



## Proceedings of the Resilient Cities 2013 congress

### Session: D3 Planning for resilient cities in Latin America and Asia

#### **Presentation: Integrated Climate Action Planning a Methodology to Increase Indonesian Cities' Resilience**

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#### **Abstract:**

Most cities in the developing world are lacking the capacity and capability to cope with climate change. The cities steering and coordination of cross-sectorial and interdisciplinary processes with involvement of relevant stakeholders is inadequate. The framework of an Integrated Climate Action Planning is designed by the Indonesian-German programme "Policy Advice for Environment and Climate Change" to build capacity of cities' administration toward an integrated and synegezied strategy between mitigation and adaptation aspects.

The settings count on a multi-level governance approach by horizontal integration of functional supplementary administrative units within the cities' administrations (cross-sectorial approach), a vertical integration of the various intervention levels (city, province, national government), and a substantial integration between adaptation and mitigation aspects. The methodology builds upon strengthening existing synergies between the different activity areas.

So far, pilot-projects for testing and implementing climate strategies show that mitigation and adaptation measures could be integrated especially in the area of waste, land, and building management. In some other issues, the integration approach could avoid the increase growth of greenhouse gases and vulnerability. This approach has a great chance to maximize co-benefits and avoid maladaptation nor malmitigation toward sustainable urban development.

**Keywords:** Capacity building, integrated approach, multi-level governance, and urban development

## **1. Background**

Climate change has become the biggest challenge to humanity, science, and politics in the 21st century. In order to avoid its negative impacts, effective greenhouse gases (GHG) control becomes very urgent to do (Herring, H & S Sorrell, 2009; Bulkeley, H. and Betsill, M., 2003). The fourth report of the Intergovernmental Panel on Climate Change (IPCC) showed that 11 of the 12 years between 1995 to 2006 is 12 years with the warmest surface temperature since 1850. This is partly due to the increase in GHG emissions by 70% within the period of 1970 to 2004. The largest portion of GHG emissions contributed by the increase in the growth of the energy sector and waste, which comes from an increase in demand and production in urban areas (IPCC, 2007; Corfee-Marlot, 2009; Bulkeley, H. and Betsill, M., 2003). As a result, the level of GHG concentrations in the atmosphere far exceeded expectations ever set (Suh, 2006).

The city's role in the climate change policy is very important because the city is the majority home of the world's population, two-thirds of the energy user, and producer of more than 70% of emissions from energy use (Clapp, C, 2010). According to the UN, half the world's population lived in urban areas in 2010. Trend of population growth will continue to increase and is estimated to be 60% of the proportion of the world population by 2030. As consequences, intensive urbanization has affected the growth of energy use. The growth is not only causing the effect on energy security, but also affects the contribution of GHG (Kamal-Chaoui, 2009).

Policy option are depend on city development planning (Matheson G & L. Giroux, 2010). How the city is managed can be part of the problem but also can be part of the solution to climate change (Corfee-Marlot, 2009; Kamal-Chaoui, Lamia and Robert, A., 2009). The city government can affect GHG emissions by directly targetted reduction (Bulkeley, H. and Betsill, M., 2003). Unfortunately, efforts to enhance the role of the city are not an easy matter. Decentralized system provides lower flexibility for the government to intervene city. Moreover, decentralization provides limited resources compared to the tasks that must be borne by the city (Mazur, E. 2011).

Further to that, most cities in the developing world are lacking the capacity and capability to cope with climate change. The cities steering and coordination of cross-sectorial and interdisciplinary processes with involvement of relevant stakeholders is inadequate. Aware to this situation, Indonesian Government committed to reduce climate change impacts and sources by strengthening cooperation internationally and empowering local governments (Bappenas, 2010).

Efforts to tackle climate change are manifested through GHG reduction commitments up to 26% with own resources and up to 41% with international support from Business as Usual scenario in 2020 (Presidential Decree 2011). Various attempts were made, among others through the development of Indonesia Climate Change Roadmap, the National Action Plan for GHG reduction, and GHG Inventory Guidelines. However,

government efforts can not be done without the support of local government. Government requires provincial governments to coordinate county and city governments to develop GHG emission reduction strategies and action plans in the regional. The framework of an Integrated Climate Action Planning is designed by the Indonesian-German programme "Policy Advice for Environment and Climate Change" to build capacity of cities' administration to support Indonesian government. the approach emphasize on the integration and synergy of strategy horizontally, vertically, and substantially.

