackle climate change issue involving NGOs and universities. The general structure is coordinator- secretary and member of team. The point of team member can be function based or personnel name based. By default, local planning agency and environmental management agency must be involved in it. The coordinator can be one of those two agencies. In short, the coordinator agency coordinates both actions while the executor goes to every relevant agency to adaptation and or mitigation actions. However, clear and organized supervisor for monitoring and evaluation is only owned by Semarang City that embeds this function to the climate working group itself.

Discussing about the form of organization of the climate working group, OECD (2010) describes some variations which have been done by cities in the world;

1) A special unit conducting supervision with regard to the climate policy in other departments;
2) A formation of climate change unit in each relevant department to climate issue;
3) A steering group special for climate policy;
4) A coordination group for climate protection;
5) A single skilful and knowledgeable unit that mainstreams the climate change policy into city development programs;
6) A unit under environmental protection or management department or agency (OECD 2010).

Based on the table 6, all pilot cities in Indonesia choose forming a climate policy steering group with representative of relevant municipality agencies, local NGOs, and universities in it. Semarang City also includes its private sectors.

Attaching the coordination function of climate working group to planning agency is in line with its original task. Besides controlling and evaluation, it also has powerful budgeting

function. Consequently, it can more empower the existence of climate working group and ensure allocation of budget for climate actions. On the other hand, environmental management agency usually has limited human resource and bargaining power (OECD 2010). Malang City is the case of lack of human resource that causes the transfer of coordinator function to its planning agency without formal written while Palembang City is the case of the dormant state because of low bargaining power. On paper, both are coordinated by their environmental management agency.

4.2.5 Financial Support

From the table 6, it is known that both adaptation and mitigation actions have been financially supported. Except Semarang City, cities expense their physical program and project for both actions mostly from their own budget. External funding comes from state budget for physical project via technical ministry and CSR donation while international donors primarily fund capacity building for local government during policy formulation. The availability of financial resource for funding both adaptation and mitigation are enabling factor for synergy potential (Duguma, Wambugu, et al., 2014).

According to explanation from R#13, since the mechanism of climate initiative at national government has not established yet, the local governments make the climate action plans as a tool to find out funding resources. In term of domestic resource such as national or local government budget, Indonesia Ministry of Home Affair requires municipality to literally allocate it in its Mid Term Development Planning (RPJMD) otherwise it may not utilize any domestic budget for the climate actions. Therefore, related to analysis and discussion on the next sub section, this circumstance urges a city to incorporate the action plan into RPJMD or capture it in regular programs of agencies.

4.2.6 Positioning

For city level in Indonesia, urban development objectives can be seen from its spatial planning (RTRW) and Mid Term Development Plan (RPJMD). Both of them are statutory planning with law consequences. As seen on table 6, all cities have incorporated the action plan into their RTRW since this is a compulsory from national regulation. Some cities have incorporated the planning into RPJMD while others capture some regular programs from its agencies to be input to the climate action plan so that they do not make a completely new plan, only repackaging. This is what is called by mainstreaming climate change issue into development planning and existing sectoral program (Klein, Huq, et al., 2007). Both ways will prevent them from conflict with the urban development plan and to ensure the sustainability of investment such as from domestic budget or international donor (Klein, Huq, et al., 2007).

4.2.7 Executed Program and Project

Referring to table 6 above, it is appeared that the cities have already executed both adaptation and mitigation actions. They do not treat the actions in segregate manner and both have equal opportunity to be executed. This condition enable for synergy actions to happen (Duguma, Wambugu, et al., 2014). However, they do not mention execution of capacity building

programs aimed to city stakeholders. In fact, very small number of civil servants gets this opportunity. Actually, the program is listed in the action plans documents where it is required not only before or during the process of arrangement but also when enter the phase of program implementation to ensure the sustainability of integration process. Even, the capacity building program has to be emphasized by government institution during the implementation period (Duguma, Wambugu, et al., 2014).

