Asian Cities Climate Resilience
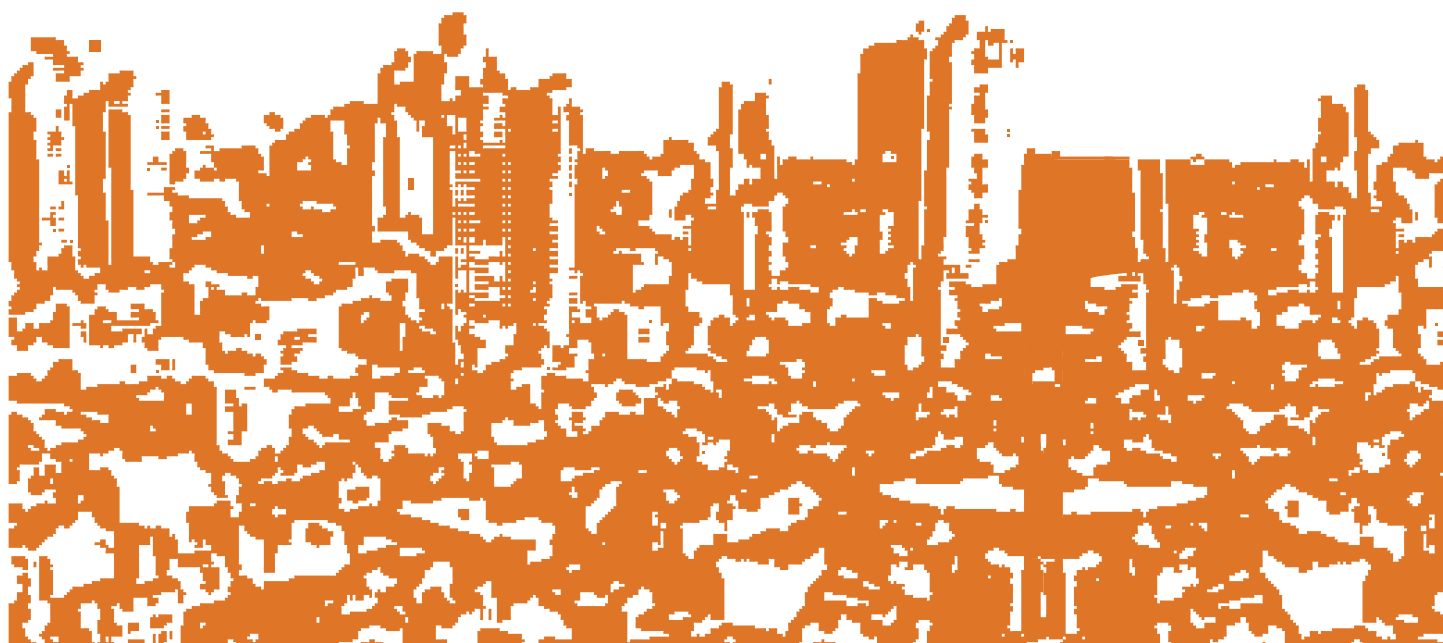
How can climate change vulnerability assessments best impact policy and planning?

Lessons from Indonesia

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Acronyms

ACCCRN	Asian Cities Climate Change
APEKSI	Asosiasi Pemerintah Kota Seluruh Indonesia (Indonesian City Government Association)
BPBD	Badan Nasional Penanggulangan Bencana (National Board for Disaster Management)
Bappeda	Department of Coordinating Planning
CCROM SEAP-IPB	Centre for Climate Risk and Opportunity Management in Southeast Asia and the Pacific, at the Bogor Institute of Farming
CCVA	Climate Change Vulnerability Assessment
CRS	City Resilience Strategy
FEWS	Flood Early Warning System
RPJMD	Local Medium Term Planning
SLD	Shared Learning Dialogue
UNDP	United Nations Development Programme
UN HABITAT	United Nations Human Settlements Programme
URDI	Urban and Regional Development Institute
USAID	United States Agency for International Development
UCRPF	Urban Climate Change Resilience Planning Framework
Yayasan Kota Kita	Our City Foundation

Abstract

In recent years there has been a number of climate change vulnerability assessments (CCVAs) conducted in cities across Indonesia. These have influenced the way that cities understand climate change, and the policies and approaches they adopt. But despite the number and variety of approaches of these assessments, there has been little research into which ones are most successful at raising awareness and informing adaptation planning and policy-making. This research looks at two different models, one that was deployed in the cities of Semarang and Bandar Lampung through the Asian Cities Climate Change Resilience Network (ACCCRN) programme, and another developed by UNDP and implemented by Yayasan Kota Kita in Manado and Makassar. They vary in duration, funding, emphasis on shared learning, stakeholder involvement, and external support; studying them helps indicate how different processes may have different impacts upon decision-making and policy implementation. The research contributes to efforts to design more effective climate change vulnerability assessment processes, providing recommendations as to how they may successfully engage and raise the awareness of stakeholders, and bring about lasting policy-making and planning outcomes.

1 Introduction

1.1 Background

Over the past five years, the impacts of climate change on cities and regions have become more recognised in Indonesia, prompting a growing awareness amongst national and local governments, as well as development agencies, of the need to conduct climate change vulnerability assessments (CCVAs) in urban areas. As a result, there has been a number of CCVAs conducted in cities across the country. While such recognition is positive, little research has been conducted into how CCVAs are used, how successful they are at informing planning and policy-making decisions, and what elements of the process help to determine their impact upon decision-making. This paper contributes to the field of adaptation planning by studying the process and impacts of four different CCVAs from the cities of Manado, Makassar, Semarang and Bandar Lampung. Based on this research, recommendations are then made as to how future CCVA processes may be better designed to promote more effective engagement of stakeholders, lasting policy-making and planning outcomes, and as a result, better climate resilience outcomes.

Turning an assessment (such as the CCVA) into concrete policy measures requires a range of actions that the CCVA alone does not encompass. However, the CCVA can make a significant contribution, depending upon the specific context of the city, and the approaches that the process enlists. While this study does not evaluate exhaustively the different approaches to undertaking CCVAs, and since there are only four cases, the cases represent some of what has been actually implemented in Indonesia over the last five years. Some of the variables that are compared for their effectiveness at prompting policy changes are: the duration of engagement, the extent of involvement of the city leadership, the variety of stakeholders engaged through the CCVA process, the level of awareness that was raised through dissemination of the report, and the follow-up actions that were given to implement the CCVA's recommendations.

1.2 Research questions

The research seeks to evaluate how successful the four different CCVA processes were in influencing policy-making, and what additional factors were necessary to ensure the CCVA's ability to make an impact. We asked the following research questions: firstly, what approaches to carrying out the CCVA are most successful in raising awareness of city stakeholders; and secondly, to what extent did the CCVAs successfully inform policy and planning practices in the cities where they were conducted. To do so we examined the endogenous and exogenous conditions for successful or unsuccessful policy adoption. Finally, we looked at the barriers to and opportunities for capacity building and the future adoption of vulnerability assessments into policy and planning.

1.3   Research findings

The research found the following: for CCVAs to influence policy outcomes and budgets, they should not be an isolated activity but part of a continuous process; thus the depth and length of engagement are significant in producing results. Another is that the participation of stakeholders in the CCVA process raises awareness of the importance of climate resilience actions, an important factor in producing results. It thus follows that the more diverse the participation, the better overall understanding. However it is not possible to conclusively determine whether participation is significant in influencing outcomes, because in different cities specific actors determined the outcomes of the process. Thirdly, the successful implementation of CCVA recommendations depends on the composition of the team of strategic actors that takes the process forward, and it is important to align their incentives to ensure that they are motivated. Therefore **who** is involved, ie the selection of strategically positioned personnel, rather than the particular methodology, is crucial to effectively translating CCVA recommendations into actions.

1.4   Methodology

The research was conducted over a period of three months from January to March 2015 and involved both a desk review and extensive fieldwork. During the first phase of research, a comprehensive desk review of the four different cases was carried out, classifying their different components, data collection techniques, analytical approaches, duration of study, involvement of stakeholders, focus of research, and outputs. The four cities of Bandar Lampung, Semarang, Makassar, and Manado were chosen because they had all undertaken CCVA processes in the previous five years, and all received external technical assistance and funding. Two of the cities belonged to the Asian Cities Climate Change Resilience Network (ACCCRN) programme (Semarang and Bandar Lampung, funded by the Rockefeller Foundation, while Makassar was conducted with guidance and technical support from UNDP and UN HABITAT, and Manado from USAID's Climate Change Resilient Development programme. During the second stage, researchers visited the cities and interviewed those people directly involved in the process, such as government officials, civil society members from NGOs, and consultants involved in conducting the assessments.[1] During these visits, data about city budgets, policies and activities of each city were collected to determine whether the resulting vulnerability assessments had had a significant impact upon their budget cycles, types of projects, and approved regulations or policies.