## **2. An Integrated Climate Action Planning Approach: Effective way to Guide City?**

### **2.1 Structure of ICA Planning Approach**

The concept of multilevel governance provides an understanding on how government, local government, private sector and other stakeholders work together in designing and implementing policies from international to the national level and ultimately to the local level. This concept seeks to bridge the gap intergovernmental cooperation through horizontal and vertical (Jordan, A., 2003). Intergovernmental relations gap are arising from decentralization of local governments. Tension and negotiation of authority are reflected from inter-government authority distribution to budget allocation. Reluctant of national government to transfer authority that could reduce national government income or resistant of local government to accept authority that may increase local spending is often negotiated (DRSP, 2006).

Governance theory arises from the observation that the state is required to collaborate with non-state actors to achieve policy objectives. State was forced to share power with businesses and non-governmental organizations. Government alone cannot solve the collective problems (Park, 2008). Separation between actors and inter-level are not appropriate to explain the analysis (Bulkeley, H. and Betsill, M., 2003). Of the vertical dimension, the concept of governance suggests that the central government cannot effectively implement climate change strategies without working with local governments as agents of change while local governments are also unable to effectively take action regardless of the national government (Corfee-Morlot, 2009). Central and local government relations are no longer hierarchical, but rather on the network, as shown in Figure 1 (Bulkeley, H. and Betsill, M., 2003).

Horizontally government should cooperate with other actors in each level in order to influence policy impact (Corfee-Morlot, 2009). There is no single actor, both government and private have sufficient information and knowledge to solve the diverse and dynamic problems. Further to that, none of single instrument or approach that could resolve the problem adequately (Jordan, 2005). Therefore, only emerging instruments or approach that could reach all actors at all levels will be more effective to solve problems.

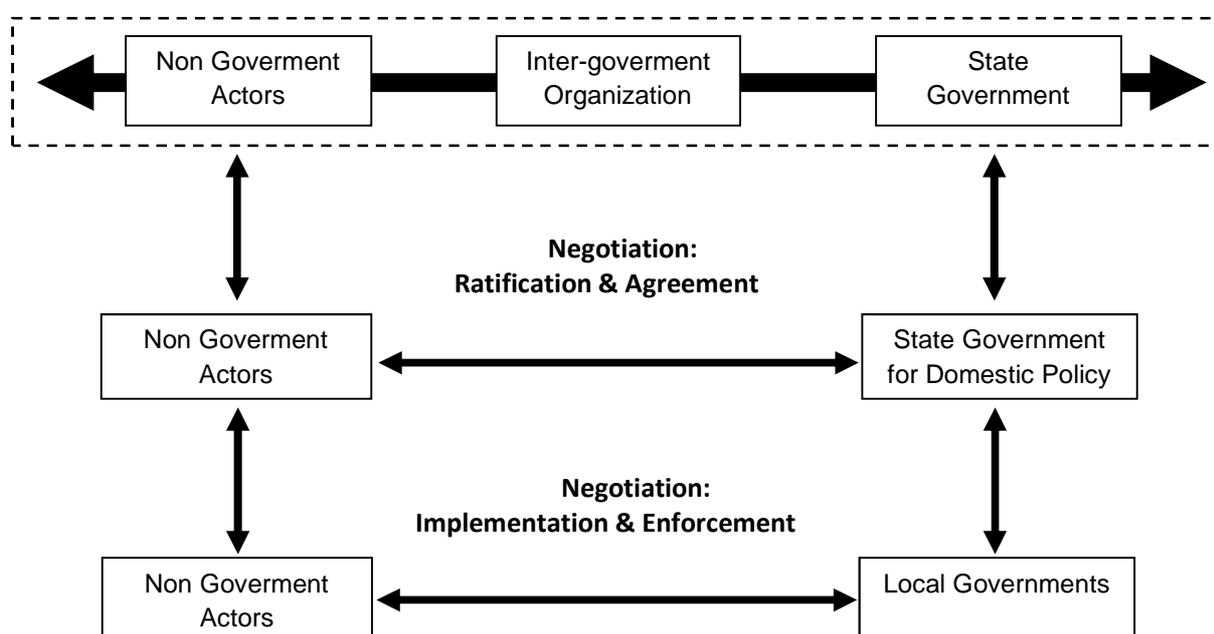
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**Figure 1. Climate Governance Model from Global to Local**



