- 6.3　第 2 回 ASEAN ワークショップ資料(2015 年 6 月 22 日～24 日)

ASEAN Perspectives on Capacity Development for Climate Change Resilience

Regional Workshop for Capacity Development on Low Carbon and Resilient Society in Southeast Asian Countries
Bangkok, Thailand
22 June 2015

Larry Maramis
Director (Cross-Sectoral Cooperation)
ASEAN Socio-Cultural Community Department
ASEAN Secretariat

Under High Emissions Scenario: ASEAN is at Risk and Vulnerable

- Long coastline, high concentration of population and economic activity in coastal areas, and heavy reliance on agriculture, natural resources and forestry.
- Annual mean temperature projected to rise 4.8ºC by 2100 from the 1990 average
- Predicted global mean sea level rise by 70 centimeters during the same period
- GDP loss of up to 6.7% each year by 2100, more than twice the global average.
- 650 Million by 2020 half will be living in urban areas

Towards a Broader Definition and a Robust Regional Resilience Framework

- Extreme events' impact to society and ASEAN integration have shaken fundamental assumptions of regional cooperation
- Intensity and regularity of disasters brought urgency of adopting risk reduction approach to address unpredictable and extreme events and make preparations to surviving them

Lessons Learned, Evolving Principles and Values in Regional Resilience

- The ASEAN Community 2025 (2016-2025) lays out the goals, strategies and actions to achieve an ASEAN Socio-Cultural Community that is inclusive, sustainable, resilient, dynamic and engages and benefits the people.
- Sustainability and resilience is critical to take on climate change, water scarcity and skills shortages, and must incorporate disaster preparedness and humanitarian interventions.
- A clean and green ASEAN requires fully established mechanisms to ensure protection of environment, sustainability of natural resources, and high quality of life of people
- Regional mechanism as first choice of response to coordinate resources and capacities

New Parameters for Sustainable and Resilient Development

- Narrow socio-economic divide
- Prevent or reduce occurrence of natural and man-made disasters and minimise damage
- Address worsening air pollution, noise and congestion, lack of adequate infrastructures and waste disposal and management in the urban areas of most countries of the region
- Reverse land degradation, deforestation, depletion of natural resources and loss of biodiversity and promote conservation and sustainable use of biological and genetic resources
- Protect freshwater resources and marine and coastal ecosystems.
- Address global environmental issues while addressing immediate and pressing economic, social and environmental issues
- Strengthen regional institutional arrangements to make them more effective in promoting environmental sustainability and resilience
- Develop risk management and information strategies in the context of Sustainable Consumption and Production

Risk Information to Address Persistent and Emerging Cross-cutting Issues

- Increasingly complex interplay of cross-cutting issues, collaboration and coordination mechanisms, and resource management.
- There is an urgent need to develop risk management and information strategies in the context of Sustainable Consumption and Production.
- Risk information should be integrated into concepts such as disaster and climate change resilience, which are seen as underpinning regional cooperation, for example.
- Further research on linkages between resilience and risk information needed to scale up good practices

ASEAN Declaration to Institutionalize Resilience to Disasters and Climate Change

- **Implement:** Implement economic, social, cultural, physical and environmental measures to address the exposure and vulnerability to the risks
- **Systemise** disaster risk management and climate change adaptation, and cross-pillar and cross-sectoral collaboration
- **Institutionalize** disaster risk management and climate change adaptation at the national and local levels with existing and new policies and legal frameworks
- **Participate:** Stakeholders' participation in planning and implementing disaster risk management and climate change adaptation, and accelerate public and private sector investments
- **Risk Aware:** Address underlying risk drivers and compounding factors, foster understanding on the extent of the risks; and share information on research and development
- **Capacity-building:** Strengthen national and regional institutional capacities to monitor and reduce risks
- **Cooperate:** Enhance cooperation on disaster management and emergency response in strengthening disaster resilience at all levels and reducing vulnerabilities of affected populations.

Capacity Development for Climate Change Resilience

- Policy formulation, conceptualization and analytical skills
- Programme formulation, implementation and operational skills in cross-cutting issues
- Monitoring, risk analysis, risk reduction and vulnerability assessment
- Multi-stakeholder partnership building
- Resource mobilization from traditional and non-traditional sources
- Coordination and organizational development
- Media advocacy and communications


Thank
You
For further information, please contact the ASEAN Socio-Cultural
Community Department, ASEAN Secretariat, Jakarta-Indonesia
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Thailand's Policies on Green Growth, Low Carbon & Resilient Society Development"

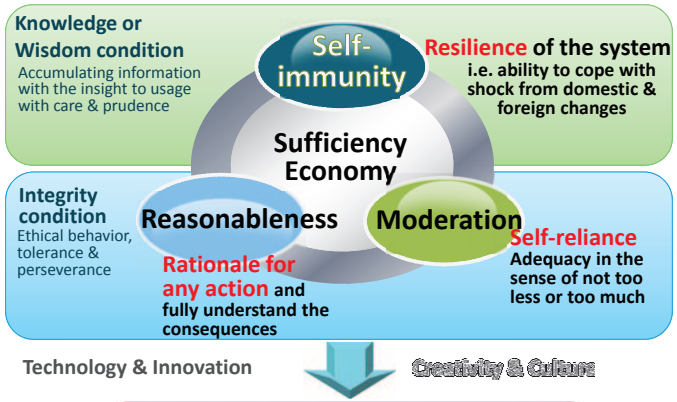
Dr. Wijarn Simachaya
Deputy Permanent Secretary
Ministry of Natural Resources and Environment (MoNRE

Presentation Outline

1. **Thailand's Framework Policies & Sectoral Plans** supporting Green Growth, **L**ow **C**arbon and **R**esilient **S**ociety (LCRS)
2. **Royal Thai Government's Policies (General Prayuth Chan-o-cha)** supporting green growth and LCRS
3. **Policy supporting the global climate agenda** : Thailand's NAMA pledged to the UNFCCC

1. Thailand's Framework Policies & Sectoral Plans supporting Green Growth, Low Carbon and Resilient Society (LCRS)

The 11th National Economic & Social Development Plan (NESDP) and the main concept of the national plan



11th NESDP comprises of 6 Strategies

Strategy 6 : Managing Natural Resources and Environment toward Sustainability

Climate change mitigation & adaptation issues **are integrated into the national plan**

- Conserve, restore and **create the security of natural resource and environment bases**
- **Development paradigm shift** towards **low-carbon economy and society**
- Enhance adaptive capability on **climate-resilient society**
- **Natural disasters preparedness**
- **Resilience on international trade** related to environment and climate
- Thailand roles on **international environmental agreements**
- **Pollution prevention and control**

www.nesdb.go.th

(Draft) National Master Plan on Climate Change 2015-2050

1. Water flood and drought management
2. Agriculture and food Security
3. Tourism adaptation to climate change
4. Surveillance of climate change impact to health
5. Natural resource management
6. Natural disaster risk minimization

1. Promotion of RE industry development
2. Sustainable transport management
3. Reduction of energy use and Increase EE in buildings
4. Energy and waste management in industry
5. Waste minimization and efficient management
6. Co-benefit agricultural management
7. Increase forest areas for carbon sink
8. Green /low carbon cities

1. Data and research development
2. Policy and management tools
3. Public awareness raising
4. International cooperation on climate change

Thailand's Energy Plans

Alternative Energy Development Plan (2012-2021)

AEDP Target : 25% of RE in total energy consumption by 2021

Energy Efficiency Development Plan (2011-2030)

EEPD Target : 25% of RE in total energy consumption by 2021

2. Royal Thai Government's Policies supporting green growth and LCRS

Prime Minister's Forest policy statement
General Prayuth Chan-o-cha

- Maintain and restore forest conservation areas.
- Increase community forest
- Develop system of land management and resolve the encroachment of state lands in line with His Majesty the King's initiatives "Enable locals to live in forest, and encourage them to participate forest management."

2. Royal Thai Government's Policies supporting green growth and LCRS

Government Policy on Waste Management Roadmap

Operation plan

1. Accumulated waste management
2. Creating platform for waste to energy
3. Decides rules and measures for waste and hazardous waste management
4. Build a discipline for Thai people

Urgent term (6 months)

-Accumulated waste management for 6 provinces

- 5 Pilot provinces for waste management

Medium term (1 year)

-Target area 20 provinces

Long term (over 1 year)

- Target area46provinces

3. Policy supporting the global climate agenda

Thailand's 2020 pledge to the UNFCCC

Nationally Appropriate Mitigation Actions (NAMAs)

H.E. General Dapong Ratanasuwan
Minister of Natural Resources and Environment

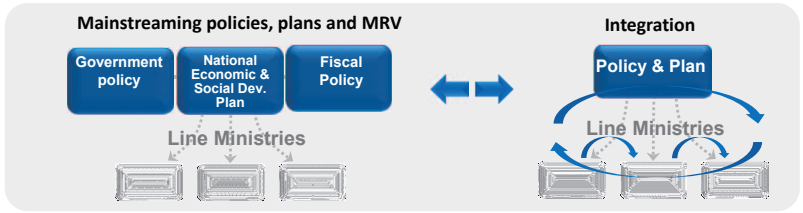
"Thailand will endeavor, on a voluntary basis, **to reduce its GHG emissions** in the range of **7 to 20 percent below the Business as Usual (BAU) in energy and transportation sectors in 2020**, subject to the level of international support provided in the forms of technology development and transfer, finance, and capacity building for NAMAs preparation and implementation."

The above-mentioned NAMAs will include **counter-measures,** as following:

- **Renewable Energy:** Biomass, Biogas, Hydro, Solar, Wind, Waste-to-Energy
- **Energy Efficiency:** EE improvement in Industries, Buildings, Transport
- **Bio-fuels** and alternative energy sources
- **Environmentally sustainable transport system**

Views on key success factors

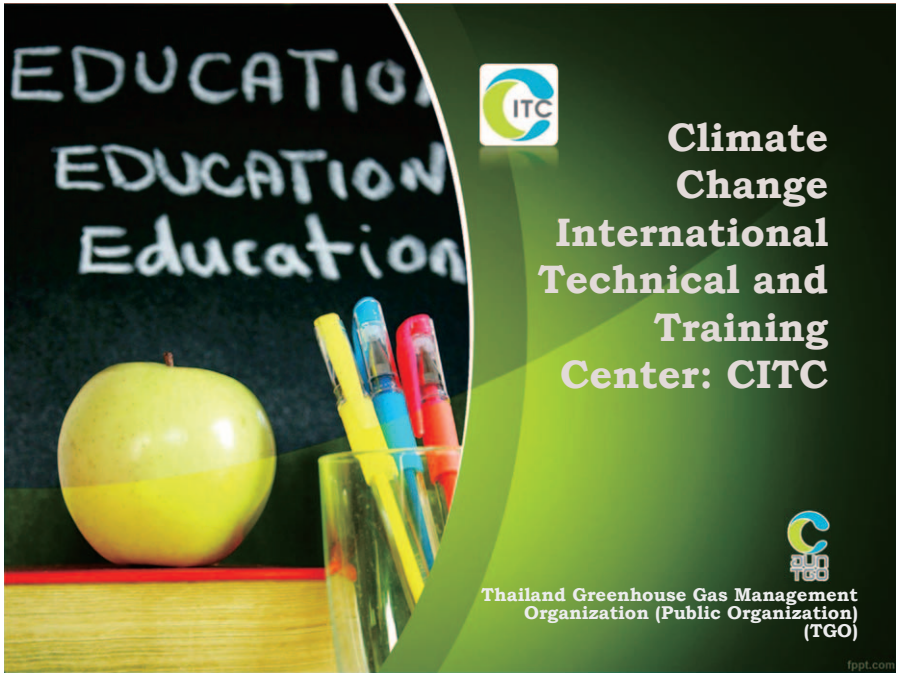
- **Mainstreaming policies, plans and MRV**



- **Public awareness raising, education, and capacity building**

Thank you

http://www.mnre.go.th
E-mail: wijarn2002@yahoo.com



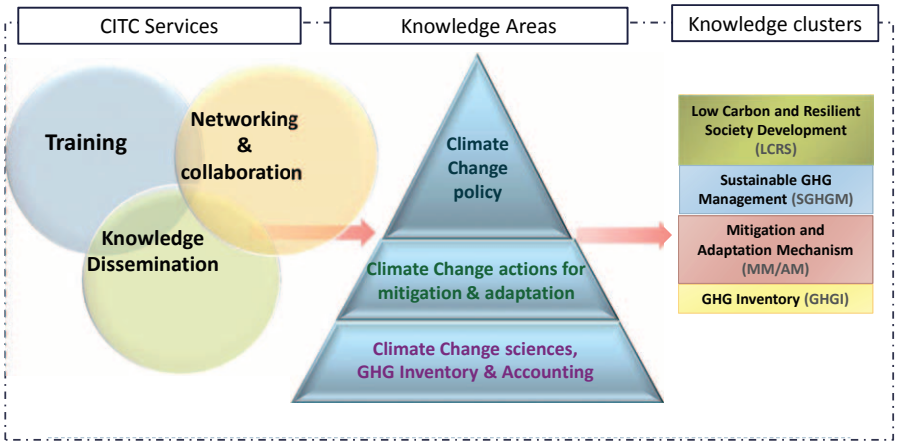
Climate Change International Technical and Training Center: CITC

Thailand Greenhouse Gas Management Organization (Public Organization) (TGO)

Outline

1. Knowledge Clusters
2. Achievements & Progress
3. Upcoming Activities

CITC in brief



Knowledge Clusters

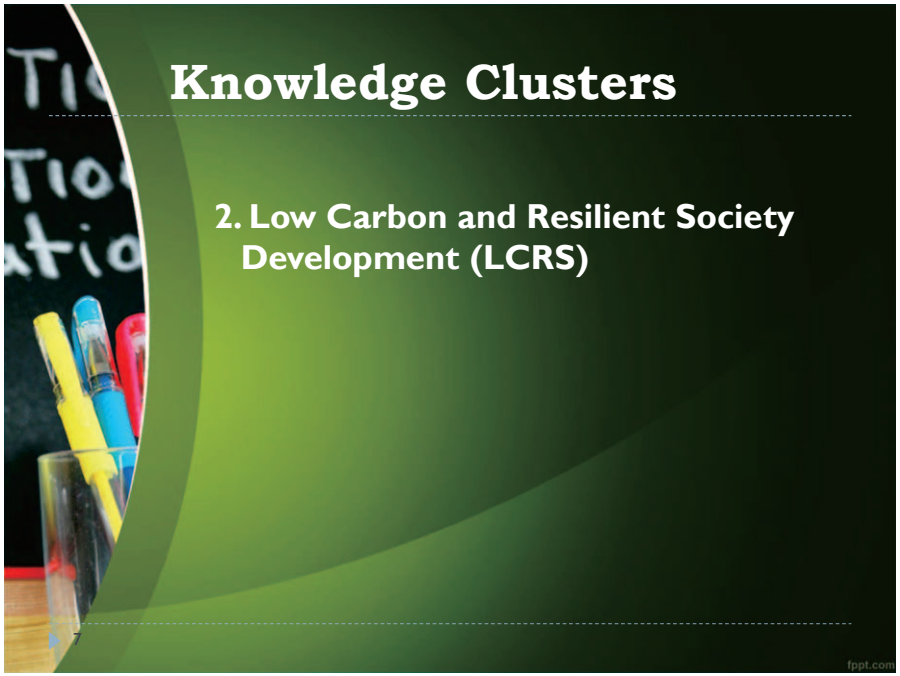
1. Greenhouse Gas Inventory (GHGI)

1. Greenhouse Gas Inventory (GHGI)

1. Greenhouse Gas Inventory for sectoral base for central government officers (Thailand Course)	• Guideline : IPCC 1996
2. Greenhouse Gas Inventory for area base for local government officers (Thailand Course)	• On the process of TNA
3. Greenhouse Gas Inventory for sectoral base (ASEAN Course)	• Guideline : IPCC 1996, 2006 • On the process of TNA

Greenhouse Gas Inventory (GHGI) For Central Government (Sectoral base)

1. Basic concept of GHG inventory GHG emission sources and data
2. GHG accounting methodologies (Separated by sector)
3. GHG quality management and reporting (Separated by sector)
4. GHG inventory applications



2. Low Carbon and Resilient Society Development (LCRS)

1. Low Carbon and Resilient Society Development for Local Government	• Local Executives, Policy Makers • Practitioners
2. Low Carbon and Resilient Society Development for Central Government	• Directors • Practitioners
3. Low Carbon and resilient Society Development for ASEAN countries	• Local Government • Central Government

Low Carbon and Resilient Society Development (LCRS) FOR Local Executives

1. Introduction to climate change and Low Carbon and Resilient Society
2. Climate change policy trend and benefits of LCRS development
3. LCRS planning and financial opportunities
4. Good practices: LCRS planning and benefits

Low Carbon and Resilient Society Development (LCRS) FOR Local Practitioners: Thailand

LCRS Concept, Impact and Co-Benefits

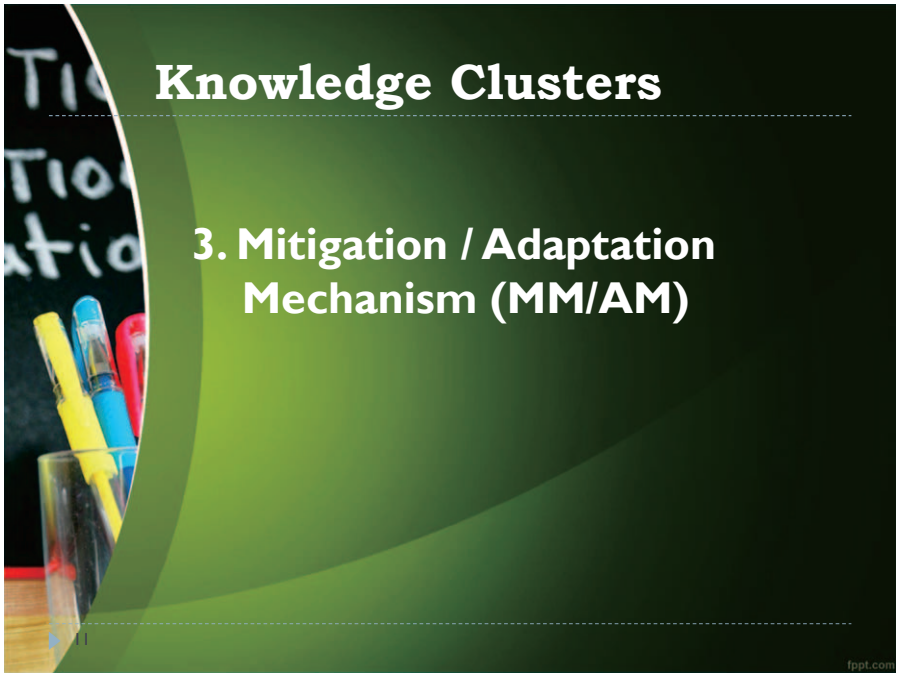
- B1 : Introduction to low carbon and resilient society
- B2 : Climate change impact in Thailand and vulnerability
- B3: Climate change science and International trend of LCRS movement
- B4: Importance of institutional management to achieve LCRS

Mitigation theory and Good practices

- B5 : Overview of mitigation and financial opportunities
- Group exercise: Problem analysis in municipalities
- B6: Good practice (sector activity) on mitigation in Thailand
- B7: Case study on mitigation project

Adaptation theory and Good practices

- B8 : Overview of adaptation
- Group exercise: Vulnerability analysis in municipalities
- B9: Good practice (sector activity) on adaptation in Thailand
- B7: Case study on adaptation project



Mitigation Mechanism (MM)

1. Importance of Climate Change
2. Overview of Climate Change Mitigation Mechanism
   - Introduction to mitigation mechanism
   - Economic approach
   - Institutional and regulatory approach
   - Education approach
   - Market-based mechanism
3. Mitigation technology
4. Measurement, Reporting and Verification (MRV) for mitigation mechanisms
5. Good Practices of mitigation mechanisms

Sustainable GHG Management (SGHGM)

1. Climate Change Economics	• Economists (Central Gov. & Academia) • Policy Makers and practitioners at National and Local levels • Private sectors
2. Climate Finance	• Policy Makers and practitioners at National and Local levels • Private Banks • Climate Finance Recipients (& national focal points) and Project Developers • Private sectors

Sustainable GHG Management (SGHGM) – Climate Change Economics

1. Introduction of climate change science
2. Greenhouse gas reduction and allocation
3. The international negotiations on climate change issues
4. lesson-learned from climate change markets
5. Economic measures and mechanisms on greenhouse gases management
6. Cost analysis and benefits
7. Impact of economic measures on climate change
8. Economics of climate change adaptation

Sustainable GHG Management (SGHGM) Climate Finance

1. Climate Negotiations and Climate Finance agreements
2. Climate Change and the Energy Economy
3. Diversity of Climate Finance mechanism and Institutional Landscape (international, multi-lateral, bi-lateral, private)
4. Mitigation Finance
5. Adaptation Finance
6. Results Finance

Sustainable GHG Management (SGHGM) - Climate Finance (Continue'd)

7. Access to Financing Mechanisms
8. Project Types eligible for use of Climate Finance
9. Effective Project Development and Management
10. Monitoring and Evaluation, Reporting Criteria and MRV
11. Public development of supportive institutions & infrastructures
12. Securing Multi-Stakeholder Cooperation and Expertise in projects

Achievements & CITC's Training Program

Curriculums	Targets	Date	No. of Participants	
			Trainees	TTT
1. Greenhouse Gas Inventory (GHGI) (3)	Central governments practitioners	Aug, Sep 2014/ May 2015	101	16
2. Low Carbon and Resilient Society Development (LCRS)	Local governments practitioners	Dec 2014	62	20
3. Low Carbon and Resilient Society Development (LCRS)	Local governments executives	Mar 2015	60	-
4. Climate Change Economics (2)	Central governments	Mar, May /June 2015	61	10
Total			284	46

Achievements & Progress

participated the **ASEAN Working Group on Climate Change (AWGCC)** for introducing the establishment of CITC and CITC activities from **2012-2015.**

Achievements & Progress

The UNFCCC COP 20/ CMP10 Side Event

"Climate Change Capacity Development Activities in Southeast Asia Region: Enhance Capacity through the CITC"

(co-organized with JICA) Lima, Peru

(more than 70 participants)

H.E. Mr. Ruengdej Mahasaranond
Ambassador of Thailand at Lima, Perú

Mr. Michihiro Oi
Director, Office of International Strategies on Climate Change, MOEJ

Mr. Ichiro Sato
Deputy Director, Office for Climate Change, JICA

Achievements & Progress

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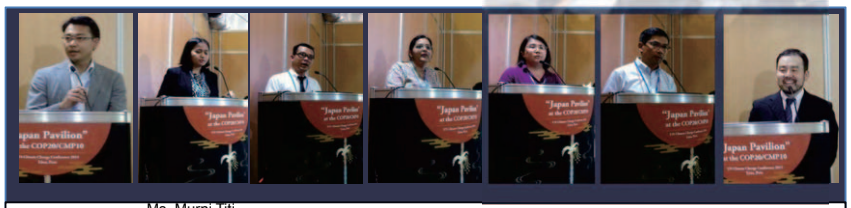


Dr. Jakkanit Kananurak, TGO

Ms. Murni Titi Resdiana (DNPI), Indonesia

Dr. Luong Quang Huy MONRE, Vietnam

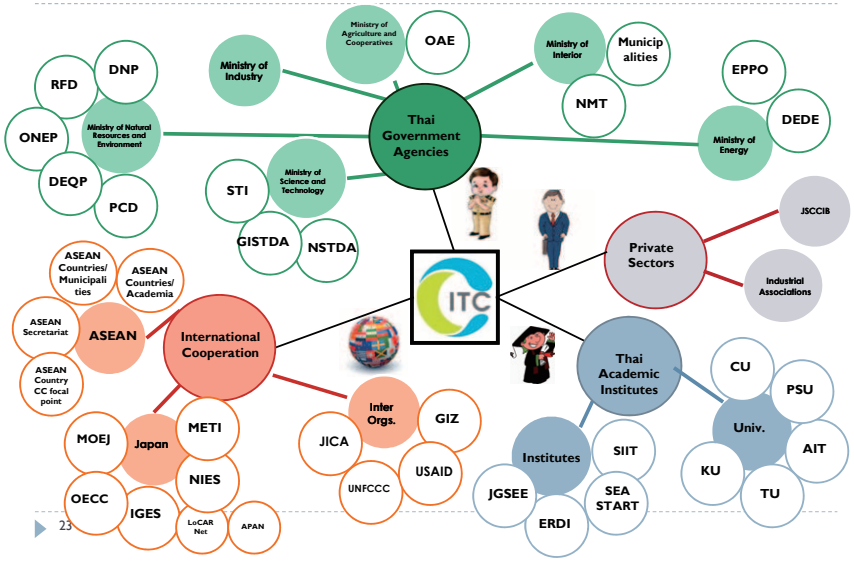
Dr. Puja Sawhney IGES Bangkok Regional Center

Ms. Takako Ono IGES

Mr. Jiro Miguel Ogahara OECC

Mr. Satoshi Iemoto JICA Expert

Achievements & Progress - Networking



Upcoming Activities

Apr-June 2015	Jul-Sep 2015	Oct-Dec 2015	Jan-Mar 2016
Trainings/Workshops			
Training on GHG Inventory for central government officers (3)	Training on Low Carbon & Resilient Society for central government practitioners (1)	Workshop on TNA for Climate Finance	Training on Mitigation Mechanism (2)
Training on Climate change economics(2)	Training on Low Carbon & Resilient Society for central government directors (1)	Workshop on peer review for Low Carbon & Resilient Society	Training on Low Carbon Society for local practitioners (2)
Workshop on Low Carbon & Resilient Society for ASEAN	TTT on Low Carbon & Resilient Society for central government practitioners (1)	Training on Low Carbon & Resilient Society for local executives (2)	Training on Climate Finance (1)
	Training on Mitigation Mechanism (1)		Training on Low Carbon & Resilient Society(1)
	TTT on Mitigation Mechanism (1)		Training on Mitigation Mechanism (1)
Knowledge Hub & Dissemination			
Publications through media to all targets			
PR and Networking activities (road shows, participation of domestic & international event			
CITC website & E-learning			

CLIMATE CHANGE CHANNEL

Upcoming Activities for ASEAN

Oct-Dec 2015	Jan-Mar 2016
Trainings/Workshops	
Workshop on TNA for Climate Finance	Training on Climate Finance (1)
Workshop on peer review for Low Carbon & Resilient Society	Training on Low Carbon & Resilient Society(1)
	Training on Mitigation Mechanism (1)
Knowledge Hub & Dissemination	
Publications through media to all targets	
PR and Networking activities (participation & international events)	
CITC website & E-learning	

CLIMATE CHANGE CHANNEL

ASEAN Perspectives on Capacity Development for Climate Change Resilience

Regional Workshop for Capacity Development on Low Carbon and Resilient Society in Southeast Asian Countries
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ASEAN Socio-Cultural Community Department
ASEAN Secretariat

Risks and Vulnerabilities: Environment & Natural Hazards

Climate Change

- Southeast Asia is one of **world's most vulnerable regions** to climate change
- Southeast Asia's **average temperature increased** at a rate of 0.1–0.3°C per decade and **sea level has risen** at 1–3 millimeter (mm) each year over the last 50 years or so.
- **Increasing frequency and intensity of extreme weather events** in recent decades evidence that climate change is already affecting the region.
- **Southeast Asia is likely to suffer more from climate change than the global average**
- Southeast Asian countries have made encouraging efforts to build **adaptive capacity**, but much more is needed.

(Source: the Economics of Climate Change in Southeast Asia: A Regional Review, Asian Development Bank (ADB), 2009)

ASEAN Community: The 3 Pillars

ASEAN Economic Community (AEC)

- Enhancing competitiveness for economic growth and development through closer economic integration

ASEAN Socio-Cultural Community (ASCC)

- Nurturing human, cultural and natural resources for sustained development in a harmonious and people- centred ASEAN

ASEAN Political-Security Community (APSC)

- Enhancing peace, stability, democracy and prosperity in the region through comprehensive political and security cooperation

Proposed ASCC Goals/Characteristics/Objectives, Central Elements/Key Results Areas

Our ASEAN Socio-Cultural Community by 2025 shall be one that engages and benefits the people, and is inclusive, sustainable, resilient, and dynamic

A committed, participative and socially-responsible community through an accountable and inclusive mechanism for the benefit of all ASEAN peoples, upheld by the principles of good governance;	An inclusive community that promotes high quality of life, equitable access and opportunity for all and promotes and protects human rights of women, children, the elderly, persons with disabilities, migrant workers, and other vulnerable and marginalised groups;	A sustainable community that promotes social development and environmental protection through effective mechanisms to meet the current and future needs of the people;	A resilient community with enhanced capacity and capability to adapt and respond to social and economic vulnerabilities, disasters, climate change as well as emerging threats, and challenges; and	A dynamic and harmonious community that is aware and proud of its identity, culture, and heritage with the strengthened ability to innovate and proactively contribute to the global community.