All these cities share commonalities; they are the capital cities of their respective provinces, are all located in coastal areas and are growing rapidly. The city of Semarang has a population of 1.6 million,[2] Bandar Lampung 0.96 million,[3] Manado 0.42 million[4] and Makassar 1.4 million. Apart from Manado,[5] the rest of the cities are likely to have populations between 2–4 million by 2050.

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[1]   All interviewed respondents have given prior permission to publish their responses.

[2]   Semarang in Figure 2014, Bureau of Central Statistics, Indonesia

[3]   Bandar Lampung in Figure 2014, Bureau of Central Statistics, Indonesia

[4]   Makassar in Figure 2014, Bureau of Central Statistics, Indonesia

[5]   Manado in Figure 2014, Bureau of Central Statistics, Indonesia

1.5   Limitations of the research

A comparative approach to evaluating the effectiveness of different CCVA methodologies is limited for a variety of reasons. Firstly, the methodologies of the different CCVAs are different in each city with the Bandar Lampung and Semarang cases having a more scientific and rigorous approach involving a range of institutions and actors, whereas in both Makassar and Manado the CCVA process was undertaken by consultants through data collection and a limited number of participatory workshops. Another issue is that the CCVAs were conducted over different time periods and with different starting dates; this makes straightforward comparison a challenge because the cases of Semarang and Bandar Lampung already have over four years longer to have generated results. The implementation process in Makassar and Manado has only begun relatively recently over the last few years, with Manado being particularly recent in the completion of its CCVA (2014).

2   Review of the literature

To ensure proper adaptation, cities need to understand their present and future risks and vulnerabilities to climate change. A rigorous CCVA process is therefore necessary to inform planning and adaptation policy and project intervention. Credible vulnerability assessments (including their indicators) are important in informing climate adaptation (Eriksen and Kelly 2007). However, research regarding urban adaptation to climate change is still a relatively nascent research area (Carmin *et al.* 2012). This includes the study of how various forms of CCVA inform adaptation policy. In some cases, researchers have attempted to determine which assessment methods are the most effective (Hinkel 2011). However, it can be argued that different methods are more or less appropriate depending on the context where CCVA is carried out by stakeholders in cities.

The literature review tracks two key issues. First, it assesses existing literature on CCVA impacts on adaptation policy. This includes observation of different claims of the effectiveness and sustainable outcomes of CCVA activities. There are variations in the methods being utilised to analyse climate vulnerability – where each method may inherently give different results in decision-making impact. Second, despite the fact that not all vulnerability assessors always have an *ex-ante* planning on a policy change scenario, we argue that understanding the context of public policy-making processes in developing countries is necessary.

Næss *et al.* argue that there is unlikely to be one single 'correct' assessment tool or indicator model to make vulnerability assessments matter at a local level. They showed the use of vulnerability assessments in a local decision-making context anticipating climate change in Norway. They identify two aspects of CCVAs that are key to local decision-making: `first, the information generated through the assessments themselves, and second, the institutional linkages to local level decision-making processes (2006:221)'.

2.1   Approaches to vulnerability assessments

There are a number of different definitions of vulnerability. The Intergovernmental Panel on Climate Change (IPCC 2007) defines it as `the degree to which geophysical, biological and socio-economic systems are susceptible to, and unable to cope with, adverse impacts of climate change'. Wolf (2012) reviewed and concluded vulnerability as `a present property that describes possible future harm, that is, vulnerability is a predictive concept.' When an `entity is declared `vulnerable to something', if this `something' is considered the source of the harm occurring to the entity, the `something' is referred to as `stimulus', and `vulnerability to a stimulus arises from the interaction of the entity with its environment' (Wolf 2012). In this paper, we adopt the definition of vulnerability by Working Group II of the 5th Assessment Report of the IPCC: `the propensity or predisposition to be adversely affected. Vulnerability encompasses a variety of concepts and elements including sensitivity or susceptibility to harm and lack of capacity to cope and adapt.'[6]

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6   *See Summary for Policy Makers WG2 AR5 IPCC, Background Box SPM.2. Terms Central for Understanding the Summary, Page 5.*
https://ipcc-wg2.gov/AR5/

Vulnerability has emerged from a rather marginal to a central concept in disaster risk research (Menoni *et al.* 2012). Considerable attention to the impact of climatic change and natural catastrophe in Asia has led to an increase in vulnerability assessments from local to national levels. Interestingly, there has been relatively little attention given to how CCVAs can be conducted in ways that not only help build awareness and local capacity to understand and find their own solutions to reduce their vulnerabilities (Fazey *et al.* 2010), but to also how CCVAs can be used to inform local and national planning and adaptation policy (Veland *et al.* 2013). The CCVA process can benefit from the tradition of risk assessments in the disaster risk research. In general, the vulnerability assessment is not a stand-alone activity. Such an assessment is often conducted in a diverse range of contexts, ranging from pure academic interest in understanding local climate risk context, to ensuring and targeting policy uptake.

Certain actors tend to favour certain forms of vulnerability assessment. For example, NGOs tend to adopt participatory approaches to vulnerability assessments (Victoria *et al.* 2014), because the participatory CCVA approach is often seen to foster facilitation and promote learning about the existing vulnerability context. It does so through a process that builds local community capacity to manage the risk and vulnerabilities and fosters local ownership and responsibility in managing vulnerability and risk reduction (Fazey *et al.* 2010).

2.2   Purpose of vulnerability assessments

Vulnerability assessments can be seen as part of the process of adaptation where the CCVA is used as a diagnostic tool for risk assessment to strengthen policy and planning' (Veland *et al.* 2013).

There are many types of CCVA that can contribute to developing more effective adaptation policies. Füssel and Klein (2006) suggest first and second generation CCVAs (evaluation of climate impacts in terms of their relevance for society and consideration of potential and feasible adaptive capacity), and adaptation policy assessments (evaluations to provide specific recommendations to planners and policy makers). At community level, vulnerability assessments typically involve a range of different methods to identify and document the conditions or risks people have to deal with. Once relevant conditions have been identified, information from other scientists and policy analysts helps to identify future exposures and sensitivities and the ways communities can plan for, or respond to, these conditions (Fazey *et al.* 2010).

Most literature suggests that vulnerability assessment is not a stand-alone activity. It is rather a part of a systematic endeavour aimed at understanding risk, vulnerabilities and capacities in order to create awareness, inform adaptation planning (including prioritisation) (Burton *et al.* 2002), and policy design (Dessai and Hulme 2004). The overarching objective is to guide actors and stakeholders to reduce risk reduction, where risk reduction should be advanced by a policy-making process that leads to policy transformation from reactive to anticipatory adaptation.

2.3   The climate and risk management policy processes in developing countries

Credible CCVAs should be based on evidence of climate change and their potential impacts on the future of cities. Therefore, conducting a CCVA should mean establishing facts or evidence about risk arising from climate change; this then leads to informed recommendations that can spur policy-making.

The policy change process involves knowledge of different types (from scientific to local knowledge), power and politics, local context of relationship between science, policy and development, citizen and state relations (Keeley and Scoones 2003). The policy-making process is often seen as a linear process moving from agenda-setting to decision-making, implementation and evaluation. Keeley and Scoones (2003) suggest that policy comprises `decisions taken by those with responsibility for a given policy area, and these decisions usually take the form of statements or formal positions on an issue, which are then executed by the bureaucracy.'

Within the context of tens of big cities and more than 550 smaller cities in Indonesia, there is lack of systematic policy-making in climate change adaptation, and most cities and districts are still at a pioneering and pilot project stage, such as the ACCCRN. Often they are driven by external actors and funding.

However, in the context of Asia, especially Indonesia, climate and disaster risk policy change often involve a complex process of local, national and international interaction. In fact, agenda setting for climate change policy is often initiated by a set of hybrid actors comprising executive government, legislative power, civil society, international organisations, multilateral organisations, private firms and academia that collectively form risk governance structure with less structural hierarchy (Lassa 2013).

