



An Overview of APN

Presenter: Dr. Erna Sri Adiningsih
 Event: APN Scoping Workshop on Climate Change Adaptation in Urban Planning
 Venue: Hotel Grand Cempaka, Jakarta, Indonesia
 Date: 6-7 May 2013

What is APN?

The APN (Asia-Pacific Network for Global Change Research) is an **inter-governmental network** that

- Fosters **global change research** in the Asia-Pacific region
- Increases **developing country participation** in global change research
- Strengthens **links** between the **science community and policy makers**

* We define global change as the set of natural and human-induced changes in the Earth; in its physical, biological, and social systems that, when aggregated, are significant at a global scale.

What is APN?

- Established in 1996 as a result of the 1990 White House Conference on Science & Economics Research Related to Global Change
- Full time Secretariat in Kobe, Japan since 1999
- Major activities
 - Research projects (ARCP)
 - Capacity building projects (CAPaBLE)
 - Science-policy linkages



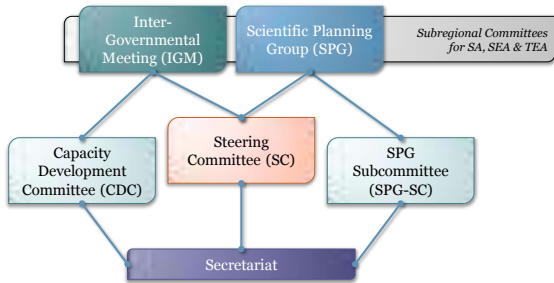
APN today

- A total of **22** Member Countries*
- Managing **39** ARCP and CAPaBLE Projects (2012/13)
- Financial Contribution for 4 donor countries: **Japan, USA, Republic of Korea, New Zealand**
- Financial Resources: **US\$ 3 Million (2012/13)**
- New focused activities on **Climate Adaptation and Low Carbon Development**




* Pacific Island Countries and Singapore are approved countries whose scientists are eligible to receive funding under APN awards.

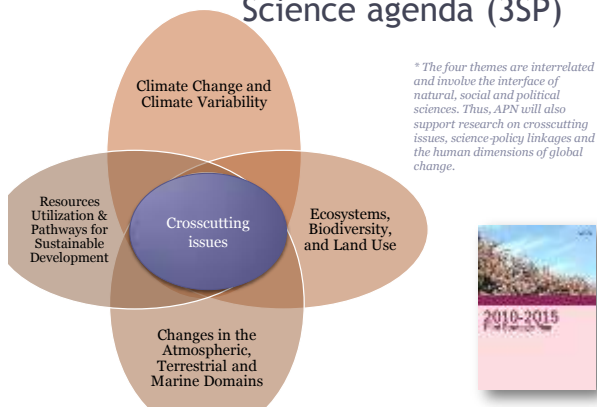
APN structure



APN Third Strategic Phase (2010-2015)

Goal 1	Goal 2	Goal 3	Goal 4
<ul style="list-style-type: none"> Supporting regional cooperation in global change research on issues particularly relevant to the region 	<ul style="list-style-type: none"> Strengthening appropriate interactions among scientists and policy-makers, and providing scientific input to policy decision-making and scientific knowledge to the public 	<ul style="list-style-type: none"> Improving the scientific and technical capabilities of nations in the region including the transfer of know-how and technology 	<ul style="list-style-type: none"> Cooperating with other global change networks and organizations 

Science agenda (3SP)



Core activities: ARCP

- ARCP: Annual Regional Call for Research Proposals



- Projects that aims to improve regional and national networking of scientists in specialized fields of research, which resulted in improved collaboration
- Research outcomes that will result in better understanding of the impacts of global change in the region and an increased awareness of these issues by policy-makers and resource managers
- Projects that were designed to meet the needs for scientific information relevant to regional issues

Core activities: CAPaBLE

- CAPaBLE: Scientific Capacity Building/Enhancement for Sustainable Development in Developing Countries



Provide opportunities for young scientists to discuss relevant issues on global change and developed professional networking for future collaborative efforts

Facilitate interactions between scientists and policy-makers as well as enhanced the knowledge base of information relevant to regional climate change impacts

Enhance technical training of scientists and practitioners and produce well-designed educational and training materials for local application

Subregional cooperation: SEA



Subregional cooperation: SEA

- **2009: 2nd SEA-SRC Meeting, Bangkok, Thailand**
 - Medium- to long-term planning;
 - Scientific priorities for SEA;
 - Mechanisms for science-policy interaction.
- **2010: 3rd SEA-SRC Meeting, Manila, Philippines**
 - Focus on SWOT analysis
 - Strengths & weaknesses need to be addressed
 - Call for strengthened coordination
- **2011: 4th SEA-SRC Meeting, Hanoi, Viet Nam**
 - Two major activities took shape: 1) SEA Science-Policy Dialogue 2) Adaptation Training for Urban Planning
- **2012: 5th SEA-SRC Meeting, Siem Reap, Cambodia**
 - Young scientists benefited from back-to-back Proposal Development Training Workshop: two proposals were approved by the IGM.
 - Review and analyze the successful Science-Policy dialogue and potential future plans
 - Discuss the plans and follow-up actions for developing the Adaptation Training Workshop
 - New proposed subregional activities



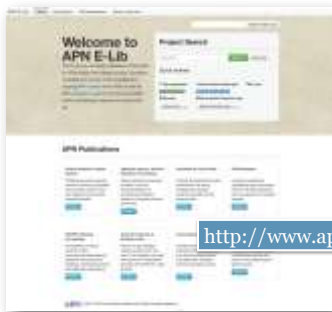
Subregional cooperation: SEA

Back-to-back activities:

- Climate Downscaling Workshop
- Climate Adaptation Seminar
- APN Proposal Development Training Workshop
- ...



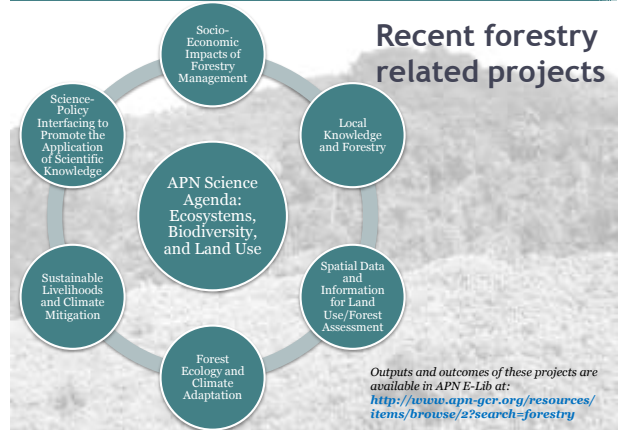
APN E-Lib: a database of APN projects and publications



- **Past and ongoing projects**
 - project metadata
 - output/outcomes
- **APN publications**

<http://www.apn-ger.org/resources>

Recent forestry related projects

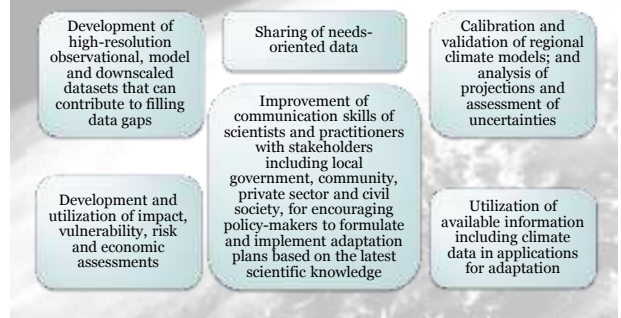


Focused Activities on Ecosystems, Biodiversity & Land Use



- Evaluation of Trade-offs between Conservation and development – Case of Land-use Change in Malaysia and Indonesia
- Critical Analysis of Effectiveness of REDD+ for Forest Communities and Shifting Cultivation Based on Lessons Learnt from Conservation Efforts in Laos and Thailand
- Participatory Approaches to Forest Carbon Accounting to Mitigate Climate Change, Conserve Biodiversity, and Promote Sustainable Development
- Developing an MRV System for REDD+: Scaling up from Project Level to National Level REDD+ MRV Systems for Laos and Viet Nam
- Capacity Building of ALOS Satellite Data to Support Mapping and Monitoring Deforestation and Degradation in Indonesia

Focused Activity 1: Climate Adaptation Framework



Focused Activity 2: Low Carbon Initiatives Programme

Regional-based research

- Advanced research to develop/deepen understanding of some components of integrated assessment models, focusing on land-use change, energy use, and regional economic integration;
- Regional comparative research of APN developing country low-carbon development pathways and scenarios;
- Research on cross-cutting issues, including traditional cultures and other behavioural/societal patterns;
- Basic research towards formulating low-carbon development path and scenarios; or
- Other research in line with developing and/or improving low carbon green growth that will lead to post Rio+20 Sustainable Development in the Asia-Pacific Region.

