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## Building Urban Resilience to Climate Change in the Secondary Cities in Indonesia

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# Building Urban Resilience to Climate Change in the Secondary Cities in Indonesia

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and

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**Abstracts** The Bandar Lampung City has taken several necessary steps in planning and building resilience to climate change. This paper investigates the evolution of institutional transformation and policy change in the City of Bandar Lampung. It highlights the experience on how the city adapting to climate change through modified urban development policy. Overall, the city demonstrates a new and unique form of urban climate governance within Indonesia context. A collective decision making body namely City Team (comprises of city departments, university based experts and academia and civil society organizations) has been formed to temporarily function as mandated body that assesses climate risks and vulnerability, sets and prioritizes problems and programs, pilots small scale adaptation projects, plans for city-scale adaptation intervention and functions as climate advocates within the city. This paper highlights how Bandar Lampung evolves as climate change ignorant city to be a climate change sensitive city as indicated by the shifts in planning, policy and budget. Challenges and barriers and policy gaps and lessons learnt are discussed.

## 1. Introduction

As a home to nearly 900,000 inhabitants, Bandar Lampung is a coastal city that spreads about 27 km from the end to the end. In 2030, it is likely to host about 1.2 million people living in the city. The City hosted the Krakatoa volcano that violently erupted in 1883 which triggered the deadly tsunamis. The Krakatoa legacy had modified the city since a century ago. It divided the city of Bandar Lampung into two parts. The first is the safer part of the city situated in the upper part (that used to be called Tanjung Karang district) where the higher economic class or the rich live (once by the Dutch colonial rulers and today by the local elites marginal coastal areas). The marginal part of the city (used to be called Teluk Betung district) was hit by the tsunamis in 1883 that killed thousands of people in Lampung and Banten coasts (North West of Java Island), still an important settlement for the majority of vulnerable groups. Both Tanjung Karang and Teluk Betung formed as a united district called Bandar Lampung tens of years ago.

Bandar Lampung has been an urban city, meaning that by 2005, the city have no longer had rural areas. This suggests a new speed of development in the city as only ten years before (in 1995) there were still 146 thousand people considered to be living in rural areas of the city. Lampung hosted the first influx of transmigrants (inter island migration) from Java Island in 1905 as initiated by the Dutch colonial rulers and later on by Suharto's transmigration program during the Pelitas' period (Satbintrans 1983). The total populations of both the city of Bandar Lampung and the province of Lampung have been dominated by the transmigrants (from about 36% in 1971 to be more than 80% in 2010).

According to a recent climate vulnerability assessment, the City of Bandar Lampung is very likely to be hit by extreme climate events such as droughts and floods. Extreme climate events in Sumatra are strongly related to large scale climate phenomena such as El Nino -Southern Oscillation (ENSO) (Gutman, Csiszar, and Romanov 2000) and Indian Ocean Dipole (a.k.a. Indian Nino) that often regulates the rainfall pattern in western and the eastern Indian Ocean of Indonesia (Du, Qu and Meyers 2008). Recent observed drought affects about its residents especially those who work as urban farmers and sell

agricultural labors causing a decline in crop yields and loss of income of traders of agricultural products. At least 55% of the land use of the city is still used for dry and mixed dry agricultural areas (or down from 60% in 1992. The total settlement areas increased from 13% in 1992 to 35% in 2006. Since dry land agriculture is very sensitive to drought, the city also experience in lack of fresh water for its population. In addition, there is an increasing trend in small floods in the city.

As the Sumatra's gate towards Jakarta, the Capital City of Indonesia, the City of Bandar Lampung continues to experience high rate of urbanization - on average 8.6% per year, calculated based on 1971 compared with 2010 census data. In 1971 there were about 36% (trans)migrants but today (as of 2010) 80% of the total population has been (trans)migrants. During the 1990s, the annual rate of population increase in the city was above 12%. Since the first decade of 21<sup>st</sup> century, the rate of population has been stabilized at the rate of 1.9% (Satbintrans 1983). As of 2011, Bandar Lampung port has exported natural resource goods to more than 87 countries (24 countries in Asia, 14 in Africa, 3 in Asia Pacific, 15 in America, and 31 in Europe). As of 2008, at least 27% are living under poverty line.

The City's vulnerability has been persisted and amplified by different forms of mal-adaptation to different urban problems. Its coastal population often experience coastal floods that locally known as rob (high tide combined with inundation and abrasion). In addition, higher incidents of floods have been strongly associated with poor drainage management. Poor waste management is exemplified by the fact that 86% of the City's solid wastes never reach the final disposal and it accumulates over the last 30 years. Our observation suggests that 'informal settlers' do not see waste as useless waste resource materials. In fact they see it as a resource that can be turned into raw materials for settlement expansion as exemplified by recent community based coastal reclamation in Bandar Lampung that have been in existence over the last 25-30 years. Unfortunately, by continued reclamation of the coast, the people have been exposing their lives and livelihoods to the sea, their vulnerability to climate and disaster risks would neither be reversed nor reduced in the short or medium terms.

## **2. Climate change and Development**

At the national level, climate change is a nascent policy domain in Indonesia. Furthermore, the main focus is still largely on carbon mitigation. The recent establishment of the National Climate Change Council in 2008 followed by the recently release of the Indonesia Climate Change Sectoral Roadmap (ICCSR) by the National Development Planning Ministry (hereinafter BAPPENAS) have been the basic steps towards a long way to integrate climate change adaptation and development. The ICCSR targets 2015 to be the time when climate change vulnerability mapping is conducted that leads to the establishment of adaptation information systems at national level. The success of climate change intervention in Indonesia mainly limited to the consideration of the issues (of mitigation and adaptation) at discursive level at particular policy settings and stakeholders. While both at province and district levels, the turn into adaptation policy remains at piloting scales driven and facilitated by international actors in a few selected cities and regions.

Researchers have been consistently arguing that the main vehicle for addressing climate change is through the development process (Román et. al. 2012). Sustainable outcomes of development require sustainable adaptation to climate change (Eriksen and Brown 2011). However in conventional development context, climate change is still a nascent policy domain as it is still unknown to many cities managers especially in the developing world (Carmin et. al. 2012). Some evidence concerning adaptation

initiatives in the global south such as Durban and Hessequa (South Africa) and Quito (Ecuador) have been often presented as good practices (Pasquini et. al. 2014, Roberts 2008; Carmin et. al. 2012). Despite the evidence of significant degree of endogenous influence towards the adoption of climate adaptation as demonstrated by Durban and Quito, there have been extensive discussion that climate policy change in the cities of Global South are not independent from exogenous influence that serves to motivate, facilitate and shape actions (Angoelovski and Carmin 2011). What is clear is that cities in the developed world, especially the global cities such as New York, Sydney, Barcelona, have endogenously addressed their need to adapt to climate change steaming from sources such as financial resources, scientific knowledge infrastructure and regulatory capacity.