External international intervention tends to follow the rational model, associated with the context of liberal democracies. In such cases, proper climate change adaptation should be grounded on empirical facts and knowledge-based policy. This suggests that vulnerability should be clearly and unambiguously assessed and that climate risks and vulnerability can be adequately understood and `that government responses can be objectively evaluated using accurate assessments of costs and benefits. However, in practice, policy objectives are often ambiguous due to competing demands on resources and conflicting or incomplete knowledge of hazards, risks, and the costs and benefits of policy intervention.' (Heazle *et al.* 2013: 163). What is crucial is how these approaches can ensure that mainstreaming adaptation does not compromise their role in building the resilience of the most vulnerable groups (Mayoux and Chambers 2005)

In fact, in a developing country context, policy-making processes rarely follow a linear process of `agenda-setting – "decision-making"- implementation – evaluation'. Policy change in an environmental context emerges in most cases as pilot projects labeled here as `scaffolding'. For instance, the ACCCRN programme has created `institutional scaffolding' – a set of procedural qualities, ideas, knowledge, frameworks, model, funds, people and workshops over a predetermined period. One of the overarching objectives is that by the end of the process, local governments are able to replicate all the required process using their own resources to reduce their stock of risks. The ACCCRN initiative is engaged in many stages of the process in building urban climate resilience, from initiating vulnerability assessments, planning workshops, drafting policies, and co-creating incentives (from internal government and from international funds) pertaining to building urban climate resilience. Meanwhile, the projects in Manado and Makassar seek to imprint pathways that local government can later continue, to sustain resilience building through up-scaling and further innovation. Therefore, each initiative, depending on the donor priorities and approaches, has a different vision on how CCVA will lead to adoption and policy change towards transformation.

What is important to note is the fact that not all actors involved in vulnerability assessments are aware of the complexity of policy processes and the factors that are involved in urban policy reform. Vulnerability assessors are often specialists and technicians who are not always aware of the `grand design' of each climate adaptation intervention.

3 Findings

The CCVA approach that was used in the four cities can actually be categorised in two groupings; those carried out through the ACCCRN programme, and those carried out using another methodology developed by UNDP. The former approach is part of a more long-term process in which the CCVA is the first step of many, towards creating and implementing a climate resilience plan. The ACCCRN approach is quite lengthy, lasting up to six years; it counts on the support of a NGO team based in each city. In the case of Bandar Lampung and Semarang, this was carried out by Mercy Corps Indonesia, an international NGO. For the scientific assessment of climate, the university-based group CCROM was hired as a consultant. The approach includes the implementation of projects and policy dialogues, also managed by the same NGO. The approach in Malang and Makassar however is almost a stand-alone CCVA processes. In both cases the process was much shorter in length, lasting only six months, it was not necessarily part of a long-term process of resilience planning, and was carried out on a much more limited budget. The team that conducted the CCVAs in Makassar and Manado were from an Indonesian NGO called Yayasan Kota Kita, made up of urban planners and community outreach specialists, who traveled back and forth to the cities, not having an actual presence stationed on the ground.

This chapter, together with Tables 1 and 2, summarise the two different approaches, and describe the process that took place in each of the four cities. The chapter offers an account of the policy impact that each approach had in their respective locations.

Table 1: Comparative table demonstrating the different characteristics of the four cases

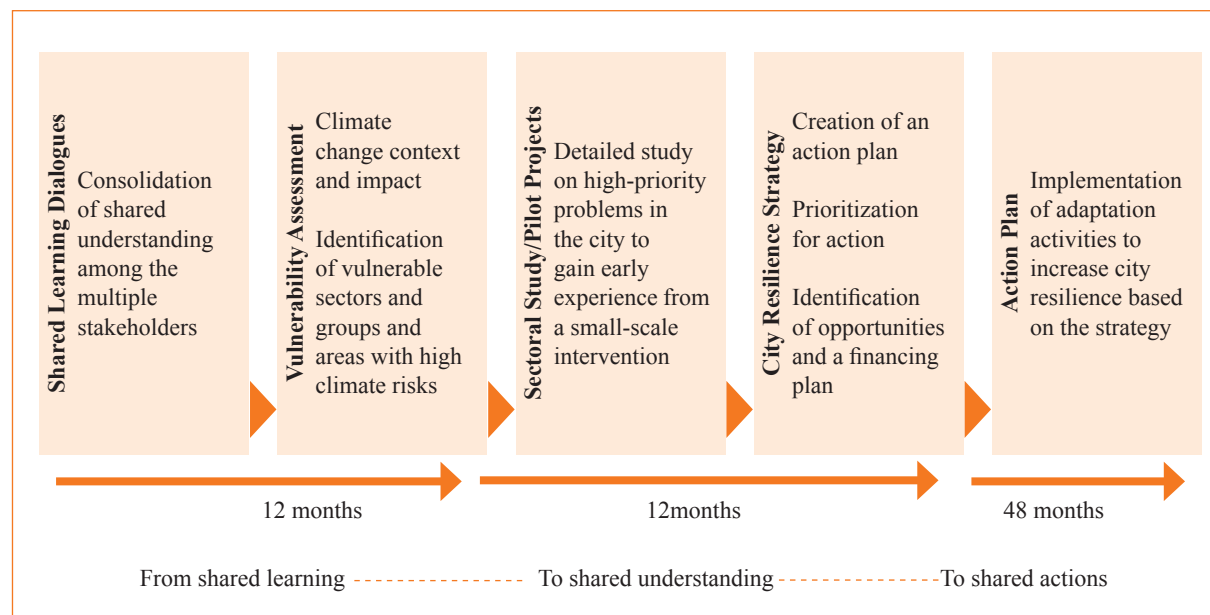|	Project name	CCVA conducted by	Funders	Duration	Key features
Manado	Climate change vulnerability assessment of Manado	Yayasan Kota Kita	USAID	2014	Climate change vulnerability assessment, critical infrastructure assessment
Makassar	Climate change and eco-system based vulnerability assessment of Makassar	Yayasan Kota Kita	UNDP	2013–2014	Institutional capacity assessment, Ecosystem-based assessment, climate change vulnerability assessment
Bandar Lampung	City-wide climate change vulnerability assessment of Bandar Lampung	Mercy Corps Indonesia, CCROM	ACCCRN, Rockefeller Foundation	2009 – present	City-wide assessment, community-based vulnerability assessment, institutional capacity assessment
Semarang	City-wide climate change vulnerability assessment of Semarang	Mercy Corps Indonesia, CCROM	ACCCRN, Rockefeller Foundation	2009 – present	City-wide assessment, community-based vulnerability assessment, institutional capacity assessment

Table 2: Comparative table of activities involved in the CCVA process

Key activities in each CCVA	Bandar Lampung	Semarang	Makassar	Manado
Duration of CCVA process	12 months	12 months	6 months	5 months
Number of participatory workshops/ Shared Learning Dialogues	5	5	2	2
Participatory VAs	Yes	Yes	Yes	Yes
Top down VAs by climate specialists	Yes	Yes	No	No
Governance structure for CCVA (City team)	Yes	Yes	No	No
Structure created/ mandated to promote VAs	Yes	Yes	No	No
Involvement of local universities and local NGOs	Yes	Yes	No	Yes

3.1   Summary of the CCVA approach in Semarang and Bandar Lampung

The Asian Cities Climate Change Resilience Network (ACCCRN) programme is a multi-year programme funded by the Rockefeller Foundation, a US-based philanthropic foundation, to promote learning and build climate change resilience in ten cities across Indonesia, India, Thailand and Vietnam. ACCCRN considers the CCVA as a key step towards a city's systematic (or planned) adaptation to climate change. The vulnerability assessments have been carried out using both a science-based and community-based vulnerability assessment. Following the completion of the CCVA, the recommendations therein are converted, through agreement with the city government, into a planning document called the City Resilience Strategy (CRS) in which activities and projects are planned and budgeted for implementation. The decision on whether a CCVA should be made is a joint decision taken by a structure called the City Team – a multi-stakeholder platform comprised of relevant departments, civil society organisations, local universities and representatives (Lassa and Nugraha 2015). Figure 1 visualises the ACCCRN processes and activities in Semarang City over the last five years. The overall framework has been named the Urban Climate Change Resilience Planning Framework (UCRPF). This functions as a process-oriented framework as it `incorporates a specific set of process considerations and supports activities that can assist urban areas in planning, capacity building, implementing and supporting the continuous process of learning that is central to the growth and maintenance of urban resilience' (Tyler and Moench 2012).