Capacity Development

- Develop and strengthening the capacity of APN developing member countries by providing training opportunities in, for example:
- Undertake activities that may strengthen the Science-Policy interface in low carbon as well as strengthen the APN's partnerships with the Global Change Community and other networks in the Low Carbon arena;
- Undertake dialogues between researchers and national/local policy-makers for helping and improving collaboration between them toward planning national low carbon development strategies; or
- Undertake targeted activities that promote South-South cooperation amongst APN member countries and disseminates messages to policy-makers.



East Building, 4F
1-5-2 Wakinohama Kaigan Dori
Chuo-ku, Kobe 651-0073, Japan
Tel: +81-78-230-8017
Fax: +81-78-230-8018

For more information,
please visit:

www.apn-gcr.org

or email

info@apn-gcr.org



DEVELOPMENT OF CLIMATE CHANGE ADAPTATION ACTION PLAN OF DKI JAKARTA



Presented on behalf of Environment Management Board
Jakarta Province

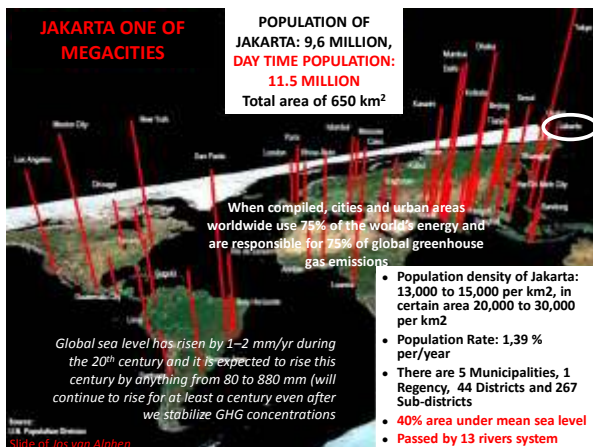
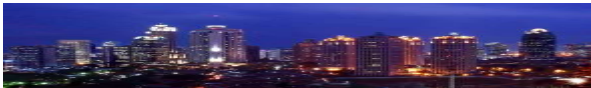
RIZALDI BOER

Centre for Climate Risk and Opportunity Management of
Bogor Agriculture University



Outline

- General Condition of DKI Jakarta
- Vision and Mission of DKI Jakarta Capital City
- Climate Change and its Potential Impact
- Vulnerability Assessment for assisting the development of CCA Plan
- Goal of CCA Plan of DKI
- Proposed Institutional Arrangement



GENERAL CONDITION

- In 2010, per capita GRDP of DKI Jakarta inhabitants at current price was 8,500 USD/capita (the Highest)
- Human Development Index (HDI) 77 in 2008 (the Highest)
- Public transportation is mainly served by 10 corridors (out of 15 corridors) transJakarta bus way (average 250.000 passengers per day).
- Clean water service coverage : 60%
- Vulnerable inhabitants around 3,48%
- Slums area : 416 RW out of 2.196 RW

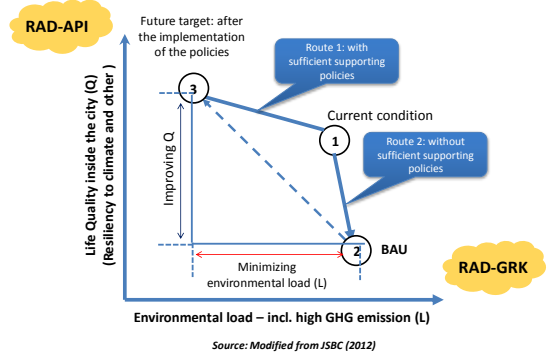


Vision and Missions

- VISION
 - Jakarta as modern and tidy city, comfortable for living, has a cultured society, and the government-oriented public service
- MISSION
 - Developing Jakarta as a modern and tidy city and consistent with the Spatial Plan.
 - Making Jakarta to be free from chronic problems such as traffic jams, floods, slums, waste and others.
 - Ensuring availability of residential and public spaces which are feasible and affordable for the citizens
 - Building a culture that is tolerant, but also at the same time have the awareness to maintain the city.
 - Building a clean and transparent governance with public service oriented.



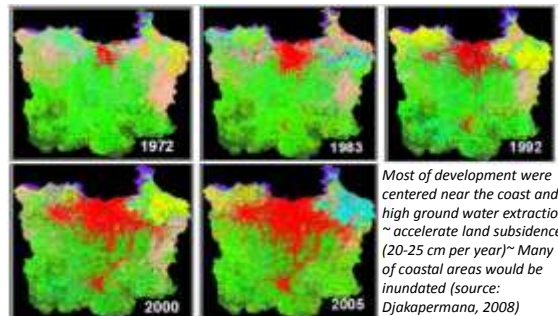
INDICATORS TO ACHIEVE JAKARTA RESILIENT CITY



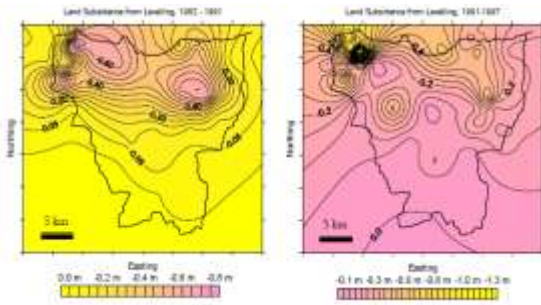
Climate Change and Potential Impact

- Environmental and biophysical condition of DKI Jakarta have deteriorated which increase the vulnerability
 - Level of exposure and sensitivity increased particularly due to land subsidence, increase population density, improvement of waste management is not in balance with its generation, drainage capacity is low and open space area is decreasing, transportation system
 - Without adaptation, impact of climate change may be severe and economic loss due to climate hazards is getting higher → late actions will lead to much higher investment required for the adaptation

RAPID CITY DEVELOPMENT (RED = BUILT UP AREA)

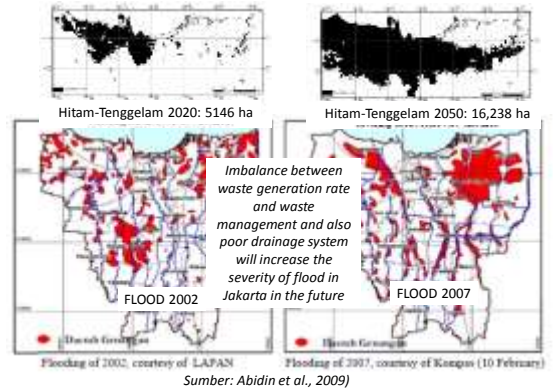


Land Subsidence (1982-1991 vs 1991-1997)

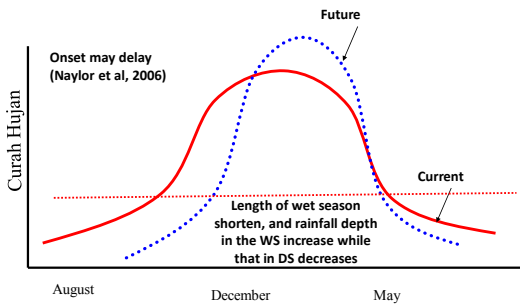


Source: Abidin et al, 2001

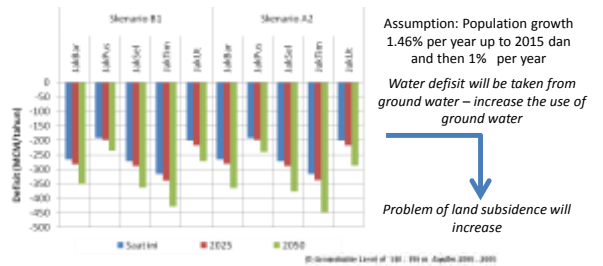
PREDICTED INUNDATED AREA DUE TO LAND SUBSIDENCE



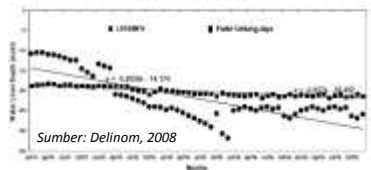
Predicted Change of Climate in the Future (2050)



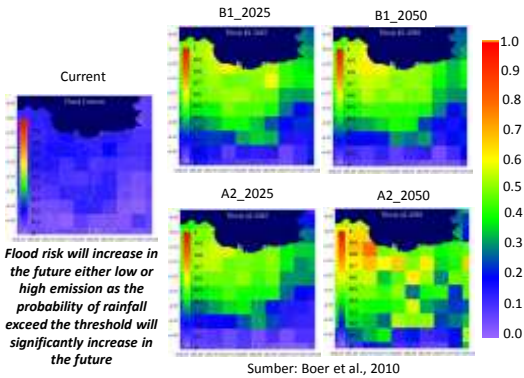
Source: Based on Naylor et al (2007)