In order to achieve sustainable development outcomes, the cities are to adapt to climatic change through building their resilience. The issue is cities in the developing world have been struggled in adapting to climate change due to the lack of endogenous forces towards urban climate planning and development reform. However, the model of and the origin of policy change towards climate resilience varies in each place. Regardless the direction of the drivers of change (either endogenously or exogenously), the question is how cities of the Global South making use of incentives, ideas and capacity towards institutional change - from being ignorant and mal-adaptive to climate change to be more adaptive to climate change?

Recently, the city of Bandar Lampung and the City of Semarang (Indonesia) - together with the other 8 cities in India, Thailand and Vietnam - have been taking the leadership role in developing an *ex-ante* adaptation strategy and climate resilience building. The two Indonesian cities are part of the most important Indonesian coastal cities (of metropolitan and secondary) which have been susceptible to different types of coastal risks and catastrophes. In the context of increasing vulnerabilities and climate change, the cities are likely to face diverse scales and magnitudes of climate extremes. The selection of the cities was based on the variables such as secondary city (with population around 1 million), level of vulnerability to climate change, political will, government capacity, demand driven, presence of individual champion, there is existing relationship with ACCCRN Indonesia and resilience to political change. The decision was at the hands of Rockefeller Foundation and ACCCRN Indonesia (Mercy Corps).

This paper examines emerging institutional transformation and/or policy change in the City of Bandar Lampung as a result of the support from Asian Cities Climate Change Network (ACCCRN) project funded by Rockefeller Foundation, managed by Mercy Corps and implemented the City Team (a multi-stakeholder platform at city governance level) since 2009 till 2016. There are three specific outcomes of ACCCRN: First, improved capacity to plan, finance, coordinate and implement climate change resilience strategy in the selected cities; Second, to create shared practical knowledge to build urban climate change, deepens quality of awareness, engagement, demand and application by the selected cities and others; Third, to expand and scale up the models urban resilience building models using diverse resources (See Brown et. al. 2012:532).

We investigate the evolution of institutional transformation and/or policy change in the City of Bandar Lampung, Indonesia. This paper asks: how can city government in Bandar Lampung sustain adaptation to climate change? What is (are) mechanism(s) required to warrant incremental change towards

sustainable adaptation? This research is based on the field works during June 2012 and October 2012 conducted by Lassa. It also based on real life experiences of Nugraha since 2009 till end of June 2013. We use mixed methods namely: participant observations, unstructured interviews with the city's stakeholders, project holders, semi-structure interviews with local communities and literature reviews (including minutes of meetings and project reports).

Before the start of shared learning dialogs, the project holders completed the city scoping and selection which took place in 2008 till early 2009 in Bandar Lampung and Semarang City (Indonesia). Both cities finally being selected as part of ACCCRN project because the cities have been willing to formally adopt the urban climate change resilience framework. There have been five phases being implemented (Figure 1). Since mid-2009, the project facilitated its first stakeholders engagement and capacity development through key activities namely Shared Learning Dialogues (SLDs). Vulnerability assessment (VA) is intended to help the actors to understand the present context and future scenarios as shaped by vulnerability and climate change. The VA resulted is a project document which identifies vulnerable sectors and groups in the city. The project initiates some pilot projects, Sector Studies, workshops and the drafting of City Resilience Strategy (CRS).

Since early 2011 the project facilitated the implementation of urban resilience projects which is expected to last in 2016. At the program management level (country level), the ACCCRN project have initiated replication and dissemination of knowledge and practical know how information to other cities in Indonesia which actually started in 2011.

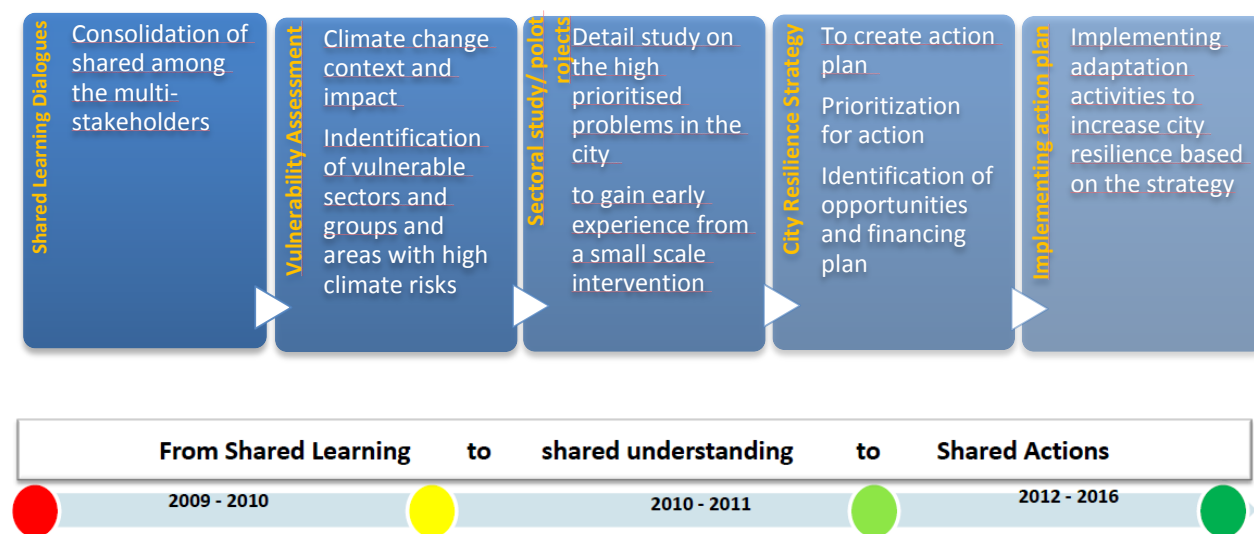
The rest of the paper is structured as follows: Section 3 discusses the ACCCRN implementation in Bandar Lampung City. It discusses the details including the shared learning dialogs, the formation of City Team, pilot projects, vulnerability assessment and city resilience strategy. Section 4 highlights the case study of urban waste management in the City. Section 5 presents the Spending on environment in the city. Section 6 outlines the sustainability scenario in the city. Section 7 provide the final reflection.