Figure 1: Typical Climate Adaptation Policy Making Process by ACCCRN in Indonesia

Shared Learning Dialogues	**Vulnerability Assessment**	**Sectoral Study/Pilot Projects**	**City Resilience Strategy**	**Action Plan**
Consolidation of shared understanding among the multiple stakeholders	Climate change context and impact Identification of vulnerable sectors and groups and areas with high climate risks	Detailed study on high-priority problems in the city to gain early experience from a small-scale intervention	Creation of an action plan Prioritization for action Identification of opportunities and a financing plan	Implementation of adaptation activities to increase city resilience based on the strategy

12 months   12months   48 months

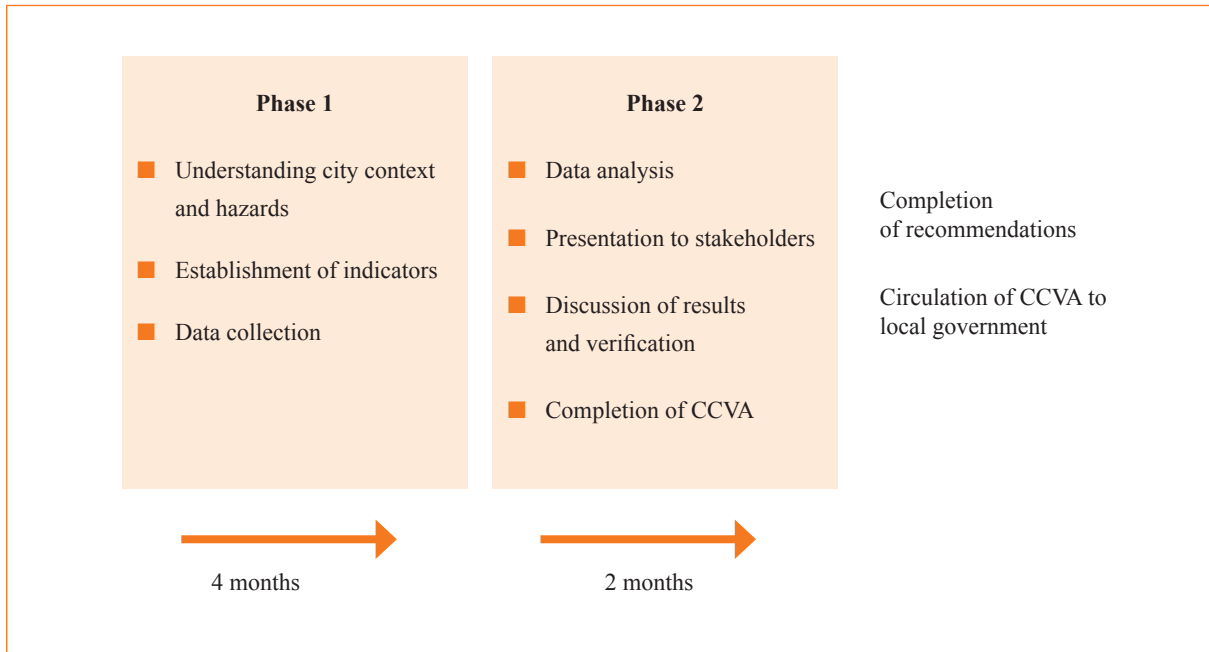From shared learning - - - - - - - - - To shared understanding - - - - - - - - To shared actions

3.2 Summary of the CCVA approach in Manado and Makassar

The approach developed by UNDP Indonesia is a much shorter process than the ACCCRN one, focusing specifically on the CCVA (there isn't an additional CRS that follows directly from it). The idea is that the outcome of the process will help to inform the city's own discussions on adaptation planning, but without the same level of external assistance – for example there are no teams assembled in each city, no financial support for pilot projects, and no guaranteed institutional support extending over several years. The approach is thus more streamlined, positioned as playing a supportive role to city governments, but requires them to follow up and implement policies and projects on their own. Given the more short-term nature of the UNDP approach, there is not a governance structure created to support the process, which is driven largely by the consultants who manage the data collection and sharing of the recommendations. The process is however participatory, as at various stages stakeholders are gathered to discuss the analysis and develop recommendations. The resulting CCVA document is thus an outcome of facilitated inter-sectoral discussion by key stakeholders.

There are two phases (Figure 2): firstly, the data collection phase, which consists of the consultant team visiting each department and gathering data, and then sharing it at a participatory workshop, where information about the city is discussed and verified. Second, the data analysis phase follows; this is undertaken by the consultants, but they then present and facilitate an open discussion in a participatory workshop space to confirm the conclusions and priorities. The presentation of the CCVA report to the mayor and city government concludes the process; from there the government is given recommendations on responding to the report by designing and implementing policies and projects.

Figure 2: Typical CCVA process developed by UNDP and implemented by Kota Kita in Manado and Makassa

Phase 1

- Understanding city context and hazards
- Establishment of indicators
- Data collection

4 months

Phase 2

- Data analysis
- Presentation to stakeholders
- Discussion of results and verification
- Completion of CCVA

2 months

Completion of recommendations

Circulation of CCVA to local government

3.3   Bandar Lampung

Bandar Lampung is the provincial capital of Lampung Province, on the island of Sumatra. This growing coastal city with a population of around 960,000 inhabitants, has been shaped by its relationship with the sea, with many settlements along the coastline, and the interior, where rural areas produce timber, coffee and minerals. The city is an important port for the extraction of these commodities and is an economic hub of south Sumatra.

Bandar Lampung undertook its CCVA through the ACCCRN programme which is implemented locally by Mercy Corps Indonesia, the Urban and Regional Development Institute (URDI), and the Centre for Climate Risk and Opportunity Management in Southeast Asia and the Pacific (CCROM SEAP-IPB), a research centre at Bogor Agricultural University. The CCVA was started in 2009 and lasted a year, but financial support for resilience-building activities continues through to 2016. Even though there are no confirmed amounts of funds being disbursed by ACCCRN, the fund has however been a significant stimulus for the city to initiate solid waste management studies, school-based curricula on climate adaptation, city-wide bio-pore development and so on. Prior to the ACCCRN programme, there was no climate adaptation programme, but following the initiation of the programme, a team of dedicated individuals and institutions was formed – the City Team – and climate change adaptation activities began in earnest.

The City Team is made up of members of various city officials from local government departments, academics, and NGOs, such as Mitra Bentala, Walhi, and Sahabat Lingkungan. This team has led activities in the city since its inception and it was legalised as an institution by a mayor's decree in 2010, 2011, and again in 2014. As this team has continued to work together from the beginning of the CCVA, they have continuously increased the capacity and awareness of members of city agencies as well as their own.

The first task of members of the City Team, together with the implementing organisation Mercy Corps Indonesia, was to conduct both a science-based analysis of vulnerability at the city-scale (this was carried out by CCROM SEAP-IPB), as well as a community-based vulnerability assessment (which was carried out by the author, John Taylor, who was hired by Mercy Corps as a consultant working together with their team). This activity adopted more of a community-focused approach in which visits were made to local communities, focus group discussions with residents were held to identify areas of greatest vulnerability, and three communities were surveyed. Concurrently the analysis of institutions was carried out by URDI, focusing largely on the dynamics of local government and institutions. Through these activities they were able to confirm that the climate hazards to which the city is exposed are flooding and drought, caused by the decreasing size of the water catchment area. They identified that most vulnerable groups are those living in slum areas and their vulnerable condition is set to increase with growing density and size of slums. This phase of gathering data process took six months and served as the foundation for understanding the conditions, climate trends and the profile and capacities of institutions at the city level.

Following the data-gathering phase, the City Team convened different stakeholders to discuss the information through what are called Shared Learning Dialogues (SLDs). The SLD process is an open forum setting in which information is shared during a series of dialogues. Through these dialogues, a set of recommendations and further actions were discussed and agreed upon. This process also took approximately six months from beginning to end. The result was the creation of a City Resilience Strategy (CRS) and Action Plan. The CRS prioritised and identified possible opportunities to finance different actions and investments. Given that the CRS resulted in specific recommendationst hat were connected to budgets, this part of the planning process helped to influence the policy-making process.

3.4   The policy impact of the CCVA in Bandar Lampung

City regulations have been impacted by the CCVA. When the CCVA was implemented in 2009, recommendations were taken up in the Local Medium Term Planning (RPJMD) documents, and climate change adaptation entered into supplemental content of elementary school curriculum passed by the mayor's regulation No. 12 of 2014. The City of Bandar Lampung has also set some regulations, such as City Regulation No 7 of 2014 that orient building regulations; this law emphasises land use regulations to ensure water absorption; other projects have complemented this initiative with funding allocated to the creation of bio-pores, which absorb rainwater back into the ground. Again in 2015, the city coordinating planning agency, known as Bappeda, ensured that climate change adaptation policies and programmes become part of the Local Medium Term Planning (RPJMD). Thus there has been a consistent application of these activities. In 2015, Bappeda scheduled the re-evaluation of the CCVA and the impact of the climate change adaptation strategy thus far.