4.3 Common Patterns

After overviewing the comparative analyses from the four cities, it is revealed that all of them have some common patterns in implementing integrated action plan in their governance system. The cities start the process by capacity building facilitated by their expert teams. They form a special climate working group officially admitted by city mayors consist of relevant institutions from local governments, local NGOs, and local universities which is usually coordinated by their planning agency or EMA. During the formulation process, they involve multi stakeholders at cities level with various techniques to elaborate aspirations and common understanding. Among those formulated actions, there are synergy and co-benefit interrelationships. For funding resource, more or less, cities prepare special budget from their own and the executors of actions go to appropriate agencies. All of them also have incorporated and linked their strategic climate action plan into the statutory city development planning and spatial planning.

Chapter 5: Conclusions and Recommendations

This chapter answers the main research question and sub research questions and reflects them from literature point of view in each passage. As the closing part, recommendations for pilot cities, other cities in Indonesia, and cities in global are given based on the findings in this study including potential research in the future.

5.1 Research Questions and Answers

The main research question and sub research questions represent each phase of the climate planning process (figure 3). The main research questions explain how the level of integration from an integrated action plan and the driving forces of the cities to do so which represent the phase of implementation and the phase of agenda setting consecutively. The sub research questions explain the phase of policy formulation, the implementation and the evaluation.

5.1.1 Answer to Sub Research Question 1

Q: How do cities identify the necessary adaptation and mitigation actions for their cities?

After conducting comparative analysis among the four pilot cities, it is revealed that in order to identify the necessary actions, all municipalities are supported and facilitated by professional expert bodies, whether from local or international organization. The process of identification involves multi stake holders at city level; relevant agencies to climate change response, local NGOs, and local universities. Ahead from the others, Semarang City has involved private sector to some extent in the process. The involvement of multi stakeholders shows the representations of each group in identification process that aims to gain common understanding and see the problem from various perspectives although the number of civil society involved in this group is very limited. Technically, they use various discussion methods such as FGD, meta-plan and "The Problem Tree" simulation to explore the real problems they face and the required actions. However, Bandung City did a breakthrough by using research of questionnaire survey to its community which has enabled to capture broader public participation with regard to climate change responses prior to handing over the results of the survey to its climate working group.

According to OECD (2010), the arrangement of local climate action plan initiates a joint meeting attended by expert body or commission with stakeholders and policy leaders for goals setting and priorities discussions until how to implement and monitor the execution. The city team holds active participation from stakeholders in drafting the action plan through workshops, seminar, public hearings or written comments to explore any useful inputs. Local government would not be able to address the major issue of climate change without the support from a wide range of non-public actors such as NGOs, privates and citizen's groups. In this occasion, civil society can convey their aspiration which impacts to broader public participation in democracy system and also to format policy networking in multi-level governance at the horizontal scale (figure 2).

5.1.2 Answer to Sub Research Question 2

Q: Which are the approaches and relationship with planning tools?

Based on the assessment of the climate plans documents and the analysis at sub-section 4.2.7, the four pilot cities have a combination of adaptation and mitigation actions approach in the planning tools. The planning contains co-benefit and synergy relationship in some actions other than actions having single adaptation or mitigation objectives. On the other hand, most of cities still have trade-off relationship (sub-section 4.2.3).

In the literature, Klein, Huq, et al. (2007) define the connection of combined adaptation and mitigation actions with the term 'interrelationship' then divide the connection itself into several types; co- benefit, trade-off, synergy (sub-section 2.3.2).

As stated by Swart and Raes, while taking into account the relationship between adaptation and mitigation actions, the action plan should consider avoiding trade-off and identifying synergies (Swart and Raes 2007). Synergy is achieved whenever the action can control of GHGs emission but at the same time it pursues the reduction of vulnerability. It tends to be more effective and efficient and prevents trade-off between them. Besides, both actions are addressed without prioritization but more win-win achievements (Duguma, Wambugu, et al., 2014).

In fact, the cities still have trade-off relationships in their actions that might be contra productive to achieve one of adaptation and mitigation objectives. It is because most of the cities have not understood yet the concept of interrelationship between adaptation and mitigation objectives from single action.

5.1.3 Answer to Sub Research Question 3

Q: How do the cities address climate actions plans objectives in their governance system?