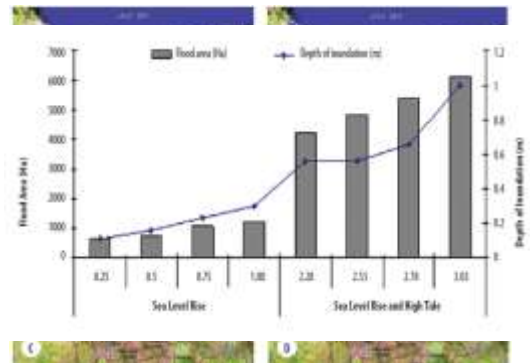
Water deficit will increased in the future (water supply only from surface runoff)



Change of Flood Probability under changing Climate



Impact of Sea Level Rise 0.25 m (A), 1.0 m (B), sea level rise + high tide of 2.28 m (C) and sea level rise + high tide of 3.03 m (D)



ESTIMATED ECONOMIC LOSS DUE TO SLR IN JAKARTA

Scenario	Number of people affected (in thousands)	Economic Loss (Billion IDR)					Total
		Settlements	Rice	Ports	Harbor/Airport		
SLR (m)	0.25	74	1.00	0.06	0.12	6,489.56	6490.74
	0.50	93	3.27	0.07	0.23	7,202.44	7294.01
	0.75	109	1.63	0.08	0.62	7,981.81	7884.36
	1.00	130	2.15	0.28	0.71	8,622.76	8625.90
SLR + tides and waves action (m)	2.28	236	1.80	8.49	1.48	6,489.56	6500.33
	2.51	280	3.27	9.50	1.59	7,202.44	7214.76
	2.78	325	1.63	10.15	1.63	7,981.81	7885.24
	3.03	381	2.15	11.05	1.71	8,622.76	8637.67

Source: SNC (MoE, 2010)

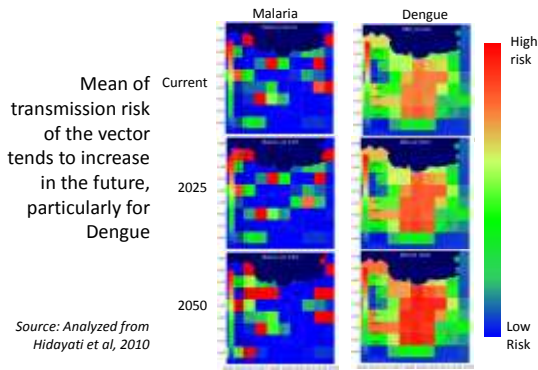
Dengue case in Jakarta



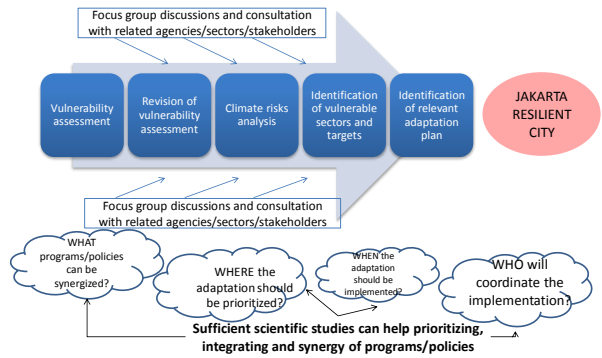
Sumber: Sunantri, Arit, Model Pencegahan Berbasis Lingkungan terhadap Penyebaran Penyakit DBD di DKI Jakarta⁹, 2008

Change in rainfall and the increase in temperature are suspected as the cause of the increase of Dengue cases in Jakarta in the last 10 years

Dengue and Malaria Risk



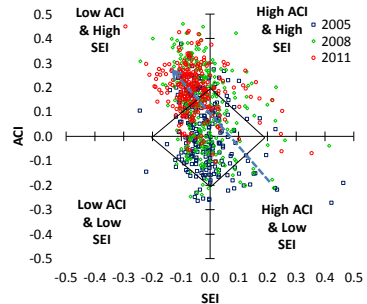
PROCESS OF DEVELOPMENT OF DKI JAKARTA CLIMATE CHANGE ADAPTATION PLAN (RAN API)



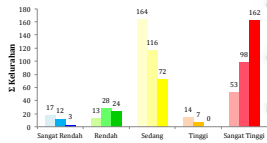
Vulnerability Assessment of Kelurahan (Villages)

A	Indicator for adaptive capacity (ACI)	Weight	B	Indicator for sensitivity and level exposure (SEI)	Weight
A1	Electricity facility	0.10	B1	No. HH live near river side	0.05
A2	Education facility	0.45	B2	No Building near the river side	0.05
A21	TK (Kinder Garden)	0.07	B3	Source of drinking water	0.10
A22	SD (Elementary School)	0.13	B31	- Pipe (PDAM)	0.25
A23	SMP (Junior High School)	0.20	B32	- Wells	0.50
A24	SMU (Senior High School)	0.27	B33	- Spring	0.50
A25	Universities	0.30	B34	- Lake/river	0.75
A3	Main source of income	0.10	B35	- Rainfall	1.00
A4	Health facility	0.35	B4	Population density	0.15
A41	Puskesmas	0.20	B5	Poverty Level	0.10
A42	Polyclinic	0.30	B6	Waste fraction	0.25
A43	Posyandu	0.20	B7	No HH in slump areas	0.15
A44	Midwife	0.10	B8	No building in slump area	0.05
A45	Medical doctor	0.20	B9	Land Subsidence	0.10

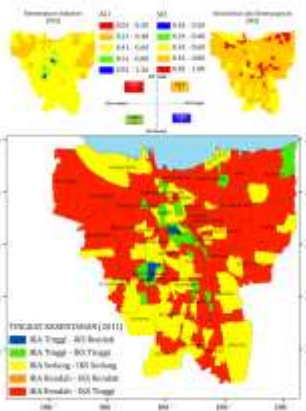
Grouping of Villages based on Vulnerability Index



Vulnerability of Village in Jakarta [Baseline 2005]

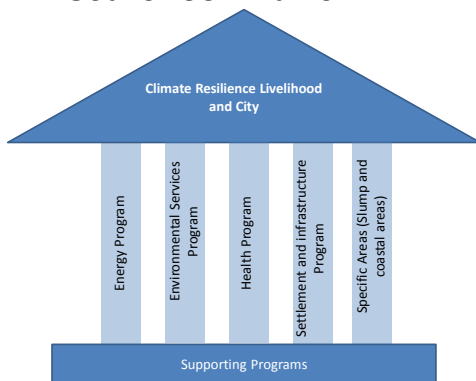


- WHERE, WHAT and WHEN the adaptation should be prioritized and synergized?
- WHAT policy supports needed?
- WHAT Institutional Arrangement?



Characteristic	SEI			ACI		
	2005	2008	2011	2005	2008	2011
High ACI and Low SEI						
High ACI and High SEI						
Medium ACI and Medium SEI						
Low ACI and Low SEI						
Low ACI and High SEI						

Goal of CCA Plan of DKI



Goal of the CCA Plan of DKI

Sector	Goal
Self Energy Sufficiency	<ul style="list-style-type: none"> • Increasing energy self sufficiency through the utilization of household waste and domestic waste to meet energy needs for reducing burden on environmental • Enhancing cooperation between the city and the local government in the upstream region to maintain and improve the condition of the rain catchment area as source of hydroelectric power plant
Specific Areas (Slump and coastal areas)	<ul style="list-style-type: none"> • Increasing community knowledge and adaptability, particularly in slums areas, coastal, and small islands in addressing climate risk • Reducing slum settlements areas, especially in river side and coastal areas
Health	<ul style="list-style-type: none"> • increasing early warning system for disease control and health disorders and accidents due to climate change • Reducing health disorders (dengue, malaria etc) as well as accidents due to climate change
Etc	<ul style="list-style-type: none"> • Etc
Supporting	<ul style="list-style-type: none"> • Establishing a city committee facilitate coordination and synergy among sectors and stakeholders for increasing community and city resilience

ADAPTATION PROGRAMME

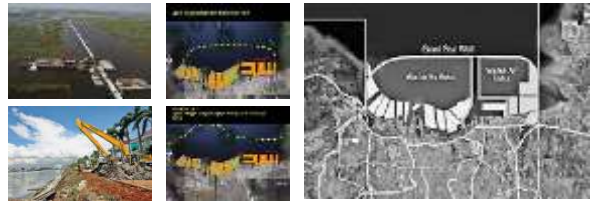
Adaptation Program :



- Flood Control Infrastructure Development
- Maintenance of Shore Line Flood Barrier and Construction of Flood Channel
- Rehabilitation of the mangrove forest
- Plan of Giant Sea Defense Development



ADAPTATION EFFORTS

- Plan of Giant Sea Defense Development
 - Activities that have been / are running:
 - Building concept of Giant Sea Wall Development
 - Deepening of Giant Sea Wall Development substances for flood controlling, wastewater, raw water, forestry, and marine sector.
 - The plan further activities:
 - Giant Sea Wall Development will be started in year 2015
 - Giant Sea Wall will be operated in year 2020
 - The raw water from retention reservoir can be processed as drinking water in year 2022.