There are several factors that have contributed to supporting the continued adoption of climate resilience policies stemming from the CCVA. First it is important to recognise the continued external organisational and financial support from the ACCCRN programme. Second there has been significant leadership from the mayor who is aware and supportive of environmental projects (Lassa and Nugroho 2015). Third there has been significant financial support from the city government, in terms of personnel and budget allocations to support climate resilience activities. What has also been significant has been public interest in environmental issues. Lastly Bandar Lampung has joined the climate change working group of the Indonesian City Government Association (APEKSI, Asosiasi Pemerintah Kota Seluruh Indonesia).

3.5   Semarang

Semarang is a large coastal city that lies along the north coast of Java, the world's most populous island. At over 1.5 million inhabitants, Semarang counts as one of the ten largest cities in the country, it is also a busy economic hub and the capital of central Java, Indonesia's third largest province. Coastal flooding, landslides and abrasion, are the most significant climate hazards recognised by the CCVA.

Semarang also carried out climate change resilience activities with ACCCRN support, in collaboration with Mercy Corps, URDI and CCROM SEAP-IPB. They initiated the two prongs of CCVA, first, a participatory assessment in 2009 with vulnerable communities and scientific-driven CCVA lead by scientists involving the City Team. Similar to Bandar Lampung, the CCVA process involved local stakeholders that created a City Team made up of local government agencies, academics and NGOs. Over the first six months, the City Team gathered data for the CCVA, such as about climate trends, neighbourhood characteristics for the community-based vulnerability assessment, and also scientific data for analysis by CCROM-IPB, that implemented a large part of the scientific data analysis. Following this first six-month phase, the results were discussed through a series of five SLDs that lasted a further six months. The result was the CCVA and a set of recommendations and prioritised actions in the City Resilience Strategy (CRS).

Despite the fact that the CRS documents were not formally endorsed by a mayoral decree, CRS documents in both Semarang and Bandar Lampung indicated a number of necessary actions by the *Bappedas* to create climate adaptation projects and actions that were followed up by the City Team, the government and various NGOs; these were implemented between 2010 and 2015 with funds from the Rockefeller Foundation and through support from Mercy Corps Indonesia. In Semarang, what resulted were a number of adaptation activities that included: developing a conservation model to reduce erosion, drought and flooding through improved management of the watershed; the creation of bio-pores, and reforestation schemes in the Sukorejo neighbourhood. Another project was the creation of a community-based microfinance fund to improve community sanitation infrastructure in Kemijen neighbourhood, and community-based mangrove reforestation in Tapak Tugurejo neighbourhood. One of the most widespread pilot projects has been the development of a Flood Early Warning System (FEWS) covering seven neighbourhoods along the Beringin River. Given that Semarang experiences flash floods, this scheme has helped to decrease vulnerability by giving advanced warning to downstream communities.

3.6   The policy impact of the CCVA in Semarang

The CCVA has helped to increase awareness of climate change issues, but its impact on influencing regulations has been more limited; there have been few city regulations affected by the CCVA's recommendations. Through the process, the City Team has actively participated in a number of activities related to climate change issues, namely to promote further understanding to the mayor and local members of parliament, as well as continuing to build their own knowledge. But despite the city constantly suffering several climate hazards and impacts, the issue hasn't become very popular at the city level. This is visible by the fact that there are no regulations that have been passed in planning documents. Only one major mangrove restoration and eco-tourism project has been passed through the local budget, and this only recently. In 2015, Bappeda and the Marine and Fishing Agency received funding through the city budget (APBD), and this is destined to not only protect coastal area through mangrove cultivation, but also to generate revenue for local communities through eco-tourism, crafts and the production of dye.

Some of the challenges for successful policy adoption have been the low levels of responsiveness and awareness of stakeholders (despite efforts to raise awareness by the City Team), poor communication and information transfer from the City Team to others, and an intransigence of approval of their recommendations by the local parliament. As a result, it took three years for the mangrove restoration project for coastal areas of the city to be approved and implemented – it was accepted in 2015.

Interviewees in Semarang highlighted that in order to implement policies, it is important that several levels of government hierarchy are engaged and are aware of the importance of climate change issues; this seems to be missing in Semarang. Over the last few years, the mayor and local parliamentarians have lacked commitment to these issues, and this is why they don't appear in the vision and mission of the city. Lacking this level of leadership, there has been a shortfall of funding for climate resilience activities and thus projects have relied heavily on donor funding. However, the fund in Semarang has been also a significant stimulus for the city to initiate city-wide flood warning systems in recent years.

3.7   Manado

Manado is a city of around 400,000 inhabitants, the capital of the province of north Sulawesi, on the island of Sulawesi. Perched on steep hillsides and along the beautiful coastline famous for its ocean wildlife and coral reefs, the city has suffered from annual landslides and flooding of the rivers that run through the city. The local Indonesian NGO Yayasan Kota Kita implemented the CCVA with funding from USAID's Climate Change Resilience Development programme over the course of a six-month period from 2013 to 2014. The CCVA process was conducted without the support of a City Team, but local government agencies made secondary data available, which was analysed and mapped in advance of the city workshops. Two city-level workshops were facilitated by Yayasan Kota Kita, convening local government stakeholders, academicians from local universities and civil society organisations, to discuss data and findings. Prior to this engagement there had not been any previous studies or trainings related to climate change in the city; but despite that there was awareness about environmental issues in the city. The mayor had already proclaimed Manado a 'green city', with efforts being made to clean the streets and protect the reef, while the city government were increasingly concerned about the annual occurrence of floods and landslides. Thus there was anticipation that the CCVA could help to present specific recommendations to reduce these threats.

The CCVA however was limited in the resources available to involve a large number of stakeholders, or to sustain activities for longer than a limited time. As a result the NGO team traveled in for data collection, interviews with government department heads and neighbourhood visits, and organised two participatory city-wide workshops to discuss the findings. The relatively short presence of the NGO team in Manado and a selective interview process mean that few respondents were aware that the CCVA was taking place. While the CCVA was presented officially to the government following its completion, it was not circulated widely amongst government officials or other stakeholders, perhaps because there was no plan or follow-up resources to do so. This contributed to limiting the impact of the process on raising awareness as well as influencing policies and planning.

But an important follow-up activity of the CCVA process was the delivery of three capacity building workshops of key stakeholders from various government departments and academics from the local university, which explained the CCVA recommendations in detail and discussed their implications. The final workshop that was organised consisted of a study visit that brought academicians, government officials and civil society members to Semarang to meet the City Team there. This visit prompted the stakeholders to form their own City Team, but so far there have been no activities initiated by the participants. Given the limited funds made available for follow-up activities, there has not been continued support to develop further actions in Manado.

That is not to say that the city government is not working on its own policies that focus on environmental issues; it cannot be said however that these have resulted from the CCVA process.

Given the existing recognition of the city's environmental potential and exposure to climate hazards, there are several promising programmes and projects, such as: Mapallus Programme Berbasis Lingkungan, or the Mapallus Environmental Based Programme (PBL), in which residents at the neighbourhood-level can propose projects and activities related to environment issues; there is also Programme SIBAT (Siaga Banjir Berbasis Masyarakat) or the Community-Based Flood Preparedness programme, conducted by the Department of Emergency Preparedness (BPBD) to confront flood hazards. In 2015, through BPBD, the government has decided to relocate selected riverbank settlements that run the risk of being impacted by flooding. As such, despite a focus on the environment, there are no specific climate change adaptation activities.

3.8   The policy impact of the CCVA in Manado

Almost all the respondents commented that while there are a number of programmes focused on environmental issues in the city, and awareness is higher about climate change issues amongst selected government officials, there has yet to be an impact of the CCVA on policy and planning; there have not been any regulations enacted as a result of the CCVA's recommendations. This observation is supported by the fact that there is no evidence of CCVA recommendations appearing in the city's budget plans. Not only has government staff overall not become more aware about climate change issues through the CCVA process, but legislative leaders, who are largely responsible for enacting regulations, continue to have low awareness of the issues.

3.8   Makassar

The final city of the study is Makassar, the largest city in the east of Indonesia and provincial capital of south Sulawesi, with a population of 1.4 million inhabitants and growing rapidly. The CCVA was prepared along the course of a six-month study conducted by Yayasan Kota Kita with funding and orientation from three UN agencies– UNEP, UNDP and UN HABITAT in 2013. The process was conducted through a series of workshops that brought together key city stakeholders, site visits to affected neighbourhoods identified by city officials, and through compiling secondary data from government sources.

Previous to the study, the city stakeholders, both from government and civil society organisations, had conducted several programmes and projects related to environmental management and planning, some of which can be categorised as climate change adaptation activities. For example there had been coastal rehabilitation activities, the renovation of sea walls, flood preparedness, and mangrove restoration; these were conducted during the term of the previous mayor. During the current mayor's term there have been trash management programmes such as Makassar Tak Tidak Rantasa (Neat and Tidy Makassar) and a campaign for the city to be considered a 'green city' called Kota Longar (Garden City) through the promotion of vegetation and gardens in public spaces.