The cities have shown some initiatives to address climate action plans objectives in their institutional arrangement, financial resources, positioning among other city planning, and execution of both adaptation and mitigation actions.

In term of institutional arrangement, city mayors officially form a local level committee what is called Climate Working Group or City Team that addresses both adaptation and mitigation actions. It consists of several relevant agencies to specifically tackle climate change issue and includes local NGOs and local universities as the team members. Semarang City also involves private sector in the working group. The coordinator of working group comes from either the planning agency or environmental management agency although some obstacles occurred during the process of coordination (sub-section 4.2.4) . This working group does not only elaborate and arrange the actions, but also distribute the task of specific actions to relevant agencies. However, most of the cities do not completely organize clear-cut unit to conduct evaluation and monitoring functions with regard to the execution of planned climate actions except Semarang City which declares the functions within its working group.

Talking about sustainable financial resources, the cities use several resources to fund their both adaptation and mitigation actions; state budget, CSR and ultimately local government budget. International donor funds are available mainly to unphysical program such as capacity building during the process of action plan arrangement except Semarang City which has consecutive international partnership for funding physical projects until 2017. Since the system of climate initiative fund from national government has not established yet, most cities manage their own regular resource funding but in order to be able to use domestic

budget such as from national and local government, the cities must incorporate the actions plans in to their RPJMD according to Ministry of Home Affair regulation.

Talking about positioning among other urban and sectoral planning, climate action plan in city level is a strategic planning without legal binding. Therefore, to strengthen its position, the cities have incorporated the action plan into its Mid Term Development Planning (RPJMD) and also spatial planning (RTRW) where both are statutory planning. Regulation from national government has encouraged them to do so. Some cities capture the existing programs run by each agency to be incorporated to the climate action plan so that they do not make completely a new plan. Both ways may prevent them from conflict or overlapping; furthermore it enables the condition of integration.

In respect to the execution of actions, the cities have performed both adaptation and mitigation actions with equal opportunity. However, they do not emphasize capacity building program aimed to the city stakeholders although the cities have listed such program in the action plan. Actually, the capacity building is required not only prior to or during the process of arrangement but also in program implementation stage to ensure the sustainability of the program.

In summary, in terms of the readiness of institutional arrangement to execute and coordinate both actions, the linkage program between climate planning with spatial and city development planning, the sustainable resource funding for both actions, and the execution of both adaptation and mitigation program, the pilot cities have had the enabling condition to integrate climate action plans in to their governance system.

Turning to literature reflection, OECD (2010) and Duguma, Wambugu, et al. (2014) mention some key factors for local governments with regard to the implementation of integrated climate action plan in their governance system. First of all, institutional arrangement which is administratively responsible for local climate policy issue. In this study, all pilot cities in Indonesia choose to form a climate policy steering group with the representative of relevant municipality agencies, the local NGOs, and the universities in the working group and to some extent the private sectors.

Secondly, how to place the position of climate action plan among other sector plans. To have an integrated plan, climate change actions should not solely link to isolated environmental issue yet it has integral part of urban development objectives, however, many cities worldwide are lack of integration (OECD 2010). The way how to link the actions is acknowledged by the integration of the climate measures in to the current and existing sectoral programs and development planning. The activity of such integration is known as mainstreaming (Klein, Huq, et al., 2007). The cities which have previously completed the arrangement of climate planning prior to the new release of RPJMD that covers for the next 5 fiscal years have opportunity to actively mainstreaming climate measures in RPJMD. Otherwise they just capture climate actions from ongoing regular programs.

Thirdly, how to provide the financial resources for funding both adaptation and mitigation measures. Related to the previous point, the mainstreaming can be a way to make more efficient and effective use of financial and human resources (Klein, Huq, et al., 2007) especially when local government mostly depends on its own budget as the funding resource likewise the pilot cities cases.

Fourthly, the existence of programs and projects that address both adaptation and mitigation actions. Planning, designing, and operation process are worked to implement such programs and projects. But, local government should get ample skill and experience before moving toward synergy actions (Duguma, Wambugu, et al., 2014). Therefore, the introduction of the climate planning for the first time to the local stakeholder plays important role in order that they can really understand the substance (OECD 2010), indeed it is the main content of capacity building program. Yet, Duguma et al. (2014) also mention capacity building has to be emphasized by government institution during the implementation period (Duguma, Wambugu, et al., 2014). For the case of the pilot cities, city stakeholders have to learn the knowhow of integrated action plan continuously.