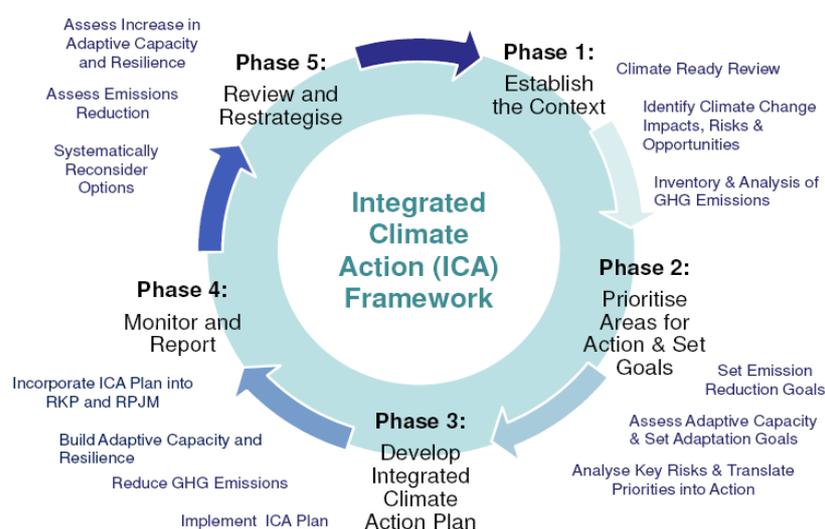
Source: Adapted from 'Constructivist' regime theory and the cascade model (Bulkeley, H. dan Betsill, M., 2003)

In response to the situation, the Indonesian-German programme on Policy Advice for Environment and Climate Change (PAKLIM) designs an Integrated Climate Action (ICA) Planning Approach, as shown in Figure 2. This approach is expected to accommodate the need of climate multi-level governance by fostering cooperation and coordination multi-stakeholders, cross-sectorial, and multi-level. A basic methodology was established to support Indonesian city governments in systematically addressing both sources of greenhouse gas emissions and the impacts of climate change at the local level. From the very beginning it has been intended to integrate the strategy in the routine of the cities' and specifically combine it with the cities' planning processes. Progress through the programme phases shall largely be driven and continued by cities' administration but also consider common planning procedures and interlink the city's climate strategy with these established planning processes. Indonesian local authorities need to integrate climate change into the design and implementation of their main mission and planning. They all have to coordinate internally and externally with counterparts and likewise stakeholders to design and implement joint activities. Climate change is perceived a cross-sectorial challenge but on local level often filed under environmental issue and attribute to the respective department. In order to arrive at an integrated climate strategy all relevant departments have to be involved in the elaboration of such a plan, establishing consensus, setting jointly targets, advancing project implementation, and reviewing progress. In order to incorporate such a strategy into Indonesian cities' operations a multi-stakeholder and multilevel approach is followed. Measures related to the adaptation gain a central position within that

strategy; but the necessity of GHG reduction and mitigation synergies as well co-benefits shall not being outweighed by adaptation. Consequently, a balanced climate action strategy is approached. Pilot-projects for testing and implementing mitigation and adaptation measures in urban areas support the further development and replication of applied approaches. These pilot approaches are executed in medium to large scale cities with higher GHG emission mitigation potentials. This approach started with self-assessment by local government itself to measure organization readiness, improve working structure, and establish steering and technical committee as a working team. This working team identify and calculate GHG emissions, the impacts and risks of climate change. It produces reports on emissions and climate change risks profiles