Goals and Strategic Areas

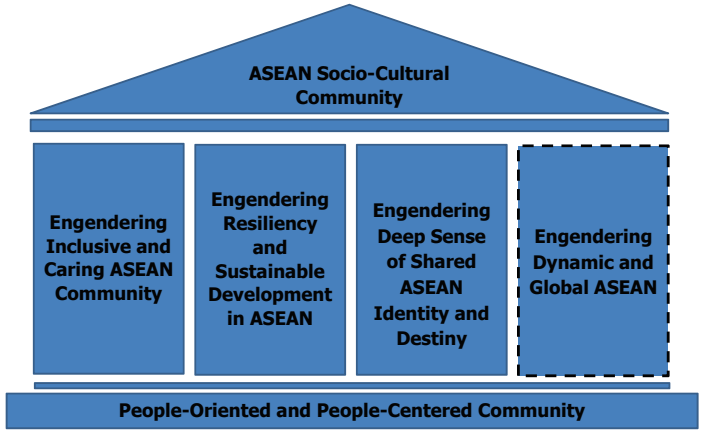
Engages and benefits the people (Good governance)

Multi-sectoral and multi-stakeholder, private-public partnership, community engagement, tripartite engagement (labor sector), social dialogues (GO-NGO/CSO engagement), CSR, interfaith and inter-cultural dialogue, ASEAN identity

Enhanced commitment, participation and social responsibility of ASEAN peoples through and in accountable and inclusive mechanisms for the benefit of all

Inclusive	Sustainable	Resilient	Dynamic
Equal access and opportunity for all, and promotion and protection of human rights	*Balanced social development and environment that meet the current and future needs of the people*	*Enhanced capacity to collectively respond and adapt to emerging trends and challenges*	*Strengthened ability to continuously innovate and be a proactive member of the global community*
• Health for all • Education for all • Gender equality • Promotion and protection of human rights • Equal access and opportunities for all • Social protection • Decent work for all • Information for all • CSR • Cultural rights for all • Child-friendly • Barrier-free for all • Active ageing	• Environmental sustainability • Sustainable livelihood • Poverty eradication • Sustainable consumption and production • Sustainable cultural heritage • CSR • Cultural conservation and preservation • Sustainable health systems • Community-based development (rural and urban)	• Disaster resilience • Climate change adaptation • Social adaptability to economic financial crisis • Youth entrepreneurship • Social and cultural harmony • Resilience to all hazards e.g. health pandemics • ASEAN responding as one	• Sports • Cultural diversity • Outward looking in the global community of nations • Innovation and creativity • Access to information • Competitiveness • Access to health care

Framework



ERIA

Engendering Resiliency and Sustainable Development in ASEAN: Indicative Outcomes/Targets

- ***Food Security Index (FSI)/ Rice Bowl Index.***
  - *Each AMS would* voluntarily *offers indicators and targets for 2025 in those components of FSI that are of special interest to it and to the ASEAN community.*
- ***Energy security index.***
  - Develop an ASEAN energy security and/or resiliency index, based on ERIA energy security index
  - AMSs agree on some quantitative target as reference points for regional and national discussions and programs of action.
- ***ASEAN Disaster Preparedness and Resiliency Index.***
  - ASEAN develop and use an ASEAN Preparedness and Resiliency Index, based on HFA monitoring data
  - AMSs target based on Sendai Agreement
- ***ASEAN Environmental Performance Index (EPI).***
  - Modest rise (e.g., 10 percent) in the modified EV, air quality, and ASEAN EPI by 2025 may be warranted.
  - AMSs to agree of a minimum score for the component variables of the indices by 2025; i.e., no zero score on any of the component variables by any AMS.

ERIA

Capacity Development for Climate Change Resilience

- Policy formulation, conceptualization and analytical skills
- Programme formulation, implementation and operational skills in cross-cutting issues
- Monitoring, risk analysis, risk reduction and vulnerability assessment
- Multi-stakeholder partnership building
- Resource mobilization from traditional and non-traditional sources
- Coordination and organizational development
- Media advocacy and communications

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ASEAN Cooperation on Climate Change

Ongoing

- Rehabilitation and Sustainable Use of Peatland Forests in Southeast Asia
- Biodiversity and Climate Change (Germany)
- ASEAN Eco Model Cities Programme
- CityLinks Pilot Partnership (US) Climate Change Adaptation in Southeast Asia (India)

Pipeline

- Sustainable Management of Peatlands Ecosystem (2014-2020)
- Research Collaboration and Information Sharing Program for Climate Change Impact Assessments on Agriculture
- Climate Change and ASEAN Coastal Areas: Vulnerability, Impacts and Adaptation

Thank You

For further information, please contact the ASEAN Socio-Cultural Community Department, ASEAN Secretariat, Jakarta-Indonesia

Climate Change International Technical and Training Center: CITC

One-stop Technical and Training Center

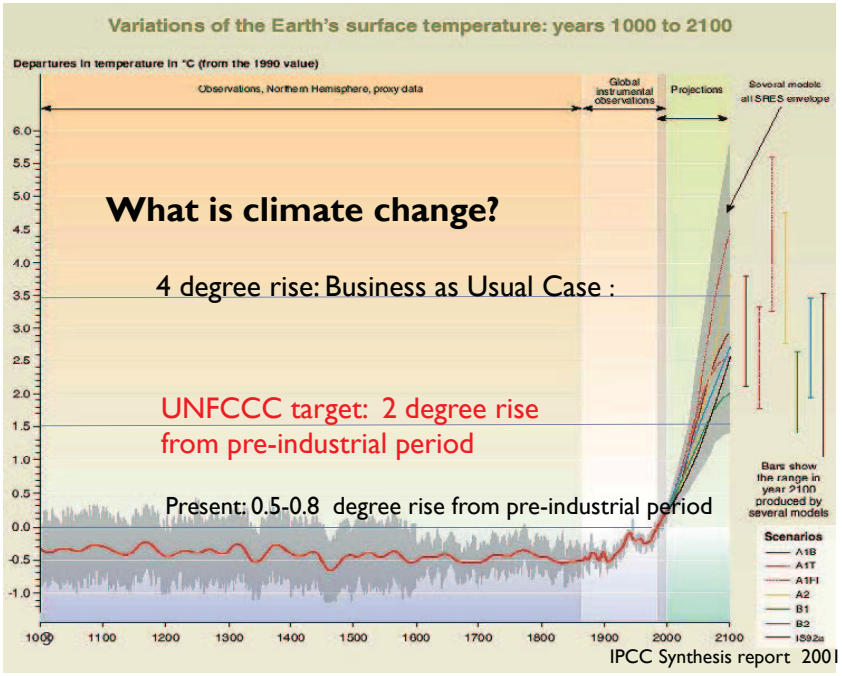
Capacity Development on
Low Carbon and Resilient Society in Southeast Asian countries

Low Carbon and Resilient Society Development Movement and its Significance in the Region

Shuzo Nishioka
Institute for Global Environmental Strategies
Secretary General, Low carbon Asia Research Network

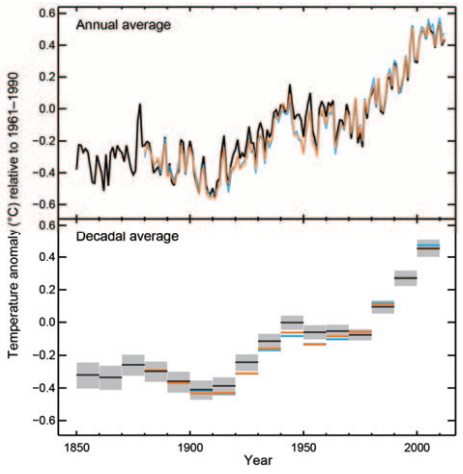
Contents

- IPCC AR5: 2 ton CO_2/capita world in 2050
  Adaptation to CC inevitable but has limit
- Asia: Key position to stabilize climate
- Implication: Leapfrog opportunity to low carbon development
- Towards ASEAN wide knowledge sharing platform for stabilizing climate: CITC+LoCARNet



IPCC Synthesis report 2001

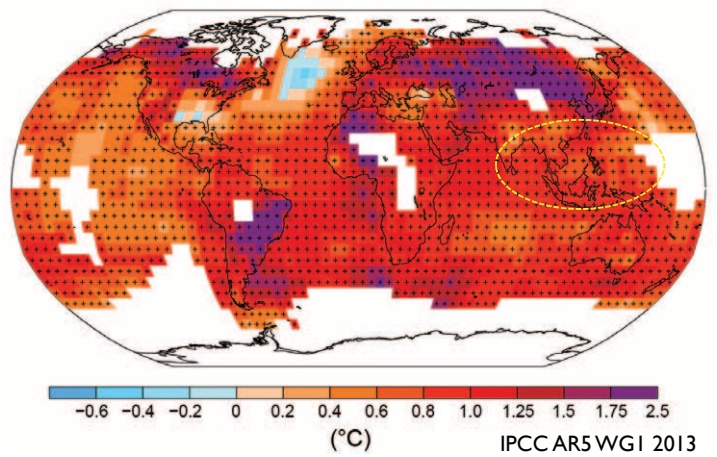
Present state of climate : Observed globally averaged combined land and ocean surface temperature anomaly 1850-2012



IPCC AR5 WG1 2013

Figure SPM.1b

Observed change in surface temperature 1901-2012



IPCC AR5 WG1 2013

Figure SPM.3

Multiple observed indicators of a changing global climate

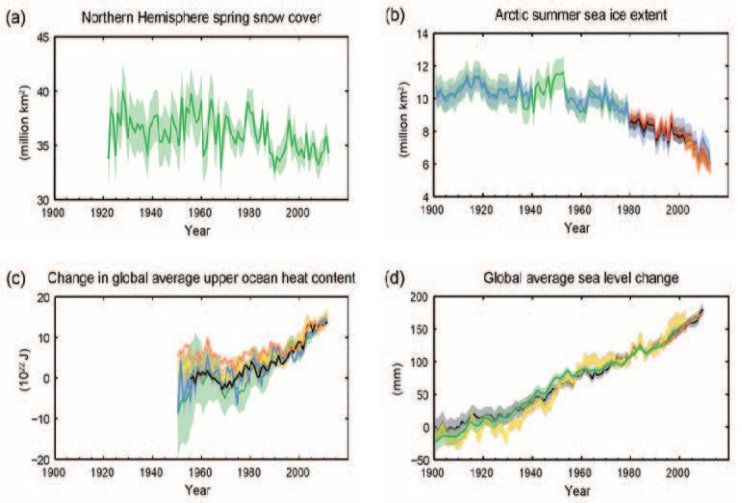
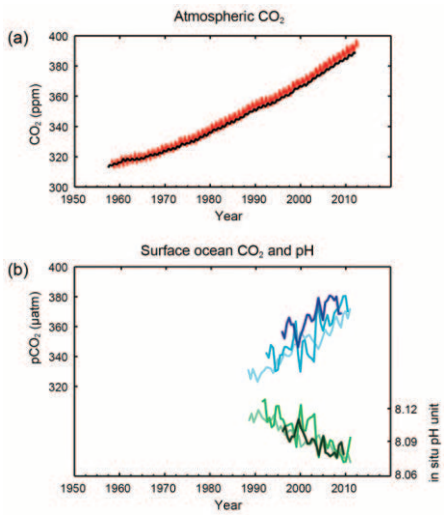


Figure SPM.4

Multiple observed indicators of a changing global carbon cycle



IPCC AR5 WG1 2013

Climate change impacts on human life: everywhere and serious

RISKS OF CLIMATE CHANGE **INCREASE** WITH CONTINUED HIGH EMISSIONS

Weather-related disasters: Flooding

Santa Rosa, The Philippines Sep. 2006

(Photos: E. C. Creencia

Integrating CC Adaptation and Mitigation strategies in the comprehensive Land Use Plan: A pilot case in Silang-Sta.Rosa subwatershed, the Philippines

How to integrate wisely
- Socio-economic pathway
- Adaptation & mitigation actions
- Governance

Hazard (ClimateVariability)
-Natural
-Anthropogenic

Human Pressure
- Migration
- Industrialization
- Resource use

Vulnerability
- Biomass
- Water resource
- Highland ecosystem

Exposure
- GHG Emissions
- Water/Air Pollutant/
- Land-use change

Risk
-climate disaster
- Ecosystem loss
- Natural resources disruption
- Air/water pollution/Health

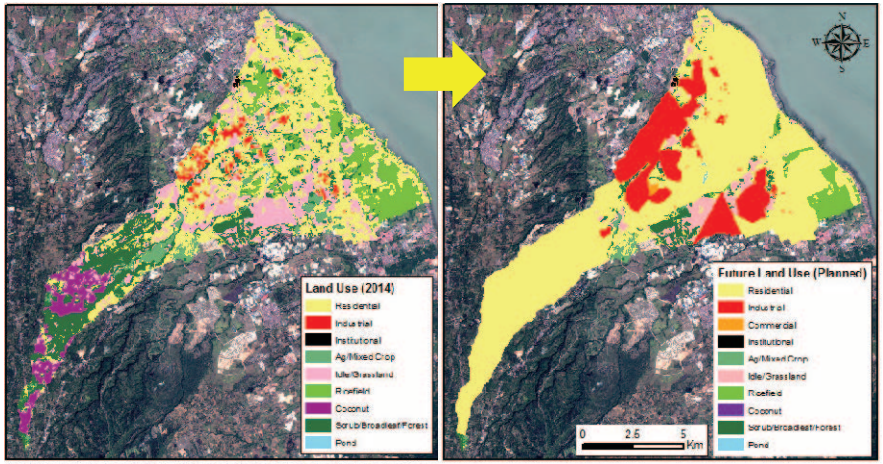
Topography

Source: D. Macandog

Risk assessment — More development

JICA

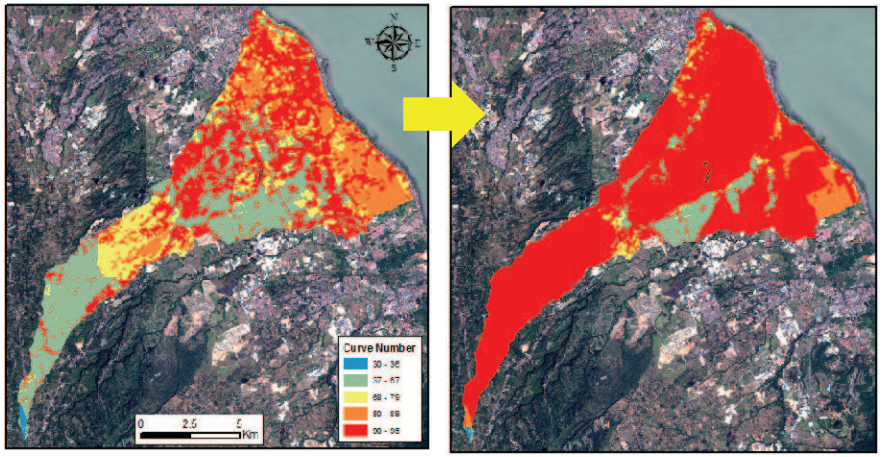
Current Land Use (2014) | **Future Land Use Plan (BAU)***



*Future land use plan map based on the results of a participatory land use mapping sessi representatives from four local government units (LGUs)

More flooding

Current curve number (2014) | **Future curve number (2025)**



Higher Curve Number values indicate higher stormwater runoff. Values are based on land use and soil type. Curve Numbers are used for flood hazard modeling.

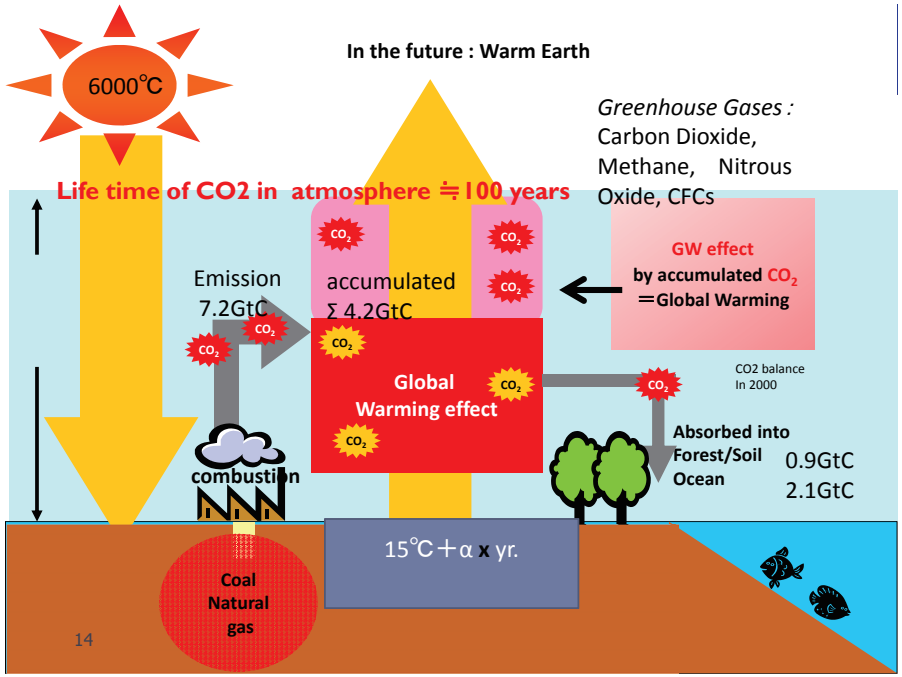
Major Climate change impacts to Asia and adaptability

Key risk / 主要リスク	Adaptation issues and prospects / 適応イシューと展望	Climatic drivers / 気候的要因	Supporting ch. Sections / 参照章・節	Time frame / 時間軸	Risk for current and high adaptation / 現行及び高次適応のリスク
Asia アジア					
Increased flooding leading to widespread damage to infrastructure and settlements in Asia (medium confidence)	- Exposure reduction via effective land-use planning, selective relocation, and structural measure - Reduction in the vulnerability of lifeline infrastructure and services (e.g., water, energy, waste management, food, biomass, mobility, local ecosystems, telecommunications) - Assistance to vulnerable sectors and households ・効果的な土地利用計画、選択的移住、かつ構造的手段による影響被害の軽減 ・ライフラインインフラとサービスの脆弱性の軽減（例、水、エネルギー、廃棄物管理、食料、バイオマス、移動性、ローカルなエコシステム、通信） ・脆弱なセクターや家庭（世帯）への支援		24.4	Present / Near-term (2030-2049) / Long-term (2080-2100)	
Increased risk of heat-related mortality (high confidence)	- Heat health warning systems - Urban planning to reduce heat islands - Improvement of the built environment ・熱波に関する健康警告システム ・ヒートアイランド現象を軽減するための都市計画 ・建築環境の改善		24.4	Present / Near-term (2030-2063) / Long-term (2080-2100)	
Increased risk of drought-related water and food shortage causing malnutrition (high confidence)	- Disaster preparedness including early-warning systems and local response strategies ・警告システムとローカルな対応戦略を含む災害準備		24.4	Present / Near-term (2030-2042) / Long-term (2080-2100)	

Flood

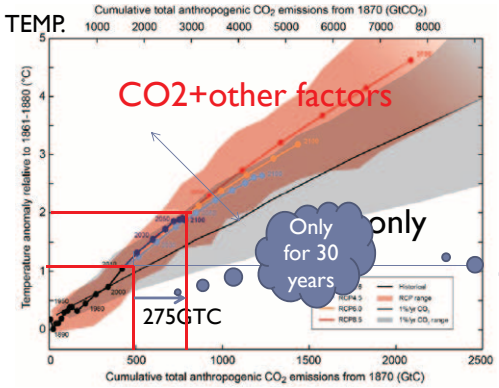
Heat shock

Malnutrition



Zero emission is only one ultimate solution to stabilize climate

linear relation between cumulative GHG emission & temperature rise



- 2℃ ⇒ 790 GtC allowed
- 515GtC emitted already
- only 275GtC remained
- 2013 emission= 9.9GtC
- 275/9.9≒30 years

Transform to low carbon society within 50-100 yr.

Cumulative total anthropogenic CO2 emission from 1870 (GtCO2)

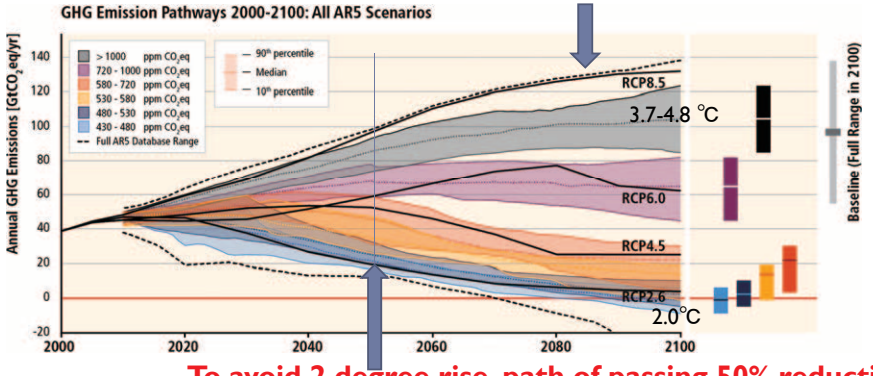
(IPCC AR4 and Emori, NIES)

Stabilization of climate: Huge challenge of 21st Century

- Final goal to stabilization: GHG zero-emission world (70～100 years)
- While adapting to CC, quick transformation to low carbon society before it get to point-of-no-return (～50 years?)

Global target: Halving of current emission by 2050

Without more mitigation, global mean surface temperature might increase by 3.7° to 4.8°C over the 21st century



To avoid 2 degree rise, path of passing 50% reductio from now in 2050 is feasible and reasonable .

IIPCC AR5 2013

Climate Change International Technical and Training Center: CITC

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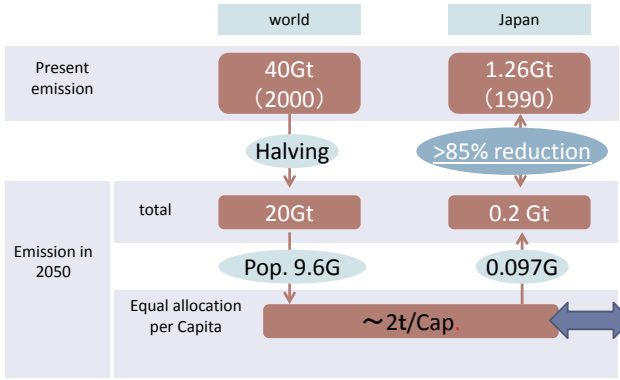
2050 halving from now: 2ton/Capita World
Japan: more than 80% reduction（base year 1990）
Asia: already more than 2ton/ Capita



2010	Per capita CO2
USA	17.4
China	5.55
India	1.35
Indonesia	1.63
Thailand	3.25
France	5.34
Germany	8.92
UK	7.92
Japan	9.05

※世界の人口は国連「World Population Prospects, the 2012 Revision」より、日本の人口は社人研「日本の将来推計人口（平成24年1月推計）」より

18

Climate Change International Technical and Training Center: CITC

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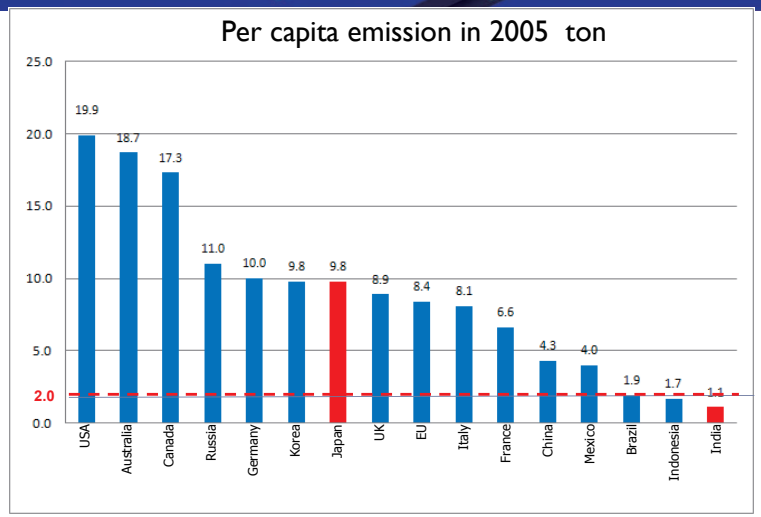
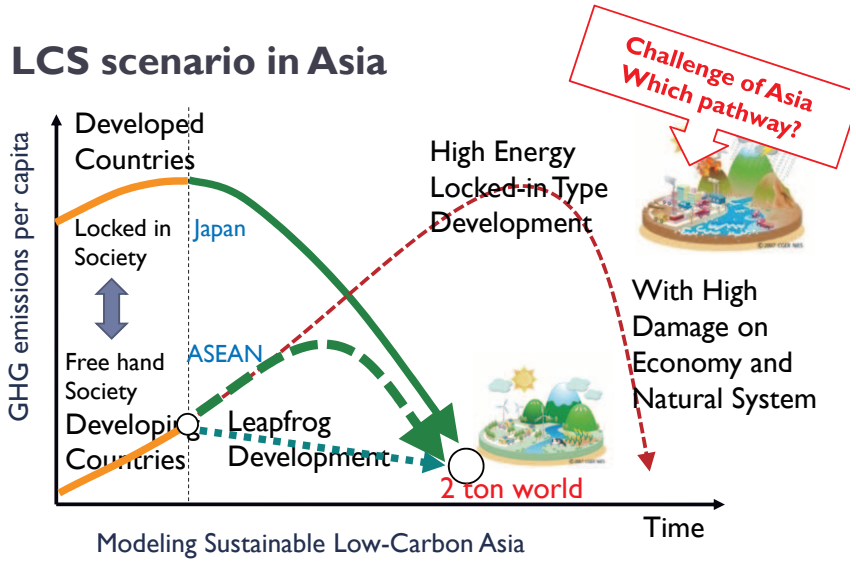


World Resources Institute, Climate Analysis Indicators Tool

19

LCS scenario in Asia



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Asian Low-Carbon Society Scenario Development Study" FY2009-2013, funded by Global Environmental Research Program, MOEJ http://2050.nies.go.jp/index.html

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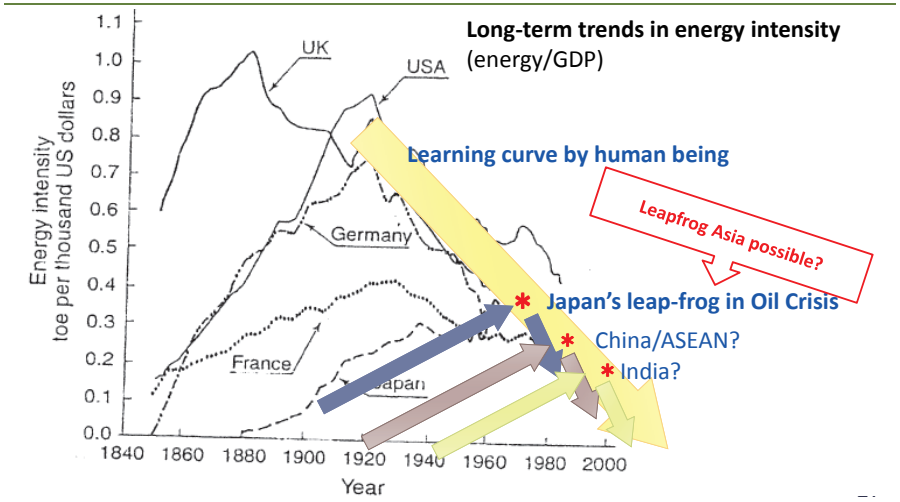
Opportunities for Asia: Leveraged by climate change



LoCARNet: Low Carbon Asia Research Network

Proposed to ASEAN +3 EMM Mtg. in 2011 by Japan

An open network of researchers & research organizations, as well as like-minded relevant stakeholders that facilitates the formulation and implementation of science-based policies for low-carbon development in Asia.

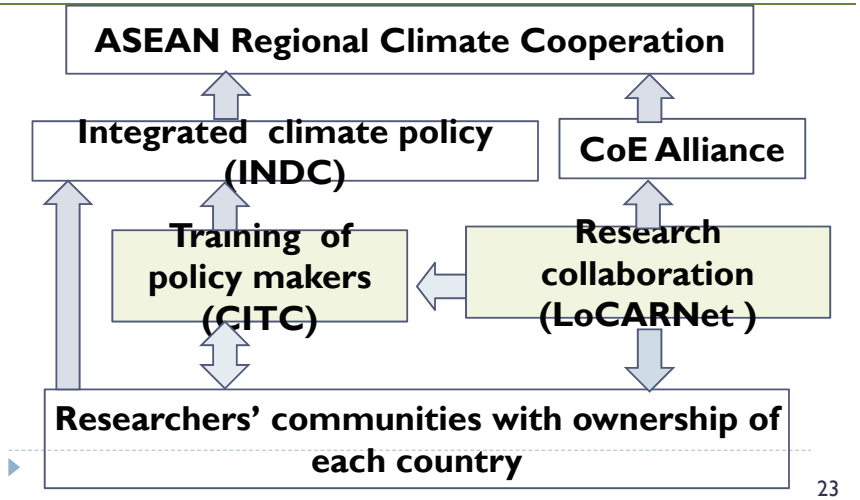
Synthesis Reports: http://lcs-rnet.org/publications/index.html

Seven Asian priority topics discussed: "GHG inventories as bases"; "policy-making processes and use of integrated assessment models"; "land use and forestry"; "low-carbon cities"; "local level practices/ decisions / initiatives"; "institutionalization of low-carbon green growth"; and "technology for leapfrogging".

Climate Change International Technical and Training Center: CITC

One-stop Technical and Training Center

Capacity building for ASEAN's scientific climate policy



LoCARNet – Working Policy

- **Network of leading researchers/experts** who are deeply involved in low-carbon development policy processes in Asia
- **Science-Science-Policy Dialogue**: LoCARNet promotes research and training for policies towards low-carbon development by enabling a sufficient amount of dialogue among/between scientists and policy-makers.
- **Ownership of knowledge by countries**: LoCARNet encourages collaboration amongst researchers in-country whose research capacity and scientific knowledge are firmly grounded in their home countries.
- **Regional Collaboration**: LoCARNet aims to increase in research capacity in the AP region through knowledge sharing and information exchange, in the scheme of regional S-S-N cooperation.

24

Workshops and consultations in Asian countries

- Low Emission Development Scenarios (LEDs) of Energy Sector: Preliminary Result of Asia-Pacific Integrated Modeling (AIM) exercise (June 2012).
- Indonesia Workshop: Research Cooperation on "Development of Low-Carbon Strategies" (Feb. 2013)

Cambodia Workshop: A Systematic and Quantitative Design of Low Carbon Development Plan for Cambodia (April 2013)

Vietnam
Vietnam Workshop: Low Carbon Society in Vietnam (April 2013)

- LoCARNet 1st Annual Mtg. (Oct. 2012)
- Development of Asia Low-Carbon Strategy and Roadmap 1st Kick off Meeting (Oct. 2012)

Int'l workshops in Iskandar, Malaysia (2012-2013)

Asian Low Carbon Development Scenario Making and Capacity Building Activity Since 1991

AIM Training WS since 1991 for integrated policy making

15th AIM International Workshop on 20-22 February 2010

Asian Modeling Meeting at Tsukuba on 17-18 September 2009

1st AIM International Workshop on 1-2 February,1996

17th AIM International Workshop,17-19, February 2012

AIM Training Workshop on 27-31 October 2008

14th AIM International Workshop on 14-15 February 2009

16th AIM International Workshop on 19-21 February 2011

AIM Training Workshop on 16-20 October 2006

AIM Training Workshop on 2-14 August 2010

AIM Training Workshop on 22-26 October 2007

Climate Change International Technical and Training Center: CITC

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JICA

Low Carbon National/City Scenarios applying Integrated Assessment Model (AIM)

27

Way forward

- **50% reduction in 2050:** A reasonable and feasible path to zero GHG emission, avoiding 2 degree rise from pre-industrial level, is that passes 50% reduction in 2050 from now. Halving GHG emission by 2050 and 2 tons per capita:
- **Already more than 2ton/capita:** When allowed emission of GHG is half of now, per capita emission allocated equally to all population in 2050 is calculated as about 2 tCO_2/yr. (cf. 2010 5tCO_2/yr.)
- **CBDR re-visited:** In 2050, almost all countries will reach to mature economic level and have equal responsibilities to preserve climate.
- **New pathway to seek**: It is difficult, from now on, for developing countries to follow a development path with high energy-dependent technologies. Therefore, developing countries need to seek for their own unique development path, which should be quite innovative one fit for this huge transition.
- **Start of low carbon competition:** This means all countries need to change or aim to fully different society of 2ton/cap. society. ASEAN has free-hand advantage to design their future. Let's look forward and win the race.