5.1.4 Answer to Main Research Question

Q: To what extent do the pilot cities in Indonesia integrate adaptation and mitigation objectives in their climate action plans and what are the driving forces of this approach?

The Pilot cities in Indonesia have had the enabling condition as an initial part for integration of adaptation and mitigation objectives in their governance system (sub-section 5.1.3). In fact, they still have not successfully avoided trade-off relationship in the actions because of insufficient information about interrelationship. Most of them also still need to clearly define the goals and organizational structure of climate working group among their own stakeholders. Except Semarang City which has established the integrated plan and stepped on the next level to the extended planning to governance, leadership, and socio economy matters, most cities still need to improve the initial system and ultimately keep maintaining the function of the groups to reach their optimum level. Hence, all of cities need to more concern in capacity building aimed for wide range of their working group members.

The driving forces of the cities to conduct the integration are varied and combination of some variables. They range from the awareness of climate change impact, the awareness of co-benefit to climate change issue, public demand, environmental factor, political leadership, awareness of adaptation-mitigation relationship until marketability orientation. The driving forces of the selected cities to have integrated action plan are almost similar with the driving force of a city to arrange a climate action plan in general except the city with more experiences and knowledge with regard to the integration issue. In this case study, Semarang City is the most straightforward about its driving force within the context while others may have more unintentional impetus. As the first pilot city in Indonesia and having done this work intensively for more than seven years, Semarang City shows its knowledge at a more mature level and deeper understanding compared to others.

According to the literature, in the context of climate policy, driving force is defined as activities, process or patterns that give positive stimulus for the action which is opponent to barrier (Reckien, Flacke, et al., 2015). Several readings have mentioned the driving forces of a city to develop climate action plan and stand-alone plan (sub-section 2.2), but almost none discusses specifically about driving forces of a city to make action plan with combination of adaptation and mitigation approach. Nevertheless, for national level, Duguma, Wambugu, et al. (2014) find the rapid growing economy countries such as Indonesia tends to choose the synergy approach. Its motivations are to improve the good image in global context, to gain funding project from international institution, to resolve the higher GHGs emission per capita because of emerging industrialization and also the climate hazard at the same time (Duguma, Wambugu, et al., 2014). To some extent, the driving forces of the national level to do the

integration may have similarities with the cities in this study in terms of gaining funding project.

Turning to the literature reflection of the level of integration issue, this is a segment to show the implementation of climate action plan. In many cases, there are situations whenever local governments unable to meet the target of the arranged plan because of implementation deficit. OECD finds several reasons for local government to have the deficit; incompatible internal institution, lack of capacity and skill, insufficient funding, insufficient jurisdiction, and absence of support from national government (OECD 2010). In this case, incompatible internal institution and lack of capacity and skill might be the most constraining factors for the pilot cities in Indonesia to implement their integrated action plan.

5.2 Recommendations

a. To The Four Cities

In order to sustain the integration of adaptation and mitigation actions, the capacity building for a climate change working group should be prioritized during the implementation phase. It will update the knowledge of involved stakeholders and keep them speaking on the same page. The potential actions with trade-off relationship should be replaced by any other actions with have single adaptation /mitigation objective, co-benefit or synergy. The function of coordinator or leader immensely plays important role to synchronize the work and to maintain the chemistry among members of the team. To control the operationalization of programs, the responsible unit/ agency/ institution for monitoring and evaluation function should clearly be defined.