### 3. The ACCCRN Framework in Practice in Indonesia

The Framework of ACCCRN Project suggests five phases/components being implemented (Figure 1).The First component is called **shared learning dialogs** (SLDs) among practitioners and policy makers. The second is vulnerability assessment which informs the both the need to conduct in-depth studies (Third component) and city resilience strategy (Fourth Component). Vulnerability assessment (VA) is intended to help the actors to understand the present context and future scenarios as shaped by vulnerability and climate change. The VA resulted is a project document which identifies vulnerable sectors and groups in the city. The project initiates some pilot projects, Sector Studies, workshops and the drafting of City Resilience Strategy (CRS) during 2010-2011. The final component is the implementation of the actions that have been set to start from 2012 to 2016.

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Figure 1. ACCCRN Typical Process in Bandar Lampung and Semarang City



Source: Internal ACCCRN Project Report/Presentation

### 3.1. The Shared Learning Dialogs

During the SLDs, a framework namely Urban Climate Change Resilience Planning Framework (UCRPF) has been introduced to the city stakeholders. The proponents of the SLDs claim that it helps agents to think cross sectors and scales; it facilitates the contextualization of scientific knowledge of climate change; and it drives action in a certain timeframe. The UCRPF is believed to help urban agents (individuals and organizations) as one of the components to understand the other components namely urban systems, institutions, climate change and their interaction among them (See Moench et. al. 2011, Tyler and Moench 2012).

In Bandar Lampung (Indonesia), the ACCCRN project facilitates a new mode of urban climate governance where decision making process is collectively represented by City Team, which basically multi-stakeholder platforms comprises of relevant departments, civil society organizations, local universities and representatives.

Since mid-2009 The City Team adopts shared learning dialogues (SLD) which is defined as “iterative, transparent discussions with local community members, government agencies, civil society organizations, research centers and other technical agencies designed to facilitate mutual learning and joint problem-solving”.<sup>1</sup> At higher level of governance, it seeks to up-scale, sustain and further innovate adaptation in the other cities and regions.

<sup>1</sup> See: <http://www.acccrn.org/about-acccrn/acccrn-methodology/shared-learning-dialogues>, Last access 12 January 2013.

The first SLDs focused on introduction to scientific information to the city departments and NGOs concerning climate change. The city team also called it as "leveling up the perception concerning climate change" so the actors can be "on the same page".

The SLD helped the actors to identify problems related to climate change and its footprints in the local levels as well as vulnerability identification. In the second SLD (2010), the stakeholders were informed by evidence from vulnerability assessment (VA) co-produced by a local university with the Indonesian ACCCRN Project lead (Mercy Corps) and URDI, an Indonesian based NGO. The VA document identifies sectors that are potentially affected by climate change. Responses from the participants help the vulnerability assessors to improve the draft. The second SLD turned out to increase the legitimacy of prioritization concerning sectors that need to be studied at greater depth.

During the SLD-3, the city team discussed the findings from the pilot projects. The participants identified early actions required to tackle climate change and highlighted some institutional issues such as the tradeoff between intervention options: from the need for capacity building, basic services improvement strengthening the local economy of the grassroots. The formation of Working Group concerning the City Resilience Strategy (CRS) took place in this meeting.

The fourth SLDs in May 2010 became a discussion forum for action plan. Assessment criteria for intervention proposal were discussed and the whole processes of decision making were shared. In May 2010, ACCCRN created opportunities for the City to send concept notes for intervention. Of the six concept notes, one was improved to be a proposal entitled Integrated Urban Waste Management Master Plan to Increase Resilience to Climate Change.

There have been funds allocated by the city's departments to sustain the coordination meetings among local government' departments, NGOs and academia. The city government, especially the key departments that host the initiative also allocate annual budget on average US\$ 10,000 to incentivize their focal points to participate in the meetings. That sums up to more than a hundred of meetings during 2009-2012.

### 3.2. Vulnerability Assessment and City Resilience Strategy

ACCCRN Project commissions international and national experts to conduct vulnerability assessment of Bandar Lampung City. The study aims (i) to assess current and future climate variability in Bandar Lampung, (ii) to assess vulnerability and adaptive capacity as well as current and future climate risk at *Kelurahan* level, (iii) to identify direct and indirect impact of climate hazards now and in the future at urban village (*kelurahan*) level, (iv) to identify the most vulnerable areas and social groups, and dimensions of vulnerability, including adaptive capacity of community to climate change impact, (v) to identify institutional and governance issues that may affect the resilience of the city to current and future climate risk, and (vi) to develop initial recommendations for Bandar Lampung for increasing resilience of the city to current and future climate risk.

The assessment document reveals Bandar Lampung City's proneness to natural catastrophe and natural hazards such as floods, landslides, high tide (a.k.a. bobs), tsunamis, earthquake and drought. The study also evaluated socio-economic impact of climate risk in six *Kelurahans*. The assessors developed vulnerability and adaptive capacity index of the *Kelurahan* - consist of socio-economic and biophysical indicators.

The city's exposure to floods is associated with the fact that two large rivers (Way Kuala and Kuripan) and the other 23 small rivers have been passing through the city. In addition, the *Kelurahans* where many of its household/ building located in river bank, have little access to drinking water from PDAM



(government owned water companies), have high population density, concentration of poor people. Big portion of *Kelurahan* area near the rivers and coastal with less green open area are likely to be more vulnerable (indicated by *high vulnerability index*). The assessment baseline year is 2005 with future scenario of 2025 and 2050. It is projected that in 2025 and 2050, 6-7 *Kelurahans* are likely to experience improvement of its coping capacity index. However, coping capacity index of some *Kelurahans* are likely to decrease in the future.

The results from the VA have been incorporated into four key city policy documents namely the City Resilience Strategy (CRS) 2011-2030 and the Integrated Solid Waste Management Master Plan to Increase Climate Change Resilience (funded by ACCCRN) drafted in 2011.

The CRS 2011-2030 is a broad guidance used by the city-level stakeholders in particular to guide the city to create an informed climate change adaptation strategy. The CRS collated results from the VA to inform climate change adaptation scenarios for the city. In order to create a sustainable city, the CRS document is expected to inform the Long-term Regional Development Plan 2005-2025 (RPJP) and Bandar Lampung Spatial Plan 2011-2030 (RTRW).

The actors believe that without the resilience strategy document, the vulnerable city was deemed as unfit to adjust to extreme climate events. It was confirmed that the CRS have provided beneficial information to inform adaptation in the Mid-term Regional Development Plan 2010-2015 of Bandar Lampung (Mega-Putri 2012).

One of the early successes of ACCCRN is that both the VA and CRS have been adopted into the Mid Term Development Plan 2010-2015, suggesting that one of the strategic efforts in order to reduce the risk of flooding as a result from climate extremes is to improve the quality of management and processing of solid waste. However, in contrast to the claim from the City Team members, our investigation suggests the VA and the City Resilience Strategy are not cited in the Bandar Lampung's Spatial Planning (RTRW) Document for 2010-2030.<sup>2</sup> One of the reasons is that the consultants selected for the RTRW 2010-2030 do not have adequate climate adaptation literacy. While the other former documents (e.g. the Mid Term Development Planning), all the key selected consultants have been part of the City Team.