Thank you very much for your attention!

LCS-RNet/LoCARNet Secretariat
http://lcs-rnet.org/index.html

c/o Institute for Global Environmental Strategies (IGES)
2108-11 Kamiyamaguchi, Hayama, Kanagawa 240-0115, Japan

Way forward

- Looking at a trend from the 19th century, developed countries including United Kingdom, United States of America, Germany and France have accomplished the economic growth while reducing the energy intensity (Energy / GDP) in the 20th century.
- Japan had caught up with this development trend at the time of the oil crisis of the 1970s and attained the economic growth by developing energy efficient automobiles as an example, without increasing the total amount of energy consumptions.
- Under such a great transition to achieve low carbon world, a country that is free from the obsolete social structure can have the big chance to become the world's leader through leapfrogging development.
- China has already become the world's leader in the use and production of renewable energies in being motivated by the climate change. Asian countries have the late comer's advantages not only in the individual technologies, but also in low carbonization of a society and city as a whole.
- **By capturing the opportunities to invest in urbanizations and developing energy saving life spaces and public transportation system, developing countries could have potentials to take a lead for coming low carbon societies.**

Chance, Challenge and possibility
Opportunities of leap-frogging in Asia:

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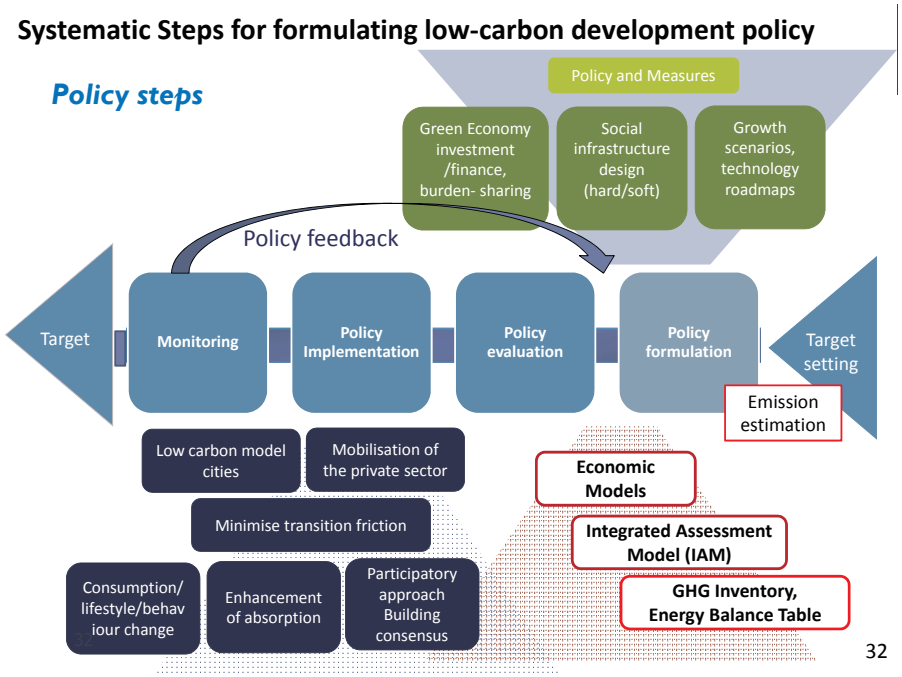
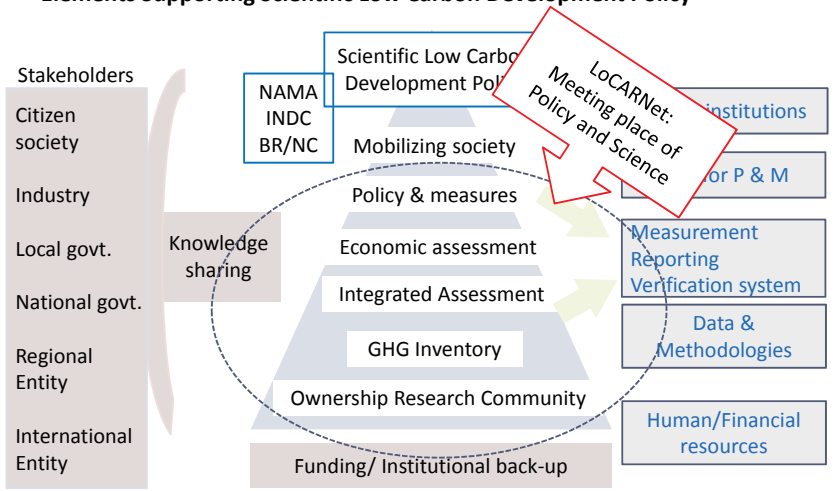
Systematic Steps for formulating low-carbon development policy



Elements Supporting Scientific Low Carbon Development Policy



Low Carbon National/City Scenarios applying Integrated Assessment Model (AIM)

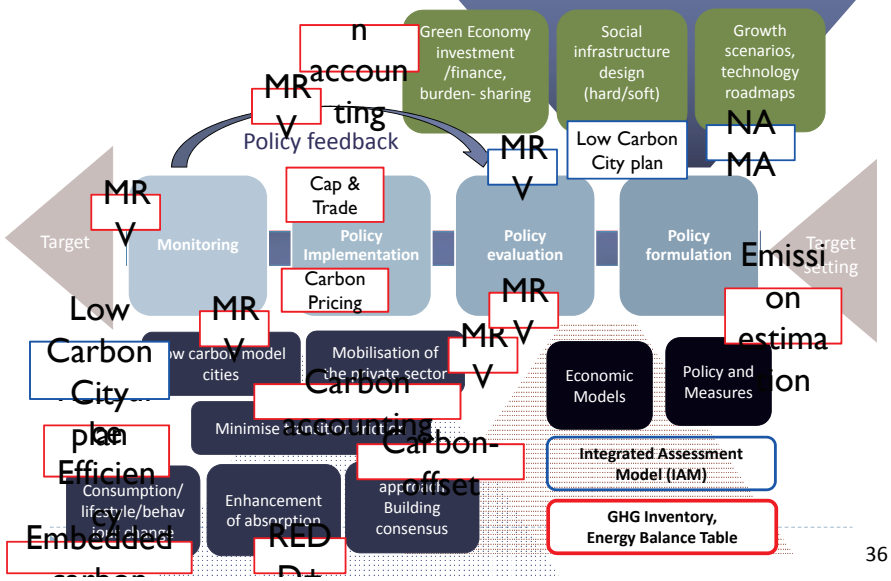
Questions and urgent research needs in Asia

The 2nd annual meeting, 2013 Yokohama

- How to effectively implement **capacity building** for developing countries?
- What are the **reduction potentials of Asian countries** to achieve two degree stabilization targets?
- What is the role of **cities** in achieving global Low Carbon Society?
- How can **research projects** effectively be funded and operated for low carbon future in Asian region?
- How can the quality, effectiveness and adoption of **green growth planning and implementation** at all Levels and in all regions be improved?
- What it takes to facilitate **low carbon technology** in Asia?
- How to realise the potential for emission reduction from the **forestry, agriculture and land-use sectors**?

Expanding fields for GHG I and IAM application toward carbon neutral Soc

PDCA Steps for formulating low-carbon growth policy



What research area/ topics should be strengthened using synergy of regional cooperation?

Ex.

- **Inventory data of region specific items**
- **Energy demand side data**
- **Development of forestry and land-use simulation model**
- **Utilization of integrated assessment models for nationally/ regionally harmonized LC policy**
- **Economic evaluation methodology for Low carbon growth**
- **Low carbon city management**
- **Comparative study of effectiveness of LC policy and measures among region**
- **Reform of power system**
- **Transportation system: good practices**
- **Waste management in relation to LC policy**
- **Mobilizing local society**
- **Asian value and behavior**
- .....

Questions and urgent research needs in Asia

(Discussion at LoCARNet 2nd annual meeting)

- How to effectively implement **capacity building** for developing countries?
- What are the **reduction potentials of Asian countries** to achieve two degree stabilization targets?
- What is the role of **cities** in achieving global Low Carbon Society?
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- What it takes to facilitate **low carbon technology** in Asia?
- How to realise the potential for emission reduction from the **forestry, agriculture and land-use sectors**?

Objectives of International Research Network for Low Carbon Societies

LCS-RNet aims to:

1. Foster LCS research community:

- Establish concept of "low carbon society", then, facilitate research collaboration among a cross-cutting research community

2. Identify common direction of research:

- Promote knowledge-sharing, identify common research direction, research topics and activities, and help researchers conduct individual and cooperative activities to realise LCS

3. Provide robust messages into policies:

- Deliver certain impacts to policies in a timely manner, by capturing appropriate research needs and enhancing dialogues with policymakers.

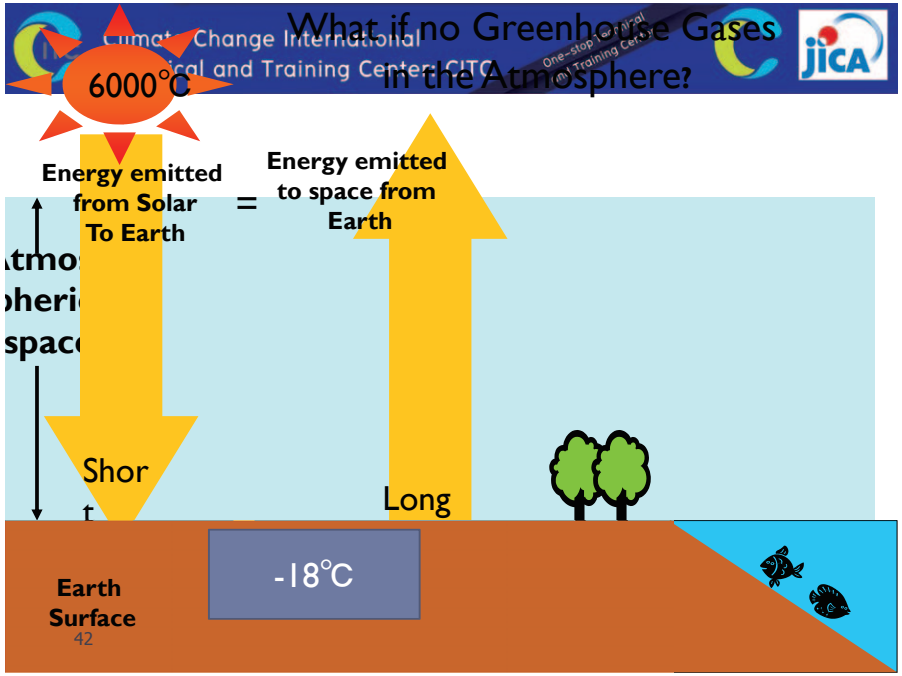
LoCARNet – Activities and Uniqueness

Climate Change International Technical and Training Center: CITC
One-stop Technical and Training Center

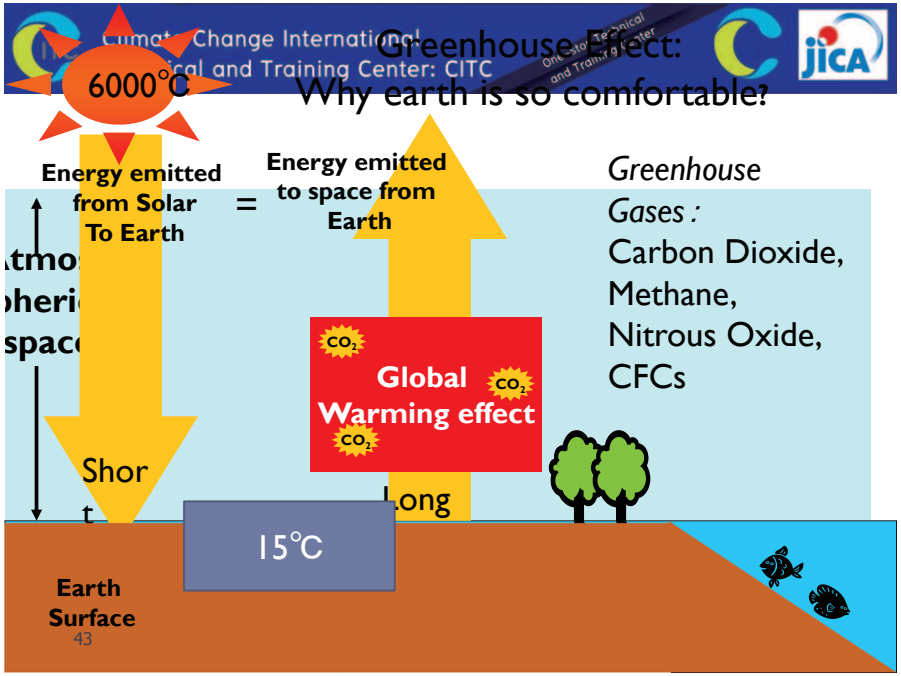
- Network of leading researchers/research organizations' who are deeply involved in low-carbon growth policy processes in this region.
- Science-Science-Policy Dialogue: LoCARNet promotes research for policies towards low-carbon growth by enabling a sufficient amount of dialogue among/between scientists and policy-makers.
- Ownership of knowledge by countries: LoCARNet encourages collaboration amongst researchers in-country whose research capacity and scientific knowledge are firmly grounded in their home countries.
- South-South-North Collaboration: LoCARNet aims to increase in research capacity in the AP region through knowledge sharing and information exchange, in the scheme of not only north-south cooperation, but also south-south regional cooperation.

CBDR Revisited:

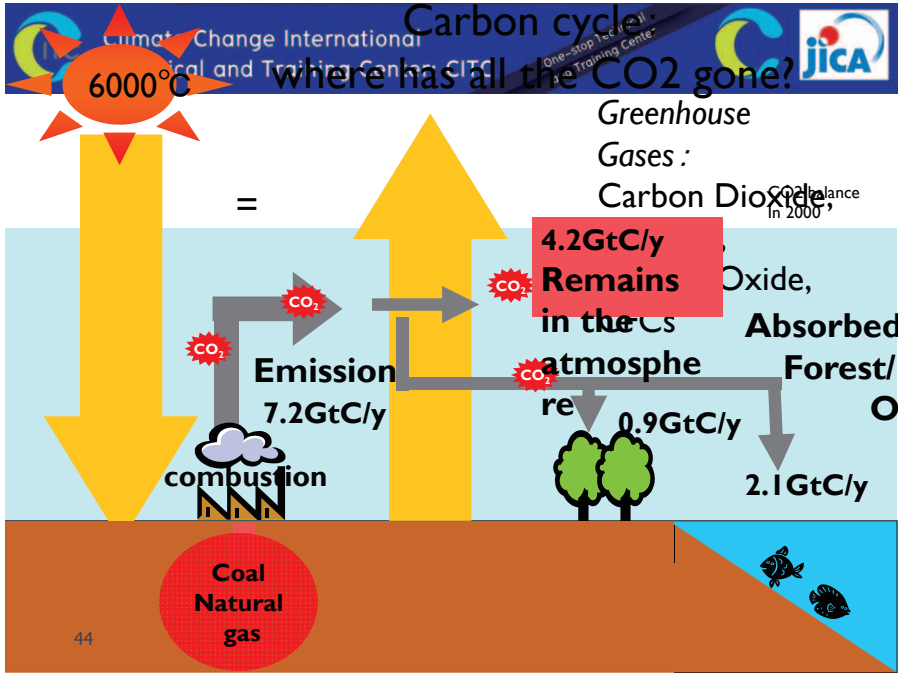
What if no Greenhouse Gases in the Atmosphere?



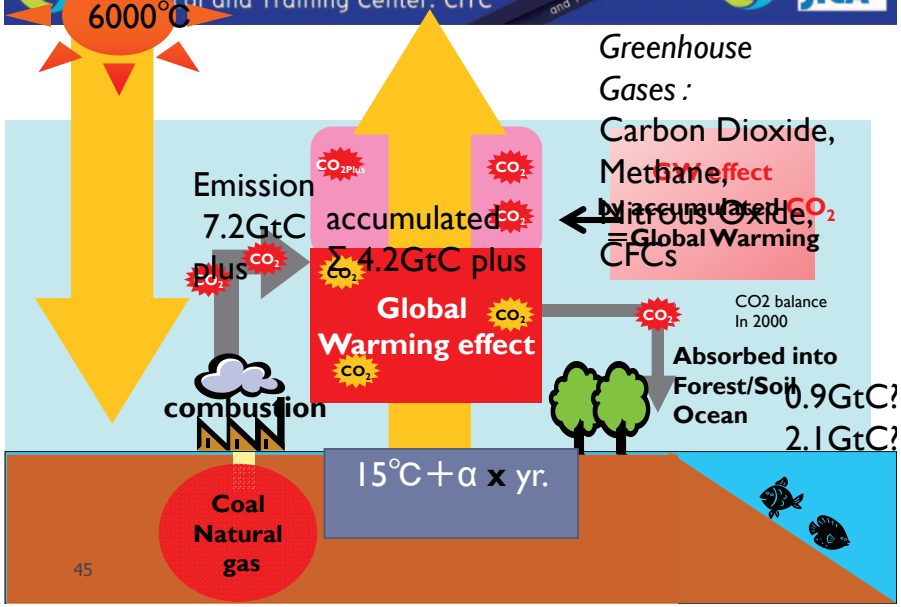
Greenhouse Effect: Why earth is so comfortable?



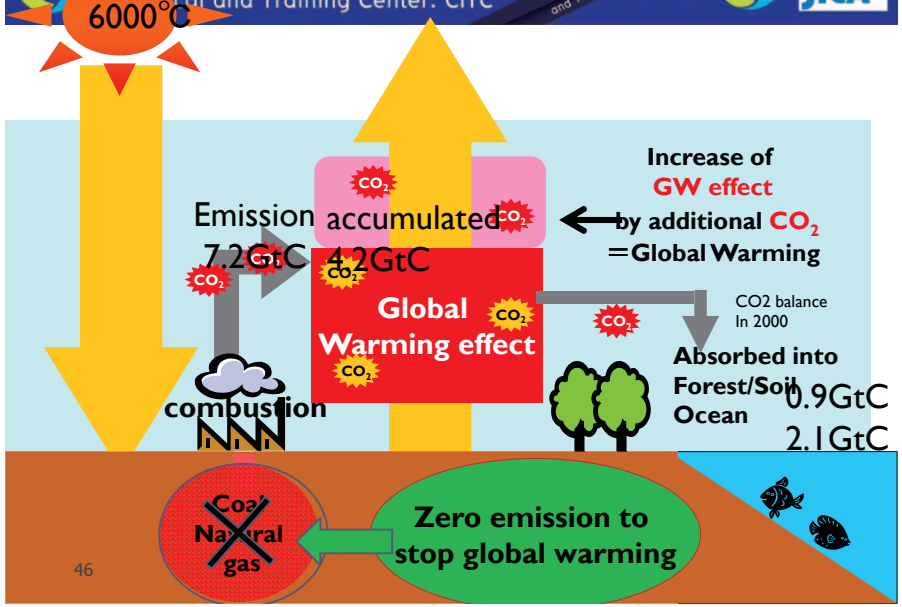
Carbon cycle: where has all the CO2 gone?



In the future : Warm Earth



How can stop Global Warming?



Example of leapfrogged Asia

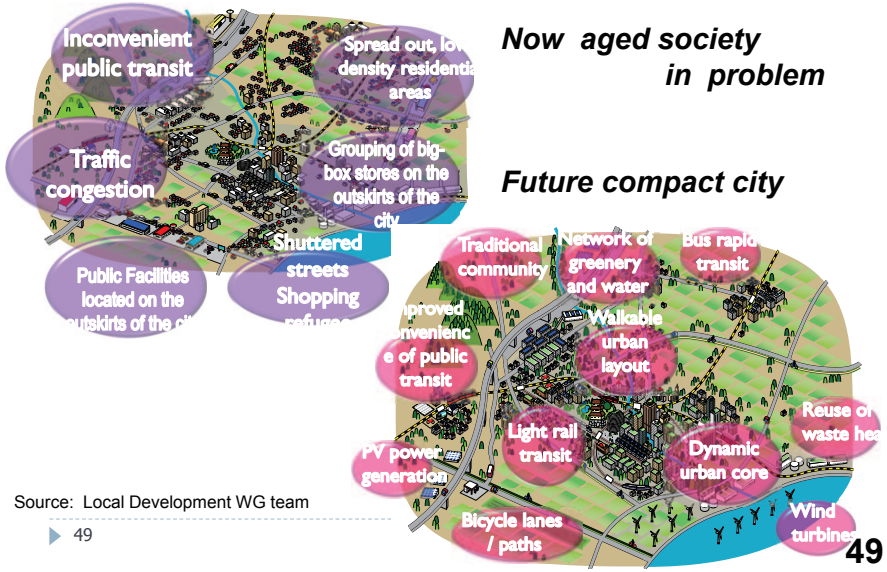
	Country	Domestic factors	External factors
Industrial structure	India: IT industry	Education/ human resources	Soft technology Globalization
Energy structure	Japan: Low energy intensity	Technology Rapid growth	Oil crisis Energy security
Urban structure	Singapore: Transportation, water, housing	Small land area Strong leadership	Relationship with Malaysia
	Tokyo: Public transportation	Rapid urbanization	In advance of auto age
Distributed energy	India: Renewable energy, biomass	Poor power grid investment; land area	
	Brazil: Ethanol	Sugar cane, scarce oil	
Information	China: Mobile phones	Rapid economic growth, big land area, Not enough com-grid	IT technology
Renewable energy system	China: Wind/solar energy	Vast land area	Climate change
Agriculture	Low energy use	Self sufficiency	Energy price

Co-benefit of low carbon development

Case of City of Kita-Kyushu: Before and after 1970s'transition : Switch from coal to oil & gas, improve energy efficiency to cope with oil crisis and innovation in pollution control technology

The atmosphere in Kitakyushu, Japan: before and after the clean up (SOE2000).

after 40 years : result of rapid infrastructure construction

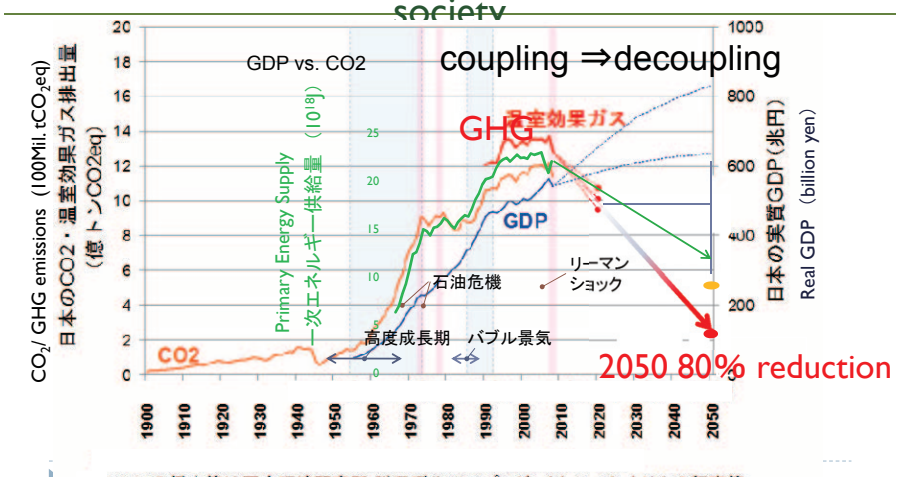


Now aged society in problem

Future compact city

Source: Local Development WG team

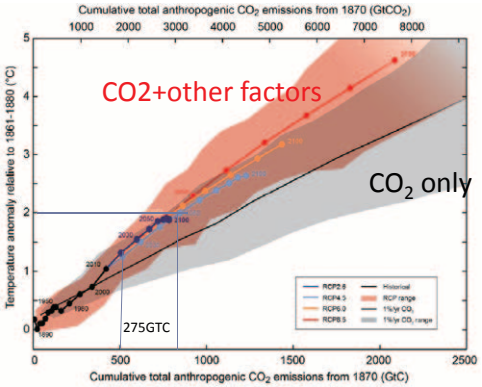
Break away from high energy and carbon dependent society



GDPの将来値は国立環境研究所 脱温暖化2050プロジェクト A・Bシナリオの想定値

Zero emission is only one ultimate solution
Emission budget to 2℃ target and time are limited :

Cumulative total anthropogenic CO2 emission from 1870 (GtCO2)
Linear relation to temperature rise
→Temperature limit decides upper limit of CO2/GHG emission



To limit within 2 ℃ from the pre-industrial era with certain possibility, upper limits are

>33% → 880GtC

>50% → 840GtC

>66% → 790GtC

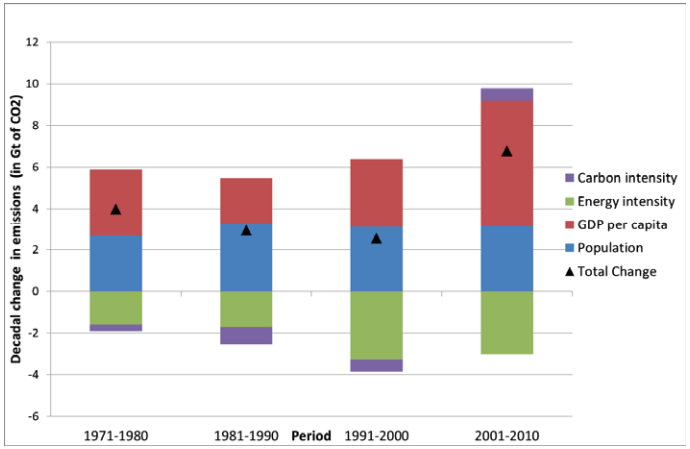
Already until 2011, 515GtC has been emitted. So, only 275GtC allowed for 2℃ target.

cf. 2013 emission 9.9GtC

⇒if it continues, 30 years to go, and dead end!

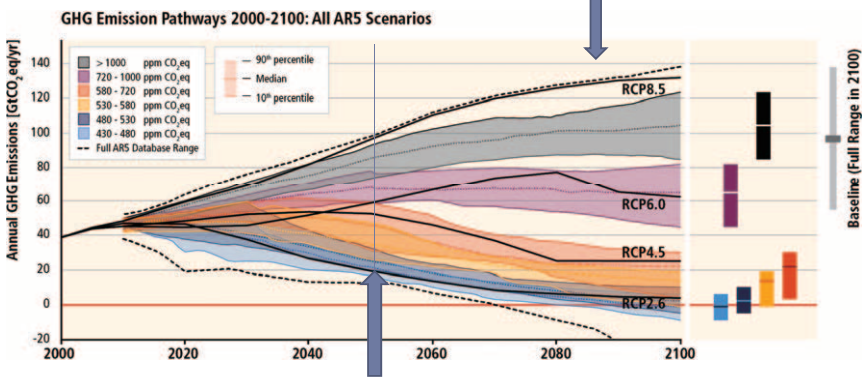
(IPCC AR4 and Emori, NIES+SN)

Decomposition of decadal absolute changes in global energy-related CO2 emissions



IPCC AR5

Without more mitigation, global mean surface temperature might increase by 3.7° to 4.8°C over the 21st century.



To avoid 2 degree rise, path of passing 50% reduction from now in 2050 is feasible and reasonable.

Stabilization of climate

- Can we stabilize climate change?: big challenge of 21st Century
- Final goal to stabilization: GHG zero-emission world
- Quick transformation to low carbon society before it get to point-of-no-return
- Common milestone of 2ton/capita world in 2050

Climate Change International
Technical and Training Center: CITC
One-stop Technical and Training Center

Implication of 2degree target to countries

- UNFCCC agreed to limit the average global surface temperature increase of less than 2°C from the pre-industrial era, as level of avoiding dangerous climate change in described in Article 2.
- IPCC report shows that a path to halve the current GHG emissions by 2050 is reasonable in order to attain this goal.
- When the emission allowance of halving the GHG emissions in 2050 is divided by the population projection of 2050, per capita CO2 emissions is about 2t CO2.
- Currently per capita emissions in the world is about 5t CO2 (Japan is 10tCO2, U.S. is 19tCO2, China is 5.5t CO2).

- Significant reduction is essential for all countries, including developing countries.
- It is difficult, from now on, for developing countries to follow a development path with high energy-dependent technologies.
- Therefore, developing countries need to seek for their own unique development path, which should be quite innovative one fit for this huge transition..