 **School of Urban and Regional Planning** 


Climate Change Adaptation and Urban Planning Education in the Philippines

Mario R. Delos Reyes
University of the Philippines
School of Urban and Regional Planning

Grand Cempaka Hotel, Jakarta
6-7 May 2013

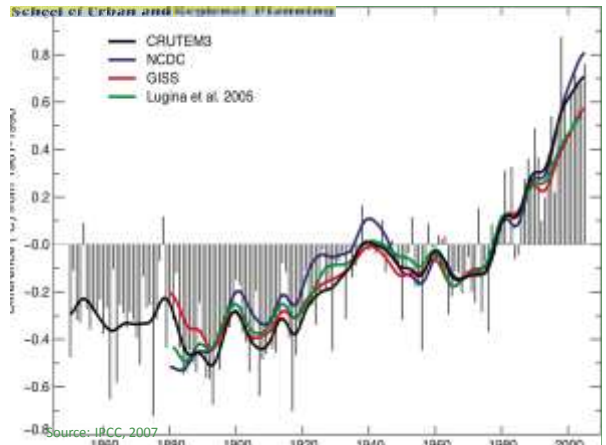
Outline of Presentation

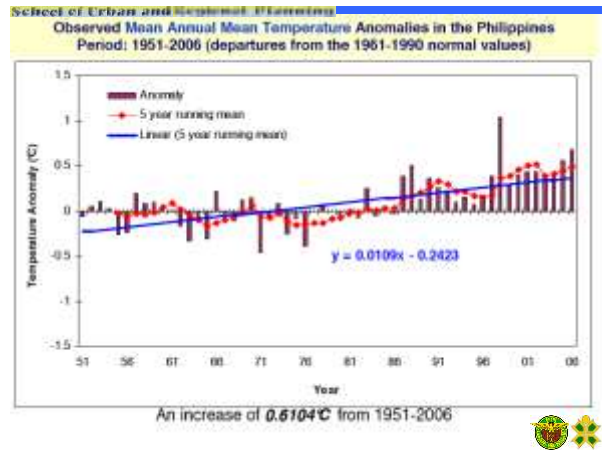
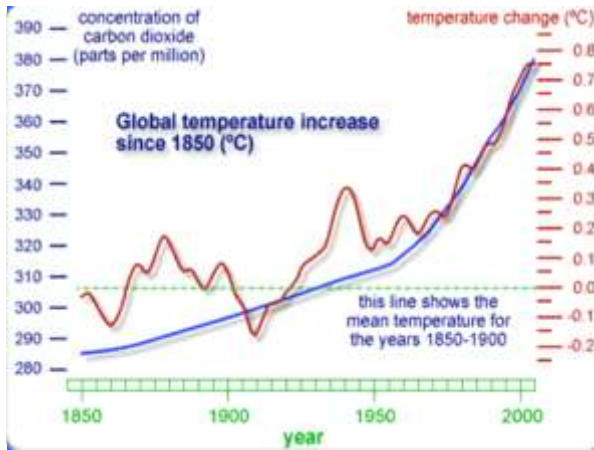
- Phil Need for CCA
- Phil Policy Response to CC
- Strengthening CCA in Planning Education
- Rising to the Challenge/Initiatives



 **School of Urban and Regional Planning** 

Philippines' Need for CCA





School of Urban and Regional Planning

CC Impacts

Stronger and more Frequent Typhoons

Detailed description: This slide is titled 'CC Impacts' and features a blue header. Below the header, the text 'Stronger and more Frequent Typhoons' is displayed in a white box. To the right of this text is a satellite image of a typhoon. Below the text box is a photograph showing the aftermath of a typhoon, with debris and damaged structures. The slide also includes the 'School of Urban and Regional Planning' logo at the bottom right.

School of Urban and Regional Planning

Typhoon Nesat
3AM JST Tue Sep 27 2011
Position: 8.3 N 122.8 E
Maximum Wind: 100 mph
Gust: 150 mph
Moving N (VMW at 11 mph)

Satellite: 6:11 PM UTC
2:11 AM JST

Detailed description: This slide features a satellite image of Typhoon Nesat. The image shows a large, well-defined eye and spiral cloud bands over the western Pacific Ocean. Technical data is provided in the top left corner, including the time (3AM JST Tue Sep 27 2011), position (8.3 N 122.8 E), maximum wind (100 mph), gust (150 mph), and movement (Moving N (VMW at 11 mph)). The satellite image timestamp is 6:11 PM UTC / 2:11 AM JST. The slide includes the 'School of Urban and Regional Planning' logo at the bottom right.

School of Urban and Regional Planning

CC Impacts

Increasing heavy rainfall causing Flooding and Landslides



School of Urban and Regional Planning





CC Impacts



School of Urban and Regional Planning

CC Impacts

Increasing temp resulting to drought, heat island, water and power shortage



School of Urban and Regional Planning

CC Impacts

Sea level rise, storm surges and coastal inundation





Analysis of the Impacts

- Scarcity of government resources to address impacts of climate change and disasters
- Overlapping functions and mandates of the NDRRMC and the Climate Change Commission
- Local government units are required to provide a Local Climate Change Action Plan and Local Disaster Risk Reduction Management Plan



School of Urban and Regional Planning

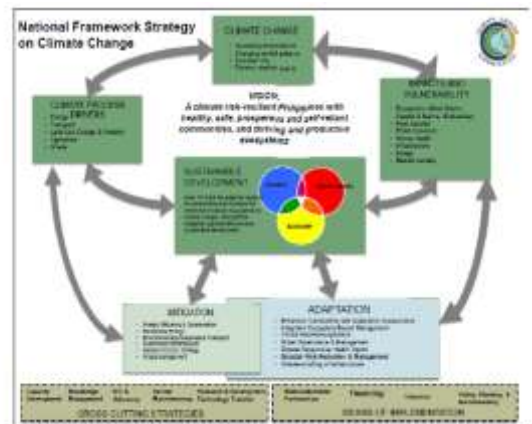


Philippines' Policy Response on CC



Climate Change Act – RA 9729

- ❖ RA 9729, Rule VI, Sec. 1(a) - Ensure the mainstreaming of climate change, in synergy with disaster risk reduction and risk management, into the national, sectoral and local development plans and programs
 - ❖ Informed
 - ❖ Knowledgeable
- ❖ Rule VIII, Sec. 4 – Local Climate Change Action Plan
 - ❖ Land use management
 - ❖ Capacitated and willing




Demand for Action

Climate Change Act of 2009


National Framework Strategy on Climate Change (2010-2022)

Adaptation Strategies	Mitigation Strategies
<ul style="list-style-type: none"> • Vulnerability and Adaptation Assessments • Integrated Ecosystem-based Management • Climate-responsive Agriculture • Water Governance and Management • Climate Responsive Health Sector • Disaster Risk Reduction 	<ul style="list-style-type: none"> • Energy efficiency and conservation • Sustainable Infrastructure • Renewable Energy • Sustainable Transport • REDD Strategy • Waste Management



Demand for Action

- **CAPAs** and **LAPAs** driving **NAPAs**
 - Learn from good experiences
- Explore synergies between **local development and adaptation**
 - Get the attention of the ‘development’ bits of local government
- Build on innovations in **local development successes**
 - community-led & municipal led ‘slum’ and squatter upgrading & housing finance; a lot of innovation to draw on





- 2011 to 2028
- address urgent and immediate needs and concerns relating to the dangerous consequences of climate change to **vulnerable sectors** such as agriculture, water resources, ecosystems, humans and infrastructure services
- Keeping the Promise in the President’s Social Contract
- Adopted 11-22-11



School of Urban and Regional Planning



Strengthen CCA in Planning Education




School of Urban and Regional Planning

CCA & Planning Educ

TOOL DEVELOPMENT FOR THE CITIES IN CLIMATE CHANGE INITIATIVE (CCCI)
Workshop
Nairobi, Kenya, 25 to 27 March 2009
Windsor Hotel and Country Club, Nairobi, Kenya

CITIES IN CLIMATE CHANGE INITIATIVE (CCCI)
WORKSHOP ON CLIMATE CHANGE AND URBAN PLANNING
28-30 May 2009
Rotterdam

United Nations Human Settlements Programme
Institute for Housing and Urban Development Studies
Commonwealth Association of Planners