b. To Other Indonesian Cities

The cities which are in the initial stage of starting the arrangement of climate action plan may have a better option to choose an integrated action plan instead of a stand-alone plan since it might be more efficient. The position may be stronger if it is linked to statutory planning such as city development plan (RPJMD) and spatial planning (RTRW). During the agenda setting, the vision to take an integrated action plan should be definitely understandable by all stakeholders. Involving more extensive public during the identification of actions may increase its stakeholders' ownership and effectiveness. The choice to select member team may be based on function or personnel name depend on the situation, but the more important thing is how chemistry among member team must be maintained during all phases to give optimum result and the transfer of knowledge among every new member team can run smoothly. Meanwhile the formulation process, actions with trade off relationship should be avoided as many as possible and more concern to synergy one. Attaching the leader position in planning agency gives advantage because basically it is in line with the function of agency to arrange a planning; to distribute the task to the appropriate agencies; and to conduct monitoring evaluation in government institution.

c. Cities in General (Global Perspective)

It is important to know the context of a city from an early stage in terms of climate change response while arranging an integrated action plan because different city may give different priority of actions. Therefore, VA, risk assessment, and carbon profile are important reports to have since the beginning to give accurate information about city profile. It aims city can

respond climate change appropriately before going through the next phases of planning process. In order to synchronize the plan and to resolve any technical obstacles, the roadmap and any supporting climate policy from national level should be acknowledged.

d. Scope for Further Research

This study mainly focuses on the driving force of integrated action plan and its implementation in governance system. It is applied to cities which since the beginning show their tendency to combine adaptation and mitigation actions in their climate plan. The study about barrier or constraining forces of a city to take integrated action plan as approach may be relevant since this type still unknown tremendously mainly in Indonesia.

Bibliography

AMICA, 2008. Adaptation and Mitigation an integrated climate policy approach. Intereg III Project. Available at: http://www.amica-climate.net/ [Accessed 5 May 2016].

Agro Bisnis Info.com. (2015). Agro Bisnis Info.com. [online]. Available from: http://www.agrobisnisinfo.com/2015/04/plus-minus-pohon-trembesi-si-pohon.html [Accessed August 30, 2016].

Badan Lingkungan Hidup Kota Palembang. (2013). *Perencanaan Ketahanan Kota Palembang*. Palembang City.

Biesbrok, G. R., Swart, R. J. and Van der Knaap, Wim G.M. 2009. The mitigation-adaptation dichotomy and the role of spatial planning. 33 (3), pp. 230-237. Available at: http://www.sciencedirect.com/science/article/pii/S019739750800060X .

Blatter, J. and Blume, T. 2008. In Search of Co-variance, Causal Mechanisms or Congruence? Towards a Plural Understanding of Case Studies. 14 (2), pp. 315-356. Available at: www.alnap.org/pool/files [Accessed 17 May 2016].

Boer, Rizaldi; Rakhman, Adi; Ardiansyah, M. (2015). *Peta Rawan Bencana Karena Perubahan Iklim di Kota Bandung*. Bandung City.

Cresswell, J. and Miller, D. (2000). Determining validity in qualitative inquiry. *Theory into practice*, 39(3), pp.124–130. [online]. Available from: http://www.jstor.org/stable/1477543?seq=1&cid=pdf-reference#fndtn-references_tab_contents.

Davidson, F., 1996. Planning for performance : requirements for sustainable development. *Habitat International*, 20 (3), pp. 445-462. Available at: http://www.sciencedirect.com/science/article/pii/0197397596000215/pdf?md5=5938836c30c2f6af36078acbb7ee1dc2&pid=1-s2.0-0197397596000215-main.pdf [Accessed 29-10-2015].

Deryardli. (2015). Sriwijaya Post. [online]. Available from: http://palembang.tribunnews.com/2015/02/12/dimana-sajakah-bakal-lokasi-kolam-retensi-di-kota-palembang [Accessed August 30, 2016].

Duguma, L. A., Wambugu, S. W., Minang, P. A. and van Noordwijk, M. 2014. A systematic analysis of enabling conditions for synergy between climate change mitigation and adaptation measures in developing countries. 42 pp. 138-148. Available at: http://www.sciencedirect.com/science/article/pii/S1462901114001178 .

Goklany, I. M., 2007. Integrated strategies to reduce vulnerability and advance
adaptation, mitigation, and sustainable development. (DOI 10.1007/s11027-007-9098-1), Available at: http://goklany.org/library/Goklany-IAM2007.pdf .