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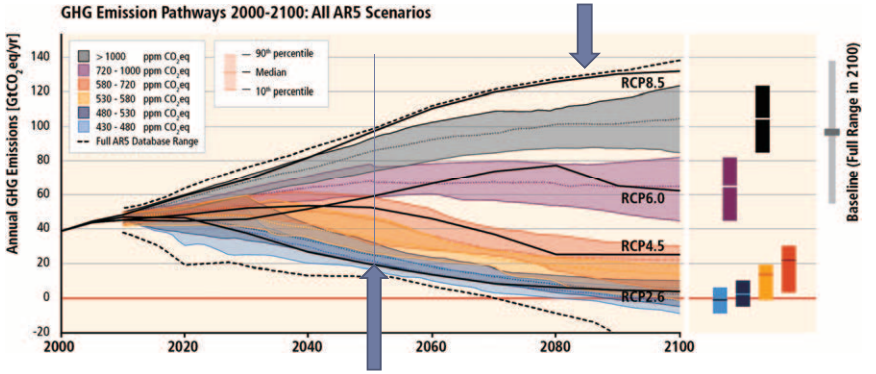

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IPCC AR5

City-level movement towards Low Carbon & Resilient Society in SEA

Takashi Otsuka

ICLEI Japan Office / IGES Senior Fellow

Regional Workshop for Capacity Development on Low Carbon and Resilient Society in Southeast Asian Countries, 22-24 June 2015, Bangkok, Thailand

Outline

1. ICLEI Overview
2. Challenges and Opportunities for Transformative Actions
   Tools/services - carbon*n* Climate Registry -
   Ambition - Compact of Mayors -
   Incentives - Earth Hour City Challenge -
3. ASEAN ESC Model Cities Programme
   Knowledge/experience exchange and *incentives*
4. Joint Crediting Mechanism (JCM)
   Finance, technology and capacity via city-to-city
5. *A new opportunity*
   - Transformative Action Program (TAP) -

ICLEI - the global cities network

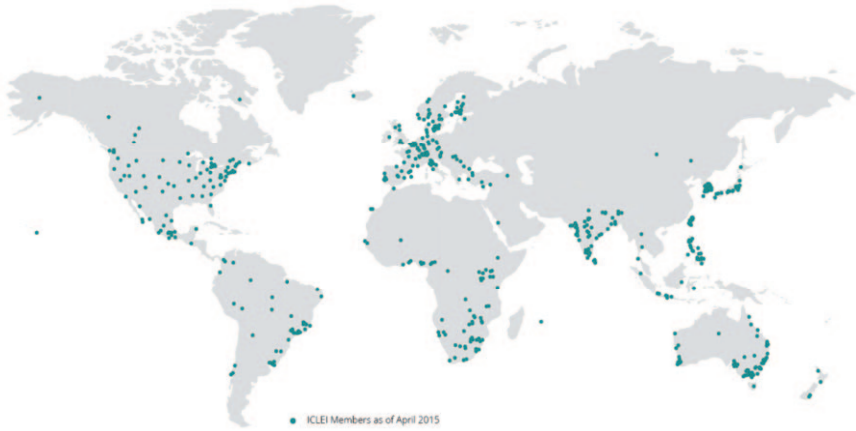
ICLEI - Local Governments for Sustainability is the world's leading network of over 1,000 cities, towns and metropolises committed to building a sustainable future. Established in 1990.

MISSION
is to build and serve a worldwide movement of local governments to achieve tangible improvements in global sustainability, with a specific focus on environmental conditions through cumulative local actions.

10 Agendas:

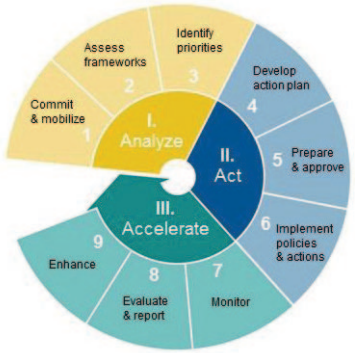
- Sustainable City – the overall goal –
- **Low-carbon City**
- Resource-efficient & Productive City
- **Resilient City**
- BiodiverCity
- Smart City
- EcoMobile City
- Happy, Healthy & Inclusive Communities
- Sustainable Local Economy & Procurement
- Sustainable City-Region Cooperation

ICLEI members



ICLEI's support for cities & towns (i)

GreenClimateCities
LOW EMISSION. LOW RISK. LIVEABLE!

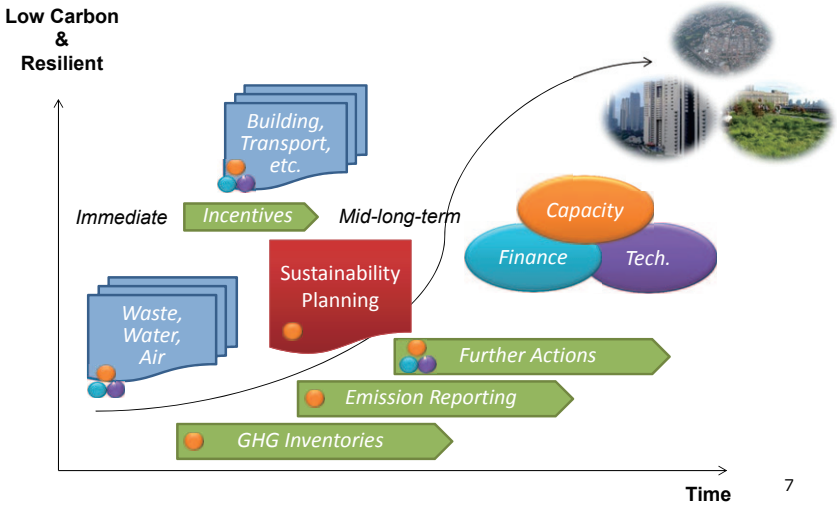


ICLEI's GreenClimateCities program

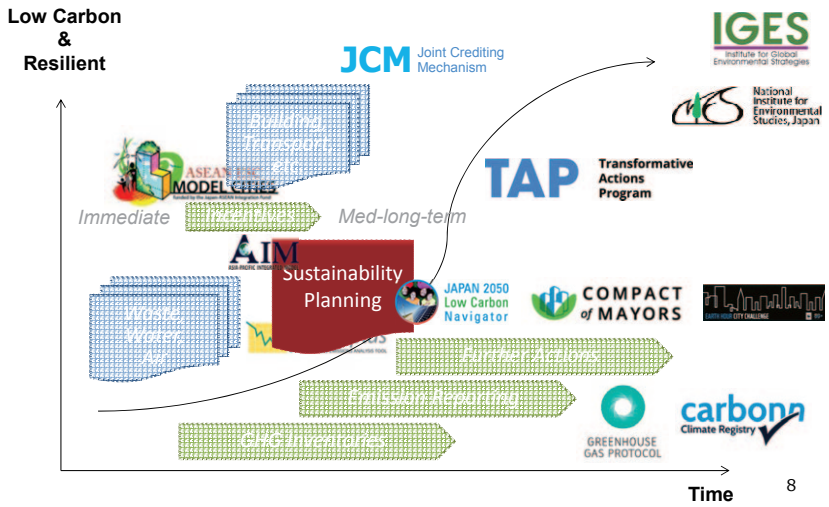
- Process support for local governments – political leaders and municipal staff
- Supporting Measurable, Reportable and Verifiable (MRV) climate action
- Concise methodology tailor-made for LGs with guidance and tools, using three phases

Challenges and Opportunities for Transformative Actions

Challenges and Opportunities



Challenges - Opportunities



ICLEI's support for cities & towns (ii)

Global Protocol for Community-scale GHG Emissions Inventories (GPC)
Accounting and reporting guidance → New standard for local governments. Supports MRV process. And transparency

Harmonized Emissions Analysis Tools *plus* (HEAT+)
ICLEI's emissions quantification and monitoring tool → Conduct regular emissions inventories, plan Low Emission Development

carbon*n* Climate Registry (cCR)
Global reporting platform for all local and sub-national govts. → Report commitments, performance, actions. Supports MRV process.

carbon*n* Climate Registry

- The cCR is a global reporting platform of local and subnational climate action to support the MRV (Measurable, Reportable, Verifiable) process.
- Launched in 2010, it currently serves as reporting platform for **11 initiatives**, including:

COMPACT of MAYORS

EARTH HOUR CITY CHALLENGE

3 areas of reporting:

- **Commitments** (Climate and Energy)
- **Performances** (GHG inventories)
- **Actions** (Adaptation and Mitigation)

carbon*n* Climate Registry

carbonn Climate Registry - www.carbonn.org
World´s leading reporting platform of local and subnational government climate action

Compact of Mayors

- The biggest collaboration to accelerate city climate action
- Commitment, action, progress reporting on mitigation and adaptation
- Cities and towns to be climate action leaders in the global effort to curb, halt and reverse climate change and build resilience

Three Global City Networks Joined Forces

C40 CITIES CLIMATE LEADERSHIP GROUP · ICLEI Local Governments for Sustainability · UCLG United Cities and Local Governments

Compact and Compliance

- Engagement（by September 2015 for announcement at COP21）
- 1st year: GHG inventory / Hazards reporting
- 2nd years: GHG reduction target / Vulnerability assessment
- 3rd years: Climate action plan / Adaptation plan

Earth Hour City Challenge

- To mobilize action and support from cities in the global transition towards a climate friendly one-planet future.
- The challenge invites cities to submit inspiring and credible urban development plans that dramatically increase the city's use of renewable energy.

Participating countries in 2014-2015

Brazil, Canada, Colombia, Finland, France, India, **Indonesia**, **Malaysia**, Mexico, Republic of Korea, South Africa, **Singapore**, Spain, Sweden, **Thailand** and USA

Process

- Entry by September
- Announcement in February
- National Earth Hour Capitals
- Global Earth Hour Capital

Seoul, South Korea, the global winner of WWF's Earth Hour City Challenge2015 © *City of Seoul*

ASEAN ESC Model Cities Programme

ASEAN ESC Model Cities Programme

Background & Framework

- An 'ASEAN-Japan' cooperation initiative (inspired by Japan's Eco-Model Cities and EU Green Capital approach)
- ASEAN Environment Ministers and East Asia Summit Environment Ministers Meeting (EAS EMM)*

Major outputs (since 2011)

- **31 Model Cities** with raised capacity and international profile (and networking among them)
- **CLMV* ASEAN countries** initiate the groundwork for national city network and sustainable city awards
- **Inter-ASEAN city-to-city exchange** and learning activities

*18 countries: 10 ASEAN Member States plus 8 countries of Australia, China, India, Japan, Republic of Korea, New Zealand, Russia and the United States

** Cambodia, Lao PDR, Myanmar and Viet Nam

Smiles from on-going activities

Model Cities (Year 1 and Year 2) 31 cities

Country	Model Cities Year 1 (14)	Model Cities Year 2 (21 (+17 new))
Cambodia	Phnom Penh, Siem Reap	Phnom Penh, Pursat
Indonesia	Palembang, Surabaya	Balikpapan, Lamongan, Malang, Tangerang
Lao PDR	Xamneua	Luang Prabang, Xamneua
Malaysia	North Kuching	--
Myanmar	Yangon	Yangon, Mandalay, Pyin Oo Lwin
Philippines	Palo, Leyte; Puerto Princesa	Legaspi; San Carlos, Negros Occidental; Santiago
Thailand	Mae Hong Son, Muangklang, Phitsanulok	Chiang Rai, Nongteng, Panusnikon, Pichit, Renunakon
Viet Nam	Cao Lanh, Da Nang	Dalat, Da Nang

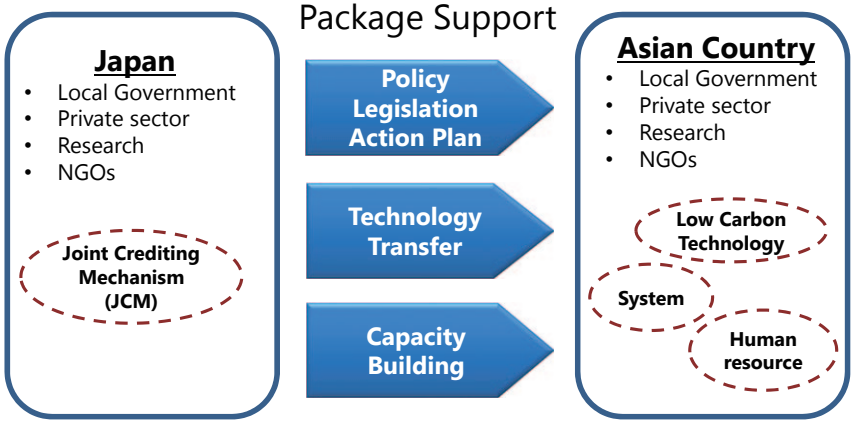
Indicates Model Cities which have initiated notable good practices targeted at mitigation and expressed strong motivation to be a 'low-carbon city'

ICLEI Local Governments for Sustainability

Joint Crediting Mechanism (JCM)

MOEJ Platform for Low Carbon & Resilient City Strategy

Asia Low Carbon and Resilient City Strategy

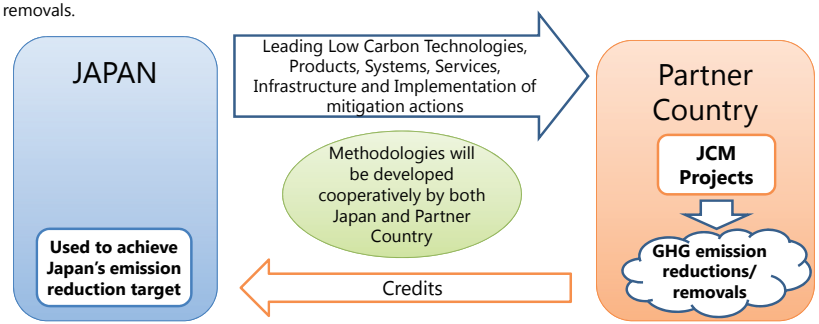


MOEJ Platform for Low Carbon & Resilient City Strategy

JCM City to City Collaboration

Realizing Low Carbon Development and Green Growth in Asian Cities

- Facilitating the diffusion of leading low carbon technologies, products, systems, services, and infrastructure as well as implementing mitigation actions, and contributing to sustainable development of developing countries.
- Evaluating contributions to GHG emission reductions or removals from developed countries in a quantitative manner, through mitigation actions in developing countries and using those emission reductions or removals to achieve emission reduction targets of the developed country.
- Contributing to the ultimate objective of the UNFCCC by facilitating global actions for emission reductions or removals.



MOEJ Platform for Low Carbon & Resilient City Strategy

JCM City to City Collaboration

Enhancing Policy and Technology Transfer

Low Carbon Policy, Legislation, Action Plan

Cities and local governments in Japan (e.g. Tokyo, Yokohama, Kawasaki, Osaka, Kita-Kyushu)

Know-how Experience

Cities and local governments in Asia

Low Carbon Technology Transfer & Deployment

Company and Technology from Japan (Energy efficiency, renewable energy, waste management, water, transport)

Project Development, Feasibility Demonstration

Growing private sectors and businesses in Asia

FY2014 Feasibility Studies for Large Scale Project Development

FY2014 Feasibility Studies for Large Scale Project Development

①Promotion of Low Carbon Technology Application (Gujarat, Maharashtra, Punjab)
②Financial Scheme Development for Promoting Energy Savings (Jakarta, Bali)
③Low-Carbon City Planning Project in Collaboration with Kitakyushu City (Surabaya)
④Eco-Auto Lease Scheme for Low Carbon Vehicle (Indonesia)
⑤Developing a Low Carbon Society in Collaboration with Kawasaki City (Bandung)
⑥Developing Environmentally and Culturally Sustainable Cities through the JCM (Siem Reap)
⑦Accelerating the Implementation of the Master Plan on Climate Change in Collaboration with Yokohama City (Bangkok)
⑧Automobile CO_2 Emission Reduction by Exporting ELV Engine (Bangkok)
⑨Strategic Promotion of Recovery and Destruction of Fluorocarbons Equipment (Bangkok, Iskandar)
⑩Installing an Evacuation Shelter with Renewable Energy as a "Low-Carbon/Resilient Model for Small Island Countries" (Palau, Samoa, Fiji, Tonga, Vanuatu, Kiribati, Tuvalu)
11Comprehensive Resource Circulation System for Low Carbon Society (Palau)
12Establishing Eco-island in Collaboration with Kobe City (Phu Quoc Island, Kien Giang Province)
13Green Growth Promotion Plan Development in Collaboration with Kitakyushu City (Hai Phong)
14Developing Low Carbon City in Collaboration with Osaka City (Ho Chi Minh)
15Large-Scale GHG Emissions-Reduction Project Development (Iskandar)
16Rice Husk Power Generation System for Low-carbon Communities (Ayeyarwady)
17Comprehensive Improvements in the Power Generation, Transmission and Distribution Systems and its Nationwide Horizontal Application (Ulaanbaatar etc.)
18Programme-type Finance Scheme for the JCM (Mongolia)
19GHG Mitigation Projects Contributing to Low Carbon Old Capital based in Collaborate with Kyoto City (Vientiane)

A new opportunity

Transformative Action Program (TAP)

Transformative Actions Program

- 10 year program to support climate investment in urban areas
- Raise ambition and accelerate transformative actions towards low-carbon and resilient society
- Raise visibility, mobilize key actors and increasing access to finance

Program

- Selection of TAP projects / action plans (100 each year)
- Visibility, information, communication through online platform
- Promotion at COP and other opportunities (TAP Pavilion @ COP21)

Transformative potential (selection criteria)

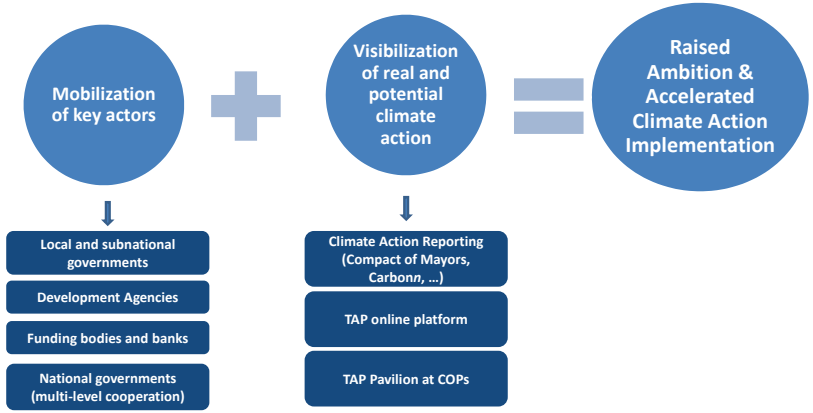
- Ambitious (first-time, scale-up), cross-cutting (people, place, planet), inclusive (city administration, civil society, multi-level governance, business)

The Transformative Action Program (TAP) calls for project applications from subnational authorities that are ambitious, cross-cutting, and inclusive - our definition of transformative.

Type of Projects

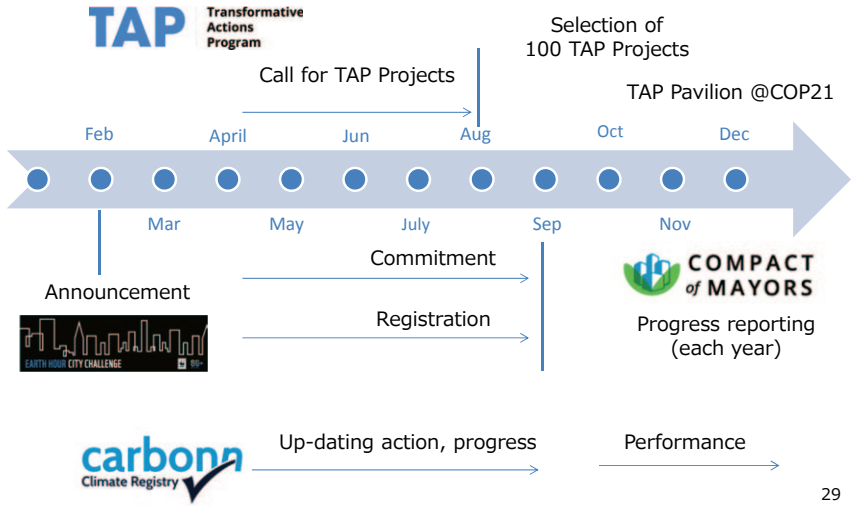
Fast-scale Transformers	Post-2020 Transformers
• Ready-to implement, fully designed projects identified need for funding (investment or grants)	• Well-designed project concepts
• projects with a clear budget, clear action plan and management	• identified need for funding, capacity building, technical advice, strategy development, finance expertise, etc.
• to be implemented pre-2020	• to be implemented post -2020

TAP the potential of local and subnational climate action!

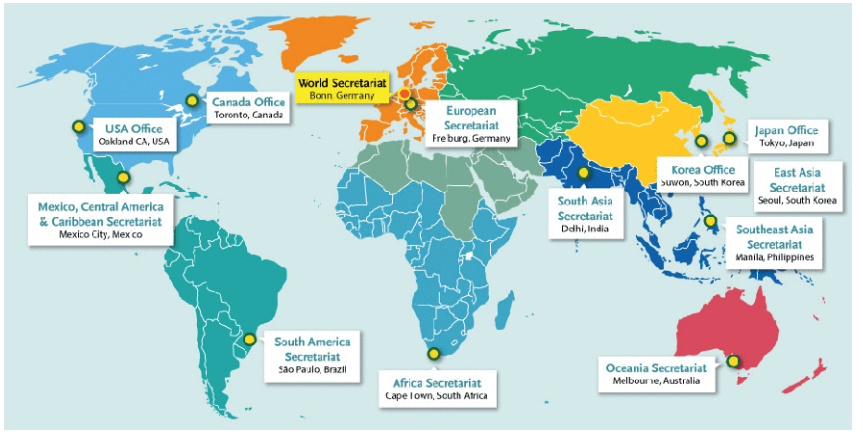


TAP the potential of local and subnational climate action!

Schedule 2015-2016



ICLEI around the world



Contact

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Regional Workshop for Capacity Development on Low Carbon and Resilient Society in Southeast Asian countries: Mitigation Realizing city-level mitigation actions.

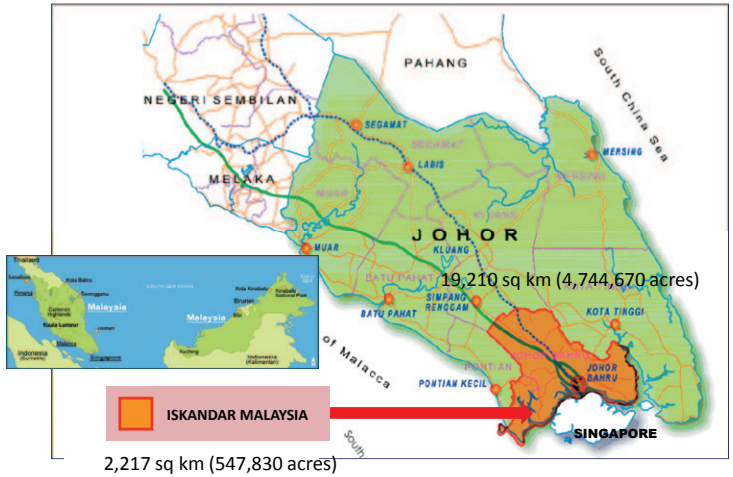
22-24 June 2015, Anantara Bangkok Riverside Resort

By Boyd Dionysius Jouman,
Acting Head, Environment
Iskandar Regional Development Authority (IRDA), Johor MALAYSIA

Presentation Content

1. Brief Introduction – Iskandar Malaysia economic region
2. Iskandar Malaysia's Environmental Policy through the Low Carbon Society Blueprint 2025 - examples
3. Success Factors

Geographical Location: Iskandar Malaysia in Johor State



Iskandar Malaysia – varied character

Iskandar Malaysia Vision

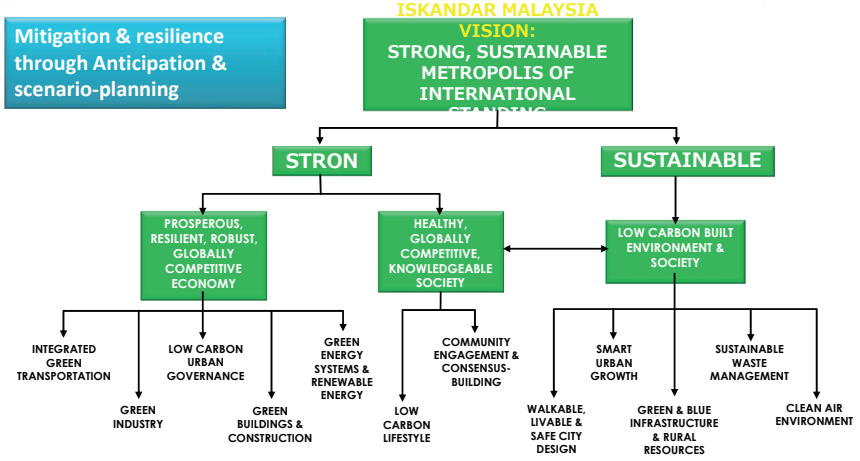
"Strong and Sustainable Metropolis of International Standing"

NPP – National Physical Plan, Malaysia
DPs – Development (Land use) Plans
SWM – Solid Waste Management

Green-focused Agenda - Rationale

Aligning IM's Vision with Low Carbon Society

Mitigation & resilience through Anticipation & scenario-planning



Background: Low Carbon Cities & a Low Carbon Region

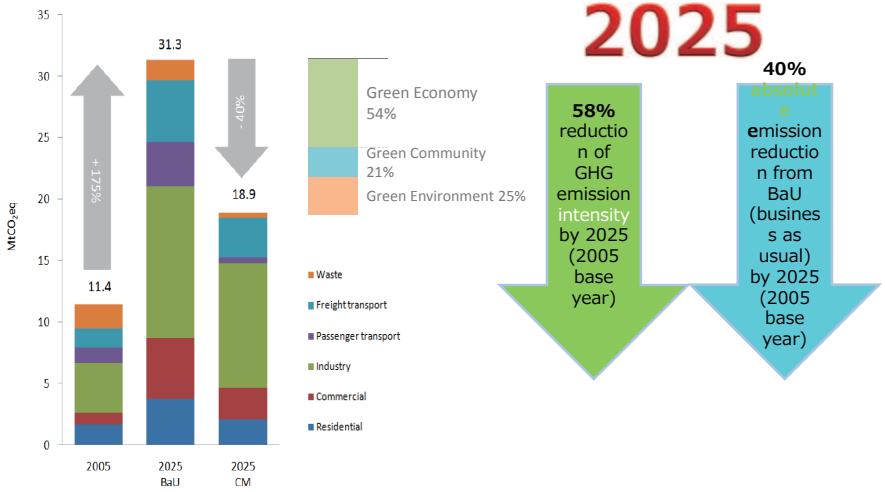
Malaysia's Commitment: COP15 Copenhagen (17 Dec 2009)
YAB Datuk Seri Najib Razak, Prime Minister: "··· voluntary reduction up-to-40% in terms of emission intensity of GDP by the year 2020 compared to 2005 levels". **2014 – achieved 30%**

Low Carbon Society Blueprint for Iskandar Malaysia 2025 - Global launching COP18 (Doha) Nov 2012; LCSBP Implementation Booklet 'Actions for a Low Carbon Future", COP19 (Warsaw), Nov 2013;
Mini-Stern Report - The Economics of Low Carbon Cities, June 2014 (by Leeds University – Centre for Low Carbon Futures)

Smart City Framework for Iskandar Malaysia – Nov 2012
Green as New Consumer Culture, New Market, New Growth with Green Credentials
- Preparing LCS Action Plans for 5 LAs in Iskandar Malaysia
- OECD-IRDA Study – Urban Green Growth in Dynamic Asia

SE4ALL – Sustainable Energy for All initiative (under Global Energy Acceleration Platform program (GEEAP)
Iskandar Malaysia selected as one of 10 cities and regions under the programme (Climate Summit 23 Sept 2014 at the UN) – LOU signed with Toyama City Japan on compact

Projected Greenhouse Gas Emission Reduction in Iskandar Malaysia



LCS Actions for IM by Three Main Themes

	Action Names	Themes
1	Integrated Green Transportation	GREEN ECONOMY
2	Green Industry	
3	Low Carbon Urban Governance	
4	Green Buildings & Construction	
5	Green Energy System & Renewable Energy	
6	Low Carbon Lifestyle	GREEN COMMUNITY
7	Community Engagement & Consensus Building	
8	Walkable, Safe, Livable City Design	GREEN ENVIRONMENT
9	Smart Growth	
10	Green and Blue Infrastructure & Rural Resources	
11	Sustainable Waste Management	
12	Clean Air Environment	

Low Carbon Society Blueprint for Iskandar Malaysia

Action 1 Integrated Green Transportation

1,916 $ktCO_2eq$

15%

To mitigate the carbon emission level, an integrated green transportation system is highly essential. This calls for promoting a shift to more energy efficient passenger and freight transportation modes; enhancing intercity connectivity through energy efficient high-speed rail; promoting energy efficiency improvement in motorised vehicles; and improving flow and performance conditions in both the passenger and freight transport sectors.

Toyama City, Japan – Compacting Toyama through transportation

	Sub-actions	Measures
1	Integrated Public Transportation	Public transport system improvement
		Introduce rail based and water based public transport
		Efficient/ seamless inter-modal transfer (interchange) facilities
2	Improve JB - Singapore, JB-KL Connectivity	Intercity High Speed Rail Transit (HSRT)
3	Diffusion of Low Carbon Vehicles	Promote use of low carbon vehicles
4	Enhancing Traffic Flow Conditions and Performance	Transportation Demand Management (TDM)
5	Green Transportation in Rural Areas	Improve public transport services & use in rural areas
6	Green Freight Transportation	Modal shift to greener freight transport modes
		Promote green/ hybrid freight transport

Low Carbon Society Blueprint for Iskandar Malaysia

Action 2 Green Industry

1,094 $ktCO_2eq$

9%

As nations and cities around the world increasingly commit themselves to tackling global climate change, it is expected that there will be a steady surge in demand for green industrial products that are more energy efficient; renewable energy sources and alternative fuels that are zero-carbon or have low-carbon intensity; and environmental analytical and advisory services that seek to help services continuously monitor, maintain and/or improve

Industrial Symbiosis – one industry's waste product becomes a resource for another

	Sub-actions	Measures
1	IM as Global Hub for Green Industry	Tax incentives & fiscal measures to attract green industries
		Promotion of R&D in strategic sectors
2	Decarbonising Industries	Reducing energy intensity of industrial production process
		Carbon reduction and environmental standards/ rules/ regulation
3	Green Employment in Existing Industries	Promote the ecological & economic benefits of greening existing industries
		Promotion of environmental analytical & advisory services towards improving resource & energy efficiency in existing industries
4	Human Capital Development in Green Industry	Upgrading/ retraining existing pool of professional & semi-professional workers
		Regional education hub for green industry

Low Carbon Society Blueprint for Iskandar Malaysia

Action 4 Green Building and Construction

To realise the goal of low carbon society, all stakeholders in the building industry should work together. Communication between public and private stakeholders, is vital to create common goals. The five main measures of green building and construction are: promoting green buildings in new developments; EEI of existing buildings; green construction, green building design technology; and rural green buildings.