UN-HABITAT
FOR A BETTER URBAN FUTURE

University Seminar & Workshop
Strengthening Climate Change in Planning Education

Objectives

- ▣ To develop country specific course modules that would be tested on Climate Change and Urban Planning;
- ▣ To develop and test a country specific three-day university seminar with innovative approaches to engage students on Climate Change and Urban Planning;
- ▣ To reach a common understanding on how to develop more generic course material for the CCCA; and
- ▣ To further fine-tune the CCCA



Strengthening CC in Planning Educ

Three seminar/workshops were organized between March and June 2010 (Manila, Uganda, and Ecuador), each meeting comprising two distinct elements:

- A three-day seminar for university students
 - Lectures and studio work were coordinated by local faculty member, and supplemented by lecturers from different universities in the region; and
- A workshop of the university lecturers were organized in conjunction with the university seminar
 - To standardize the sessions towards the CCCA and to further discuss how the universities can benefit from and contribute to CCCA




School of Urban and Regional Planning

CC & Planning Education

THE HABITAT PARTNER UNIVERSITY INITIATIVE
Global Workshop
Hosted by University of Westminster
London, 16-18 May 2011

Strengthening Urban Climate Change Education in Universities
CITIES AND CLIMATE CHANGE ACADEMY (CCCA)
Global Workshop in Bonn, Germany, 1 – 2 June 2011



School of Urban and Regional Planning

CCA & Planning Education

- Mainstreaming Climate Change Adaptation and Disaster Risk Reduction into Local Development Planning
 - Module 1: Key Concepts on CCA/DRR Mainstreaming
 - Module 2: Vulnerability Assessment
 - Module 3: Vulnerability Mapping
 - Module 4: Mainstreaming Vulnerability Results in Local Development Planning



Plan 289: Climate Change Impacts and Adaptation Measures

COURSE OUTLINE

1. Orientation on Course Requirements
2. Introductory Concepts to Climate Change & Overview of Climate Change and Development
3. Climate Change Footprints and Scenarios
4. Climate Change Impacts and Disaster Risks
5. Climate Change and Development Sectors
 - a. Agriculture and Fisheries
 - b. Forestry and Biodiversity
 - c. Coastal and Marine Resources
 - d. Public Health
 - e. Water Resources
 - f. Urban Services
6. Mainstreaming Climate Change in Development Planning
 - a. Climate change as a planning imperative
 - i. Understanding Climate Change Vulnerability
 - ii. Vulnerability Assessment Approaches and Perspectives
 - b. Climate Change Responses: Mitigation and Adaptation Measures: Concepts and Trends
7. Climate Change Responses in the Philippines
 - a. Philippine Policy Framework for Climate Change Responses: Mitigation and Adaptation
 - b. Lessons from Mitigation and Adaptation Practices
8. Barriers to Mitigation and Adaptation



School of Urban and Regional Planning



Rising to the Challenge/ Initiatives

School of Urban and Regional Planning

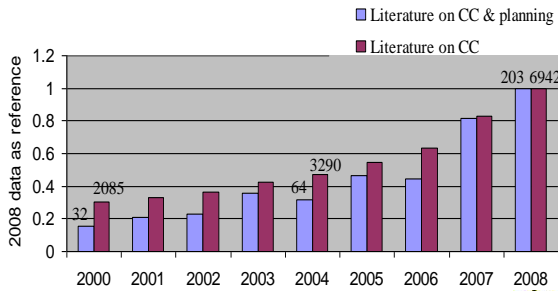
Climate Change and Education

- Addressing CC requires global, regional & local level actions and capacity
- Cities/municipalities need to identify priorities, policies and actions to address CC
- Planning education, mitigation and adaptation to CC
- CC Education in the North made progress
- Large investments on CC research and establishment of research institutions
- Limited publications on CC and planning



Annual Change in Publications on CC

Annual change in publication on CC from Web of Science



Cities in Climate Change Academy

The vision of the Cities and Climate Academy is to provide universities with resources to better address climate change in urban planning education. In the future an on-line facility is planned where specially designed lecture sessions would be uploaded for download by universities. A complete package for each session could contain: a lecture/power point presentation, supplementary lecture notes, a reading list, case studies, suggestions for studio/seminar work etc. Lecture sessions could be combined to develop a complete semester (or term) course, which would form one course module of a post-graduate (or graduate) degree. The objective here would be to mainstream climate change into existing syllabi. Individual lecture sessions could equally be used to address climate change in a traditional semester/term course. For example a lecture session on "transport planning and climate change" could be inserted in a general semester course on "transport planning". A dynamic web-platform is necessary. Users should be able to provide comments, upload case studies, lectures, additional reading material etc.

- Netherlands, Rotterdam May 2009
- Philippines, Quezon City March 2010
- Uganda, Kampala, May 2011
- Bonn, Germany, June 2011

HABITAT PARTNER UNIVERSITY INITIATIVE

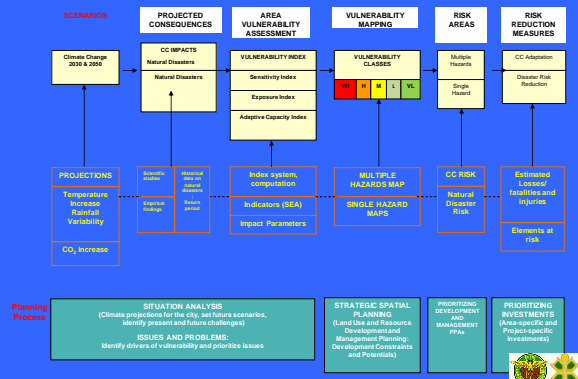
HABITAT UNIVERSITIES

Harnessing the strengths of universities, promoting cooperation in the fields of education, research, professional development and policy advice towards progressive university-city collaborations on sustainable urban development.

The Habitat Partner University Initiative aims to strengthen cooperation between UN-HABITAT and institutions of higher learning. The Initiative encourages universities to become closer partners of cities, actively engaged in problem solving, closing the gap between academics and practitioners, and encouraging collaborative learning. UN-HABITAT will act as a catalyst, facilitating partnerships among universities and other urban stakeholders.

- Informal Urbanism Hub
- Climate Change Hub
- Food Security Hub
- Future Cities Hub
- Urban Governance Hub

GENERAL MAINSTREAMING FRAMEWORK





School of Urban and
Regional Planning



**Thank You/
Salamat/
Terima Kasih.**

mdreyes84@gmail.com



Climate Change Adaptation and Urban Planning in Thailand

Jariya Boonjawat
 Southeast Asia START Regional Center
 Chulalongkorn University
 E-mail: jariya@start.or.th

Climate Change Impact and Adaptation Study for Bangkok Metropolitan Region in 2009

- Financed by the World Bank, focus on BKK and vicinity
- Objective

The study strengthened the understanding of:

- (i) the socioeconomic impacts of climate variability and change, and associated vulnerabilities of the urban communities, especially the poor, to such impacts; and
- (ii) the need to adapt urban infrastructure to mitigate these impacts and protect the urban population.

A number of conclusions

- Bangkok Metropolitan Region, BMR includes 5 more provinces in the vicinity and the climate impacts require study of the whole Chaophaya river basin to understand the hydrology system e.g. basin precipitation, sea level rise, land subsidence and monsoon-driven storm surge in the Chaophaya river mouth.
- Flood-prone areas will increase by 2050, and infrastructure (building and houses) in Bangkok and Samut Prakan will be more vulnerable,

Hydrological characters of the Chaophaya Basin

- **Flood-prone area will expand in the future.** We estimate that an additional 180 km² of Bangkok and Samut Prakan may be inundated under varying depths and to varying number of days under the A1FI climate change condition in 2050. The change marks about a 30% increase in the flood-prone area between 2008 and 2050. Furthermore, 7% of these provinces may remain inundated for over one month. Much of the increase in flood-prone area will be in the western part where the existing and planned flood protection infrastructures (dikes and pumps) may be inadequate to save the area from higher depths of flood in the future.
- **Flood volume will increase by the same percentage as precipitation, but flood peak discharge will increase more.** We observed a linear relationship between future precipitation and flood volume in the Chao Phraya River. Nevertheless, flood peak discharge in the Chao Phraya River will increase by a larger percentage than precipitation. This observation corresponds to unequal travel times of floods from upstream catchments.
- **Storm surges are important, but will have less effect on flooding.** Storm surges are not uncommon in the Gulf of Thailand. They are also responsible for flooding the BMR area. However, we estimate that the flood-prone area in Bangkok and Samut Prakan will increase by about 2% due to affecting storm surge striking western coast of the Gulf of Thailand.