Indonesia Climate Change Sectoral Roadmap-ICCSR. (2009). *Indonesia Climate Change Sectoral Roadmap-ICCSR*. Jakarta.

Indonesia Ministry of Home Affair, 2014. Indonesia Ministry of Home Affair [online] available at http://www.otda.kemendagri.go.id/images/file/data2014/file_konten/jumlah_daerah_otonom_ri.pdf.

Jasa Tirta II Public Corporation. (2013). The Decision Support System for Integrated Water Resource Management in the Citarum River Basin. [online]. Available from: http://www.slideshare.net/OswarMungkasa/decision-support-system-for-iwrm.

Jurnal Bandung.com. (2016). Jurnal Bandung.com. [online]. Available from: http://www.jurnalbandung.com/lewat-biodigester-tpst-babakansari-manfaatkan-sampah-untuk-memasak/ [Accessed August 30, 2016].

Klein, R. J. T., Huq, S., Denton, F., Downing, T. E., et al., 2007. Inter-relationships between adaptation and mitigation. In: M. L. Parry, O. F. Canziani, J. P. Palutikof, P. J. van der Linden and C. E. Hanson eds., 2007. Climate Change 2007: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change. Cambridge: Cambridge University Press. pp. 745-777.

Malang, P.K. (2013). *Strategi Terpadu Perubahan Iklim Kota Malang 2013-2020*. Malang City.

mctap.b2te. (2014). Halo Malang. [online]. Available from: http://halomalang.com/news/mahasiswa-salah-satu-penyumbang-sampah-terbesar-di-kota-malang [Accessed August 30, 2016].

Mercy Corps, ISET, URDI, C. (2010). *Final Report Vulnerability and Adaptation Assessment to Climate Change in Semarang City*. Semarang.

Ministry of National Development Planning. (2012). *National Action Plan for Climate Change Adaptation (RAN API)*. Jakarta.

Moser, S. C. and Ekstrom, J. A. 2010. A framework to diagnose barriers to climate change adaptation. *Proceedings of the National Academy of Sciences of the United States of America*, 107 (51), pp. 1-6. Available at: http://www.pnas.org/content/107/51/22026.full.pdf [Accessed 18-01-2016].

OECD, 2010. Cities and Climate Change. OECD Publishing. Available at: http://dx.doi.org/10.1787/9789264091375- en .

Reckien, D., Flacke, J., Olazabal, M. and Heidrich, O. 2015. The Influence of Drivers and Barriers on Urban Adaptation and Mitigation Plans—An Empirical Analysis of European Cities. 10 (8), pp. 1-21. Available at: http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0135597 [Accessed 29 April 2016].

Robinson, J., Bradley, M., Busby, P., Connor, D., et al., 2006. Climate Change and Sustainable Development: Realizing the Opportunity. 35 (1), pp. 1-8. Available at: http://ambio.allenpress.com;

Sandelowski, M. (1995). Focus on qualitative method: sample size in qualitative research. *Research in Nursing and Health*, 18, pp.179–183.

Sekretariat Kabinet Republik Indonesia. (2011). *Peraturan Presiden Republik Indonesia Nomor 61 Tahun 2011 tentang Rencana Aksi Nasional Penurunan Emisi Gas Rumah Kaca*. Indonesia. [online]. Available from: http://sipuu.setkab.go.id/PUUdoc/17288/PERPRES 612011.pdf.

Sugiyama, N. and Takeuchi, T. 2008. Local Policies for Climate Change in Japan. (DOI: 10.1177/1070496508326128), pp. 424-440. Available at: http://jed.sagepub.com/content/17/4/424 .

Swart, R. and Raes, F. 2007. Making integration of adaptation and mitigation work: mainstreaming into sustainable
development policies? 7 (4), pp. 288-303. Available at: http://dx.doi.org/10.1080/14693062.2007.9685657 [Accessed 18 April 2016].

Teasdale, P., 2010. Multi-level governance : a conceptual framework. Multi-level governance : a conceptual framework. 2010. Cities and climate change. Paris: OECD Publishing. pp. 171-178.

Tompkins, E. L. and Adger, W. N. 2005. Defining response capacity to enhance climate change policy. 8 pp. 562-571. Available at: www.elsevier.com/locate/envsci .