1,203 $ktCO_2eq$

9%

Green Building initiatives – CASBEE, GM, Tokyo Met Govt EE etc >>> GAIA

	Sub-actions	Measures
1	Promoting Green Building in New Construction	Expedite approval process for green buildings
		Showcase/prototype of a green building in IM
2	Energy Efficiency Improvement of Existing Buildings (Retrofitting)	Identify candidate buildings (commercial and offices) for retrofitting demonstration project
3	Green Construction	Developers to promote green design
		Use of recyclable and low embodied energy building materials
4	Green Building Design and Technology	Introduce Building Energy Management System (BEMS) & Industrialised Building System (IBS)
		Climatically responsive building design
		"Built to last" buildings - longer building lifespan
5	Rural Green Buildings	Conservation & promotion of vernacular, climatically adapted architecture in rural areas

Low Carbon Society Blueprint for Iskandar Malaysia

Action 5 Green Energy System and Renewable Energy

Power is the main driver of development as well as the largest emitter of greenhouse gases. Low carbonization of the energy sector is therefore one of the key factors toward the realization of the goal of achieving low carbon society in Iskandar Malaysia. Three strategies to green the energy sector are: promotion and encouragement of renewable and clean energies utilization; establishment of the SMART Grid on both supply and demand side;

2,725 $ktCO_2eq$

21%

SE4ALL – Sustainable Energy for All initiative (under Global Energy Acceleration

	Sub-actions	Measures
1	Promotion of Renewable/ Alternative Energy	Harnessing solar energy
		Utilisation of energy from waste
		Hydrogen utilization
2	Establishment of Advanced Energy System	Employing of distributed energy system
		Widespread use of energy storage
		Diffusion of demand response technologies
		Incorporation of power management system (IT Technologies)
3	Provision of Incentives and Subsidies and Derivation of Tariff Rates	Incentives for green energy initiative
		Tariff for future grid

Low Carbon Society Blueprint for Iskandar Malaysia

Action 8 Walkable, Safe and Livable City Design

A low carbon city should offer its inhabitants a high quality, healthy and safe living environment while contributing to mitigate CO2 emission. Designing walkable and livable cities is therefore an important facet of a low carbon society. Its main purpose with respect to Iskandar Malaysia is to induce a voluntary modal shift from motorised vehicles to walking and cycling for short- to medium-distance trips while creating world-class

263 $ktCO_2eq$

2%

Benchmarking with world class cities

	Sub-actions	Measures
1	Designing Walkable City Centers and Neighborhoods	Providing comfortable walkways
		Interconnected pedestrian network
2	Designing the Cyclist-friendly City	Providing safe, comfortable, cycling network
3	Designing the Safe City (from crime)	Crime prevention through environmental design (CPTED)
		Increase police presence
4	Designing Civilised & Livable Streets through Traffic Calming	Reduce vehicle speed
		Street environmental enhancement
		Reclaiming pedestrian space

Low Carbon Society Blueprint for Iskandar Malaysia

Action 9 Smart Urban Growth

As population in Iskandar Malaysia is set to more than double from and GDP to almost quadruple to in 2025, supporting and managing rapid growth while keeping energy demand and CO2 emissions at bay become a critical issue. Key to this is the way in which Iskandar Malaysia's spatial growth is managed through 'smart urban growth' strategies. Smart urban growth aims at reducing average trip making, trip distances and vehicle mile travel and at the same time increasing the use of

1,214 $ktCO_2eq$

10%

Smart City Framework

	Sub-actions	Measures
1	Promote Polycentric Growth Pattern in IM	Gradual urban function reconcentration in polycentric nodes connected by public transportation
2	Promote Compact Urban Development	Urban growth boundary (UGB) for Iskandar Malaysia
		Higher density mixed use development
3	Promote Transit Supportive Land Use Planning	Transit Oriented Development (TOD) & Station Area Planning (SAP)
4	Develop the 'Smart Digital City'	Information and Communication Technology (ICT)

Low Carbon Society Blueprint for Iskandar Malaysia
Action 10 Green and Blue Infrastructure and Rural Resources

392 $ktCO_2eq$

3%

Green and blue infrastructure includes the natural environmental components and green and blue spaces that lie within and between our cities and towns. Among the services provided by them include sequestrating and storing excessive CO2 from the atmosphere, moderating high temperature in the cities and reducing GHG emissions by conserving energy used for

	Sub-Actions	Measures
1	Regional Green Corridor Network	Acquisition of land for forest connections
		Protect existing forests
2	Conservation of Mangrove Forests	Reinforce protection of existing mangrove areas
		Mangrove area regeneration
3	Promote Urban Forests (urban recreation and green lungs)	Reintroduce endemic forest species into existing urban parks
		Create new urban parks
		Increasing green cover
		Reforestation
		Ongoing urban tree planting campaign
4	New Development to Retain Existing Vegetation	Enforcement of ACT 172 (Part VA: Trees Preservation Order)
5	Low Carbon Farming in Rural Areas	Promotion of low carbon farming in rural areas
6	Ecotourism and Rural-cultural Tourism	Promotion of natural resource-based and rural cultural tourism

Low Carbon Society Blueprint for Iskandar Malaysia
Action 11 Sustainable Waste Management

1,224 $ktCO_2eq$

10%

The main objective of sustainable waste management is to figure out alternatives solid waste management system that can prevent waste generation and enhance material and energy recovery. Five areas were considered: municipal solid waste management, agricultural waste management, industrial waste management, waste water management, and construction and demolition waste management.

Green Community Programmes

	Sub-actions	Measures
1	Sustainable Municipal Solid Waste Management	Reduction at source
		Recycling of municipal solid waste
		Extended final disposal
		Effective waste transportation
2	Sustainable Agricultural Waste Management	Biomass to wealth
3	Sustainable Industrial Waste Management	Scheduled waste reduction and treatment
		Non-scheduled waste reduction, reuse and treatment
4	Sustainable Sewage Sludge Management	Improved sewage treatment and sludge recycling
5	Sustainable Construction and Demolition Waste Management	Reuse and recycling of construction waste

Low Carbon Society Blueprint for Iskandar Malaysia
Action 12 Clean Air Environment

- $ktCO_2eq$

-%

Air pollution is one of the issues in Iskandar Malaysia, it is mainly caused by the emission of particulate matter , SO2, NOx, CO and VOC from vehicles in road transportation, industrial activity and trans-boundary pollution by biomass burning, which is known as haze. There are many good strategies to improve local and regional air quality as the co-benefits under low carbon society blueprint.

	Sub-actions	Measures
1	Clean Air Quality	Implementation of co-benefit s of approach in policymaking process
		Promote win-win actions in Industry
		Promote low-emission vehicle and public transportation
		Compensate the negative impact of LCS CM on local air quality
2	Improve Regional Air Quality	Continuous monitoring & real-time publishing of Air Pollution Index (API) information
		Strengthen cross-border cooperation towards reducing perennial haze occurrences

Completed/On-going Green Economy Projects

Green Transportation

Public transport system improvement

Bas Iskandar Malaysia- social route

BeXTRA- BAS EKSPRES TRANSIT- express, limited transit

Low Carbon Urban Governance

Regular Stakeholder Engagements – Investment Committee

Nusajaya/Danga Bay waterfront – advice,

Green Industry

Promote the ecological & economic benefits of greening existing industries

(Thru facilitation of investment and new development)

Green Building and Construction

Promote and Facilitate Green Building in New Construction

Green Building Assessment tools –

GAIA – Green Accord Initiative

Green Energy System and Renewable Energy

Promotion of Renewable Energy for new development

SEDA's role – FIT; Renewable Energy

Low Carbon Cities Policy Package

Buildings

- •Environmental performance standard and evaluation of buildings
- •Adjustment of tax rate of fixed asset tax
- •Low interest loans to investment in energy efficient buildings
- •Environmental performance standard of equipment
- •Environmental labeling
- •Education and information services
- •Green purchasing policy
- •Green Investment policy
- •Subsidy to introduce photovoltaic power generation system
- •Tax incentives for green developments

Transport & Land

- •Urban planning
- •Green Transportation planning; mobile management system
- •Tax rate adjustments to fixed asset
- •Investment in public transport e.g. BRT
- •Environmental performance standard of vehicles
- •Tax rate adjustment to energy-efficient vehicles
- •Promotion of bio fuel

Industry

- •Subsidy to investment to energy efficient equipment
- •Promotion of technology transfer
- •Green manufacturing

- •Incentives to introduce energy-efficient equipment & buildings
- •Incentives to introduce/adopt renewable energy
- •Controlling urban growth & choice of transport mode

Energy-efficiency improvements | Lowering CO_2 | Transport demand control

Sustainable Cities & Economic Region

2. Transformation of Johor Bahru City Centre – Environmental, Economic, Social

JBCC Vision	TO REJUVENATE AND REVITALIZE JB CITY CENTER AS A LIVEABLE CITY THAT ATTRACTS VIBRANT ACTIVITIES AND POPULATION
To be	LITTLE VENICE for canal, heritage and culture, and BILBAO for Rejuvenation Strategies/Initiatives
Livability	Compact and conducive living environment

ECA : (Asia) JB ranks 34 out of 240 cities (World) JB ranks 197 out of 252 cities

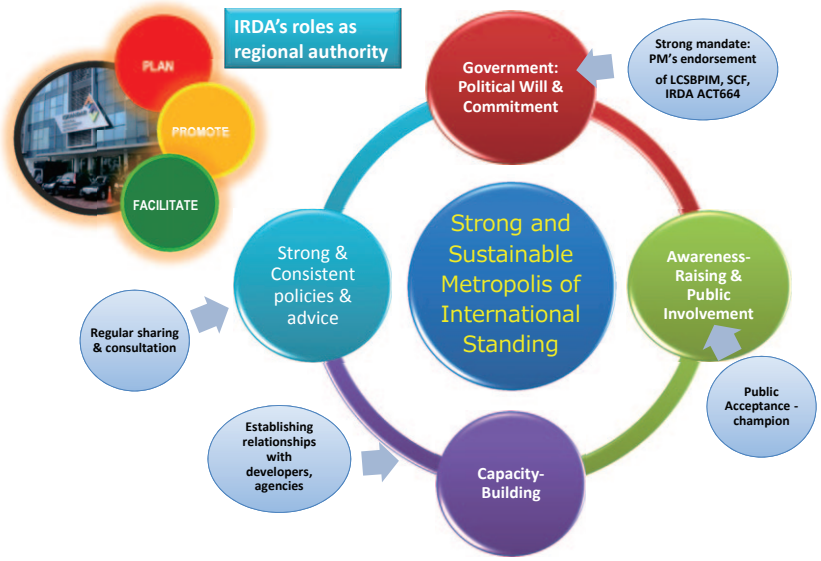
Quality of life index measures for improvements

- Transport
- Culture
- F & B
- Housing
- Local Entertainment
- Green space
- Quality streetscape
- Low crime

Economic — Vibrant activities in conducive environment

- Immediate: -
  - Retail
  - Heritage and cultural tourism
- Future:-
  - Professional back production offices
  - City Campus

Mechanisms for Success

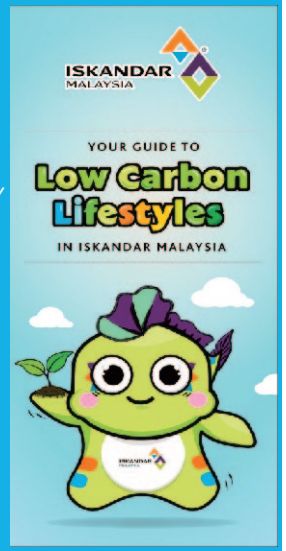


THANK YOU! KOTOHUADAN!

ISKANDAR REGIONAL DEVELOPMENT AUTHORITY (IRDA)
boyd@irda.com.my

RCE ESD (Regional Centre of Expertise on Education for Sustainable Development) – **RCE Iskandar**

UTM-LOW CARBON ASIA RESEARCH CENTRE



ISKANDAR MALAYSIA Here and Now

www.iskandarmalaysia.com.my

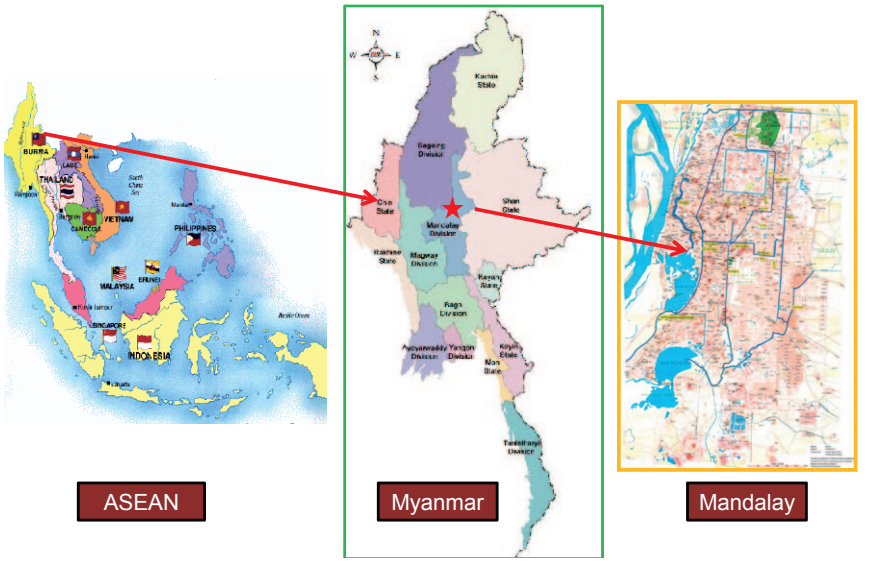
The Republic of Union of Myanmar

MANDALAY CITY DEVELOPMENT COMMITTEE

Mitigation Realizing
City- Level Mitigation Actions

Dr.Thwin Kyaw Kyaw
Executive Committee Member
Mandalay City Development Committee
Mandalay

The Republic of the Union of Myanmar



Institution for Environmental Management

- **National Environmental Conservation Committee (NECC)** has been reformed in April 2011 as central organization to carry out the national environmental management and to implement effective environmental conservation and protection in Myanmar.
- **Ministry of Environmental Conservation and Forestry (MOECAF) was upgraded in place of** Ministry of Forestry in September 2011 for as the focal point for the overall environmental management in the country, coordinating agency for environmental matters and promoting environmentally sustainable development.
- **The Environmental Conservation Department** under the MOECAF has been now started in 2012 for the effective implementation of environmental conservation and management in Myanmar.

National Policy and Strategies Developed

National Environmental Policy (1994)

- To achieve harmony and balance between socio-economic, natural resources and environment through the integration of environmental considerations into the development process enhancing the quality of the life of all its citizens.
- Environmental protection should always be the primary objective in seeking development

Myanmar Agenda 21 (1997)

- To mobilize and focus national efforts to achieve sustainable development.
- To facilitate the incorporation of environmental considerations in the development process of the economic and social sectors.

National Strategy for Sustainable Development (NSSD)

- **Guiding document to implement in harmony among the 3 pillars of environment, economic and social sectors.**
- **Three goals identified are:**
  - Sustainable management of natural resources;
  - Integrated economic development; and
  - Sustainable social development.

- Environmental Conservation Law promulgated on 30 March 2012
- To establish integrated environmental monitoring system
- Environmental Impact Assessment (EIA) in the developing projects to incorporate environmental management plan for the mitigation of environmental impact
- To develop standards for environmental qualities
- To encourage green initiatives to adopt its strategies and action plan for mainstreaming into the development sectors

Policy Guidelines for Environmental Conservation

1. **To conserve Forests and Biodiversity**
2. To reduce Air and Water pollution
3. To control of Industrial Waste
4. **To extend Renewable Energy**
5. To mobilize Participation of people and social organizations
6. **To lay down new policy for economic development in parallel with environmental conservation**
7. To review and amend laws and enact new laws on environmental conservation

Sustainable Environmental Development Strategies

(a) To implement Myanmar National Environment Policy;
(b) To enable to integrate the matters of environmental management into the sustainable development processes to enable to lay down **short, mid and long term plans, strategy and policies**;
(c) To manage the conservation and sustainable use of natural resources;
(d) To lay down and carry out the scheme of the control of environmental pollution such as water pollution, air pollution and land pollution;
(e) To cooperate with Government departments, organizations, private persons and international organizations on the matters on environmental conservation;

(f) To encourage to carry out the reduction of **carbon emission** and to cooperate with relevant organizations on the development work for carbon reduction;
(g) To carry out the environmental conservation **research and awareness**;
(h) To manage **ecosystems systematically for social prosperity, poverty elimination, and economic development** resulting from the encouragement of green economic processes included in sectorial development projects.

Initiative on Green Economy and Green Growth

Focusing on

- Environmental conservation polices and strategies,
- Reducing of carbon emission and renewable energy development;
- Supporting finance in private sector;
- Resistant to disaster risk in building of cities, urban infrastructures;
- Water and food security;

- Forest conservation; ecotourism;
- Natural resources management;
- Conservation and management on agriculture and irrigation;
- Challenges and opportunities to Green Economy and Green Growth.

Challenges

- National Economy Development is highly **rely on exploitation of natural resources** in terms of Mining, Oil and Gas, Aquatic, Forest Resources
- Development projects in terms of **Dams for Hydropower and Agriculture, Highways, Industries and Special Economic Zones and Urbanization** are largely increasing.
- **Leading to cause resource degradation, ecosystem and loss of habitat and biodiversity**
- **Increasing Investments** from Transformation of Natural Resources based Economy to Industrial-based Economy
- **Leading to cause environmental pollutions**
- Global **Climate Change**
- **Poverty**
- Limited Institutional **Capacity and Technology**
- Poor **coordination**
- Sustainability of **Finance**

Issues for Transition to a Green Economy

- Weakness of coordination mechanism among the stakeholders due to limited capacity and institutional structure.
- Lack of understanding and awareness about green strategy, practices and operations in key development sectors
- Integration of national environment conservation guideline and regulations into development are still missing.
- Limited knowledge, research and information to support Green Investment in natural capitals and other production sectors for Green Growth & Green Economy
- Lack of Environmental Sound Technology and best practice
- Financial Sustainability

MANDALAY CITY

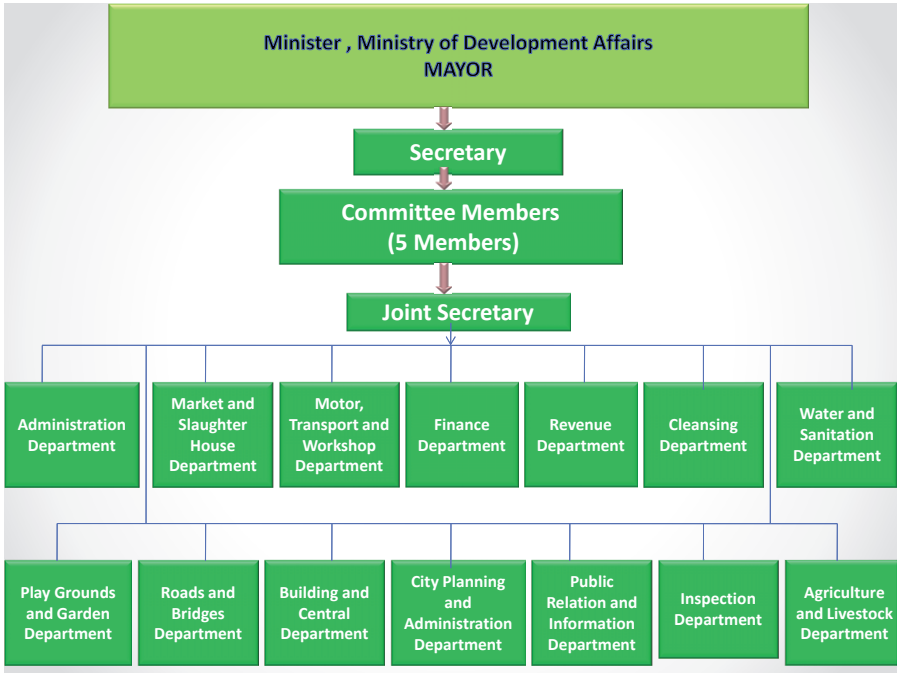
- Second largest city of he Union Of Myanmar, last royal capital
- City incorporates six townships
- Total area of the City is about 91508 hectares (915.08 Square Kilometers)
- Population is 1.41 millions(2015)

  density- 13.3 person/ha, 1328.8/sq.km
- developing rapidly with concomitant increase in developed area due to its strategic location and key national role.
- MCDC is in charge of financing, planning and implementation of urban services of six townships.

Mandalay City Development Committee

VISION

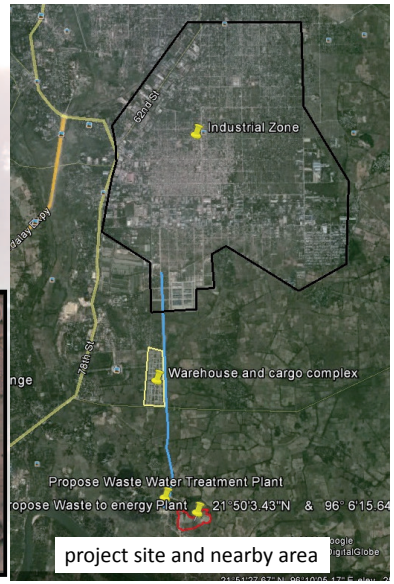
- To keep the City Clean
- To make the City Beautiful
- To enable the City Dwellers to Enjoy the Pleasant Life



Initiative of Waste to Energy Project for Low Carbon Green City

Solid Waste to Electricity Generation Project

- Southern Outpost of the City.
- Sauk Taw Wa Village, Amarapura Township
- 29.32 Acres for project area
- Organic Asia Group (Thailand) will be implemented.
- 14.8 MW/h of electricity can be generated.
- 219 Tonnes per day of Carbon Dioxide can be Reduced.



project site and nearby area

Policy Guidelines for Energy

- To maintain the status of energy independence
- To employ hydroelectric power as one of the vital sources of energy sufficiency
- To generate and distribute more electricity for economic development
- To save non-renewable energy for future energy sufficiency of the nation
- To promote efficient utilization of energy and impress on energy conservation
- To prevent deforestation caused by excess use of fuel wood and charcoal

Biomass Energy for Rural Development

- As a drive against deforestation the objectives of the **Biogas Project** are:
  - (i) to get biogas for cooking and generating electricity,
  - (ii) to get a wood-substituted fuel, and
  - (iii) to improve the rural environment in agricultural sector and

Use of Bio-digester prevent deforestation and at the same time it control pollution which improves health and sanitation standards of the area and also bio-digester residues can be utilized as fertilizer.

Air Quality Monitoring Unit (Haz Scanner EPAS)

Traffic Junction

Rural Area

Instrument Testing, Staff Training, and Monitoring

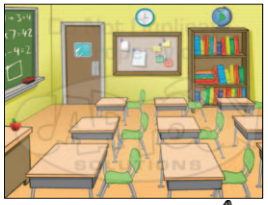
Implementation of Green Garden City by Trees and Flowers Planting

- Four golf courses, two lakes, nine parks, ten playgrounds, one zoological garden and three hilly areas.
- To be green garden city and urban oasis.
- Every year, ceremonies of Mass Tree Planting and Spreading of Seeds held in rainy season, 50000 numbers of trees.
- Trees planting on platforms and center of city area.

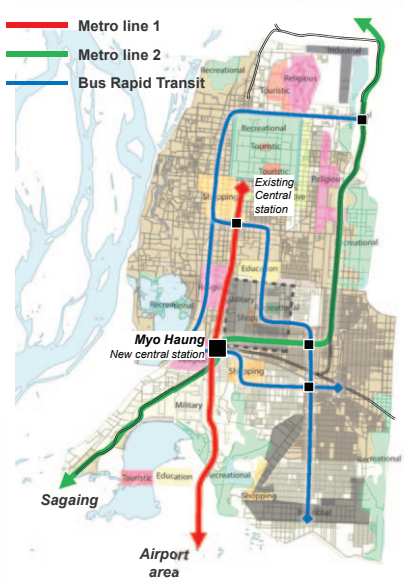
Promotion of Environmental Education

2014-15 Financial Year
(150000 US$)

2015-16 Financial Year
(180000 US$)

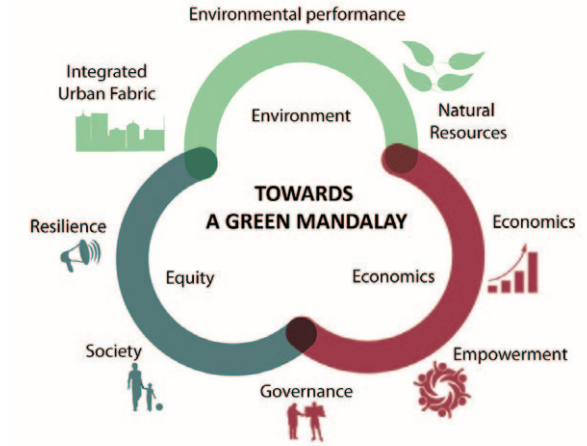


A coherent urban and transport vision for the future Mandalay



Towards sustainable performance

URBAN TRANSPORT | WATER | SOLID WASTE | ENERGY EFFICIENCY




Thank you

Bangkok Mitigation Actions

Ms. Suwanna Jungrungrueng
Deputy Director-General
Department of Environment
Bangkok Metropolitan Administration
Thailand

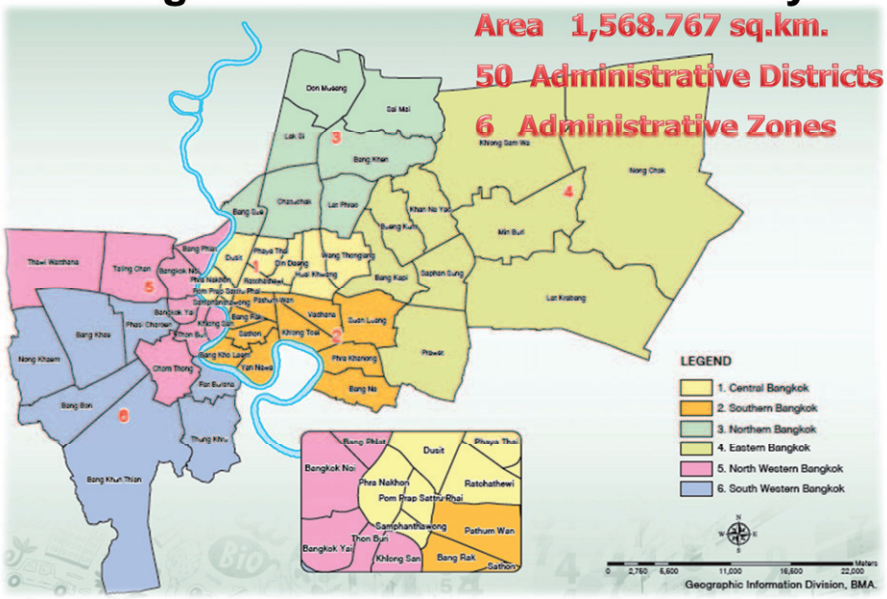
Contents

1. Introduction

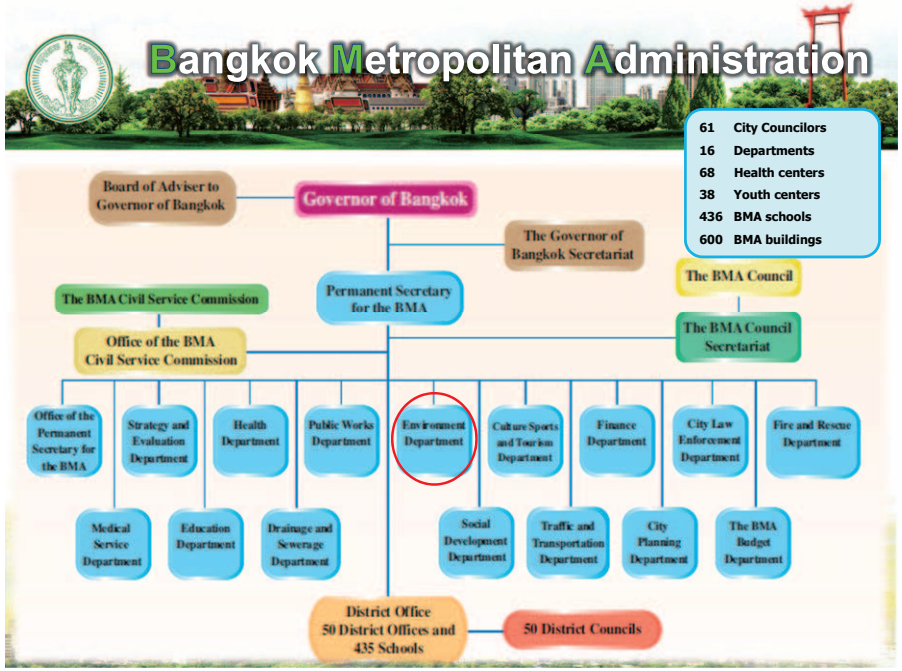
Fact about Bangkok

❖ **Populations**	Registered	5,686,252 persons (2013)
	Non Registered	~ 4 million persons
❖ **Houses**		2,593,827 households (2013)
❖ **Density Populations**		3,625 persons/km^2 (2013)
❖ **Average Ground Level**		+0.50 to +1.50 m MSL
❖ **Temperature**		17.6 - 39.3˚C
❖ **30-year Average Annual Rainfall**		1,648 mm
❖ **Length of the Chao Phraya river in Bangkok**		35 km

Bangkok Administrative Boundary



Bangkok Metropolitan Administration

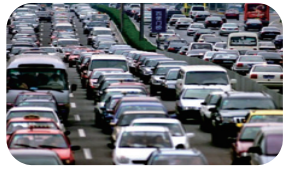


2. Challenges & Climate Change Impact

Challenges

Waste generation
9,900 tons /day,
22% of Thailand's
(2014)

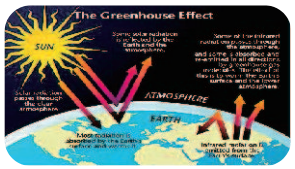
Wastewater is treated
1,112,000 m^3 / day
46 % of total wastewater generated
(2014)



8.6 million registered cars
6 million trips of car usage/day.
Increase 5% each year
(2014)

PM_{10} on roadside
exceeded the 24-hour average
(120 µg/m^3) in some areas.
(2014)

Fuel consumption
353,707 million MJ.
Electricity consumption
32,605.44 GWh
(2013)



GHG Emission 42.65
million tons (2007)

Climate Change and Bangkok

- ✓ Climate change is one of the largest challenges to the current and future development of human society.
- ✓ For Bangkok, climate change has become a big and real challenge.
- ✓ At the same time, expanding economic and social activities in Bangkok has caused large emission of GHGs.