Impacts

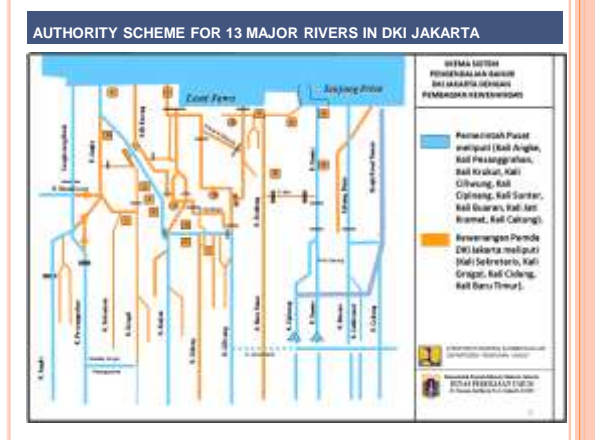
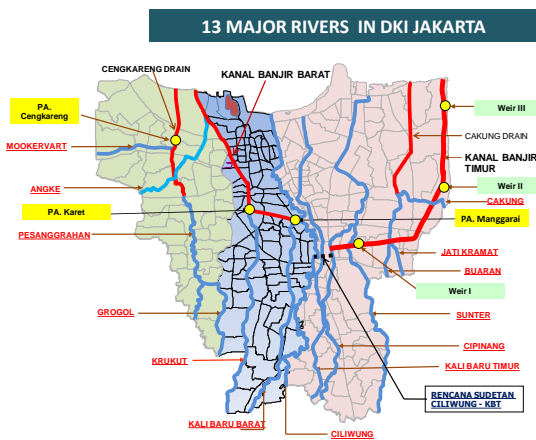
- **Large population will live in flooded area.** About one million inhabitants of Bangkok and Samut Prakarn will be affected by the A1FI climate change condition in 2050. One in eight of the affected inhabitants will be from the condensed housing areas where most live below the poverty level. One-third of the total affected people may be subjected to more than a half-meter inundation for at least one week. This marks a two-fold increase of that vulnerable population. The impact will be critical for the people living in the Bang Khun Thian district of Bangkok and the Phra Samut Chedi district of Samut Prakarn.
- **The economic damage of flooding will rise four-fold in 2050.** We found that under current climate and infrastructure conditions, economic damage from flooding (at current prices) would be 35 billion baht (about one billion U.S. dollars), which might rise to 148 billion baht (about 4.22 billion U.S. dollars) in 2050. However, 70% of the cost in 2050 would be attributed to land subsidence alone.
- **Buildings and houses are the most affected infrastructure.** More than a million buildings and housing (residential, commercial and industrial) units in Bangkok and Samut Prakarn might be impacted by flooding in 2050. These impacted buildings will include about 300,000 units in the western areas such as Bang Khun Thian, Bang Bon, Bang Khae, and Phra Samut Chedi districts. The total partial damage (to buildings and assets) may exceed 110 billion baht (3.14 billion U.S. dollars) at current prices. Nevertheless, half of the cost will be due to probable partial damage caused to the large number of new buildings that will be subjected to land subsidence in the flood-prone areas.
- **Commercial and industrial sectors will suffer substantially.**

Mix structural and non-structural adaptations

- **Mainstreaming climate change in national and sector development planning.**
- Lack of awareness of climate change within the government and insufficient relevance of available climate information to development-related decisions poses considerable difficulties in
- mainstreaming adaptation in the city's development planning.
- We propose mainstreaming climate concerns at both policy and operational levels. At the policy level, projected impacts of climate change should be embedded in all development planning.
- Operational level mainstreaming or climate proofing, on the other hand, will involve critical analysis of adaptation options for actual implementation of activities

Big flood in 2011

- Adaptation plans: spatial, from upstream watershed, all the river basin in the middle part and all the BMR at the river mouth
- Financial plan: 350,000 million Baht in process



RIVER BASIN MANAGEMENT

STRUCTURAL

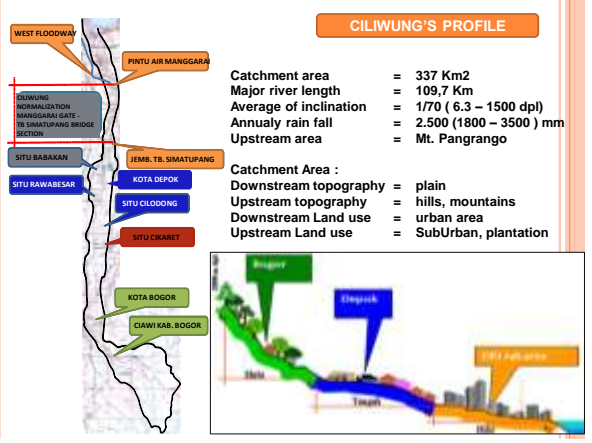
NO	PROGRAM/KEGIATAN	STATUS	JADWAL PELAKSANAAN				
			2012	2013	2014	2015	2016
1	Peningkatan Kapasitas Pemukiman Rural	selesai					
2	Peningkatan Kapasitas Pemukiman Urban	selesai					
3	Normalisasi dan pengalangan Sungai dan Bendung	tidak dilaksanakan					
4	Penyempurnaan dan pemeliharaan Bendung (Bend. Widi, Benda 1000)	proses					
5	Normalisasi Kali Cikarang	proses					
6	a. Pembuatan Mangrove dan Perbu Air Keras	tidak dilaksanakan					
7	b. Normalisasi Kali Cikarang Lama	tidak dilaksanakan					
8	c. Normalisasi Kali Cikarang (PA Mangrove - TB Simatupang)	proses					
9	Normalisasi Bendung	selesai					
10	Normalisasi Sungai (Kali)	selesai					
11	Pembangunan Substansi Kali Cikarang Kanal Bantar Timur	proses					
12	Pembangunan Waduk Ciuri	rencana					
13	Pembangunan Peraga Banjir	tidak dilaksanakan					
14	Restorasi Sempadan dan Rempis di Jalur Botak	tidak dilaksanakan					
15	Pembangunan Check Dam dan Sumur Resapan	rencana					

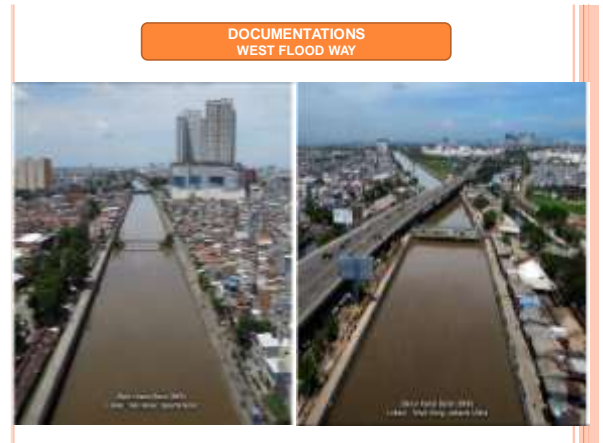
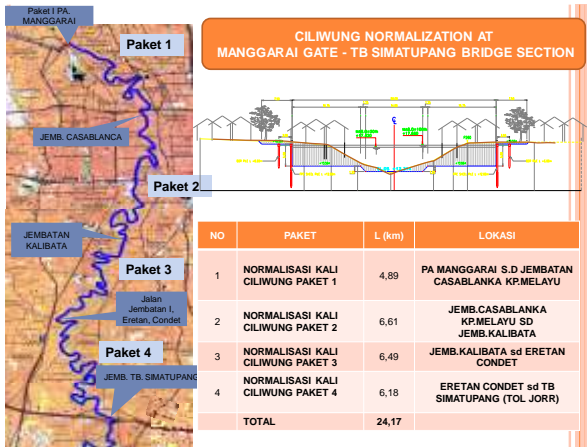
RIVER BASIN MANAGEMENT

NON STRUCTURAL

No	Kegiatan/Lokasi	Rencana Pelaksanaan						Kewenangan
		2011&2012	2013	2014	2015	2016	2017	
1	Penataan dan Sosialisasi Sempadan Sungai dan Situ-Situ							Kementerian PU, Pemprov DKI Jakarta, Pemprov Jabar, Pemprov Banten
2	Kawasan Ruang Terbuka Hijau							Kementerian PU - Ditjen Penataan Ruang, Pemprov DKI Jakarta, Pemprov Banten
3	Penataan Kawasan Hulu							Kementerian PU - Ditjen Penataan Ruang, Pemprov Jabar, Pemkab Bogor, Pemkab Cianjur, Pemprov Banten
4	Pengelolaan air limbah							Pemprov DKI Jakarta, Pemprov Banten, Pemprov Jabar
5	Peningkatan Early Warning System							Kementerian PU, Pemprov DKI
6	Pembuatan Sumur Resapan, Biopori pada lahan Pengembang dan Masyarakat							Pemprov DKI Jakarta, Pemprov Jabar, Pemprov Banten dan Stakeholder
7	Peningkatan Partisipasi Masyarakat							Stakeholder
8	Penataan Kawasan Pemukiman							Kementerian PU- Ditjen Cipta Karya
9	Rencana Tata Ruang di Kawasan Strategis Propinsi (KSP)							Pemprov DKI Jakarta, Pemprov Jabar, Pemprov Banten