The CCVA was conducted by the Yayasan Kota Kita with support of a local NGO facilitator (with no specific background in climate change assessments), who helped arrange meetings; but sustained efforts to raise awareness through the process were sporadic 3–4 day visits where the consultant team had to travel to the city and where there was no City Team to steward the process locally. There were however two intense day-long participatory workshops which convened a diverse collection of city stakeholders, composed of government officials, academics and civil society. These workshops helped improve the knowledge of participants, and research respondents commented that the CCVA document did contribute to raising their awareness of climate change issues; but its impacts upon policy have so far been minimal. Since participation at the workshop was limited to only about 40 participants overall awareness is still limited. Similar to the case of Manado, there was not a plan in place or further resources made available by the donor agency to disseminate the CCVA document widely, and so follow- up activities, such as advocating for the implementation of certain policies and activities, were not possible.

3.9   The policy impact of the CCVA in Makassar

The CCVA has not been adopted in the city regulations and there has been little follow-up of the process; although there is evidence that climate change considerations have been pursued elsewhere. The mayor's vision and mission for the city of Makassar, for instance, demonstrate that there is an emphasis on environmental issues relevant to climate resilience. For example, recovering damaged coastal systems and small islands, also a desire to enforce better urban planning regulations to the city – these are both mentioned in the city's medium term plan (the RPJMD), although it is unlikely that these result from the CCVA itself. Thus, external to the CCVA process, the mayor and government have demonstrated an understanding of the importance of environment, evidenced by the mid-term budget, even though respondents indicated that funding through the fiscal funds to support these activities is limited, and the city requires external funding from donor agencies.

Most of those interviewed believe that the CCVA process was sufficiently participatory and that the discussion was beneficial to raising awareness amongst the participants. The resulting CCVA document helped to inform stakeholders of how to face vulnerability to climate change. However little follow-up was pursued by UNDP or the city government, and the document was not disseminated beyond those involved in the workshops. The city also underwent a leadership transition and changeover of mayors, and this disrupted the continuity between administrations interrupted whatever momentum the CCVA had set in place. On a positive not,e the Badan Nasional Penanggulangan Bencana (BPBD), or National Board for Disaster Management, did demonstrate interest in using the CCVA to support their city-wide vulnerability mapping.

There are several constraints and opportunities faced by Makassar; namely there is a low level of awareness of local stakeholders about climate change issues, there has not been sufficient training or knowledge transfer through the CCVA process, or adequate follow-up of that which did occur.

4 Analysis

The following analysis refers to the original research questions and asks in what way the different CCVA approaches may have led to an impact on achieving policy impacts. While the ACCCRN approach in Semarang and Bandar Lampung is difficult to compare with the approaches adopted by UNDP in Makassar and the CCRD-USAID in Manado, they demonstrate that there are certain approaches that are more likely to lead to future success.

4.1 What approaches to carrying out the CCVA are most successful in raising awareness of city stakeholders?

This research has identified four approaches that help ensure that the CCVA raises the awareness of city stakeholders: involving the city leadership throughout the process from the beginning through to the sharing of findings; the active engagement of a diverse set of stakeholders in the collection and discussion of data; the ability to undertake a consistent and lengthy process; and having a series of follow-up and dissemination activities that can bring the results to even more people and organisations.

Having an engaged and supportive city leader, for example in the figure of the mayor, is an important factor in raising the awareness of city stakeholders. While this doesn't always guarantee legislative reform will necessarily take place, it does help focus the agenda of local government and motivate stakeholders: "in order to raise the awareness of city stakeholders we need to directly approach the leader of government itself, meaning the policy makers of the city, such as the city mayor and also legislative leader (DPRD)" [Edi Ariadi, NGO activist in Makassar]. This is understandable given how much local policy-making in Indonesia relies on mayors to determine budgetary and legislative priorities. Bandar Lampung is a good example of when a mayor's own interests can wield influence. Mayor H. Herman HN's desire to impact the primary school curriculum resulted in the passing of a mayoral decree to include climate change adaptation.

The involvement of a diverse group of stakeholders was an important factor in ensuring that the CCVA process was successful in Semarang and Bandar Lampung. Diversity means that the information campaign could reach beyond a narrow audience, and affect decision makers and a broader section of the public. This was made possible because the ACCCRN programme could mobilise local staff to visit the various government offices, universities and other civil society organisations, facilitate research and gather data. There were also the multi-stakeholder City Teams in these two cities, made up of a range of individuals and institutions, who regularly contributed information, discussed the analysis and planned activities. The emphasis on the diversity of stakeholders underlines the complexity of climate change impacts, efforts to respond require the involvement of many different institutions and organisations. Dr. Aryati Puspasari Abady, from Bappeda in Makassar, emphasises that it is "…actually not **only** government who needs [to raise their awareness], community and CSOs also have to have good knowledge and information about climate change issues".

The ACCCRN process was also successful because it engaged stakeholders over a long period of time, allowing them to become more familiar with the issues and context related to climate change impacts. The longer the exposure to the issues, the more stakeholders seem to further buy into the process, and this helps to ensure higher levels of awareness

and urgency to implement required measures. In Bandar Lampung and Semarang data collection, consolidation of understanding of the local context, SLDs and working group meetings were sustained for a year. In Makassar and in Manado, limited funds necessitated a shorter period of engagement. While the approach was also participatory, it was far shorter and less intensive. This meant the opportunities to share information and engage with the stakeholders were far more limited, and government officials may not have had as much ownership over the CCVA findings to disseminate them more widely on their own. Data collection was conducted through periodic, short visits by a visiting consultant team over a period of six months. Ultimately this led to the stakeholders having far less time to absorb new concepts, build up ideas and knowledge about climate change impacts, and lessons from the CCVA could reach far fewer institutions and people. This limits its impact significantly.

A further approach that raises awareness is following up the CCVA process with activities to disseminate findings. While the processes in Makassar and Manado finished with the official handover of the document to the government, the ACCCRN programme recruited and assigned project staff to continue the process as agreed upon by the stakeholders during the SLD meetings. Efforts were made to disseminate the knowledge more broadly and educate people about what the CCVA meant. In Bandar Lampung in particular, public meetings and focus group discussions were organised with local leaders at the neighbourhood and district levels. There was a constant effort to build awareness, with new people invited to the SLDs, and the enlistment of people who had not previously been involved to learn about the process – this helped make them the driving force in their communities. The mayor even instituted a curriculum change, through a mayoral decree, aimed at raising awareness about climate change amongst children through the city's primary schools.

4.2   To what extent did the CCVAs successfully inform policy and planning practices in the cities where they were conducted?

Across the four cases, the CCVAs have had varying degrees of success in informing policy and planning practices. One of the lessons identified from this study is that where the vulnerability assessment process is able to transition into the design of a city resilience strategy, this process converts knowledge from the vulnerability assessment into a list of budget items and policies are eventually influenced. This follows from the previous analysis identified that structured and continuous processes yielded better results. In the cities of Semarang and Bandar Lampung, longer engagement following the CCVA proves to have been fruitful. The creation of the temporary governance structures, such as the City Teams, helped to articulate climate policy options and institutionalise the process. This was made possible by there being in place a longer-term period of facilitated engagement. In both cities, after a few years, the Departments of the Environment were able to adopt climate change adaptation into their annual work plan and budgeting. It appears that consistent advocacy, and the support of donor assistance, combined to promote pilot projects, which were later expanded. This is also true due to an emphasis on consistent learning, facilitated by the SLDs, where knowledge has been continuously circulated and disseminated amongst stakeholders. In the cities of Manado and Makassar, there was no such follow-up, such as the design of a city resilience strategy; as a result the impact on the city's budget plans and policies has yet to take place.

There can be other factors though, some less planned and predictable, that influence policy uptake. For instance, one cannot discount that an element of luck might also be involved. In Bandar Lampung, the city where most significant policy practices were altered, research noted that the addition of climate resilient measures to the mid-term budget of 2009 and 2014 were in large part due to the fact that the consultant that was hired to complete the mid-term budget was also involved in the ACCCRN vulnerability assessment. This is perhaps a coincidence, but it certainly influenced the decision-making process involved in designing the budget. Of course raising the general awareness of key stakeholders is also relevant, but having the consultant involved in this way is also very useful. This suggests that CCVA facilitated by external experts should target local planning enterprises that often provide regular consultancy services to the planning authorities, such as Bappeda.