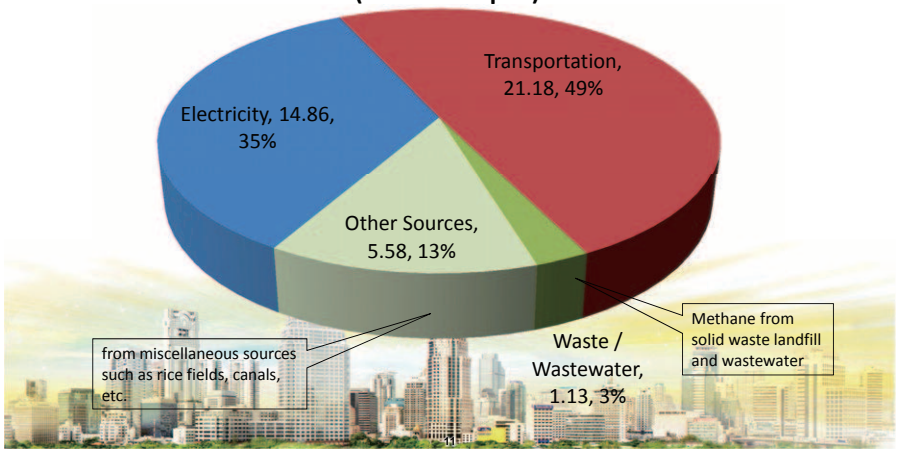
Impacts of Climate Change

- ↖ **The change in land use effects to Bangkok's temperature to be higher than the suburb by 2°C**
- ↖ **Disaster from floods**
- ↖ **Sea-level rise threatens coastal erosion in Bangkhuntien**

  At present, more than 760 m of the Bang Khun Thian shoreline have been eroded. Coastal wave due to Monsoon erode at 5-14 meter/year
- ↖ **High incidence of infectious diseases such as dengue fever and Leptospirosis**

Greenhouse Gas Emission (GHG)

GHG Emission in Bangkok by Sectors (million ton p.a.)



3. Climate Change Plan & Policies

DRAFT Climate Change Master Plan (2013 - 2050)

Vision

Thailand has achieved climate resilience and low carbon growth in accordance with sustainable development agenda

Mission

- Build climate resilience for Thailand's development by mainstreaming climate change adaptation into development planning of all sectors and levels
- Reduce GHG emission and establish policy instruments to encourage sustainable and low-carbon development
- Develop appropriate knowledge base, databases and technologies to support climate change adaptation and low-carbon development
- Enhance capacity and awareness of development partners at all levels to enable effective engagement in executing climate change policy and plan

Strategy

ADAPTATION
1. Water resource management
2. Agriculture and food security
3. Tourism
4. Public health
5. Natural resource management
6. Settlements and human security

MITIGATION
1. Power generation
2. Transport
3. Buildings
4. Industry
5. Waste management
6. Agriculture
7. Forestry
8. Urban Management

CROSS-CUTTING ISSUES
1. Database, R&D and technological development
2. Policy instrument development
3. Awareness and capacity building
4. Enhancement of international cooperation

Source : Naphanich Asvapoosit kul, Climate Change Management and Coordination Office, Office of Natural Resources and Environmental Policy and Planning, Ministry of Natural Resources and Environment, Thailand.

Bangkok 20 Years Development Plan (Bangkok 2032)

VISION : Vibrant of Asia

In 2012, MR. Sukhumbhand Paribatra brought a new perspective of "Vision Planning" to derive a new 20 years development plan for BMA.

After "Vision Planning" project have been finished, the Bangkok Vision 2032 was transform into action under 7 Strategies

Strategic Plans on Development of Bangkok Metropolis 2013 – 2032

Bangkok Climate Change

"The Bangkok Declaration on the Cooperation of Alleviating the Global Warming"

36 Organizations jointly signed the Bangkok Declaration on the Cooperation of alleviating the global warming on 9 May 2007 at the United Nations Conference Centre, Bangkok

The Bangkok Declaration

- We will **reduce energy uses and effectively use resources** for production and consumption to make least impact to global warming.
- We will together **support** the role of youths, communities, businesses, government units and individuals **to coordinately reduce greenhouse gases emission.**
- We will together **support the way of life based on the sufficient economy** to prevent prepare and adapt to global warming.
- We will together participate, **support and promote carbon sequestration through tree plantation extensively and sustainably.**
- We will continuously support the global warming reduction and prevention activities by **disseminating knowledge and information, to encourage practical action in everyday living.**

From Bangkok Declaration to the 5-Year Action Plan for Global Warming Alleviation (2007 – 2012)

Public Consultation Process

Expert consultations

Resident consultations
on BMA's website, seminar and survey

4. Response to Climate Change Impacts

Climate Actions

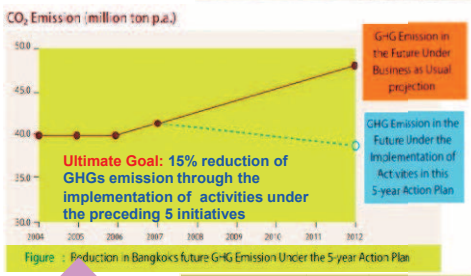
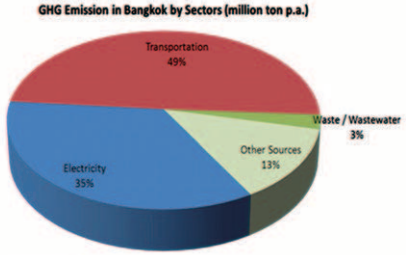


Figure : Reduction in Bangkoks future GHG Emission Under the 5-year Action Plan



Comparison of GHG Emission in the Future Under Different Scenarios Against Current GHG Emission Condition

Sector	Year 2007	Year 2012	
	Current GHG Emission (CO_2 equivalent - million tons)	Future GHG Emission Under Business as Usual Scenario (CO_2 equivalent - million tons)	Future GHG Emission Under BMA Action Plan implementation (CO_2 equivalent - million tons)
Transportation	21.18	25.3	19.77
Biofuels Energy (reduced GHG)			(0.61)
Electricity	14.86	16	13.75
Waste / Wastewater	1.13	1.13	0.95
Waste Recycle (reduced GHG)			(0.28)
Others (estimate 15% of total GHG emission from other sectors)	5.58	6.36	6.36
Green Area (reduced GHG)	(-0.10)	(-0.10)	(-1.00)
Total	42.65	48.69	38.94

- GHG emissions 7.1 *tons* CO_2 equivalent / capita /year under business as usual (BAU)
- GHG emissions in future 5.5 tons CO_2 equivalent /capita /year under the implementation of activities in 5-year Action Plan

BMA Action Plan on Global Warming mitigation 2007-2012

5 Initiatives & 10 Action Plans

Initiative 1: Expand Mass Transit and Improve Traffic System	Action Plan 1: Expand the Mass Transit Rail System within the Bangkok Metropolitan Area	Action Plan 2: Improve Public Bus System	Action Plan 3: Improve Traffic System
Initiative 2: Promote the Use of Renewable Energy	Action Plan 1: Promote the Use of Biofuels		
Initiative 3: Improve Building Electricity Consumption Efficiency	Action Plan 1: Improve Building Energy Consumption Efficiency	Action Plan 2: Electricity Conservation Campaign for Bangkokians	
Initiative 4: Improve Solid Waste Management and Wastewater Treatment Efficiency	Action Plan 1: Increase Efficiency in Solid Waste Management	Action plan 2: Increase Efficiency in Wastewater Treatment	
Initiative 5: Expand Park Area	Action Plan 1: Plant trees in the Bangkok Metropolitan Area	Action Plan 2: Plant trees in the Neighboring Province Areas	

Cooperation

Local Cooperation

- Ministry of Energy
- The Federation of Thai Industries
- Electricity Generating Authority of Thailand
- The Bangchak Petroleum Public Co.Ltd.
- The Energy Senate Committee
- Ministry of Natural Resources and Environment
- Metropolitan Electric Authority
- Private Partnership
- Raise Awareness Through Media Partnership

International Cooperation

- World Bank
- JICA
- UNEP
- C40 and Clinton Climate Initiatives
- Agence Française de Développement (AFD)
- WWF
- ASEAN + 6 City Forum on Climate Change
- Cool ASEAN, Green Capitals Initiative
- International Forum for Sustainable Asia and the Pacific : ISAP
- Citynet
- The Asian Network of Major Cities (ANMC21)
- Mexico Pact
- Gwangju Summit of the Urban Environmental Accords (UEA)
- Sister City
- UNISDR

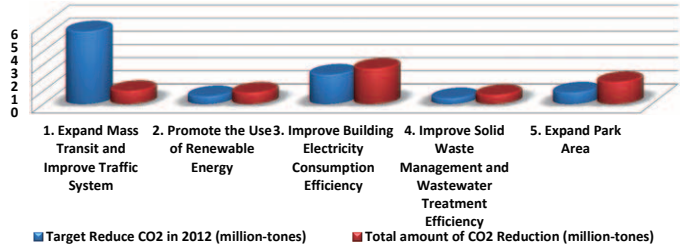
Capacity Building on Climate Change Adaptation and Mitigation for Implementation in Bangkok

- From **2010 -2012**
  - 45 officers of BMA had 3 Training in Japan (Supported by JICA)
  - Learning experience from Yokohama
  - Experts from JICA followed up and supported implementation for the Bangkok Action Plan on Global Warming Mitigation 2007-2012

BMA Action Plan on Global Warming mitigation 2007-2012

Results of Measures under BMA Action Plan on Global Warming Mitigation (2007 – 2012)

BMA Action Plan on Global Warming Mitigation (2007 – 2012)	Target Reduce CO_2 in 2012 (million-tones)	Total amount of CO_2 Reduction (million-tones)
1. Expand Mass Transit and Improve Traffic System	5.53	1.01
2. Promote the Use of Renewable Energy	0.61	0.88
3. Improve Building Electricity Consumption Efficiency	2.25	2.70
4. Improve Solid Waste Management and Wastewater Treatment Efficiency	0.46	0.70
5. Expand Park Area	0.90	1.69
Total	**9.75**	**6.98 (14%)**



Recommendations from JICA Experts for BMA actions on Climate Change

1. Participatory approach should be improved from the planning stage of new Master Plan by involving relevant key stakeholders.
2. A sustainable and coherent way should be considered for calculation and projection of GHG emission, within the scope of BMA's administration and activities.
3. A consideration should be made regarding the alignment with national level climate change policies.
4. Roles and responsibilities of the national and local level authorities should be clarified.

Key Success Factors

1. JICA's support for BMA officials' capacity building
2. Strong partnership with 36 relevant organizations : The declaration to mitigate global warming
3. The active working of steering committees on Climate Change
4. Continuity of Bangkok policy on Climate Change issue

Bangkok Master Plan on Climate Change 2013-2023

Signing Ceremony of the Record of Discussions on the Technical Cooperation Project for Bangkok Master Plan on Climate Change 2013 – 2023

Between Bangkok Metropolitan Administration (BMA) And Japan International Cooperation Agency (JICA) Wednesday, 7 November 2012, Bangkok City Hall

Scope of the Master Plan

(1) Environmental Sustainable Transport;

(2) Energy Efficiency and Alternative Energy;

(3) Efficient Solid waste management and Wastewater Treatment,

(4) Green Urban Planning; and

(5) Adaptation planning.

Institutional Arrangement

Steering Committee

- To provide overall guidance, and review to the activities of Master Plan and capacity development in policy aspect, such as monitoring and evaluation (M&E) and measurement, report, and verification (MRV) as mechanism of PDCA (Cycle of the Project)
- To receive report on the progress of project activities periodically by the Working Group

Working Group

- To discuss technical matters related to implementing the Master Plan and capacity development activities, based on works by the 5 Task Forces
- To coordinate and ensure consistency and integration of work across the 5 Task Forces

External Partners (Such as JICA)

BMA Secretariat

- Core of overall coordination. Coordinates inter-departmental work, including reporting process
- Propose activities on knowledge development of climate change
- Focal point for external communication

Local consultants

- Support for data collection and calculation etc

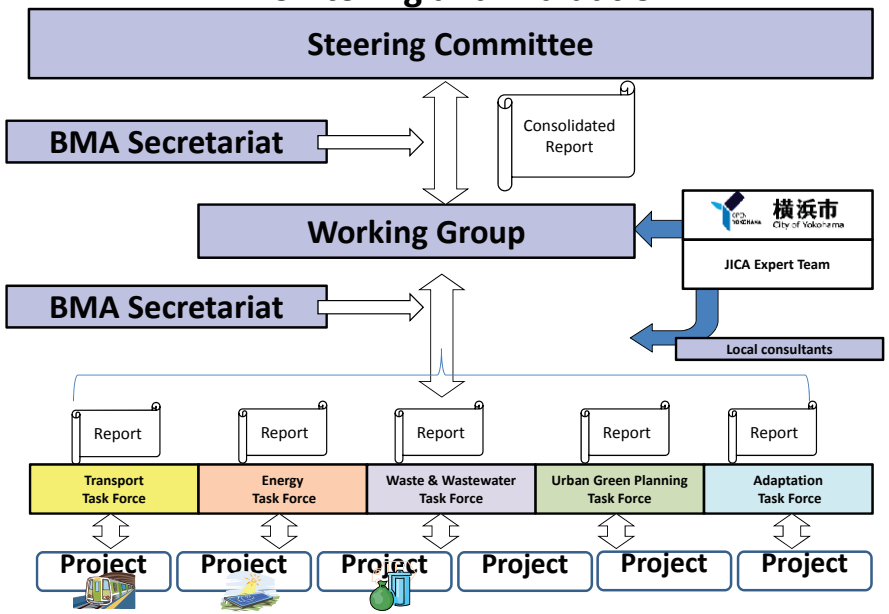
Transport Task Force	Energy Task Force	Waste & Wastewater Task Force	Urban Green Planning Task Force	Adaptation Task Force

- Collect activity data / information related mitigation and adaptation
- Propose mitigation and adaptation actions
- Conduct outreach activities in respective sectors etc

Domestic counterpart	Domestic counterpart	Domestic counterpart	Domestic counterpart	Domestic counterpart

- Based on discussion by the Steering Committee, domestic counterparts are invited to collaborate with respective BMA department s, regarding data collection, outreach etc. (working level officials are expected)

Monitoring and Evaluation



Technical Cooperation on Sustainable Urban Development

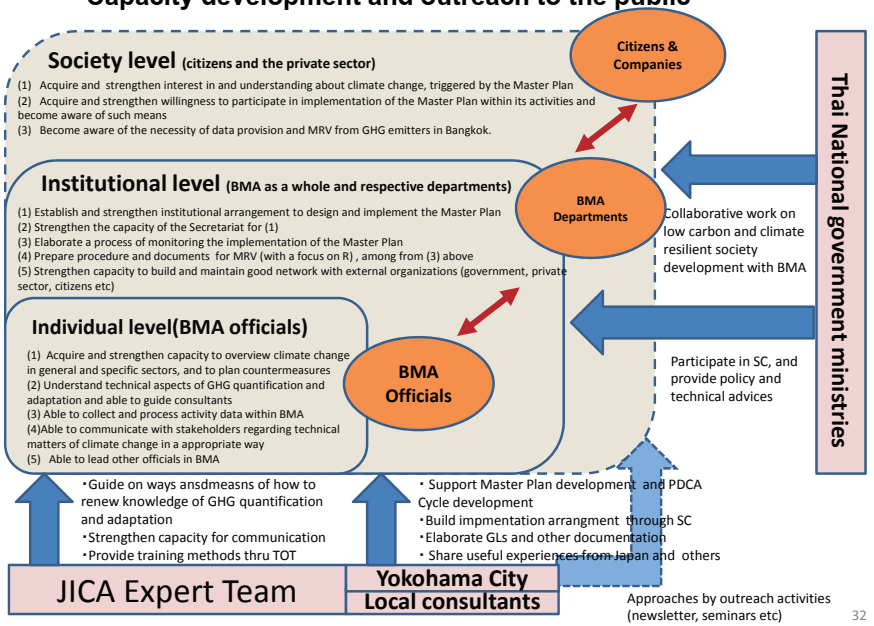
Signing Ceremony of the Memorandum of Understanding on the Technical Cooperation for Sustainable Urban Development

Between Bangkok Metropolitan Administration (BMA) and City of Yokohama
21st October 2013, Yokohama City Hall

Focal Areas of Cooperation

(1) Energy management, public transport, waste and wastewater etc.
(2) Participation by the private sector, academia, and local communities
(3) Call for participation by the Thai and Japanese Government and international organization for their support
(4) Information sharing

Capacity development and outreach to the public

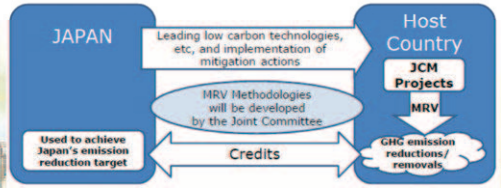


Technical interchange trough the JICA Project

Dr. Kazuhito Yamada and
Dr. Mariko Fujimori
Jica Expert Team

JCM and its MRV Training in Bangkok on 12 September 2014

- To explain to participants the outline of the Joint Crediting Mechanism (JCM)
- 30 BMA Officials understood about JCM and its MRV
- Applying in Bangkok Master Plan on Climate Change 2013-2013



Public-Private Partnership Workshop on Low Carbon Urban Development in Bangkok and the Joint Crediting Mechanism (JCM)

- Based on the inter-city cooperation between Bangkok Metropolitan Administration, and the City of Yokohama, efforts to develop sustainable city
- The workshop was organized to provide a platform for Thai and Japanese organizations to exchange information on needs and opportunities for introducing technologies.
- The Workshop also highlights possibilities of applying the Joint Crediting Mechanism (JCM), which provides financial support to the introduction of low carbon technologies.

Public-private Partnership Workshop on Low Carbon Urban Development in Bangkok and the Joint Crediting Mechanism (JCM)

- The Workshop was attended by approximately 180 people, including 130 Thai and 50 Japanese from the national government agency (TGO and JICA), local governments (BMA and the City of Yokohama), the private sector, as well as academia.
- Substantive Discussion
  - 4 private sector organizations from Thailand, and
  - 7 Japanese private sector organizations made a presentation.
- Match-making session

Climate Action Initiatives

1. Environmentally Sustainable Transport

- Development of public transportation (15 lines, 510 km. in 2029). It can reduce 905,600 tons of CO_{2eq}
- Improvement of connectivity of public transport
- Development and expansion of park & ride
- Measures on motor vehicles , non-motorized transportation, traffic flow control
- Public awareness raising

2. Energy Efficiency and Alternative Energy

- Energy saving campaign
- Retrofit building
- Being in accord with Energy Efficiency Development Plan (EEDP25%) and Alternative Energy Development Plan (AEDP20%)

Climate Action Initiatives

3. Efficient Solid Waste Management and Wastewater Treatment

- Promotion of waste reduction and separation at source
- Construct waste-to-energy facility
- Install environment-friendly landfill system
- Promotion of utilization of sludge and water reuse
- Being accord with roadmap for waste management by managing waste
- Promoting waste-to-energy
- Revising the regulations and building self-discipline

4. Green Urban Planning

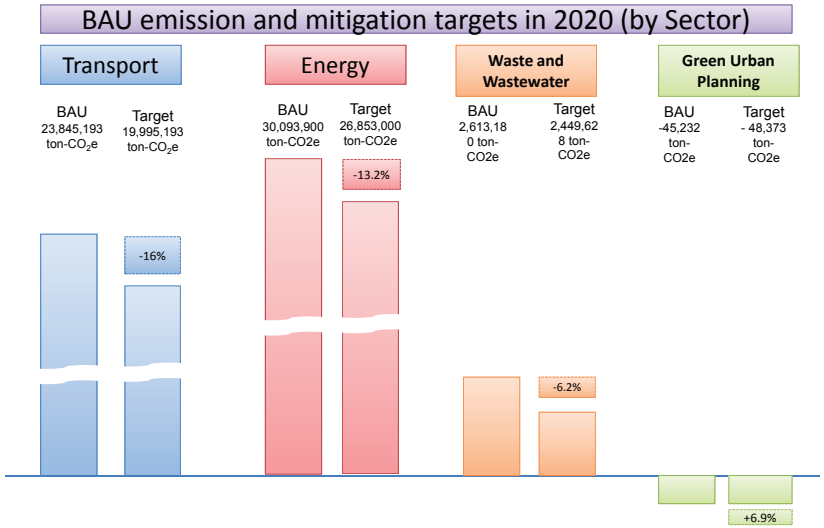
- Increasing new green areas
- Reforestation mangroves
- Public awareness campaign

5. Adaptation Initiatives

- The protection of coastal erosion
- Flood and drought and saltwater intrusion

Thank You for Your Attention

BAU emission and mitigation targets in 2020 (by Sector)



Note: In the process of the final adjustment,
taking into account the national target figures

BAU emission and mitigation targets in 2020 (by Sector)

Sector	Reduced GHG Emission/absorbed GHG against BAU in 2020*
Transport	-16%
Energy	-13.2 %
Waste and Wastewater	-6.2%
Green Urban Planning	+6.9 %

*Note that these figures are not portions of contribution to the overall GHG emission in Bangkok. It is percentage of reduction and absorption of GHG against respective sectoral emission of BAU in 2020.

Adaptation Initiatives

1. Cooperation with World Bank and Asian Disaster Preparedness Center (ADPC)

- BMA was supported by the World Bank to conduct the study of climate change impacts and adaptation for Bangkok Metropolitan Region (BMR), co-operated with Navamintratirat University and experts from ADPC in developing the Multi Hazard Map for disaster management and guidelines on the development and implementation of disaster management strategies for BMA.

2. Cooperation with SEA-START RC for "The Coastal Cities at Risk (CCaR) Project"

- The Coastal Cities at Risk (CCaR) Project supported by Southeast System for Analysis, Research & Training Regional Center (SEA-START RC) Program aims to develop the knowledge base and enhance the capacity of Bangkok to successfully adapt to and when necessary, coping with risks posed by the effects of climate change, including sea level rise, in the context of urban growth and development and the study on model of solid waste and wastewater management and learning center in community to apply to other areas in Bangkok

Adaptation Initiatives

3) Cooperation with the United Nation International Strategy for Disaster Reduction (UNISDR) for "Making Cities Resilient Project"

- BMA signed an agreement with the UNISDR to take part as a role model in a project "The Making Cities Resilient Campaign: My City is getting Ready!!!" to adopt the Local Hyogo Framework for Action – Local Government Self-Assessment Tool (LGSAT) as a guideline for self-assessment on the readiness level of local government to cope with disaster events for planning the effective disaster risk adaptation and mitigation plans with technical support provided by the UNISDR.

4) Cooperation with the Rockefeller Foundation for "Resilience in Bangkok"

- From more than 300 global applicants, Bangkok was selected as one of the first 32 cities to partner with 100 Resilient Cities pioneered by the Rockefeller Foundation. The initiative is designed to enable 100 cities from around the world to better address the increasing shocks and stresses of the 21st century.
- As part of this program, Bangkok Metropolitan Administration (BMA) will receive technical support and resources from 100 Resilient Cities - to hire a Chief Resilience Officer (CRO) and develop and implement a City Resilience Strategy in the next two years. Bangkok will also become part of the 100 Resilient Cities Network, providing the

Kyoto City's Climate Change Mitigation Measures through Partnership

June 22, 2015
Shinya YASUDA
Section Manager of "DO YOU KYOTO?" Project Promotion,
Environment Policy Office, Global Environment Policy Bureau
City of Kyoto

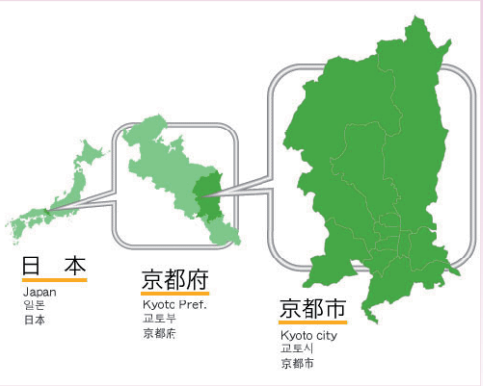
"Washoku" was designated as a UNESCO Intangible Cultural Heritage!

"Washoku: Japanese traditional food culture" was registered as a UNESCO Intangible Cultural Heritage (in December 2013)

- Origin of "Washoku" is Kyoto
- In Kyoto, living in harmony with rich natural environments has been alive among citizens
  - -> Saying "*Itadakimasu*" and "*Gochisou-sama*" to give thanks to rich nature, life and others
  - -> "*Mottainai*" showing the mindset to use food materials without waste

* In the meat-eating Western culture, large amounts of grains are consumed as feed

Characteristics of Kyoto City



During the 8th - 19th Century
the Capital of Japan

Co-existence, Harmony with Rich nature

With population of 1,470,000
Large Inland City

Backed by the Traditional Spirit of Autonomy
Power of Citizens and Communities

With 37 Universities and Colleges and 150,000 Students
City of Higher Education

Success of Advanced Technology Backed by Excellent Traditional Industry
City of Manufacturing

Commitment to Prevent Global Warming
Birthplace of "Kyoto Protocol"
Environment Model City

6 visions of the society on Kyoto Program of Global Warming Countermeasures

6 visions of the society in 2030

(1) City where people enjoy walking and higher priority is given to pedestrians and public transportation: a post "car-oriented" society

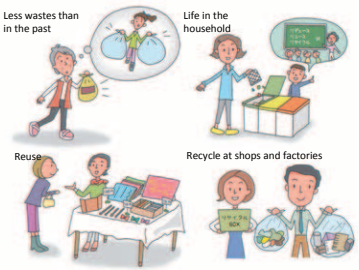
(2) City that re-generates forests, and values "culture of wood"

(3) City of energy creation and recycle-based community

(4) Environment-friendly lifestyles

(5) Environment-friendly economic activities

(6) Waste reduction



1. City where people enjoy walking and higher priority is given to pedestrians and public transportation: a post "car-oriented" society

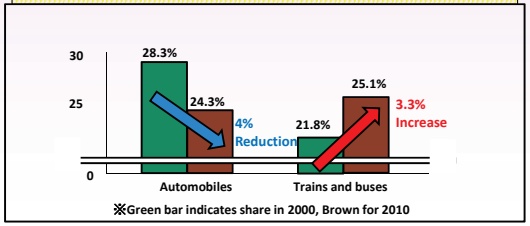
- **"Pedestrian-Friendly City, Kyoto" Charter (Jan. 2010)**
  Promote creation of an attractive and "pedestrian-oriented" city through collaboration between citizens, tourists, enterprises and the city
- **"Pedestrian-Friendly City, Kyoto" Comprehensive Transportation Strategy (Jan. 2010)**

Basic Concept

- Transform city from car-oriented city to a healthy and pedestrian-friendly city
- Continue to be one of representative international, cultural and tourism cities in Japan as well as a vibrant city

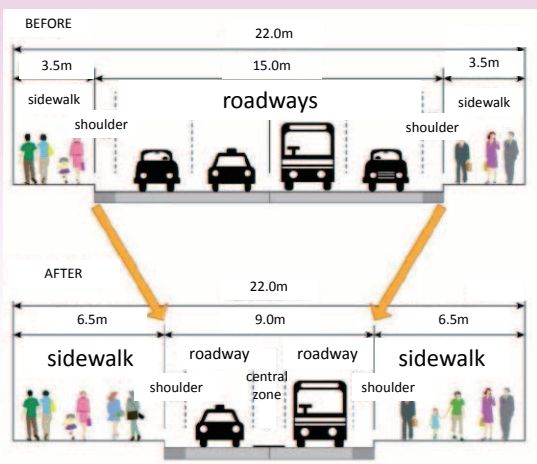
⇒ 88 projects to promote the Strategy

Reduction of the transit modal share of automobile



1. City where people enjoy walking and higher priority is given to pedestrians and public transportation: a post "car-oriented" society

Kyoto city has widened sidewalks and narrowed down the width of roadways (from four lanes to two lanes) on a main street of downtown Kyoto in order to prioritize pedestrians and public transportation.
(This measure was taken for the first time among large cities in Japan.)



1. City where people enjoy walking and higher priority is given to pedestrians and public transportation: a post "car-oriented" society

Development of Pedestrian Friendly City, Kyoto app: "Master of Bus and Railway"

- Developed a free searching system for bus and railway services in Kyoto. By inputting the point of departure and destination, users can get the information such as best route, fare and travel time.
- This system also provides information about connections between 18 public and private railway and bus companies.
- The City Bus and two private companies equipped with GPS can calculate the arrival time by taking account of the current traffic condition (the first case in Japan).