PROGRAMES WHICH ON PROGRESS AND ALREADY DONE





DOCUMENTATIONS
EAST FLOODWAY

PONDOK BAMBU



RADEN INTEN BRIDGE
(BUARAN)



THE IMPACT OF CLIMATE CHANGE
IN JAKARTA



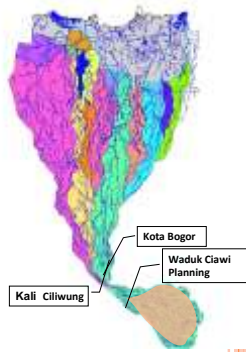
Floods "rob" in Northern part of Jakarta



CILIWUNG MANAGEMENT
PLANNING



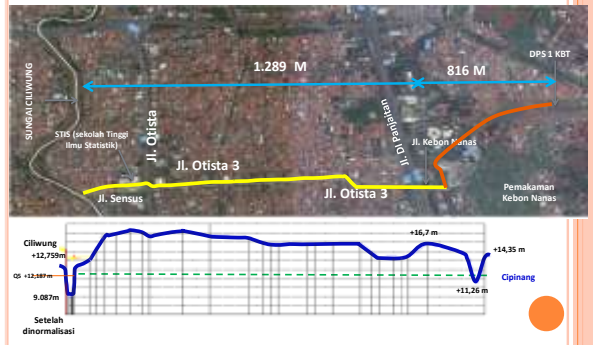
1. CONSTRUCTION OF WADUK CIAWI (2014-2017)



TECHNICAL DATA WADUK CIAWI:

Catchment area	= 105,1 km ²
Storage volume MAN	= 35,67 x 10 ⁶ m ³
Catchment area on MAN	= 137,08 ha
Catchment area on MAB	= 146,88 ha
Dam height	= 90 meter
Dam crest length	= 1.417,70 m
Cost planning	= 3,9 Triliun
Location	= Desa Gadag, Bogor

2. SHORTCUT / FLOODWAY PROFILE CILIWUNG RIVER TO EAST FLOODWAY (KBT)



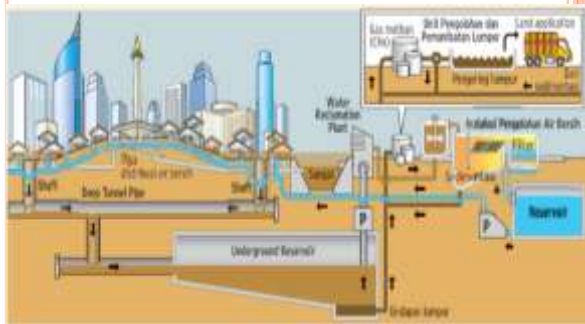
3. NATIONAL CAPITAL INTEGRATED COASTAL DEVELOPMENT (NCICD)

THERE ARE 3 STAGES OF GIANT SEA WALL CONSTRUCTION IN NORTHERN PART OF JAKARTA :

1. SEA WALL ON EXISTING COASTAL AREA
2. SEA WALL ON RECLAMATION AREA
3. SEA WALL ON THE NORTHERN PART OF RECLAMATION AREA



4. MULTI PURPOSE DEEP TUNNEL



THANK YOU

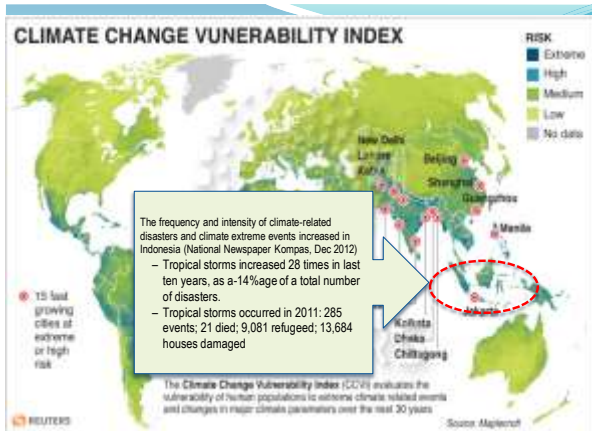
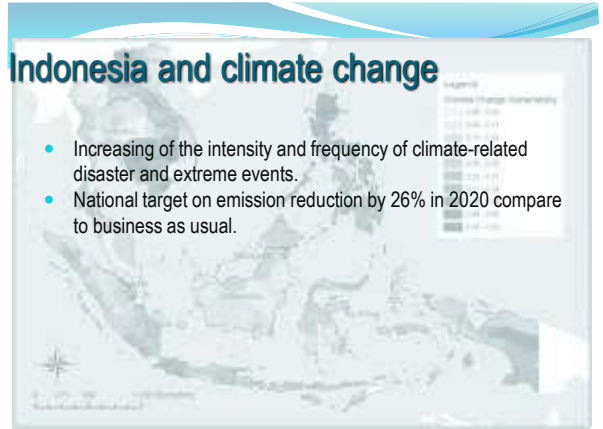


Indonesia's National Policy on Climate Change Adaptation

Assistant Deputy for Climate Change Adaptation
The Ministry of Environment
Republic of Indonesia
6 May 2013

Indonesia and climate change

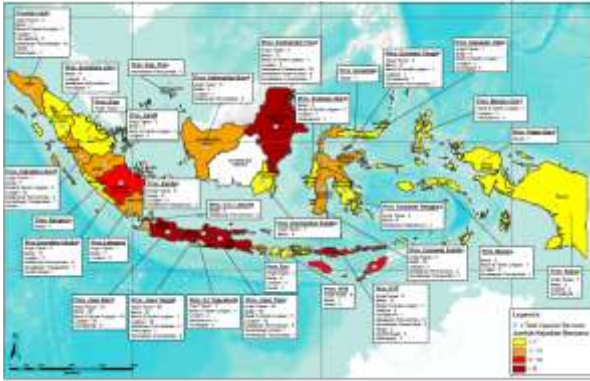
- Increasing of the intensity and frequency of climate-related disaster and extreme events.
- National target on emission reduction by 26% in 2020 compare to business as usual.



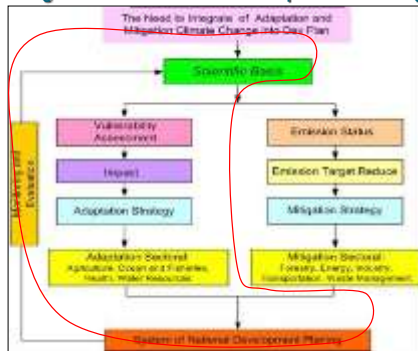
Climate related disasters in Indonesia



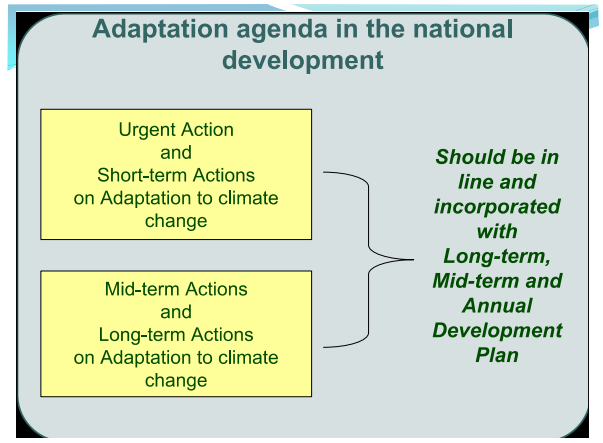
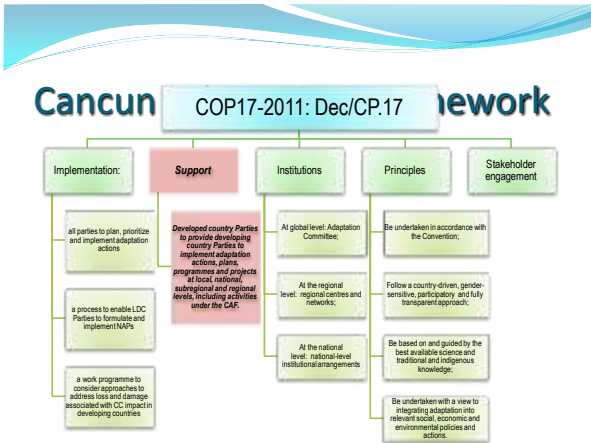
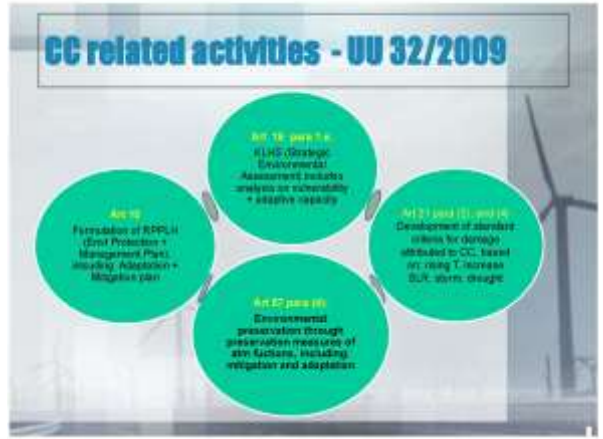
Disaster in Indonesia (2010)