City' emissions and climate change risk profiles are being analyzed to identify options for emission reduction and adaptation to climate change risks. The options are screened based on technical, economic, and social feasibility criteria to determine the goals, objectives, and action plans. The result of this stage is set priority of action in adaptation and mitigation. Priority adaptation and mitigation actions are integrated vertically, horizontally, and substantially to create synergies and effective policy. Vertically, the strategy takes into account climate inter-government level policy while horizontally it accommodates multi-sectorial and multi-stakeholder interest. Substantially, the strategy combines aspects of mitigation and adaptation in a way that mitigation actions consider adaptation and vice versa. The output of this stage is a strategic plan document.

**Figure 2. Integrated Climate Action (ICA) Planning Approach**



Source: ICLEI, 2010

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## 2.2 Output and Challenge

Since 2010, PAKLIM has assisted 10 small, medium and metropolitan cities namely Pekalongan, Semarang, Salatiga, Surakarta, Yogyakarta, Pasuruan, Mojokerto, Probolinggo, Malang and Blitar in Java, the most populated island in Indonesia. Each city established technical and steering committee consist of government, private, universities and civil society organization representative. Involvement of multi-stakeholders is to accommodate different interests of stakeholders as well as different views of each sector. It is considered as the starting point for horizontal integration.

Technical committee is trained and later on applies tools according to ICA planning approach. Output of this tool application covers three reports namely GHG emission, climate change risk, and integrated strategy. Unless Pekalongan and Salatiga which the energy data overlap with surrounding areas, GHG emission of each city could be compared (see Table 1). The highest emitter in total is Semarang which is the capital of Central Java Province nevertheless in term of emission per capita, Yogyakarta produced more than 2 ton CO<sub>2</sub>e per capita as the highest. In the second place is Probolinggo with 1.7 ton CO<sub>2</sub>e per capita. Yogyakarta is a center of tourism and commerce while Probolinggo is a heavy industrialized city. Yogyakarta generates 108 ton CO<sub>2</sub>e in order to produce IDR 1 billion GDP that consider as the most inefficient compared to other city. In the second and third places are Blitar and Semarang. Blitar is also a tourism city but rather for local destination beside a minor industrial area. Semarang has reasonable industrial areas and commercial activities nevertheless the developed area is only one third while two third of the area is still undeveloped, mainly for forest, agriculture, and other open spaces.

**Table 1. City Emission Profile and Its Reduction Target**

No	City	Area (KM <sup>2</sup> )	Population	GDP (Mio IDR)	Emission		Reduction Target (%)
					2010	2020	
1.	Pekalongan	45.25	273,991	1,820,001	445,000*	658,000	15
2.	Salatiga	56.78	167,033	1,541,682	389,000*	655,000	8
3.	Surakarta	44.04	563,565	6,909,094	595,000**	918,000	20
4.	Yogyakarta	32.50	451,118	8,599,468	928,000*	1,501,000	15
5.	Malang	110.06	820,243	13,540,947	1,188,000	2,055,000	6
6.	Mojokerto	16.48	120,064	2,798,999	133,000	373,000	6
7.	Pasuruan	36.58	186,262	2,645,524	216,000	351,000	3
8.	Probolinggo	56.66	217,062	4,768,000	368,000	628,000	12
9.	Blitar	32.58	132,106	2,032,244	187,000	327,000	11
10.	Semarang	373.70	1,527,433	20,180,578	1,838,000	3,062,000	4
	<b>TOTAL</b>				<b>6,287,000</b>	<b>10,528,000</b>	<b>9</b>