Van Thiel, S., 2014. Research Methods in Public Administration and Public Management. Second. London and New York: Routledge.

Annex 1: Interview Guide for Local Government

Introduction

My name is Yulie Budiasih, I am a civil servant in West Java Province who temporarily leaves the office because of task to study in Institute of Housing and Urban Development Studies, Erasmus University Rotterdam, the Netherlands. I am currently conducting a research on The Analysis of Climate Action Plan in Pilot Cities in Indonesia.

You have been identified as one of main stakeholder in developing **integrated** climate action plan. As key informant, I would like to ask you some questions related to how your municipality initiates and also implements the plan.

The interview would last for an hour. Feel free to express your opinion. No names will be recorded; any information will be treated confidentially and used for academic purpose only.

Personal Linkage

Can you describe the role and responsibility of your task in regard to process of climate action plan?

Implementation

Can you describe the institutional arrangement/distribution of task regarding climate change issue in the municipality?

How does the positioning of the climate action plan among other plans at city level?

What is the source of funding for the execution of planned programs?

What adaptation and mitigation objectives programs or projects are executed since the issuance of plan?

Integrated Action Plan Formulation

How do you identify the necessary climate actions to be included in the plan?

Type of Relationship

How do you identify the type of interrelationship between adaptation action and mitigation action in your climate action plan which can be ONE or MORE as following?

- Synergized : reducing GHG, enhancing sinks carbon and decreasing vulnerability

Eg: planting vetiver grass on a slope to protect land sliding and also to reduce GHG

- Trade off : reducing GHG but increasing vulnerability or the other way around

Eg : potential conflict in water usage between hydroelectricity generator and water consumption.

- Co-benefit : One of the two has unintended consequences for the other.

E.g.: planting mangrove mainly to protect abrasion but then it also can be carbon sink actually.

Driving Force

What is the main driving force/ motivation of the city to develop an **integrated** climate action plan?

Why not (if it is a **standalone** action plan)?

Would you give me a favour to recommend other contact person who is involved in climate action plan arrangement?

Many thanks for your answers and cooperation.

Annex 2: Interview Guide for National Government

Introduction

My name is Yulie Budiasih, I am a civil servant in West Java Province who temporarily leaves the office because of task to study in Institute of Housing and Urban Development Studies, Erasmus University. I am currently conducting a research on The Analysis of Climate Action Plan in Pilot Cities in Indonesia.

You have been identified as one of resource person who know most about the process of climate action plan in several pilot cities in Indonesia. As key informant, I would like to ask you some questions related to how pilot cities initiate and also implement the **integrated** action plan.

The interview would last for an hour. Feel free to express your opinion. No names will be recorded; any information will be treated confidentially and used for academic purpose only.

Personal Linkage

Can you describe the role and responsibility of your task in regards to climate policy?

Integrated Action Plan Formulation

What type of relationship between adaptation mitigation measures in action plans of cities in Indonesia?

How do cities identify the necessary climate action into their climate action plan?

Implementation

Can you describe the institutional arrangement and distribution of task regarding climate change issue in the city level?

What is the positioning of climate action plan among other city plans?

What is the source of funding for the execution of planned programs?

What adaptation and mitigation objectives program are executed since the issuance of plan?

Driving Force

What is the background of pilot cities to develop **integrated** climate action plan?

Why not (if it is a **standalone** action plan)?

Annex 3: ID Respondents of Interview

Respondent ID	Function
R#1	Bandung City Environmental Management Agency
R#2	Bandung City Planning Board
R#3	Bandung City Health Agency
R#4	Malang City Environmental Management Agency
R#5	Malang City Solid Waste Management and Park Agency
R#6	Palembang City Environmental Management Agency
R#7	Kelurahan/Ex Palembang City Environmental Management Agency
R#8	Palembang City Health Agency
R#9	Semarang City Environmental Management Agency
R#10	Semarang City Planning Board
R#11	Semarang City Planning Board (staff)
R#12	Ministry of Environment
R#13	Secretariat of National Adaptation Action Plan