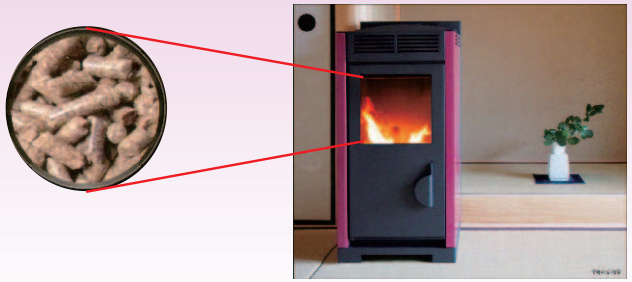
Kyoto Future Transportation Innovation Research Institute

- The Kyoto Future Transportation Innovation Research Institute was established in August 2014, through collaboration between industry, academia and government. (It consists of 16 experts and 29 businesses and organizations including Kyoto University, Roam, Fujitsu, Shimadzu at present.)
- Simulating the traffic system in Kyoto in 2030 through the advanced ICT and research
- Goals and visions for materializing an attractive future transportation system in Kyoto
  1 Improving the safety, comfort and convenience for the citizens and tourists
  2 Revitalizing economic activities
  3 Developing the city for materializing the "Pedestrian Friendly City, Kyoto"

2. City that re-generates forests, and values "culture of wood"

Promotion of wooden pellets

- Three quarters of the city area is forest
- To utilize forest resource in the city, thinning lumber is processed into fuel.
- A subsidy to purchase a wooden pellet stove



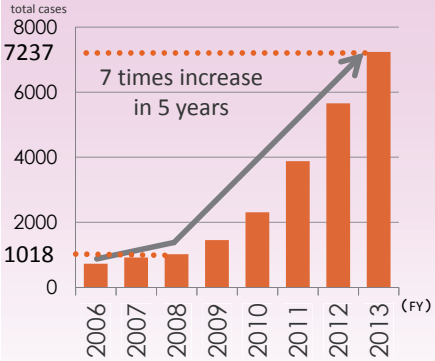
Promotion of Wooden Biomass Power Generation

- Analyze steady wood supply, size of power generation, and financial feasibility

3. City of energy creation/ recycle-based community

Promotion of Renewable Energy

1. Promotion for houses



Number of recipients of the Solar Power System Subsidy Program

In 2014, city subsidized the installation of five types of power generation and energy saving facilities.*
(*Solar power generation system, electric storage device, solar heating system, home fuel battery system, HEMS)

2. Promotion by the initiative of citizens
(Citizen Cooperative Power-Generation Project)

Citizens will participate in the Power-Generation Project through investment.
The investors will be rewarded with local specialties.

3. Promotion for business sector

One third of the costs for the installment of energy-saving equipment is subsidized by the city to the small and medium -sized enterprises in Kyoto.

3. City of energy creation/ recycle-based community

Launched "Biodiesel Fuel Project" in October 1996

Harnessing the power of citizens and communities, used cooking oil is collected by citizens for making fuel. The fuel is used for waste-collection trucks and city buses.

A collection point of used cooking oil
(about 1,800 points)

Fuel-production facility for used cooking oil in Kyoto
(Produces 4,000 liter/ day)

・92 city buses (B5)
・136 waste-trucks (B100)
・GHG reduction: 3,300 tonnes/ year

Biomass Fuel Production (Bio Light Oil Materialization Project)

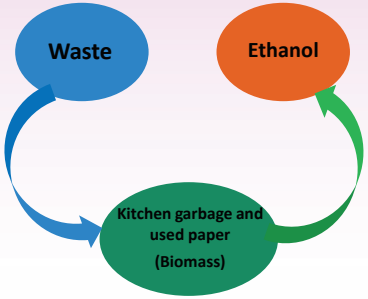
Compared to the present biodiesel fuel, bio light oil is far more compatible with vehicles and exhaust is much cleaner. City of Kyoto has launched a collaborative project with the Advanced Scientific Technology & Management Research Institute of Kyoto, Toyota Motor Corporation and Kyoto University on the research and development of techniques for producing high-quality bio light oil, with the hope of realizing these by FY 2018.

Feature of Bio Light Oil
1. Using biomass fuel that does not emit CO_2 in the air
2. High quality fuel equals to that of light oil
3. Can be produced not only from used plant oil but also from waste animal fat

3. City of energy creation/ recycle-based community

Urban "Oilfield" Development Project

- The city has successfully produced about 60 liters of ethanol, at 99.5% purity, out of one tonne of kitchen garbage (40% of the total amount of garbage collected by the city) and used paper (30% of that) by adding water, enzymes and yeast to induce glycation and fermentation.
- By meeting the Japanese Industrial Standards for dehydrating ethanol, it is possible to use it as an oil product.
- This project is implemented by the collaboration between Kyoto City, Kumamoto University, and Hitachi Zosen Corporation (subsidized by the national government).



Demonstration plant located in Kyoto (2011)

"Kyoto" is Synonymous with "Eco"

Kyoto Products by Kyoto Energy Ltd.

"DO YOU KYOTO?"
(Are you doing something good for the environment?)
as a slogan, encourages the shift to an eco-friendly lifestyle

Commemorating the date when Kyoto Protocol became effective on February 16, 2005, City of Kyoto designated the 16th of every month as
"DO YOU KYOTO? DAY"
(a day for doing something good for the environment).

Lycee Kyoto (an environment-friendly high school in France)

No My Car Day is designated on every 16th day of the month as a day when people use public transportation instead of personal cars to commute to work etc.

“Kyoto” is Synonymous with “Eco”

To expand the network of environment-friendly efforts, well known figures active in their respective fields in and outside Kyoto City will be appointed as “DO YOU KYOTO?” ambassadors of Kyoto City.
Seeking wide attention of citizens, business operators and tourists for the preservation of the earth’s environment.

1. A group of young performers inheriting traditional culture,
“DO YOU KYOTO? Network”

Calling for the preservation of the global environment through traditional cultural performance such as flower arrangement and Noh in city-sponsored events, etc.

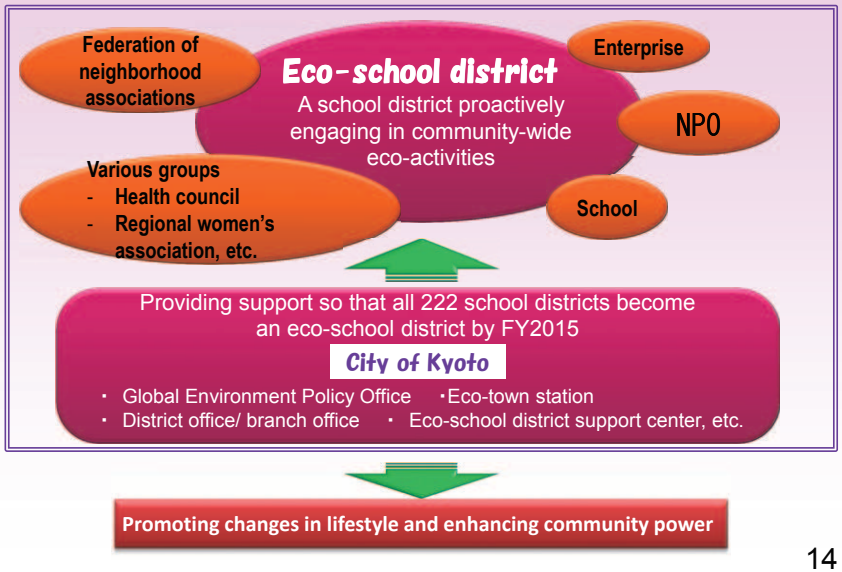
2. Professional football team
“KYOTO SANGA F.C.”

For home ground games, adopt a “carbon offset matching” scheme to use “DO YOU KYOTO?” credits for offsetting CO2 emissions associated with holding the match

3. A group of artists, such as musicians
“Live! Do You KYOTO? acting committee”

Calling for the preservation of the earth’s environment through hosting a live music concert once a year, in addition to regularly conducting town cleaning activities throughout Kyoto City.

Eco-school district project



Promotion of energy-saving measures in coordination with the eco-school district project

◆ Energy-saving diagnosis (my house eco-diagnosis)

Proposing CO2 reduction methods in accordance with present status and lifestyle of each household

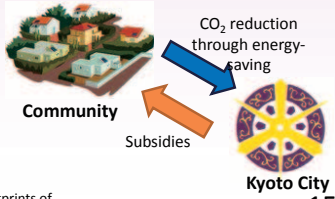
- Using a computer application to determine whether the utility cost and CO_2 emissions of the individual household are above or below the average household
- Providing specific advice on energy-saving and saving methods

Diagnosis display

◆ DO YOU KYOTO? credit scheme

Granting subsidies in accordance with energy-saving results achieved through regional community efforts, etc.

- Participation by approx. over 10 households in the neighborhood association, PTA, etc.
- Financial incentive to the participating communities depending on the amount of CO_2 reduction achieved through energy-saving efforts (10,000 yen per 1 ton of CO_2 reduction)



* The reduced amount of CO_2 is credited and utilized for offsetting the carbon footprints of Kyoto marathon, Kyoto Tower illumination, Toji temple illumination, KYOTO SANGA F.C. games, etc.

5. Environment-friendly economic activities
Creation of Green Innovation

Kyoto Industrial **Eco- Energy Promotion**

Concentration of universities with advanced research, and a group of enterprises that develop their products using advanced technologies

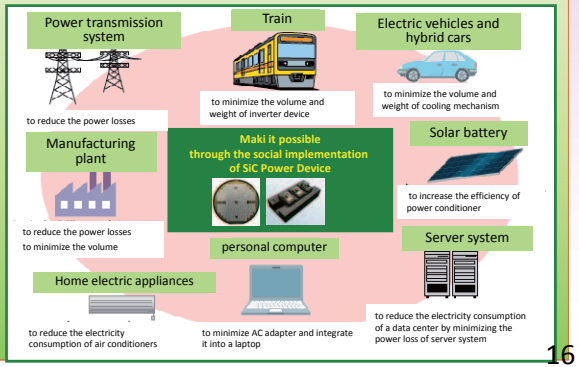
Successful example:
Harnessing the outcome of research by Kyoto University, a company in Kyoto joined their research for the practical use. Promoting the production of an SiC semiconductor power device which is extremely efficient for energy-saving

Kyoto Local Core Cluster
(Kyoto City and Kyoto Pref.)

Satellite Cluster
Shiga, Fukui, Nagano

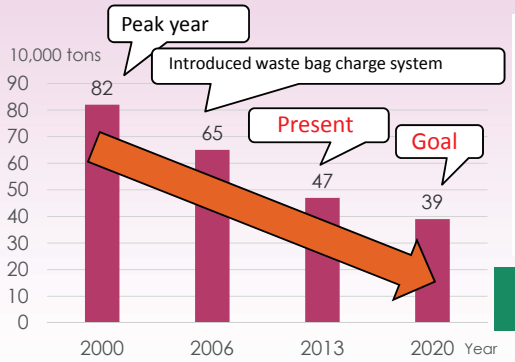
Promoting the project centering on Kyoto area

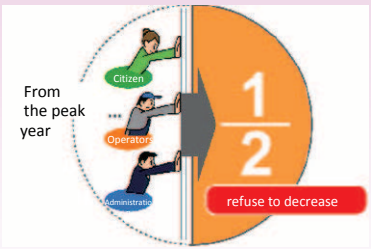
Greatly reduce the energy loss which is created when producing electricity.
Contributing to the realization of an environmentally less burdened, high efficiency and comfortable society.



6. Waste reduction
Let's reduce waste by half !

- Reducing the total amount of waste in Kyoto by 42% from the peak year (2000)
- Kyoto City disposes of the least amount of garbage per person among the 20 largest cities in Japan.
(Kyoto: 445g/ capita/ day Average of 19 other cities: 595g/ capita/ day)





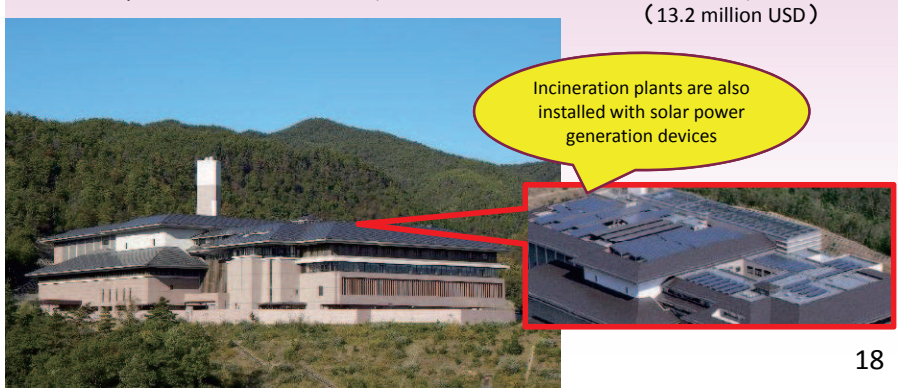
Drive for building a recycling society by promoting waste separation

- Shutdown of waste incineration plants (2004: 5 plants → 2013: 3 plants)
(3,100t/day) (1,700t/day)
- Cost reduction for waste collection(2002: ¥ 36.7 billion → 2013: ¥ 26.1 billion)
(306 million USD) (218 million USD)

6. Waste reduction
Waste-to-Energy: Waste Incineration Plant is an efficient power plant

◆All three waste incineration plants in the city generate electricity utilizing residual heat

[Performance in 2013]
-Total power generation: 173,870,000 kWh
(This is equivalent to power consumption of 40,000 households in a year)
-Sales of power: 85,660,000 kWh (Revenues from sale: ¥1,584,300,000)
(13.2 million USD)



International Cooperation through ICLEI

Collaboration with ICLEI

◆Kyoto City joined ICLEI in Sep 1996.
◆The Kyoto Protocol was adopted at the COP3 in Dec 1997.
◆World Mayors Council on Climate Change (WMCCC) was founded by Former Mayor of Kyoto in Dec 2005.
◆The 2nd Assembly of WMCCC was held in Kyoto for the 2nd anniversary of Kyoto Protocol in Feb 2007. The Kyoto Climate Action Declaration was adopted by 109 local government and leaders and heads of organizations from 26 countries and regions.

Opening Address by Mayor of Kyoto at Kyoto International Environment Symposium

◆The Kyoto International Environment Symposium was held in Nov 2014. The Kyoto Declaration on Targeting Sustainable City Development through Partnership in East Asia was presented in front of 1,000 participants from 41 cities and organizations in East Asia.
◆The ICLEI World Congress 2015 was convened in Seoul, Korea, in April 2015. Kyoto City presented "Low-Carbon City Development through Partnership" in front of more than 2,500 participants from 75 countries and regions.

City-to-City Cooperation in Asia

◆ **Iskandar, Malaysia (Johor Bahru)**
Support for demonstration and promotion of Kyoto's environment Education Program (practiced in all of 166 elementary schools in Kyoto) since 2013

Courtesy Call from Malaysia

◆ **Xi'an, China**
Support for developing measurement and analysis framework of suspended particulate matter including PM2.5, staff training, policy for improvement of sewage treatment

◆ **Vientiane, Laos**
Start feasibility study for technical support for environment policy and water supply and sewage to support for construction of a low-carbon historical city

◆ **Chinese Government**
Technical support for operation of an environmental education center "the Japan-China Environmental Information Plaza", to be opened in Beijing in 2015.
This center models after Kyoto Municipal Environment Protection Activity Promotion Center (Miyako Ecology Center).

Natural environment, arts and culture, food and hospitality of Kyoto

Kyoto Brand receives increased recognition for its diverse urban characteristics.

World best cities by Travel + Leisure

● 2012年

Rank	Name	Score
1	Bangkok (Thailand)	89.87
2	Florence (Italy)	89.14
3	Istanbul (Turkey)	89.11
4	Cape Town (South Africa)	88.64
5	Sydney (Australia)	88.52
6	Rome (Italy)	88.49
7	New York (America)	88.12
8	Hong Kong (China)	88.03
9	Kyoto (Japan)	87.90
10	Paris (France)	87.67

● 2013年

Rank	Name	Score
1	Bangkok (Thailand)	90.40
2	Istanbul (Turkey)	89.96
3	Florence (Italy)	89.84
4	Cape Town (South Africa)	89.57
5	Kyoto (Japan)	89.31
6	Rome (Italy)	89.09
7	Charleston (America)	88.65
8	Barcelona (Spain)	88.45
9	Paris (France)	88.35
10	Chiang Mai (Thailand)	88.15

● 2014年

順位	都市名	得点
1	Kyoto (Japan)	90.21
2	Charleston (America)	90.18
3	Florence (Italy)	89.99
4	Siem Reap (Cambodia)	89.82
5	Rome (Italy)	89.61
6	Istanbul (Turkey)	89.58
7	Seville (Spain)	89.28
8	Barcelona (Spain)	89.18
9	Mexico City (Mexico)	89.07
10	New Orleans (America)	88.74

Ranking system by the vote of its readers conducted for 19 years
Two years ago, Kyoto entered the top 10, and this year it reached No.1 in the world

— 「Travel + Leisure」 —

Travel + Leisure is a monthly travel magazine which boasts its sale of one million copies. Most of its readers live in North America. It is believed to be one of the most influential magazines in the world.

World Best Award is a popular vote by the readers started in 1995.

※Kyoto was also voted No. 1 City in Asia by readers of Condé Nast Traveler, a specialist travel magazine of a major U.S. publishing house with a print volume of 800,000.

Thank you for your attention !

Picture: LED-illuminated Toji Temple, a World Heritage Site, together with “ECO-Chan,” Kyoto City’s Mascot for Environment-friendliness

Regional Workshop for Capacity Development on
Low Carbon and Resilient Society in Southeast Asian countries

Anantara Bangkok Riverside Resort & Spa, Bangkok, Thailand
22 June 2015

"Mitigation-related activities in Asia by the Overseas Environmental Cooperation Center, Japan (OECC) and a new partnership with CITC - TGO"

JIRO OGAHARA
Senior Researcher
Overseas Environmental Cooperation Center, Japan (OECC)

Contents

1. Introduction of our organization
2. Introduction to training activities
3. Some examples of our projects in Asia
   - Joint Crediting Mechanism (JCM)
   - Bangkok Master Plan on Climate Change 2013-2015
4. The way forward

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Outline of OECC

The Overseas Environmental Cooperation Center, Japan (OECC) is an independent, non-governmental and non-profit organization established in 1990, working in environmental cooperation issues at the global level.

Objective:
Encourage and promote global environmental protection through cooperative activities.

Main activities:
- Conduction of (joint) research studies,
- Implementation of capacity building activities,
- Conduction of international projects in the form of environmental cooperation.

OECC funding sources and Membership

Funding:

OECC is supported by subscription of its member organizations and the consignment of projects by the Ministry of the Environment, Japan (MOEJ), JICA, JBIC and foreign government and international organizations such as UN, ADB, etc.

Membership:

- Corporations engaged in consultancy or monitoring/analysis service of the environment,
- Corporations engaged in constructing environmental protection facilities, manufacturing environmental monitoring equipment or other environmental related business,
- Local governments and other non-profit organizations engaged in activities to protect the environment.

Core activities

Env. consultancy | International Activities | Domestic Activities

- OECC currently puts its highest interest on climate change related subjects and is providing technical support to developing countries in elaborating their national and/or local action plans on climate change mitigation and adaptation.
- By conducting research and participating in international environmental projects, accomplishments and experiences are utilized to improve contents of capacity building, and to support policy making of international environmental cooperation and promotion of new collaborative activities.
- OECC promotes the Co-benefits approach which is and effective approach to address needs to reduce GHGs and at the same time, improve the local environment.

Contents

Introduction of training activities

- Rationale:
  OECC conducts capacity building of human resources (in Japan and in host countries) as a core part of its strategy. We believe that training is the first step towards concrete actions, and the seed for potential collaborations.
- Topics:
  Issues related to climate change (mitigation and adaptation, policy and implementation level), with special focus on decisions taken under the UNFCCC.
- Source:
  - Entrusted by the Japanese government (MOEJ, JICA, JBIC)
    - ✓ Stand-alone capacity-building projects
    - ✓ Capacity building as part of projects
  - Entrusted by partner countries (MONRE, Vietnam; Australian gov't)
  - Entrusted by international organizations (GEF, CTCN, ADB)
  - Taylor-made courses/projects for partner countries

Case 1: Asia Pacific Seminar on Climate Change

Course title :	Asia Pacific Seminar on Climate Change
Source:	Entrusted by the Ministry of the Environment of Japan (MOEJ) and the Australian Government
Type:	This is a 2-day seminar intended to discuss (informally) key topics in preparation of climate change discussions at the Conference of the Parties organized by UNFCCC
Target :	• Government officials at focal points that will participate in climate change meetings. • Usually experts from renown international research organizations, think tanks, development organizations, and university researchers are invited to share their knowledge
Topics :	Usually key topics in climate change discussions: mitigation, adaptation, technology transfer, financing, cross-cutting and policy-level issues, etc.
Outputs :	Presentations from experts and the Chair's Summary, where all the discussions are summarized, providing conclusions and also recommendations
URL:	http://www.env.go.jp/en/earth/ap-net/

Case 2: JICA Climate Change Training Course

Course title :	JICA – Development of Strategies on Climate Change
Source:	Course from the Ministry of the Environment entrusted by Japan International Cooperation Agency (JICA)
Type:	This is a 3-phase training course organized first at trainee's countries and later in Japan for 5-6 weeks. (As part of Japan's ODA).
Target :	• Government officials working at focal points • Researchers working in climate change issues at national research institutions • Local government authorities, etc.
Topics :	Usually key topics in climate change discussions: mitigation, adaptation, technology transfer, financing, policy-level issues, etc.
Outputs :	• Lectures from Japanese and foreign experts, site visits to key national research institutions, technology developing companies, governmental agencies. • An "Implementation Plan" prepared by trainees and revised by OECC staff, aiming at implementation with JICA support.

Case 3: SP-RCC Training Course

Course title :	Support Program to Respond to Climate Change (SP-RCC)
Source:	Entrusted by Japan International Cooperation Agency (JICA)
Type:	Program conducted in collaboration with several international organizations (JICA, AFD, AUSAID, World Bank)
Target :	Government officials working at focal points of line ministries of Vietnam
Topics :	Mitigation, adaptation and cross-cutting issues.
Outputs :	• A forum set up for open policy dialogue and discussion, communication about CC issues for all stakeholder (ministries, donors, NGOs and civil society, business sector,…) through series of technical meetings (2 weeks x 2 times a year). • Improved coordination and cooperation.

Case 4: Capacity building for NAMA/MRV

Course title :	Capacity building for NAMAs in a MRV manner
Source:	Entrusted by the Ministry of the Environment of Japan (MOEJ)
Type:	• Comprehensive program focusing on readiness for NAMAs. • Design, planning and implementation conducted by OECC
Target :	Government officials working at focal points of line ministries of Cambodia, Lao PDR, Mongolia and Vietnam
Topics :	Mitigation actions (NAMAs), mitigation policies and strategies, MRV
Outputs :	• NAMA design in specific sectors and subsectors • Implementation Plan • Institutional Arrangement • Introduction of mitigation technologies • Matching of technologies • Training and site visits in Japan

Contents

Study for Developing Environmentally and Culturally Sustainable Cities through JCM in Cambodia

Vision

To contribute to the sustainable development of Asia

City Development / Job Creation / Improved Environment

JCM Project Formulation

To study the feasibility of application of Japanese low-carbon technologies, such as an electric vehicle and an efficient air-conditioning system by using the JCM

City-to-City Cooperation

To promote knowledge sharing between Cambodian and Japanese cities

Angkor Mobility Project

Operation of electric reumork motos and park & ride terminal

Heritage Park Project

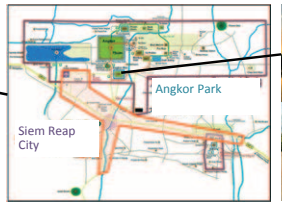
Development of "smart" culture & tourism city based on the Transit-Oriented Development concept

Master Plan Development

Design of the Master Plan to solve issues on Environment, Transport and Land Resettlement

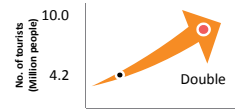
Objective

To promote the development of environmental policies and JCM projects in Siem Reap



Background

- Lack of infrastructure to accommodate increasing number of tourists
- Negative Impact on the Angkor heritages caused by air pollutions
- Necessity to create plans to address environmental and transport issues



Implementation arrangement

Implementation organizations		Cooperation	Implementation organizations	
APSARA National Authority	Siem Reap Province		OECC	
	Siem Reap City		JDI	Terra Motors
CCDA (Driver Association)	IDEA (Driver Association)			MILAI
				JTB Business World Travel & Solutions

Advisory organizations: Ministry of Environment, etc.

Local Government: Kanagawa Prefecture / Kamakura City

Project for Developing Low-carbon Tourism Cities through the Joint Crediting Mechanism in Siem Reap

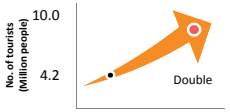
Vision

To contribute to developing a low-carbon touristic city in Siem Reap through the introduction of renewable energy such as solar power, and energy-efficient technologies, under city-to-city cooperation between Siem Reap Province and Kanazawa Prefecture

City development / Job creation / Improved environment

Background

- Lack of infrastructure to accommodate increasing number of tourists
- Negative impact on the Angkor heritages caused by air pollution
- Necessity to create plans to address environmental and transport issues



Objective

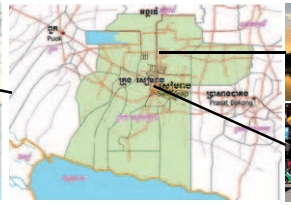
To access the feasibility of the potential JCM projects: introduction of renewable energy and energy-efficient technologies while introducing relevant policies of Kanagawa, Japan

JCM potential project

To introduce biomass power generation and high-efficient electrical equipment, etc.

Solar power project

To introduce solar power generation at hotels in Siem Reap City



Implementation Arrangement

Royal Government of Cambodia	Coop	JDI		
Siem Reap City / Rice mill Association	Hotel Association / EDC	Needs Survey	OECC	Asian Gateway
Innotality Group	PPA	Solar	AGC	KYOCERA
Siem Reap Provincial Government	Coop	Kanagawa Prefecture		

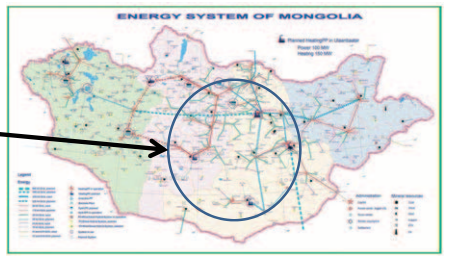
Study for the development of JCM projects for comprehensive improvements in the power generation, transmission and distribution systems in Ulaanbaatar City and on the possibility of nationwide horizontal application of the same improvement model in Mongolia

Project Outline

(1) Improvement in the efficiency of the Ulaanbaatar CHP3 with the use of advanced Japanese maintenance, operation and management technologies
(2) Comprehensive replacement and upgrading of the facilities for power transmission and distribution in Ulaanbaatar City
(3) Understanding the needs of power generation, transmission and distribution in other major cities in the country with a view to nationwide horizontal application of the improvement measures of (1) and (2).

Target Site

Ulaanbaatar City and Central Grid in Mongolia



Thermal Power Plant In Mongolia

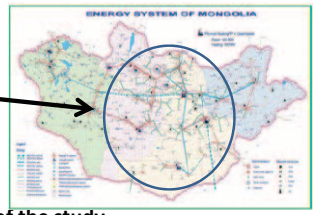
Feasibility study on a programme-type finance scheme for the JCM in Mongolia

1. Contents of study

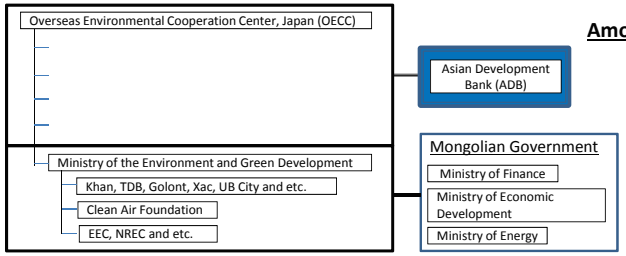
(1) Establishment of a programme-type JCM finance scheme
(2) Identification of appropriate Japanese technologies for the scheme
(3) Establishment of Institutional Arrangements for MRV of JCM projects

2. Target Site

Ulaanbaatar City and Central Grid in Mongolia



3. Organizational structure of the study



4. Technologies to be introduced

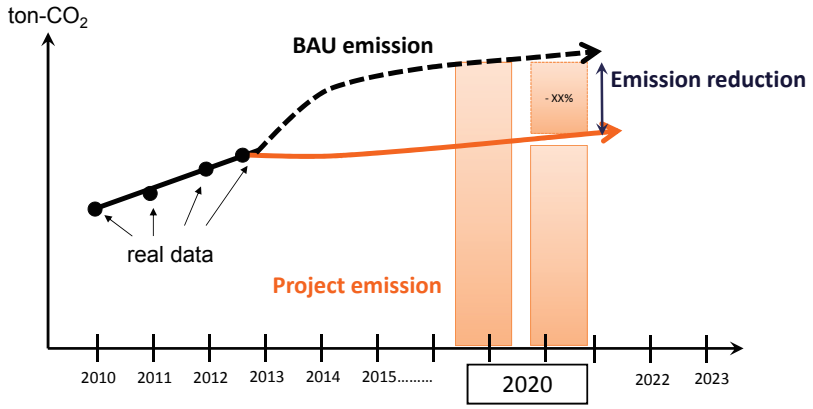
Level inverter system

Amorphous Core Transformers

Solar Power Systems

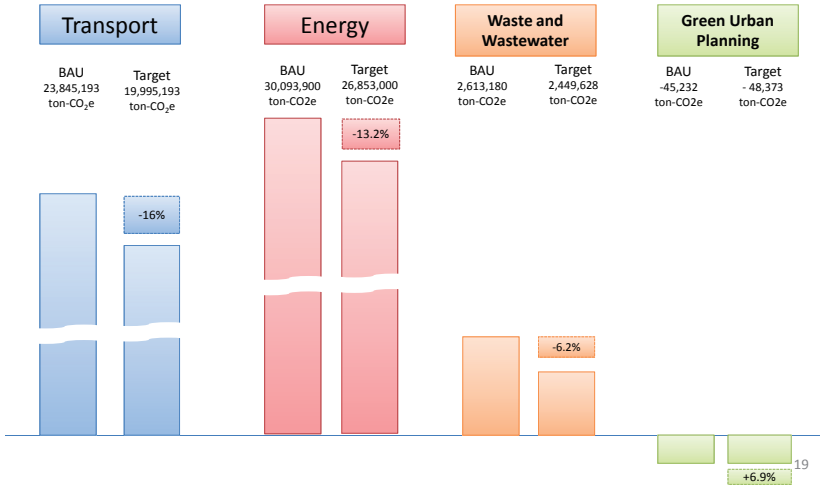
Bangkok Master Plan on Climate Change 2013-2015

BMA, representing a leading City of Southeast Asia and the world, in partnership with national government ministries and agencies, the City of Yokohama, and OECC, takes proactive measures to mitigate and adapt to climate change in the short, mid, and long term.



Scope and emissions reduction goals

(1) Environmental Sustainable Transport; (2) Energy Efficiency and Alternative Energy; (3) Efficient Solid waste management and Wastewater Treatment, (4) Green Urban Planning; and (5) Adaptation planning.