Despite the status of the produced VA, CRS and the Master Plan for Solid Waste Management have been treated as informal (as they have not yet endorsed as legal documents), however, they have been used and cited in the White Paper for Sanitation in Bandar Lampung City (drafted in 2012) and Master Plan for Green Open Space for the City of Bandar Lampung drafted in 2012 (Mega-Putri 2012).<sup>3</sup>

### 3.3. Formation of City Team

Soon after the city selection, the formation of the City Team of Bandar Lampung took place. The City Team becomes a temporary climate governance mechanism or a collective decision making body - comprises of city departments, civil society, representatives from local universities and private sectors. The idea is to have certain procedural quality in cities' decision making system. It has been conceptually designed by Asian Cities Climate Change Resilience Network (ACCCRN) since 2009 in Indonesia.

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<sup>2</sup> See the City Regulation (Perda) No 10/2011 Concerning Spatial and Regional Planning 2011-2030. No word climate is mentioned at all. However, the document has been sensitive to disaster risk management terminology because they appear tens of times in the planning documents.

<sup>3</sup> We participated in the last meeting of Green Open Space Master Plan. The meeting is hosted and facilitated by Desti Mega Putri from the Development Planning Board (Key facilitator of City Team)

The legitimacy of the team is based on two decision letters (or Mayor's decrees) in 2010 and 2011. The mandates of the city team are not only to monitor, control, organize, conduct studies, manage projects, and report on all activities, processes and methodologies applied under ACCCRN. Nevertheless, leads and facilitates the development of the city resilience strategy, which is the goal of ACCCRN project. The city team in Bandar Lampung prepares monitoring and evaluation plans for each pilot project. The city team identifies and determines the terms of reference for the sector studies. The initial ideas for the sector studies were generated during the second Shared Learning Dialogue (SLD) with participation of community members and then narrowed down and finalized by Mercy Corps and the city teams.

The City Team is to ensure the VA to be adopted into the development agendas. One early success is to adopt the VA as a basis for the Bandar Lampung Resilience Strategy document. Since then, the team should guarantee adoption of City Resilience Strategy into the city development planning and agendas. To date, the city team emerged as a temporary strategic group in the city that function as a lobby group to ensure politicians, the Mayor, and the head of city departments to allocate adequate resources for climate adaptation.

The experiment from ACCCRN in Lampung also affects the day to day relationship between critical NGOs and their perception about local governments as indicated from lack of collaboration prior to ACCCRN and how there have been improvements in the relationship between local governments and the NGOs. Despite the risk of being compromised with the city government's interests, the NGOs also reflected that the forum give them more chances to influence local government (Pusbik 2012, Herza 2012). This suggests that the City Team function as a bonding agency where stakeholder's interests are shared.

### **3.4. Pilot Projects**

As the VA document suggests, solid waste and poor drinking water become the most visible problems for the city of Bandar Lampung over the last 10-20 years. During 2009-2011, there was no known project in the city that are earmarked related to urban climate adaptation. It was agreed by the City Team that all the pilot projects were implemented by NGOs because the local government's budget system does not allow flexibility for taping external resources. The first pilot project was implemented by an NGO namely Lampung Ikhlas. It piloted small scale waste management and clean water management project with the overall objective to improving community adaptation to reduce impacts of flood and water scarcity. The waste management was aiming at changing behavior of coastal communities through solid waste recycling (e.g plastics and paper waste recycling as well as turning organic waste into organic fertilizers. The water management project helped the local communities in Kangkung village (Kota Karang) to filter brackish water to become drinking water.

The second one was implemented by an NGO namely Mitra Bentala. The NGO also helped coastal community in Bandar Lampung (Panjang Village) to initiate waste management training, environmental education and clean water support. In regards to waste management, Mitra Bentala trained local communities in turning organic waste into organic fertilizer and vertical agriculture. The vertical

agriculture was basically a concept of space efficiency where urban poor can make use of the organic waste to grow herbs and vegetables in their marginal gardens. Mitra Bentala also took different approach by providing local communities some waste containers as well as the formation of community based organization pertaining to household solid waste from households to temporary waste collection (TPS).

Our study suggests that the sustainability of the intervention was not fully successful due to institutional barriers (such as lack space and lack of incentive for growers) at different level that time (2009). What is left is the birth a few champion who turned organic waste into both organic farming and very small scale vertical agriculture. However, overall policy landscape of waste management suddenly changes after 2010, especially after the new Mayor took his office in 2010. Section 4 will discuss the case study of emerging sustainability in solid waste management of the city of Bandar Lampung.

#### **4. Case Study of Urban Waste Management Sustainability**

One of the impacts the SLDs, the VA and the pilot projects is the increasing popularity of waste management in the City's government offices. The decision of the City Team to draft the Integrated Solid Waste Management Masterplan (To Increase Climate Change Resilience) has helped the city to starting invest in the waste management.

The Masterplan was developed based on the rationale that the city' existing plan for waste management was inadequate. It stated that solid waste has been contributed to vulnerability to climate change in Bandar Lampung as piles of garbage on "drainage channels and rivers has reduced the drainage capacity and increased the possibility of flooding." In addition, "due to high tide, wind storm and high rainfall in coastal areas there has been severe flood events. And along with piled garbage in coastal areas – and inland areas, the secondary impacts (of disease spreading and water contamination) could trigger the occurrence of dengue fever and diarrhea. Realizing the importance to have a plan for waste management, Bandar Lampung prepared An Integrated Solid Waste Master Plan to increase city resilience in facing to the impact from climate change, either direct or indirect." Data also suggests that only approximately 14 percent of generated waste was properly disposed to a final disposal site; while the rest was left improperly disposed, including drainage channel dumping.

The new Mayor's commitment to environmental sustainability within the city fits very well to the City Team initiatives. In fact, most of the city team members have been playing roles as 'informal' advisors to the Mayor. As a result, the city have increased its investment in its waste management policy and practice starting since 2010.

Our observation along the 27km of the coastline of the Bandar Lampung City suggested that the coastline has been expanded into the sea because local communities use household solid wastes as a raw material to landfill coastline. This form of community based coastal reclamation is also complemented by uncontrolled reclamation by the private sectors and the local government. The problem is that the 'new' settlements as a result of this practice cannot be fully seen as informal because the local government have legally expanded their electricity and water services to these areas and collect land and housing tax from the areas too.

## Figure 2. Waste Management Practice in City of Bandar Lampung

Figure 2A. Land filling practice at the coast by local communities.