Annex 4: Code List in Atlas.Ti

Code List

Code-Filter: All

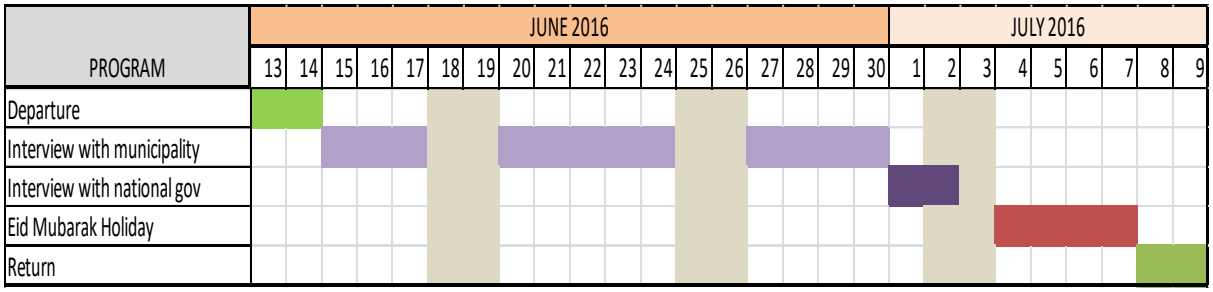
HU: Climate Action Plan Agt,5
File: [D:\IHS 2015\Thesis\Transcript interview\transcribed\Climate Action Plan Agt,5.hpr7]
Edited by: Super
Date/Time: 2016-08-05 20:08:43

Capacity building
Constraining force
Driving force of extended plan
Driving force of integrated action plan
Executed Program and Project
How to identify
Institutional arrangement
Positioning of the plan
Role and responsibility
Series of document
Sustainable financial support
Type of relationship

Annex 5: List of Secondary Data

	Title	Year of Published
1	Vulnerability And Adaptation Assessment to Climate Change in Semarang City	2010
2	Strategi Ketahanan Kota : Rencana Adaptasi Semarang Hadapi Perubahan Iklim	2010
3	Strategi Perubahan Iklim Terpadu Kota Semarang Tahun 2010-2020	2013
4	Strategi Terpadu Perubahan Iklim Kota Malang 2013-2020	2013
5	Peta Rawan Bencana Karena Perubahan Iklim Di Kota Bandung	2015
6	Climate Change Mitigation and Adaptation Action Plans Under Framework Water Resource Management at Citarum River Basin	2013
7	Perencanaan Ketahanan Kota Palembang	2014
8	Indonesia Climate Change Sectoral Road Map: Synthesis Report	2009

Annex 6: Time Schedule of Field Work



Annex 7: IHS copyright form

In order to allow the IHS Research Committee to select and publish the best UMD theses, participants need to sign and hand in this copy right form to the course bureau together with their final thesis.

Criteria for publishing:

A summary of 300 to 500 words should be included in the thesis.

The number of pages for the thesis is about 60.

The thesis should be edited.

Please be aware of the length restrictions of the thesis. The Research Committee may choose not to publish very long and badly written theses.

By signing this form you are indicating that you are the sole author(s) of the work and that you have the right to transfer copyright to IHS, except for items cited or quoted in your work that are clearly indicated.

I grant IHS, or its successors, all copyrights to the work listed above, so that IHS may publish the work in *The IHS thesis series*, on the IHS web site, in an electronic publication or in any other medium.

IHS is granted the right to approve reprinting.

The author(s) retain the rights to create derivative works and to distribute the work cited above within the institution that employs the author.

Please note that IHS copyrighted material from *The IHS thesis series* may be reproduced, up to ten copies for educational (excluding course packs purchased by students), non-commercial purposes, providing full acknowledgements and a copyright notice appear on all reproductions.

Thank you for your contribution to IHS.

Date : _____

Your Name(s) : _____

Your Signature(s) : _____

Please direct this form and all questions regarding this form or IHS copyright policy to:

The Chairman, IHS Research Committee Burg. Oudlaan 50, T-Building 14th floor, 3062 PA Rotterdam, The Netherlands	j.edelenbos@ihs.nl Tel. +31 10 4089851