4.3   What were the endogenous and exogenous conditions for successful or unsuccessful policy adoption?

The **endogenous** conditions that affected successful policy adoption relate to levels of awareness of the government and stakeholders were having a consistent bureaucracy in place, as well as available local funding. The training and general awareness of government officials and civil society about climate change can be instrumental in ensuring successful policy adoption. According to Purnomo Dwi Sasongko, the secretary of Bappeda for Semarang "capacity building encourages the awareness of stakeholders (not only government but also the community). The adoption of vulnerability assessments into city planning can only really be achieved if people really understand about climate change". One factor that hinders consistent progress in adopting policy is the fact that there is often turnover within local government agencies, and this can remove strategic stakeholders. As identified by Veronica Kumurur, lecturer at Sam Ratulangi University, Manado: "Informing policy and planning practices at the city level also depends on the actors who are responsible for those issues. Government positions change so frequently and this impacts the difficulty of getting CCVAs to become policy and planning practices. Successful CCVA implementation also depends on the government's commitment".

Another important condition is the availability of local funding to support pilot programmes and sustaining the momentum of climate resilience initiatives. In Bandar Lampung, despite there also being external financial assistance for pilot projects, the government dedicated US$ 100,000 to support the bio-pore project and a further US$ 200,000 to support the campaign for environmental education. The city government was able to sustain these projects independently.

The cases also offer lessons about ways that **exogenous** conditions can positively influence policy adoption, such as the existence of institutional support from donor agencies and organisations; funding for pilot demonstration projects; and the involvement of the national government. International development agencies and organisations play a vital role in providing support and reassurances to local governments and stakeholders that the process will be consistent and lasting. In all the cases, except in Manado, encouragement from agencies and programmes, such as UNDP and ACCCRN, reassured the highest level of local government that institutional support was forthcoming. This helped to facilitate initial engagement and ensure mutual commitment to the process. The ACCCRN programme was also able to provide assurances of continuity for up to **six** years, together with a clear road map of support throughout this period. This helped make local governments feel more confident that their engagements with ACCCRN would be supported over long periods of time. This kind of institutional engagement offer was not possible in the case of Manado, where the vulnerability assessment was not introduced by an international agency, but a local NGO.

Exogenous support to fund demonstration projects can also be valuable, as pilot projects were instrumental in Semarang and Bandar Lampung. In these two cities they helped not only raise the awareness of community members, but also of government officials. While such projects do not ensure systematic policy adoption by the city government in all sectors, the introduction of pilot projects (for example in Semarang mangrove reforestation and coastal economic development projects, and in Bandar Lampung through the first bio-pore pilot projects) led to their later adoption in each city's annual budgets, only after they were tried and tested. The lack of follow-up financial support to implement pilot projects in Manado and Makassar has meant that there are no examples of exogenous support later influencing adoption of innovative resilience project approaches.

Finally, the chances for policy adoption are further enhanced if the national government provides encouragement and incentives to do so. Purnomo Dwi Sasongko adds that "when national government has a good way to encourage the adoption of climate change issues in government policy, climate change issues at the local level will also be encouraged".

4.4 What are the opportunities and barriers for future capacity building and the adoption of vulnerability assessments into policy and planning?

There are a variety of opportunities to increase capacity about climate change and promote the adoption of vulnerability assessments into policy and planning: the prospect of new, more environmentally aware mayors that are elected into office; the emergence of local champions; and the benefit of working with government officials and stakeholders who have greater capacity and understanding of stakeholders about climate change. At the same time it is important to note, however, that external forces are always subject to the internal constraints of working with local governments – bureaucracies can be slow to respond to change and turnover and shifting priorities can lead to a lack of continuity in the implementation of policies. As a result there are no guarantees in terms of what can be expected from the introduction of new opportunities.

Given the importance of political leadership in shaping local adaptation policies in Indonesia, opportunities lie in the election of new mayors, especially those with an interest in environmental issues. The cases demonstrate that such interest can pave the way for changing local agendas and prioritising action, such as was the case in Bandar Lampung and Semarang, and to a certain extent in Makassar. Gunawan Wicaksono, secretary of the environmental department in Semarang noted: "in terms of adopting new policies the most challenging issue is the commitment of the leader, the mayor, but also the heads of department, and legislative leaders, because they are the decision makers of the city who have power to establish the policy." Pandu, from the municipal water department in Makassar shared that "in my opinion, the leader is the change maker, they are the role models of their staff; when they do something good, in this case in terms of implementing climate adaptation policy, their staff will copy what they did also."

We see too that leaders can emerge from local champions, defined here as climate adaptation gatekeepers and motivated climate policy entrepreneurs. In the case of Semarang City, the champions have been key officials who displayed a strong commitment in promoting innovation at the local government level, they were vital to the progress made towards building the city's resilience. They were communicators and **spokesperson**s to the city's high officials, such as the head of Bappeda and the mayor. In Bandar Lampung, there was also a local champion that had been officially mandated by a mayoral decree, and had knowledge of the complex planning governance in the city. Another opportunity is the benefit of working with leaders and government officials who have greater understanding and capacity to implement adaptation policies. These people have the capacity to influence their peers and share their knowledge with members of their own institutions.

While elections and the progressive development of local government capacity and local leadership are important opportunities, mayors and officials are themselves limited, and are subject to varying support that may change suddenly due to electoral cycles, the wishes of political parties, or the changing political landscape. These present significant barriers to adopting policy measures. There are also local dynamics such as corruption that cannot be neglected, as was the case of the mayor's deposition in Semarang. In 2012, the popular mayor, who had raised expectations and visibility for climate resilience actions by supporting the ACCCRN project's implementation, was deposed on corruption charges. The mayor was investigated for allegations of bribery by the Anti-Corruption Court (KPK), one piece of evidence submitted was that the increase the 2012 local budget (APBD) to improve the city's drainage system – which was informed by the Semarang CCVA – was influenced by a bribe made by the city secretary and acknowledged by the mayor. The temptation of the city government to bribe the legislature to approve their budget proposals is a complex phenomenon, but this case indicates that even when there is technical backing for resilience actions, such a report alone may not be its only justification. While this paper will not delve into the motivations of bribery, it serves as an example of how rapidly corruption can undermine policy adoption. The mayor was removed and this undoubtedly sidetracked the ACCCRN progress for some time.

This case yields further lessons about the barriers to policy adoption and learning that are reflected in the challenging political and operational realities associated with working with local governments in Indonesia. It reminds us that while climate change policy is not merely a technocratic issue, to be solved by technocratic stakeholders of the city under the leadership of city planners, engineers and environmental agencies of the city government. In fact decisions about urban policies and projects are closely related to political engagement and decisions that are embedded within an urban context. Sustaining fiscal allocations for climate change adaptation and resilience building is a political decision, and therefore the potential roles of city politicians, and their influence in climate change adaptation is necessary.

Another barrier is that at an operational level climate change has traditionally been seen as a sectoral issue, managed by the environmental protection agency (BLH), and rarely in a coordinated manner with more influential agencies. This can lead to the marginalsation of the issue within the local government. In the four cases, each of the CCVAs **were** conducted through direct engagement with the integrated planning agency or Bappeda, which is the leading agency responsible for coordinating climate resilience actions across other departments. Their role as a coordinating agency does not only make sense, but as the local subsidiary of the National Development Planning Ministry (Bappenas), that led to the drafting of the Indonesia Climate Change Sectoral Roadmap (ICCSR), they are the relevant department for ensuring that policies and projects are formulated and instituted. Therefore if city departments don't work together on climate adaptation under the guidance of Bappeda, it is likely that CCVAs won't be afforded the attention and prioritisation that they merit.

In fact, the tendency of the specialists and urban planners to `remove politics from policy-making by adopting ostensibly "evidence-based" decisions, causes policy debate to become "scientised", which obscures the political dimensions of not only how people and governments understand resilience, but also the trade-offs they are prepared to accept in order to better manage their exposure and vulnerability to hazardous events' (Heazle *et al.* 2013: 167).

5   Conclusions

The following conclusions help shed light on ways in which CCVA processes can be better designed to best achieve their objective of influencing policy. In developing countries in Asia, adoption of climate change adaptation policy has been facilitated by international support, such as ACCCRN, and multilateral agencies. Most of this adoption has been informed by a rapid increase in CCVAs; for example in Indonesia, between 2005 and 2014, it is estimated that more than 2,000 vulnerability assessment have been carried out in both disaster reduction and climate change adaptation.[7] Some of the important factors that determine the policy uptake of CCVAs are programme design; ensuring a consistent and extended process; a diverse participatory process; and understanding what is necessary to implement policies, such as the incentives of different stakeholders, the importance of implementing local regulations, and the availability of local and external funding to support project implementation.