Figure 2B. Recent solid waste management practice by the City Parks and Cleaning Department



Photo: Lassa

Figure 2A shows the result of the on-going informal reclamation using solid waste made by the local communities to adapt to urban settlement pressures and needs; As a result, the coastlines have been moving between 10 to 100 m into the sea (all the neighbor houses in Figure 2A are on moving in to the sea. This trend continues until today despite significant reform made by the city government over the last 3 years. Therefore, the future vulnerability has been persisted and amplified by different forms of mal-adaptation to different urban problems. Our observation suggests that 'informal settlers' do not see waste as useless waste resource materials. In fact they see it as a resource that can be turned into raw materials for settlement expansion as exemplified by recent community based coastal reclamation in Bandar Lampung that have been in existence since 1980s.

There is a poly-centric solid waste management system in Bandar Lampung. Different institutions deal with different spatial origin of the solid wastes. The coastline and near shore solid wastes are the responsibility of the Marine and Fisheries department. Solid waste at the urban markets is managed by the traditional market managers. While City Parks and Cleaning Department deal with the wastes at the streets, road canals and selected public spaces. Figure 2B is an example how the City Parks and Cleaning department have been working day and night to clean the city's streets starting since the new Mayor took the office in Late 2010.

Despite excellent progress in solid waste management as seen and felt by most of the interviewed stakeholders,<sup>4</sup> however, at the higher level of governance, some of the city stakeholders felt that there is a poor practice of “stick and carrot exercise”. For instance, In 2009 Bandar Lampung city won the Adipura - the national award for the cities that keep their urban environment cleaned. *Adipura* Award has been used as stick and carrot in encouraging Indonesian cities and urban regions to be clean and green since 1986. It was stopped for a few years after the fall of Suharto in 1998 but being rejuvenated again during Megawati's presidency in 2002. Every year, there will be *Adipura* contest among the metropolitan cities, big cities, medium cities, and small cities in Indonesia. Additional category includes the best cities whose urban-forest ratio and best city markets and best city parks. In 2009 *Adipura* contest, Bandar Lampung city won the *Adipura* for the Big Cities category. The held perceptions were that the real face of the city was actually dirtier. Some people even noted that "you can find solid wastes" in many places. But, yes, the officials were happy with that.

In 2012, when the city gets cleaner and better managed as a result of significantly higher investment in city budget for waste management, the city received a new status as “the dirtiest city” in Indonesia as it sits at the lowest bottom of the Adipura ranking - as recently announced by central government Ministry of Environment.<sup>5</sup> There are some plausible reasons why the people were not so happy with the *Adipura* assessment in 2012. The common perception from taxi drivers to garbage collectors to the officials at Mayor's office and city environmental agency that I interviewed suggest that the city gets cleaner and better at managing its solid wastes over during 2010-2012. They said, it was easy to accept if the city was put at the bottom in 2009 but it is totally not acceptable in 2012.

The evidence for better intervention in urban waste management can also be noted. There is sharp increase in the city budget since 2010 or since the present Mayor of Bandar Lampung took the office in 2010. The annual budget has been rather flat before 2010. For instance, the budget for 2009, the City Parks and Cleaning department only managed US\$ 247k. This figure dramatically increased by 700% in 2010 (or US\$ 1.8 million). It continues to be increased by the Mayor in 2011 and 2012 (respectively US\$ 3.2 million and 5.5 million). What is worth noted is that the budget originates from the reform in tax and retribution collecting system set by the new Mayor of Bandar Lampung since 2011.

There is clearly an excellent practice of waste management going on in the city. The question is how investment in city waste management can be sustained after the future regime changes? The Section 6 explains the macro policy context of Bandar Lampung City, where hope for future sustainability can be ensured.

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<sup>4</sup> We interviewed 14 grassroots communities in 7 villages during 13-14 October 2012 concerning how the behavior of waste management at the households level as well as the local institutions of the solid wastes.

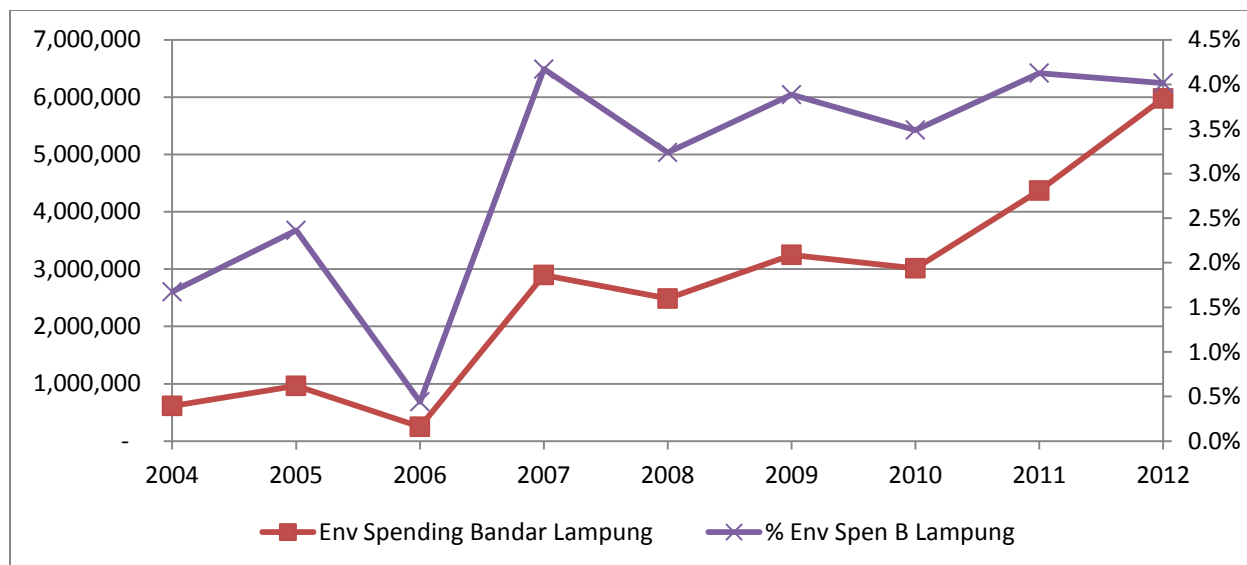
<sup>5</sup> When we argued that probably the Adipura assessor downgraded the cleanness index of the city based on the observation from the city's coastal areas, One of the City Team members the City Environmental Department argued that that almost all of coasts in cities in Indonesia are in poor condition. Therefore, for apple to apple comparison, one cannot use coastal conditions to downgrade the rank of the city of Bandar Lampung. (interviewed with Wahyudi, A. Key Contact of BPPLH, City of Bandar Lampung, 20 June 2012.