Note: \* base year 2008,

\*\* base year 2007

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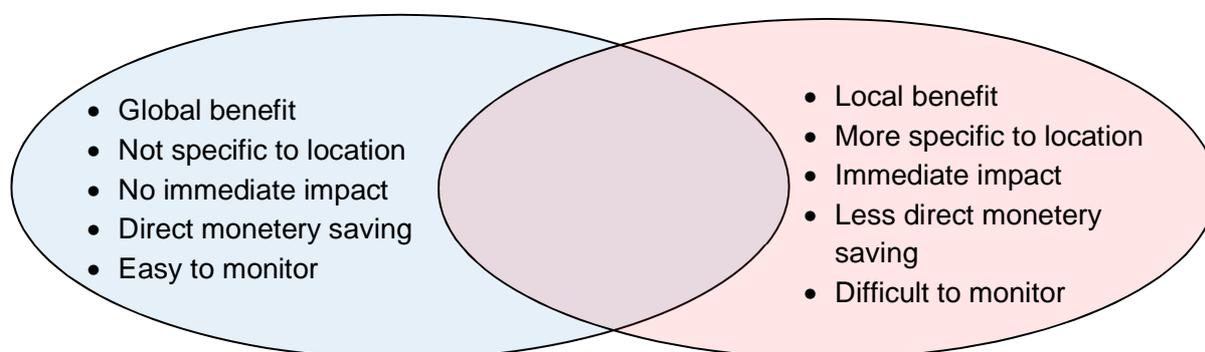
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In adaptation perspectives, the major risks are caused by the increase of flooding, dengue fever, and clean water scarcity. In general, current infrastructure and environmental condition will be crucial for climate change impact. City with poor infrastructure and environmental condition are more sensitive to climate change impacts i.e. Semarang and Pekalongan which lies coastal area are highly vulnerable because both have problems with land subsidence due to ground water extraction. Land subsidence has increased sensitivity to sea level rise that put both cities in high risk for flooding. As comparison, both Probolinggo and Pasuruan lie in coastal area but not so vulnerable because both cities do not have land subsidence problem.

In order to respond climate change, cities establish various strategy namely increase efficiency and renewable energy, mass transportation management, open space, integrated waste management, disaster preparedness, health control and services, and so on. Not all of strategy could be integrated substantially due to its unique characteristic but application of ICA planning approach still has influenced in all strategy by avoiding maladaptation (adaptation that generate more emission), malmitigation (mitigation than generate vulnerability), and maximize co-benefit (see Figure 3). Substantial integration mainly occurs in the area of waste management, improvement of open space, and building management. In a minor action, integration also happend in transportation (i.e. the use of PV in traffic light) and water supply (i.e. rain harvesting).

**Figure 3. Possible Integration of City Climate Strategy**



In the multi-governance setting, ICA planning approach seems promising for better synergy, effectiveness, and efficiency. Nevertheless in the implementation, this tool faces various challenges in term of politic and organizational setting. In the political aspect, local elections influenced organization structure due to rotation and reorganization for political reason. Members of technical committee could be changed due to rotation that hampered capacity building process. Vertically, inter-government communication is not effective to transfer the message. In several cases, process is blocked by transparency issues such as activity without measurement (i.e. waste transportation, vehicle fleet). It hampers the discussion on reliable

data. In the organizational aspect, leadership and delegation of task are still not following the competence while city officials are rather administrators than knowledgeable experts. The status of leading institution has also influence in coordination function i.e. environmental institution with lower status (Office) have limited power (than Agency) that finally influence the coordination quality.

### **3. Conclusion**

Trend of climate change negotiation puts cities in a strong position since there is an obvious fact that the way cities managed will influence to climate, neither as a part of problem or solution. Cities could take the opportunity to play its role in climate change by managing their urban development properly, eventhough the capacity to do so is still limited. Approach, tools, and practices that comprehensive and integrated by considering multi-level governance, multi-stakeholders, and sinegized mitigation and adaptation is rather limited.

Development and tested ICA planning approach has its effectivity and effectiveness to maximize co-benefit, avoid maladaptation as well as malmitigation. Nevertheless, application of this approach have faced political and organizational challanges, partly because of old practices of centralization government. it needs further changes in political and organizational setting in order to increase city contribution to climate change control.

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### **Acknowledgements:**

All authors would like to thank to all pilot cities especially to the Indonesian cities delegation to RCC 2013 for their contribution and input. They would also like to express their gratitude to the Mayor of Pekalongan, Mr. M. Basyir Ahmad for his participation in global adaptation movement by signing Durban Adaptation Charter.

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