Climate Change Assessment Process: Adaptation and Mitigation



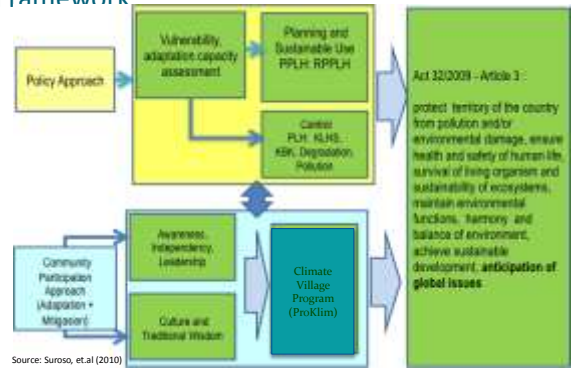
Source: Suroso, et al (2010)



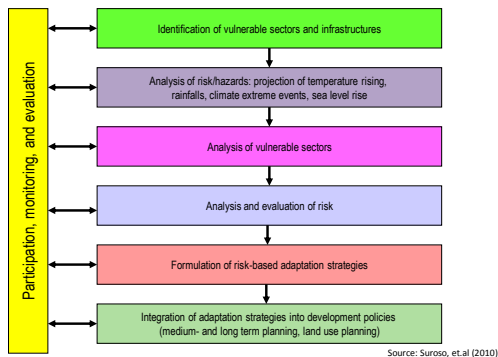
Adaptation agenda in the national development should be planned for different time-frames:

- **Urgent Action and Short-term Actions**
 Focusing on building the adaptive capacity and resilience for current climate variability
 - accurate-reliable-and-accessible climate information (for planning, anticipation),
 - information disseminating on climate change in every level of community (participation of NGOs, stakeholders and private sectors),
 - risk management program in climate-related events (e.g.: program on re-forestation in the degraded lands),
 - capacity building to mainstream adaptation issue into national plan and into program in every key sector, infrastructure design
- **Mid-term Actions and Long-term Actions**
 Targeting on the development of infrastructure system, planning system, and key sector development, re-structuring the regional planning → community resilience

Indonesia: Adaptation Implementation Framework



Vulnerability and Adaptation Assessment Process



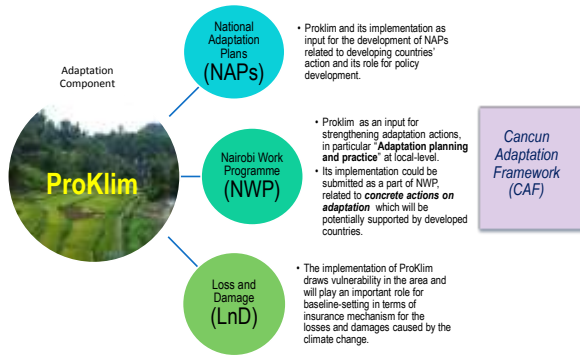
Program Kampung Iklim (ProKlim) ~a climate village programme~

- "Kampung" in Indonesian or "Village" in plain English → is administered according to traditions and customary law (adat), located in rural areas and urban subdivisions, practices the culture of helping one another as a community, as well as being family-oriented (especially the concept of respecting one's family [particularly the parents and elders]), courtesy and believing in God as paramount to everything else.
- Various name of "kampung" in Indonesia: *banjar* (Bali), *nagari* (West Sumatera), *dusun* (Java), etc

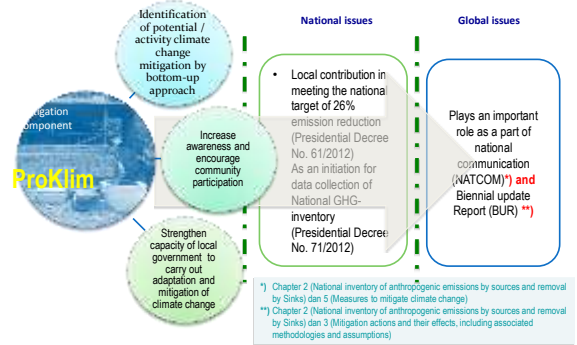
ProKlim

- is a program to recognize active participation of local communities in implementing actions of integrated climate change mitigation and adaptation, which contributes to the achievement of national green house gas reduction target and increases the community resilience to the climate change impact.

ProKlim as a part of global actions and UNFCCC



ProKlim as a part of global actions and UNFCCC



Benefits

Contribution of the local community for the achievement of 26% national emission reduction target in 2020 compare to business as usual;

Enhancement of adaptive capacities to the impact of climate change and climate variability in local level;

Provide data and information on potential climate change mitigation and adaptation activities in local level.

Strategies



ProKlim covers a minimum area of a village or small community called "dusun", "Rukun Warga (RW)" up to desa or kelurahan, depends on the local nomenclature.

Criteria

- The existing mitigation and adaptation activities in a specific area;
- The continuity of mitigation and adaptation activities;
- The contribution of concrete activities in achieving the GHG emission reduction target and in enhancing the community resilience to the climate change impact;
- The availability of local community institutions and supports on sustainability of the activities.

Activities (60%)

Adaptation

Mitigation

Local Community and Sustainability Aspects (40%)

Related to proponents who are conducting the activities

Ensure the sustainability of activities

Components

Adaptation activities, i.a.:

- Management of drought, floods and landslide
- Enhancement of food security
- Anticipation to sea level rise, and other risks/hazards in coastal area
- Management of climate-related diseases

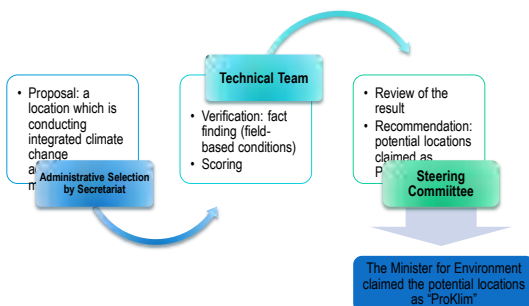
Mitigation activities, i.a.:

- Management of waste and solid waste
- Liquid waste treatment and utilization
- Energy consumption (e.g. energy efficiency, renewable energy)
- Reducing emission from agriculture activities
- Forest conservation
- Management of land and forest fire

Local Community and Sustainability Aspects, i.a.:

- Availability of local organization to manage and implement the activities
- Adoption of local policies, traditional ethics and other local knowledge to support the implementation of activities
- Community dynamics (e.g.: community self sustain, self finance scheme, gender participation)
- Local community capacities to implement the activities
- External support from governments
- External support from private sectors, NGOs, universities and other
- Continual improvement of existing activities
- Positive impacts (economic benefits, environmental benefits, and/or minimize the impact of climate extreme events)

Mechanism



ProKlim 2012

71 locations from 15 provinces submitted to the Ministry of Environment as a ProKlim candidate by local government (districts, municipalities), universities, NGOs, individual, private sectors.

Evaluated by technical team and steering committee.

Result of evaluation: 7 locations have been received ProKlim's Trophy and 4 locations awarded a certificate as "Potential Location for ProKlim Development"

No	Location	Districts/Municipalities	Province
1	Sukunen Village	Sieman	Yogyakarta
2	Jelis Lor Village	Pacitan	East Java
3	Sambangan Village	Buleleng	Bali
4	Gatak II, Tamantirto Village	Bantul	Yogyakarta
5	Serut Village	Bantul	Yogyakarta
6	Mukti Jaya Village	Rokan Hilir	Riau
7	Ngleji Village	Gunungkidul	Yogyakarta

No	Location	Districts/Municipalities	Province
1	Kerta Village	Gianyar	Bali
2	Kembana Village	Pacitan	East Java
3	Lombiana Village	Samarang	Central Java
4	Mekarjaya Village	Ciamur	West Java





Thank you...

Email: adaptation.moe.id@gmail.com
Ph/Fax: +62 21 8593 4934