## 5. City Spending on Environment and Climate Change

The Mayor decides what environmental agenda to fund and what to dismiss. However, the power is shared by the local legislators. Their decision is often made at macro scale. The officials at the department and the Development Planning Office have the discretionary power to propose smaller scale budget lines.

Despite it is relatively low from the international point of views, the city has been increasing its annual budget for environment (and climate change related sectors) from less than US\$ 1 million (during 2004-2006) to over US\$ 3 million during 2007-2010 as indicated by the 8 year trend in environmental spending by the Bandar Lampung city government (Figure 3). Since the new Mayor Herman HS (hereinafter Mayor HHS) took the office, he has been pushing to double the budget during 2011-2012. Compare to total city budget, both for routine and development expenditure, the percentage of the budget that allocated by local government for climate change related activities was below 2.5% during 2004-2006 and today it has been flattened at 4% of the total annual budget during 2009-2012. The data is based on the spending at the Environmental Department combining with some related spending such as public health and urban drainage. However, detail segregated data are not yet available.

**Figure 3. Bandar Lampung City Spending on Environment and Climate Change**



Source: Regional Transfer Section, Ministry of Finance 2004-2012. Inflation is corrected based on BI Rate.

After the exchanges of ideas through the SLDs during 2009-2012, since 2012, for the first time, the Environmental Department (a.k.a. BPPLH Office) have created a new budget code namely Climate Change Adaptation broken down into programs namely intervention for water recharging program namely *biopore* (water absorbed pits or holes), climate change impact control, and training/capacity building concerning *biopore*. Before 2012, the budget line for climate change adaptation was put under a Budget Line No 7 namely *Environmental protection & conservation*.

Since 2010, the BPPLH Office has shown commitment in investing in climate change adaptation. During 2010-2012, it has subsequently allocated US\$ 121k, 112k and 133k to tackle climate change impact. In 2013, the planning draft suggests an increase to US\$ 144k. The mentioned budget does exclude salary staff of the office. In 2010 and 2011, the budget is mainly spent for buying seeds for urban trees as well as buying instruments such as climate and weather monitoring and some laboratory instruments (LAKIP BPPLH 2010 and 2011)<sup>6</sup>

Some of the city's annual budget for is actually the funds transferred by the Central Government namely DAK (Special Budget Allocation) often made by respective ministers at central government level. Therefore, it can be said that despite there is change in the budget structure of the Environmental Department (which is an achievement in itself), however, overall, the origin of the funds (of the Environmental Department) flows from the central government.

In addition, there is a tendency that the shifts in the budget structures to include climate change intervention during 2010-2011 were at the expense of other environmental program being cut. For instance, the water and environmental quality monitoring and improvement program in 2009 was US\$ 145k. However it was cut to zero in 2010 while in 2011 it was allocated only for US\$ 1,98k. Even though it was raised to US\$ 40k and 30k in 2012 and 2013 respectively, however, they only reached 20-25% of the 2009 level. Similar trend also occur for the budget for environmental impact assessment (EIA) where it did not exist during 2010-2012. Overall, there is tendency for volatility in the budget allocation. 2013 shows some indication towards balancing budget allocation within the office. This can be made possible due to the fact that overall, there is a significant increase in the budget from US\$ 194k in 2009 to 463k in 2013.

## 6. Sustainability Scenarios

In international development intervention, sustainability often interpreted as to lengthen the social and physical outputs and outcomes (Pelling 2011). The ACCCRN Project seeks to imprint sustained adaptation pathways in the cities. The expectation from the project is that after the phasing out of the intervention in 2016, the city governments will be able to adopt, replicate and self-sustaining the overall process using their own resources to reduce their stock of climate risks.

Despite the fact that the origin of the idea of urban climate change adaptation policy has been exogenously driven by ACCCRN, the question on sustainability remains on how the city government endogenously take the opportunity to progress by sustaining the policy and practice of climate adaptation. Based on this, we would like to predict based on five variables that we consider important in addition to climate adaptation ideation or discursive making through the activities such as SLDs and exchanges of ideas within the city team members. The first is fiscal sustainability which allow the city government to increase sharply the investment in waste management using the cities' own funds while at the same time shifting some small grants from the central government to support climate change. The second, is the planning process. The third is the sustaining the idea of adaptation to be continued

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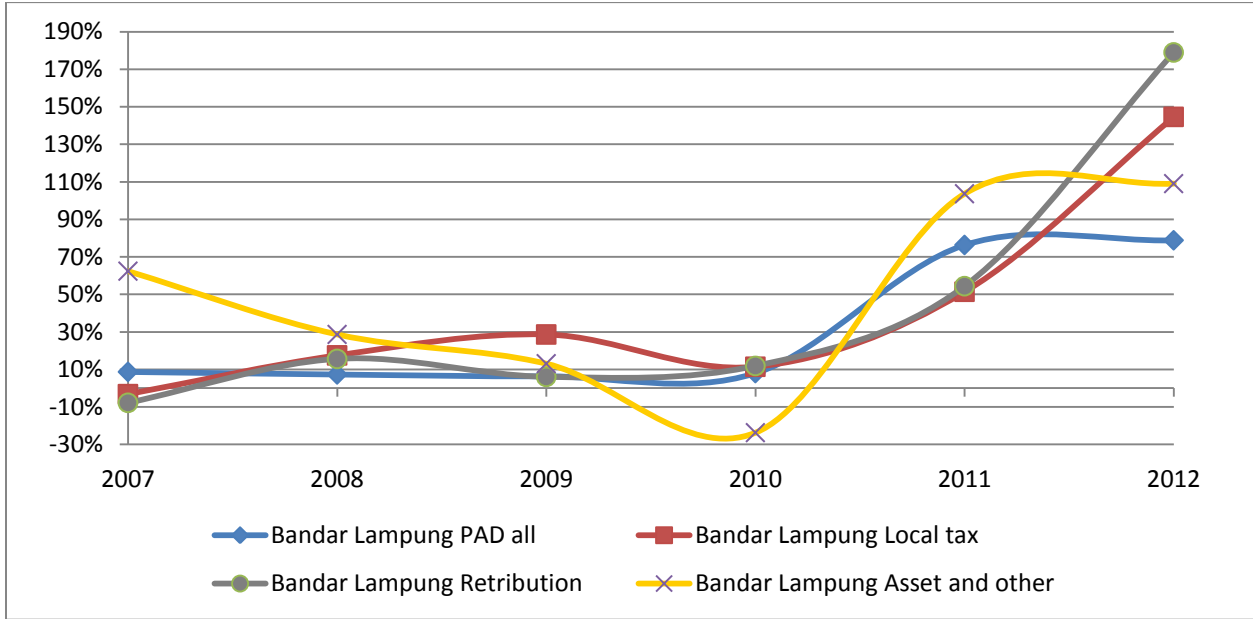
<sup>6</sup> Lakip Report is the Performance Accountability Report by City Departments.

flagged in the offices. Fourth is the issue on leadership. Fifth is the issue of staff turnover in the context of Indonesian decentralization. Finally, the drive from the Mayor to enforce local regulations that are pertinent to adaptation is also a key to sustain the results.