The CCVA process should be designed with a number of key components

The research has demonstrated that there are a number of important elements that can be included in the CCVA process that can help lead to policy implementation – these can help improve programme design of future CCVA. While there is no ideal, fixed formula, this research demonstrates that each element has contributed to the successful uptake of adaptation policy.

During the programme design stage, the importance of creating governance structures, such as the City Team, cannot be underestimated; it helps to provide a regular forum for discussion, dissemination and for the inclusion of stakeholders in the process. While diversity has been emphasised in this research, the involvement of local experts seems to be particularly relevant. Given their familiarity with the complexities of local governance, they can more easily support stakeholders to move towards implementing solutions, while understanding what is required politically to do so. Another strategic group is that of local champions, who should be identified and supported, to ensure that climate change remains high on the local agenda.

Climate change adaptation should not be narrowly conceived as a single sectoral issue, rather it should be discussed by multiple departments and stakeholders, given that it affects so many different sectors. Thus in designing and implementing a CCVA one shouldn't only work with certain departments, but find ways to work with many of them simultaneously. Another important element of project design is to ensure that demonstration projects are provided for; they help the government and communities to experiment with adaptation solutions, and raise awareness of their significance in reducing vulnerability.

Finally, following the completion of the CCVA, it is essential that the process leads straight into the development and design of a City Resilience Strategy, ideally with involvement of the city government who will implement it and provide a budget for activities. It is important that it does not stop short simply at the assessment of vulnerability. The CRS should translate the analysis and recommendations of climate hazards into implementable programmes and policies. The CCVA

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7   *In Indonesia alone, USAID has recently promoted more than 500 CCVA/DRR practices from villages to district levels. Please see the recent report by Lassa et al. 2014. http://pdf.usaid.gov/pdf_docs/PA00KD6T.pdf*

should also be disseminated widely following its completion so that different stakeholders, institutions and the public – those not involved in its creation – can also learn from it. Having more people aware of climate change issues, and potential solutions, can create positive momentum that can pressure government to implement policy change.

The CCVA should be part of a consistent and continuous process to ensure that it can successfully impact policy and planning

The CCVA process should not be developed as an isolated, stand-alone report, but form part of a lengthy process of inquiry, discussion and eventually the development of the city's resilience strategy and planning documents. A number of conditions are needed to develop this more **long-term** perspective; they include a stable and predictable institutional structure, the availability of resources and incentives, avoidance of high levels of turnover of government staff in key departments, and an emphasis on learning. An institutional structure, such as the City Teams of the ACCCRN programme help to provide consistent advocacy voices and leadership, as well as the human resources needed to ensure continuous actions. This reduces the impact of constant turnover, which can be inevitable in city governments.

Resources are of course needed to maintain this structure for a long period of time; also to test and develop pilot projects and maintain advocacy efforts, which usually take time for their message to effectively influence policy. An emphasis on continuity helps foster a sense of **continuous learning,** such as the SLD meetings, which is essential to absorbing and accumulating knowledge, and reducing dependence on external consultants that may come and go sporadically. Such consultancies are not always able to promote internal learning of key stakeholders, and thus are unable to ensure that lessons learned throughout the process are captured locally. In Bandar Lampung and Semarang, it is evident how continuity helped to lead to policy changes and enact legislation, but only after a long period of sustained action.

Participation of a variety of stakeholders in the CCVA process raises awareness – this is positive and contributes to better results – but we cannot conclusively determine whether participation is significant in impacting policy.

The cases demonstrate that participation in the CCVA process leads to raising awareness of stakeholders about climate change hazards; especially when there are systematic efforts to disseminate knowledge and recommendations beyond the initial group of stakeholders. Creating structures like the City Team actually seems to institutionalise the process and builds ownership for the results of the CCVA; this significantly contributes to helping carry forward recommendations into policy (Archer *et al.* 2014). We see in the case of the SLDs that where there is participation in the process, opportunities are provided for groups to discuss issues and meaningfully contribute to policy design – this helps transform knowledge into action. Participation is beneficial to policy makers as it can spread understanding of the issues and solutions, and gather community interests so that they can be aligned with those of decision makers. Having more people involved and seeing their interests reflected in adaptation policy builds pressure to enact change.

However, in terms of impacting climate resilience policies, widespread public awareness is not necessary, what is needed is the awareness of strategic people, in particular city leaders, including the mayor. This was highlighted by the interviewee Pandu from the PDAM agency in Makassar: "increasing the knowledge, and building the capacity, of city leaders is the main challenge in terms of influencing the local policy". Thus the need to identify influential people to bring about policy changes, be they from civil society, the legislature, or in the case of Bandung, the consultant tasked with elaborating the city budget, is tantamount. In these cases the political sway of certain individuals can be more significant than raising the awareness of the population, at least in the short term. This also recognises the often political nature of influencing urban policies and budgets. Given how rarely CCVA documents are disseminated, it is difficult to attribute policy impacts to pressure from the community level. It also raises the question of whose responsibility it is to

disseminate, and the degree to which resources need be made available to do so. Therefore CCVAs play an important role in raising awareness, but this is not always necessary to impact policy changes.

While awareness and leadership are important keys to the success of a CCVA to impact policy, focusing on the mechanics of implementation is critical to ensuring that the assessment and planning translate into action.

There are many factors that combine to influence the policy impact of the CCVA; in practical terms some of the most important are often overlooked. The mechanics of policy change refer to the importance of financial resources to support project implementation, translation of the CCVA into clear guidelines and budgets, and attention to the incentives and interests of stakeholders to dedicate themselves to seeing policy changes through to implementation.

The importance of a consistent and supportive programme structure has already been mentioned; one that is able to last long enough that lessons can be learned and adaptation policy can be developed. What should **also** be included is the necessary financial support to ensure that demonstration projects can be implemented and advocacy can be followed up. Another issue is being able to translate the language of the CCVA into the practical language that drives local governments: budgets, local regulations and implementation guidelines – the nuts and bolts of implementation. Regulations are very important because it is more difficult to revoke or to change them with changes in staff or mayoral leadership; when a local regulation has been approved it has much more weight to influence behaviour, both of government and the public. Local regulations themselves can also be supported significantly by the existence of national regulations and legislation.

In addition stakeholders (such as legislators, mayors, academics, or civil society leaders) need to see the benefit of committing themselves to the process. In some cases, motives can be professional and thus the involvement of donor-funded initiatives is helpful because they can create opportunities and support them over time. Other times they are ambitious political goals; for example mayors and government officials who seek a signature initiative or re-election through involvement with an issue that resonates with the electorate. Some officials may be motivated by the opportunity to present at an international event, and this helps motivate them to use their influence to impact local policies. This means that the CCVA process and its dissemination cannot confine itself to a technocratic approach – it must also recognise that policy impact may require politicians and others to use their influence. Given this understanding it becomes even more important that dissemination strategies target raising the awareness of local parliamentarians (which remarkably did not happen in any of the four cities), and that strategic decision makers (such as the head of Bappeda) are motivated to involve their department to push for policies and budgets until they are enacted.

This conclusion acknowledges the importance of initiatives like ACCCRN that can provide long-term and stable support, and help finance projects that make an impact on the ground. Community members may not necessarily understand what city-level strategies may entail, but they do understand and positively respond to projects that improve access to basic services and reduce physical and social vulnerability. Thus aligning interests with the CCVA process and its desired outcomes can have the important impact of raising appeal and maintaining the right people within the process for a longer period of time. This is a necessary reality for policy impact to occur.

6 Suggestions for further research

Reflecting upon the research has led to a number of suggestions for further research in this field:

Different approaches to the elaboration of the CCVA and climate resilience strategy can influence the kinds of infrastructure projects that cities wish to adopt. When implemented, these projects can have a large impact upon the shape and structure of cities. It would be interesting to gain a better understanding of the range of influences that impact the choice of infrastructure projects, and the varying degrees to which they embrace ideas of adaptation to climate change. Given the decision to build massive sea walls around a number of coastal cities in Indonesia, understanding how these decisions were informed would be of interest.

Over the last two years, at least ten more Indonesian cities have adopted ACCCRN's climate change adaptation approach and undertaken CCVAs. These cities vary in size but most of them are smaller than the four cited in this research, with limited fiscal capacity and external support. It would be interesting to learn how the process in these cities has been undertaken and how successfully their climate resilience policy has been based on largely endogenous resources.

Recently the Indonesian President Joko Widodo has planned to allocate US$ 8 million for each city and district through a development stimulus. This financial stimulus package will be topped up in order to promote infrastructure projects. It would be interesting to conduct further research to better understand how cities can access and use these funds to promote climate change resilience.

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