### 6.1. Fiscal Sustainability

In this section, we demonstrate the emerging sustainability of the income of Bandar Lampung exemplified by recent trend in the city's income excluding the central government supports. Elsewhere in Indonesia, the local government incomes have been grouped into three big categories. Firstly, the PAD (regional original income) which consists of local tax, retribution, and local government's asset management. The collected local tax is collected from the entertainment business, hotels, C Type mining, street lighting tax, and advertisement and so on. Secondly, the transfers funds from the central government (or a.k.a. *Dana Perimbangan*). The transfers consist of *general allocation funds* or DAU (mainly allocated for the salary of civil servants (often between 60-70%) while the rest is allocated for physical infrastructure, facilities and other regular spending); Special allocation funds or DAK is allocated by central government through technical ministries that flows directly to specific departments in cities and districts; and sharing funds from tax and non tax. Third, is coded as simply "Other Sources" such as grants, (disaster) emergency funds, tax sharing with the province, other adjustment funds and others funds outside the categories above.

**Figure 4. Trend of Regional Original Income in Bandar Lampung City**



Over the last five years, Bandar Lampung City has enjoyed a great deal of income growth as indicated by the annual budget of the city since 2006 when it only recorded its income at US\$ 57 million. In 2010 the

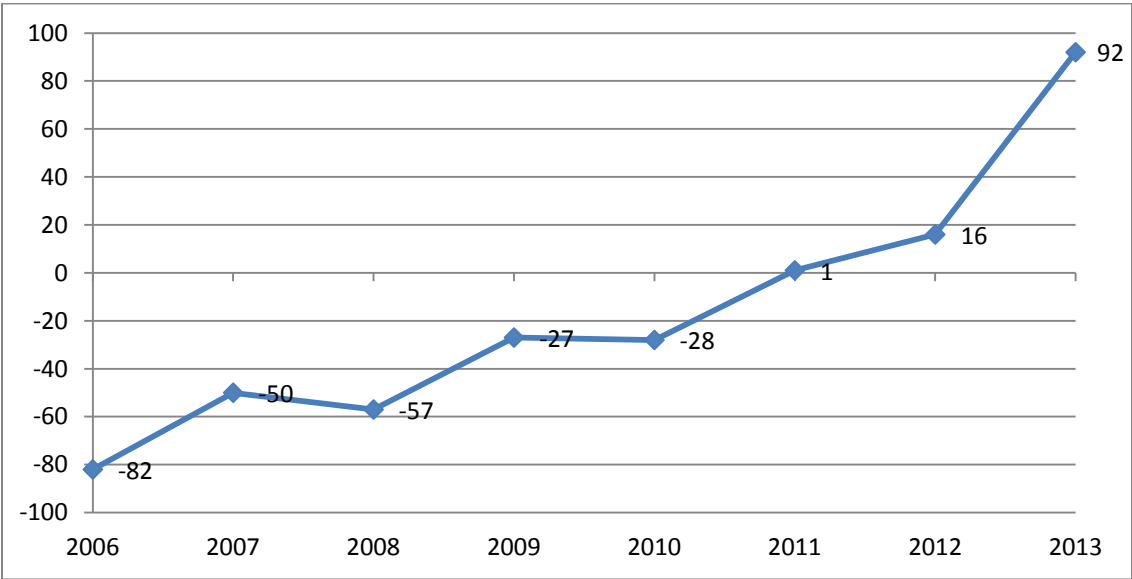


budget was about US\$ 86 million. During 2011 and 2012, the city has recorded an increase to US\$ 101 million and US\$ 135 million subsequently. The data suggests that Bandar Lampung City also enjoy a reform in terms of its tax income. In 2006, the city was only able to collect US\$ 4.7 million. It has been increased to US\$ 7.6 million in 2010 and 11.8 million in 2011. In 2012, after serious commitment from the city government, including efforts to curb corruption within the local tax office and extension of tax targets, the PAD (regional original income) increased to US\$ 290 million.

### 6.2. Better Planning and Better City Politics

Weak capacity in annual development planning has been the bottleneck for both urban and regional development in Indonesia. After the political reform that led to decentralization in Indonesia in 1999, local governments in Indonesia have been going through long transition in building their capacity to plan. Local governments have been encouraged to plan for their own development agenda. New political dynamics emerge as the executive governments often require political approval from the multi-party legislators at provinces, cities and districts levels. This often creates long delays in fiscal planning for the new fiscal years. In some places where executive-legislative conflict occurs, delays can take place more than 9 months. This leaves the cities/regions to have only 90 days to finish development projects. As a result, development outputs often suffer from poor quality implementation and construction and therefore short lived.

**Figure 5. Planning Reform in Bandar Lampung Indicated by Annual Budget Approval Date**



To avoid these pitfalls in the local development routines, the Government issued regulations that create sanctions and rewards for the cities and regions. One of the regulations is the Ministry of Finance (MoF) Regulation 04/2011 concerning time limit for regional fiscal information such as annual fiscal plan (a.k.a. APBD). It encourages the local governments to submit new fiscal plan on 31 January for each fiscal year. If they failed to submit on time, the respective local governments will receive warnings from the MoF

within 15 days after the time limit. If the respective local governments ignore the warning within 30 days, new warning will be issued and the MoF will also delay the transfers of DAU (general allocation funds) to the respective region. The government will cut 25% of the transfer each month during the fiscal year. Other sanction will also be applied.

On the other hand, rewards will be given to local governments that accomplished their fiscal plan earlier. Our findings (Figure 5) suggest that the City of Bandar Lampung has demonstrated a new culture of fiscal planning. For the first time, probably within the last 50 years, the city has been able to endorse its fiscal years ahead of time. For 2012, the Mayor was able to get endorsement from the legislators 16 days before the beginning of the new fiscal year. While for the fiscal year 2013, the approval from the legislators has been granted 92 days in advance.

The incentives to plan ahead are not only that the city/district government is that it is entitled to US\$ 1 million grants if they are able to plan ahead of time. But also, it gives the city bureaucrats adequate time and some degree of quality to plan and implement their program and projects. In the past, such as in 2006, was delayed 82 days because of long negotiation between executive and legislative, which sometimes may trap a good leader in corruption plots. In the ACCCNR piloted City of Semarang, in order to speed up the process, the previous Mayor took the risk of bribing and he eventually ended up being punished by the National Corruption Eradication Commission in 2012.

### 6.3. Leadership

Lampung has been facing up climate extremes. "Floods often come to this city, but I ask all the village and districts' head to take care of their local environment by direct visits to the field and not only sitting in the office as I do", the Mayor once claimed. The Mayor uses strong stick and carrot approach in regards to waste management. He promotes high performed staff and dismisses low performed officials under his rank. Local media portrayed him as having a good deal of crisis management leadership exemplified by his consistent city surveillance during heavy rain especially at the inundation hotspots.

On 11 September 2012, the Mayor received an award from the Vice President of Republic of Indonesia (DISKOMINFO 2012). The award was recognition of financial accountability from the City Government. He received two times in a row as an accountable city government that has managed to get "WTP" (Normal without conditions) in their annual fiscal report. He combines innovative program including environmental ones with transparent financial management (the so called good corporate governance). In regards to 2013 APBD, the provincial government will review earlier so that they can start work exactly on the first of January 2013.

Administrative will and political will are the conditions for creating a sustainable climate governance practice. A clean leadership exhibits by the Mayor HHS create conditions also for healthy fiscal capacity. The increase in the fiscal capacity of the city (as exemplified by Figure 4) encourages the city to spend more on the issues and sectors that concern the present leadership.

However, the empirical evidence suggests that there should be fixed connectors and lobby groups created at different levels in order to facilitate interests of different actors such as politician,

bureaucrats, civil society, private sectors and academia to come together to solve urban problems under changing climate which has been partly played by the City Team.

#### **6.4. Staff Turnover**

Multiple staff turnover causes discontinuity of City Team especially during 2009-2010. This is by no means new to the city because elsewhere in Indonesia, key government staff who have gained middle to high level rank and echelons are often moved without prior notice. Therefore, policy innovation and practices being exercised by key officials are often not sustainable and discontinued due to the high degree of volatility in commitment as a result the high turnover of knowledgeable officials. Our interview in Bandar Lampung suggests among high level officials involved in the city team, only one or two key person that have been stayed in the same offices for more than 10 years. While the rest, they only lasted from 6 months to 3-4 years.

#### **6.5. Sustainability of Adaptation Discourse**

During 2011 and 2012, Bandar Lampung has consistently been successful in increasing its own incomes from the local tax and retribution. It moves from an annual rate of 10% in 2010 to 170% in 2012. This is the main reason why the present city government has greater flexibility to ambitiously increase the annual budget for urban waste management from US\$ 247k in 2009 to US\$ 5.5 million in 2012. In the context of Bandar Lampung, the data suggests that predicting sustainability of self-sustaining the adaptation planning and intervention needs to be explained by the facts beyond the meetings, pilot projects, major intervention projects and self-claimed success in the formal meetings.

Despite the importance of financial capacity of the city, it should be noted that by having more money the cities do not automatically increase their investment in the sustainable development including climate change. The cases from Sections 4 and 6 suggest that the city government have been performing better in waste management (suggested both by the spending and the fact that the city has been cleaner), however, improvement is much more needed. It includes the need for smarter spending (e.g. more spending on adaptation and wider environmental concern) as the city has been gaining more incomes.

#### **6.6. Creative Enforcement of Regulation**

The VA acknowledges that the ground water exploitation was the one of root causes of urban vulnerability. As noted in the introduction that the city has been facing lack of fresh water and drinking water. Apart from regular drought, it is also exacerbated by uncontrolled ground water exploitation. Therefore, the Mayor demonstrates how rules of the game (local regulations or Perda) and incentives can be co-created to shape the behaviour of the community and the private business in order to be accountable to the urban environment and climate adaptation. Under the PERDA No2/2010 (regarding

Ground Water Management) and Perda 9/2011 (Guide for Ground Water Tax), the present city government has been able to create dis-incentives to reduce ground water exploitation.

As of 2012, the present Mayor has been able to collect US\$ 40,000 (from targeted tax of US\$ 25,000) water tax. The amount seems trivial but from the perspective of the local government history like Bandar Lampung, it is a significant achievement. The arrangement was under the leadership of BPPLH (Diskominfo 2012). Property and housing developers have been encouraged to pay for the ground water tax. This is seen as ways to increase local income tax and retribution at the same time.

## 7. Reflection

Lessons from Durban suggest that 'headline adaptation strategy was unsuccessful in encouraging any new adaptation focused action, while the development of the sectorally focused cities action plan has been far more successful in building champions and encouraging action.' In addition, lessons from Durban's adaptation response suggest that learning by doing strategy has been key to the city's success which allowed the city "to explore new methods and concepts through structured and programmatic action" (Roberts 2008).

The "learning by doing strategy" has been used partially by the City Team with great supports and leadership from the City's Mayor. However, there has been no clear measurable success if people question to which degree the level of vulnerability and risk has been reduced within the city because the intervention has been focusing on the software (ideation, studies and knowledge sharing, policy drafting, and budgeting).

The success in local tax reform including curbing leakages in local retribution collection is one of secret behind the increase in the fiscal capacity which allows greater flexibility for the city government to invest in waste management as exemplified by the case study in Section 4.

The learning lessons is a tipping point towards sustainable adaptation can be reached when the external support such as ACCCRN is meet by endogenous drive as exemplifies by the present city government as well as the still functioning urban governance such as the City Team in Bandar Lampung.

In addition, Bandar Lampung city has been trying to show an initial results as exemplified by the recent efforts such as spending on tree plantings, *Biopore* and capacity building (Mukhlis 2012). Some of the success has been associated with the work of the City Team and Mayor's commitment as endogenous forces within the city that have been adequately responsive to the exogenous intervention namely ACCCRN Project.

Bandar Lampung evolves as a completely climate change ignorant city to be a more climate change sensitive city as indicated by the shifts in planning, policy and city budget. However at the same time it is interesting to question why the City's spending on explicit earmarked climate adaptation within the Cities' Environmental Department has been very modest in comparison to waste management.

Present temporary 'success' is associated with the multi-stakeholder platform namely the City Team of Bandar Lampung. The Team has been able to play as climate policy entrepreneurs in their own departments and agencies. They also manage to convince the Mayor to capitalize external support by combining existing city's capacity to be adaptive to change. The question is after 2016, what kind of incentive can be locally created to support the roles of the City Team?

Creating incentives for climate adaptation therefore not only substantial but also should be sustained (Muklis 2012) because 'incentives create imperatives' (Carmin 2009, 4) for coordination, shared learning and shared action. However, incentives for climate adaptation can only be made if there is a sustained efforts to keep the issue alive at city level. This justifies the fact that small external intervention may catalyze action within the city.

This research only documents the temporary progress of the innovation in the city. Therefore, there is uncertainty on how climate adaptation mechanism in the city will unfold in the future.

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