Institutional Arrangement

Steering Committee

- To provide overall guidance, and review to the activities of Master Plan and capacity development in policy aspect, such as monitoring and evaluation (M&E) and measurement, report, and verification (MRV) as mechanism of PDCA (Cycle of the Project)
- To receive report on the progress of project activities periodically by the Working Group

Working Group

- To discuss technical matters related to implementing the Master Plan and capacity development activities, based on works by the 5 Task Forces
- To coordinate and ensure consistency and integration of work across the 5 Task Forces

External Partners (Such as JICA)

BMA Secretariat

- Core of overall coordination. Coordinates inter-departmental work, including reporting process
- Propose activities on knowledge development of climate change
- Focal point for external communication

Local consultants

- Support for data collection and calculation etc

Transport Task Force	Energy Task Force	Waste & Wastewater Task Force	Urban Green Planning Task Force	Adaptation Task Force

- Collect activity data / information related mitigation and adaptation
- Propose mitigation and adaptation actions
- Conduct outreach activities in respective sectors etc

Domestic counterpart	Domestic counterpart	Domestic counterpart	Domestic counterpart	Domestic counterpart

- Based on discussion by the Steering Committee, domestic counterparts are invited to collaborate with respective BMA department s, regarding data collection, outreach etc. (working level officials are expected)

Contents

1. Introduction of our organization
2. Introduction to training activities
3. Some examples of our projects in Asia
   - Joint Crediting Mechanism (JCM)
   - Bangkok Master Plan on Climate Change 2013-2015
4. The way forward

Partnership between OECC and CITC-TGO

- OECC has been long working in the development of training programs in partner countries. By partnering with TGO, we are looking forward to the consolidation of CITC as the prime training center in Asia, and through this alliance, we are aiming at the improvement of capacities to build a low-carbon society.

- Joint organization of training programs, seminars and workshops
- Joint application to funded programs
- Curriculum development of training courses
- Exchange of knowledge
- Exchange of human resources

Expected benefits from the partnership

Benefits:

- Network expansion: By organizing various activities with partner countries, a regional network will grow and solidify.
- Creation of projects: By raising the capacities of key human resources in the region, it is just a matter of time to create seeds for future collaborative activities.
  - ✓ TGO and OECC are considering the possibility to co-apply for funding of international programs such as the Japan-ASEAN Integration Fund (JAIF)
- Recognition: By increasing the number of joint activities, CITC will obtain more recognition from the international community.

Thank you for your attention.

Questions or comments to:

Jiro Ogahara
Overseas Environmental Cooperation Center, Japan (OECC)
ogahara@oecc.or.jp

Climate Change International Technical and Training Center (CITC)

Low Carbon and Resilient Society in Southeast Asian Countries

Mitigation

"Realizing city-level mitigation actions"

22nd June 2015
Chaopraya Grand Ballroom
Anantara Bangkok Riverside Resort&Spa

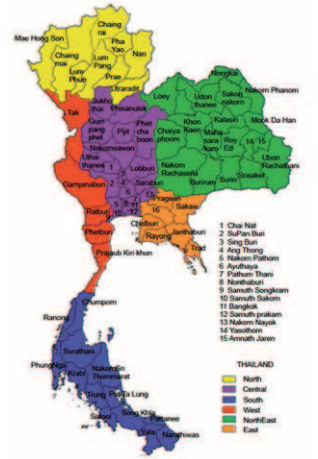
Dr. Wandee Khunchornyakong Juljarern

Chairperson and CEO of SPCG Public Company Limited, Thailand

Winner of UNFCCC Momentum for Changes Lighthouse Award 2014

About Thailand

About Thailand



77 Provinces

Population in 2015

- **67,417,883 persons***

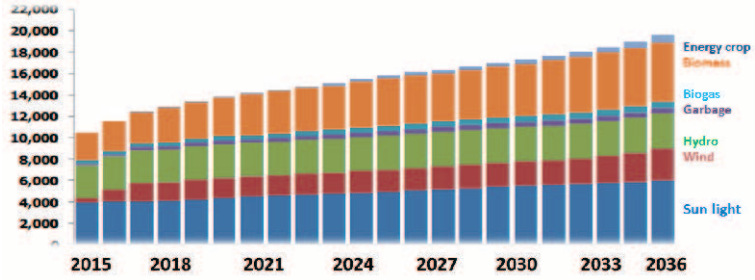
Power of Electrical Manufacture (Set up) in 2015

- **Total 34,780 MW**
  - EGAT 44.51%
  - IPP 37.86%
  - SPP 10.71%
  - Import & Exchange 6.92%
  - VSPP <1%

Reference: Electricity Generating Authority of Thailand (EGAT) from www.egat.co.th/index.php?option=com_content&view=article&id=80&Itemid=116

Renewable Energy Development Plan,2015: REDP

Type	Garbage	Biomass	Biogas	Hydro	Wind	Sun light	Energy Crops	Total
Capacity in 2014	48	2,199	226	3,016	220	1,570	-	7,279
Capacity in 2030	501	5,570	600	3,282	3,002	6,000	680	19,635



Reference: Ministry of Energy, 8 April 2015. Renewable Energy Development Plan,2015: REDP

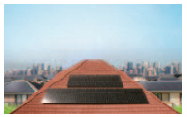
Renewable Energy Development Plan,2015: REDP

Electricity Generating Capacity from 2015 to 2036	Draft PDP 2015
Total Generating as of ended 2014	37,612 MW
New Generating	57,467 MW
Reduced Capacity	-24,669 MW
Total Generating as of ended 2036	**70,410 MW**

Electricity Generating Capacity 2015 - 2036	Original Planed 2015 - 2025	New Plan 2026-2036	Total
Clean Coal Power plant	4,365(6 stations)	3,000(3 stations)	7,365 (9 stations)
Natural Gas Power Plant	14,878(13 stations)	2,600(2 stations)	17,478(15stations)
Nuclear Power Plant	-	2,000(2 stations)	2,000 (2 stations)
Gas Turbine Power Plant	-	1,250(5 station)	1,250
Cogeneration	3,695	357 (25 people)	4,052
Renewable energy	-	12,205	12,205
Pumped Storage Power Plant	500(1station)	1,601	2,101
Buying from overseas	3,316	7,700	11,016
Total	**26,754**	**30,713**	**57,467**

Reference: Ministry of Energy, 8 April 2015. Renewable Energy Development Plan,2015: REDP

SPCG GROUP



Solar Farm

- **SPCG invests and develops 36 solar farms, which are considered the largest in ASEAN with total 260 MW PPAs by THB8 adder on top of base tariff and Ft**
- **Starting in April 2010, currently the company's already operated all solar farms since June 2014**

Solar Rooftop

- **SPCG provides solar rooftop business through Solar Power Roof Co., Ltd. (SPR), the Company's affiliate which was established on May 1, 2013**
- **SPR provides full services for distribution and installation of solar roof systems including design and installation, supply and distribution of materials, and advice on effective management in energy-saving and safety by focusing on residence, industry and real estate project**
- **SPCG established SPCG Capital Co., Ltd. (SPCGC) on August 29, 2013 in order to be a vehicle to invest in solar power projects and related business**

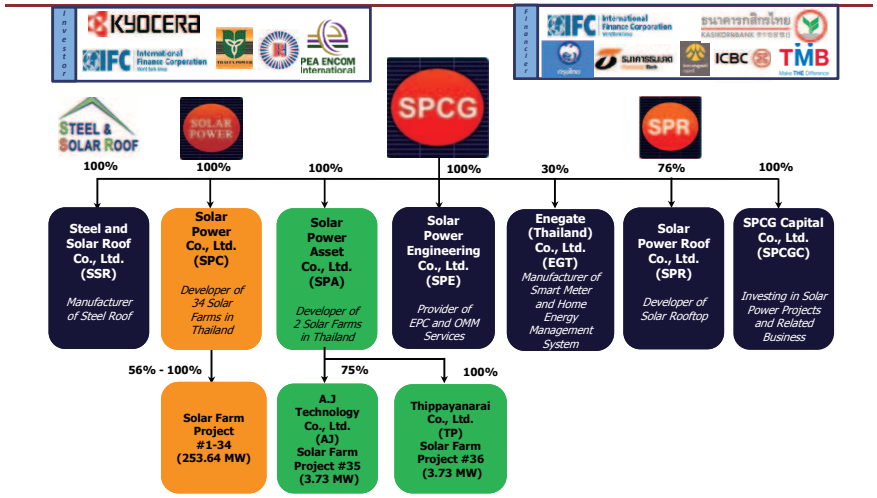
EPC and O&MM

- **SPCG provides Engineering, Procurement and Construction (EPC) and Operation, Maintenance and Monitoring (O&MM) services for all of its solar farms through Solar Power Co., Ltd. (SPC), a wholly owned subsidiary**
- **The Company expands EPC and O&MM services to external clients, both domestically and internationally through Solar Power Engineering Co., Ltd. (SPE), a wholly owned subsidiary**

Steel Roofing

- **SPCG is a leading manufacturer of steel roof top, such as metal sheet roof and high strength purlin**

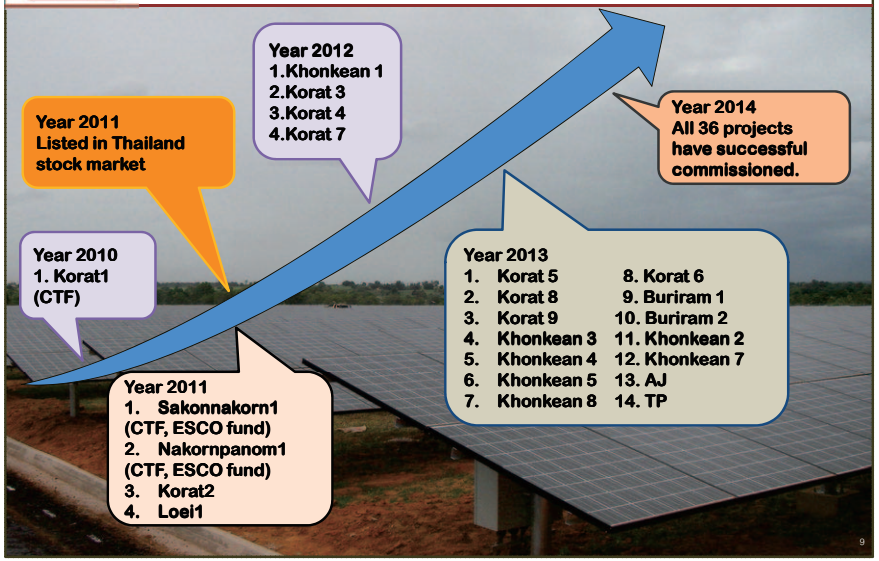
SPCG Group Structure



SPCG has total paid-up capital of THB 923,990,000 as of December 2014

SPCG GROUP

Success of all 260 MW commission



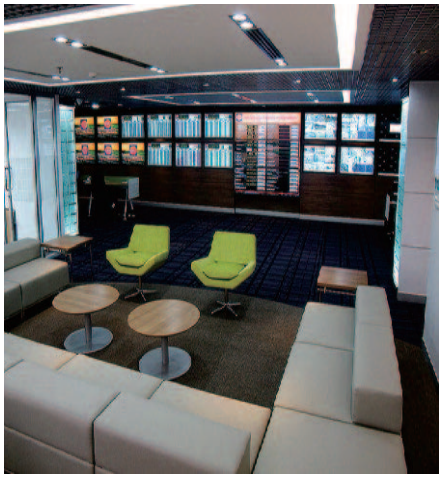
SCPG GROUP

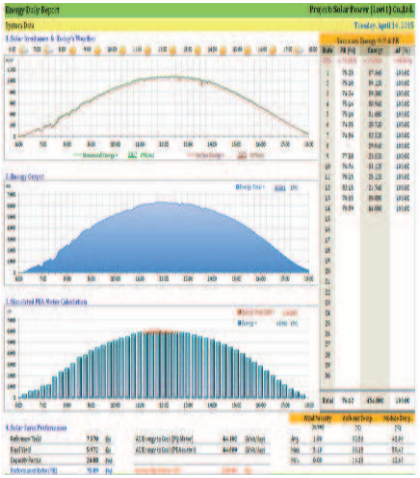
SCPG GROUP

Solar Roof

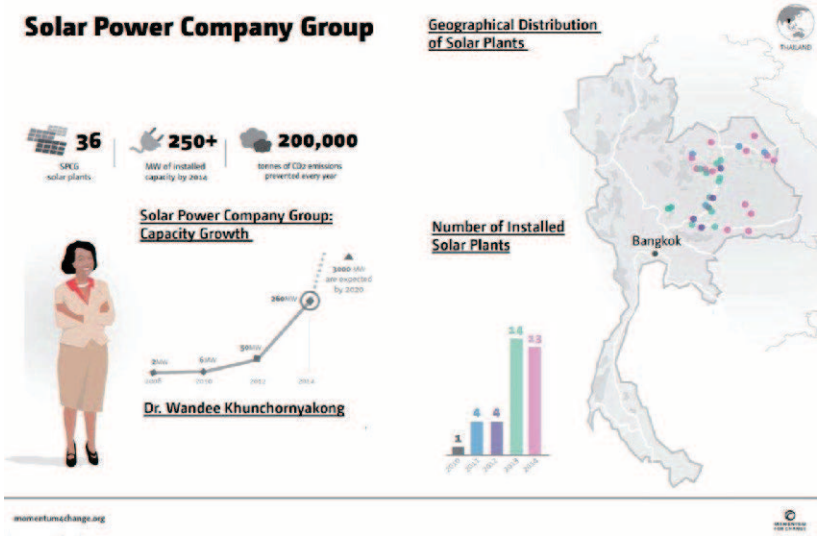
Solar Roof

Monitoring Room





SPCG impacts on Global



SPCG impacts on Thailand

- Become the precedent case of Solar Farms Business in Thailand & ASEAN
- Propelled Solar PV electricity capacity in country power mix for Thailand's PDP (Power Development Plan)
- Starting with 6MWp in 2010 and become 260 MWp in 2015 for total of USD 800 millions

SPCG impacts on Society

- About 20,000 jobs created during construction of solar farm in the period of 4 years.
- More than 1,000 jobs created after construction.
- Over 400 positions under SPCG group.
- Promote renewable energy and clean technology.
- Educate solar technology to student and people in the area.
- Support community activities.
- Donate for community religious ceremony.
- Scholarship for local students.

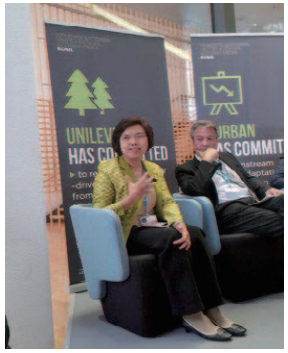
Honorable Award

'Leading a women Empowered Solar Energy Transformation'
UNFCCC Momentum for Change Light House Activities Award in Lima, Peru

United Nations Framework Convention on Climate Change: UNFCCC

Momentum for Change
"Renewable Energy and Energy Efficiency"
June 2015 in Bonn, Germany

United Nations Framework Convention on Climate Change: UNFCCC



Momentum for Change
"Renewable Energy and Energy Efficiency"
June 2015 in Bonn, Germany

Solar Farm Education Center

Supporting Local Schools

Regional Workshop for Capacity Development on Low Carbon and Resilient Society in Southeast Asian countries

22-24 June 2015 in Bangkok, Thailand

National and Local Adaptation Strategies and way forward for Climate Resilience

SOKHAI NOP,
General Secretariat of National Council for Sustainable Development, Ministry of Environment, Cambodia

Contents

Background

- Cambodia is one of the most vulnerable countries to climate change.
- The effects of climate change on Cambodia such as severe floods, droughts, storms, increasing of temperature, sea level rise, changing rainfall regime and season. For example, the flood in 2013 cost 300 million USD with 168 casualties, impacting to economic growth and poverty reduction efforts.

Key Milestone in Cambodia CC

- 2015: Climate Change Mainstreaming to Subnational levels
- 2014: Finalized NAP stocktaking assessment and road map for Cambodia
- 2014 up to date: CC Action Plan by Govt. Institutions
- Oct 2013: Cambodia CC Strategic Plan 2014-23
- Jan 2007: Preparation of the Second National Communication
- Oct 2006: Lunched the Cambodian NAPA
- Apr 2006: Establishment of the National Climate Change Committee (NCCC)
- Oct 2002: Submitted Initial National Communication to UNFCCC
- Jul 2002: Accession to the Kyoto Protocol
- Dec 1995: Cambodia ratified the UNFCCC

Approach to the CC Response

- Royal Government of Cambodia has recognized CC as a major development issue.
- Approach of development of CC Strategic and Action Plans is to integrate the CC responses into regular development activities at national and sectoral levels:
  - In the short and medium term: a gradual approach is required to gradually mainstream CC in Government practices and procedures.
  - In the long term: there should be no separate planning for CC, it will be considered as part of normal planning, normal budgeting, normal monitoring and evaluation systems.
- Royal Government of Cambodia launched the 10 years Cambodia CC Strategic Plan, has supported line ministries to prepare CC strategic and Action Plans in their sectors.

Cambodia Climate Change Strategic Plan 2014-2023 (CCCSP)

Vision

Cambodia develops towards green, climate resilient, equitable, sustainable and knowledge-based society.

Mission:

Creating a national framework for engaging public and private sectors, and civil society in a participatory process for responding to climate change to support sustainable development.

Goals:

- Reducing vulnerability to climate change impacts of critical (natural and societal) systems and most vulnerable groups;
- Shifting towards a green development path by promoting low-carbon development and technologies; and
- Promoting public awareness and participation in climate change response actions.

Strategic Objectives of CCCSP

1. Promote climate resilience through improving food, water and energy security
2. Reduce sectoral, regional and gender vulnerability to CC impacts
3. Ensure climate resilience of critical ecosystems (Great Lake, Mekong River, coastal ecosystems, highlands etc.), biodiversity, protected areas and cultural heritage
4. Promote low-carbon planning and technologies to support sustainable development of the country
5. Improve capacities, knowledge and awareness for CC responses.
6. Promote adaptive social protection and participatory approaches in reducing loss and damage
7. Strengthen institutions and coordination frameworks for national CC responses
8. Strengthen collaboration and active participation in regional and global CC processes.

National Adaptation Plan Roadmap

The road-map is divided into three work-streams which occur in parallel over the time frame 2014-2019:

- **Workstream I: Planning, establishing and steering the NAP process.** This requires an overall steering of the NAP process. Many activities from the 6 strategic intervention areas.
- **Workstream II: Implementing the NAP process /CCCSP and Sector CCAPs.** Deal with the implementation of the strategic intervention areas 1 to 5.
- **Workstream III: Reviewing and learning.** Deal with the implementation of an effective M&E system. It thus implements strategic intervention area 6.

Strategic Intervention Areas of NAP

Operationalising the goal, the following **strategic intervention areas are suggested:**

1) **Inter-sectoral coordinated implementation:** Fields of activity based on Sectoral CC Action Plans which offer synergies through joint collaboration between sectors.
2) **Data systems and analyses:** Harmonize/standardize data processing, modelling, projections, vulnerability assessments, and use of Geographical Information Systems.
3) **Support financing systematically:** MOE might adopt a 'finance brokering' function to match financing needs with sources.
4) **Capacity development and vertical mainstreaming linking national and sub-national levels:** Support measures such as capacity development, advisory services, up-scaling mechanisms, and enhanced ownership at the local level.
5) **Overall steering of implementation and evaluating effectiveness (M&E):** Priortise the establishment and running of an overall M&E system at MOE to ensure learning process for CC Adaptation.
6) **Qualitative mainstreaming:** Including integrating climate risks into Environmental Impact Assessment and climate proofing larger projects.

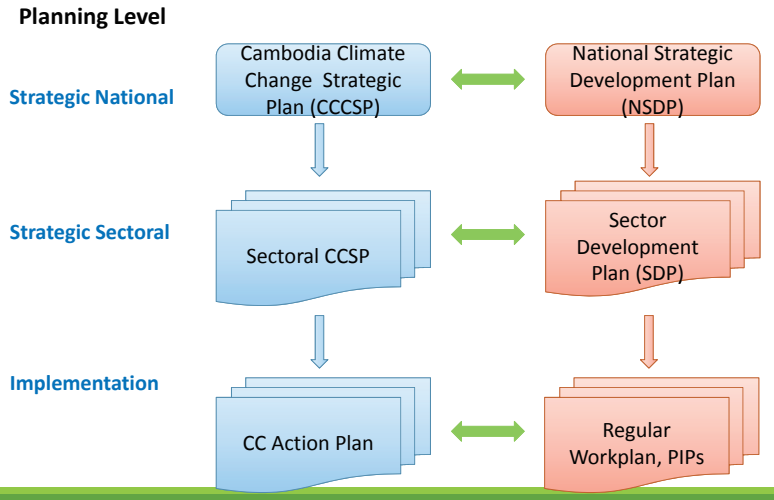
What should NAP focus on Cambodia

- Filling the gaps or bridging the intersection between the climate change action plans of line ministries and the CCCSP (e.g. aspects of the CCCSP not covered by CCAP). For example
  - CC scenario building for the priority actions identified by the sectors
  - Knowledge management and etc.
- Technology need assessment for the implementation of the priority actions for adaptation identified in the CCAP
- Capacity building of the climate change secretariat for coordination and policy development
- Development of joint implementation programmes or schemes between line ministries drawing from the priority actions identified in their CCAP
- Building synergies between adaptation and mitigation using priority actions in the CCAP.

Goal of the NAP process in Cambodia

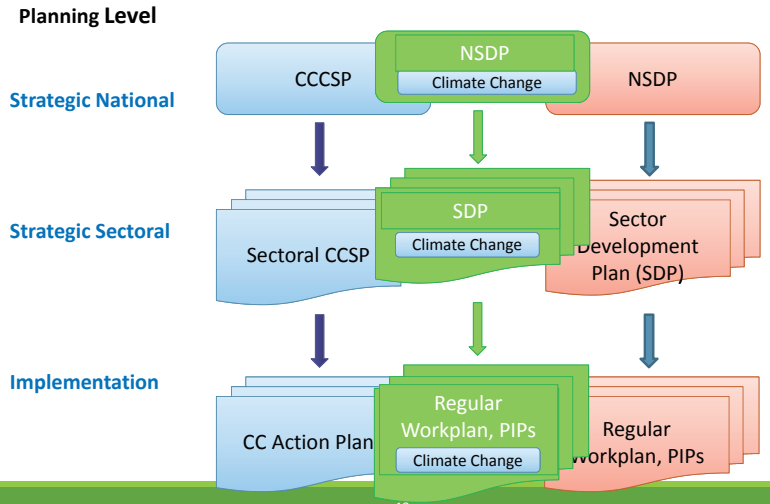
- Based on the stock taking assessment, the goal of the NAP process in Cambodia could be defined as "Ongoing Climate Change Adaptation processes are strengthened through cross-sectoral programming and implementation at national and sub-national level".
- The goal of the NAP process does not modify other objectives set by the NSDP and the CCCSP. It builds on their objectives with a focus on strengthening and better integrating on-going processes. It further identifies cross-sectoral programming and implementation at national and sub-national level as key principles for process strengthening.

Mainstreaming CC in National Planning

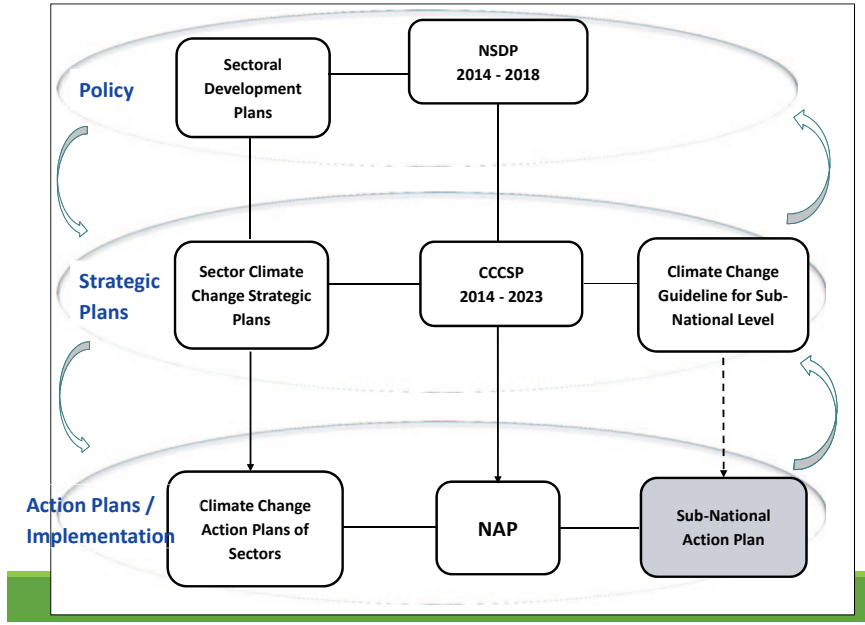


Mainstreaming CC in National Planning (2)

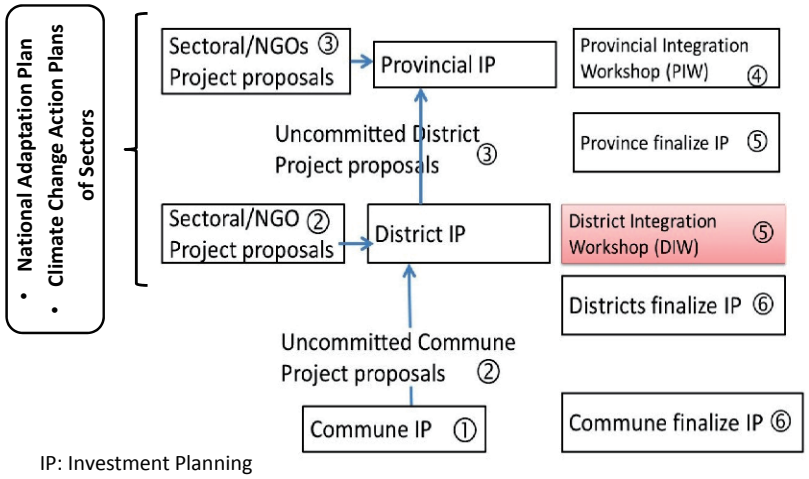
Fully integrated processes



Relationships between national response strategies and plans to CC



Mainstreaming CC in Sub-National Level Planning



IP: Investment Planning

Gaps and Challenges for adaptation

Some significant gaps need to be addressed:

- Lack of inventories of existing climate information
- Fragmented and outdated vulnerability assessments
- Lack of consistent climate scenarios, and limited cross-sectoral collaboration on climate adaptation programming at national and sub-national levels
- Lack of clear CC policy and legislation, some proposed CC responses remain supply-driven *(not easy to align with national priorities)*
- Limited technical and institutional capacity
- Data availability, reliability and management issues *(include weak research capacity)*
- Limited CC awareness, understanding about future CC and its impacts, and GHG mitigation potential
- Limited connection between research results, policy formulation and proposed actions.

Way Forwards

- Implement national adaptation plan process that includes M&E system, financial framework and legal framework;
- Develop CC guideline on planning and budgeting at sub-national level
- Capacity building and resources mobilization for CC implementations at national and sub-national levels.
- Pilot CC action plans of line ministries and relevant institutions
- Conduct monitoring and evaluation on CC projects implemented by relevant institutions and cooperate on assessment of loss and damage from CC
- Continue facilitation works under the UNFCCC, Kyoto Protocol and ASEAN Working Groups.

Thank You!

Contact Address

Email: sokhai.nop@gmail.com

Regional Workshop for Capacity Development on
Low Carbon and Resilient Society in Southeast Asian countries
22nd – 24th June 2015 in Bangkok, Thailand

Experience and lessons learnt from Indonesia: "National and Local Strategies and way forward for Climate Resilience Society in Southeast Asia Region"

Arif Wibowo
Head Division for Vulnerability of Climate Change
Ministry of Environment and Forestry of Indonesia

Climate related disasters in Indonesia

ICCSR Synthetic Report (December 2009)

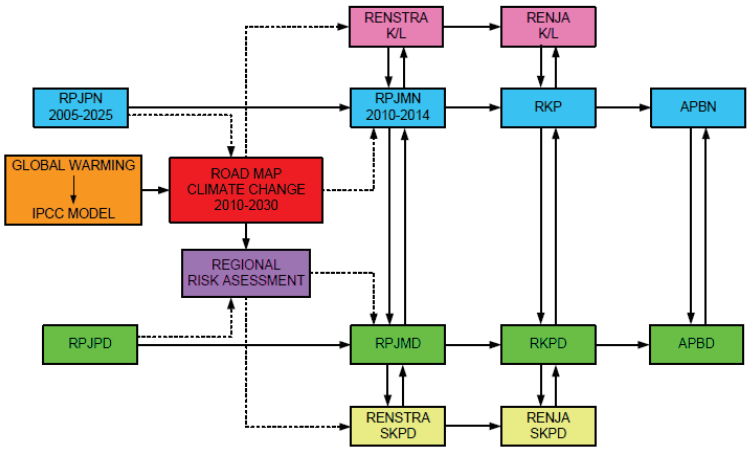


Figure 1 Inter-linkages between the Climate Change Roadmap and Development Planning

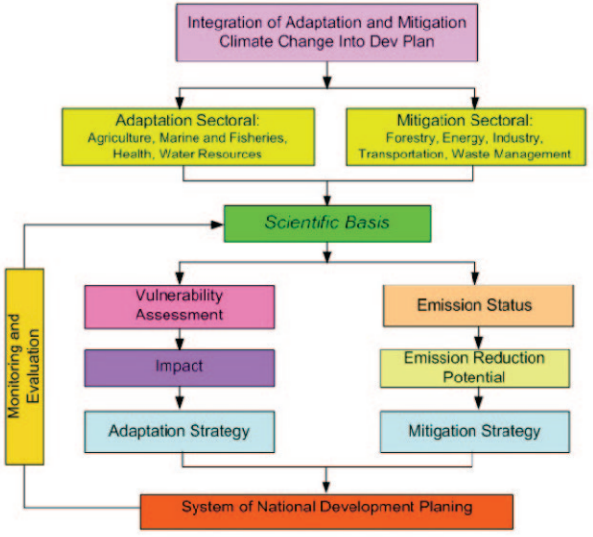
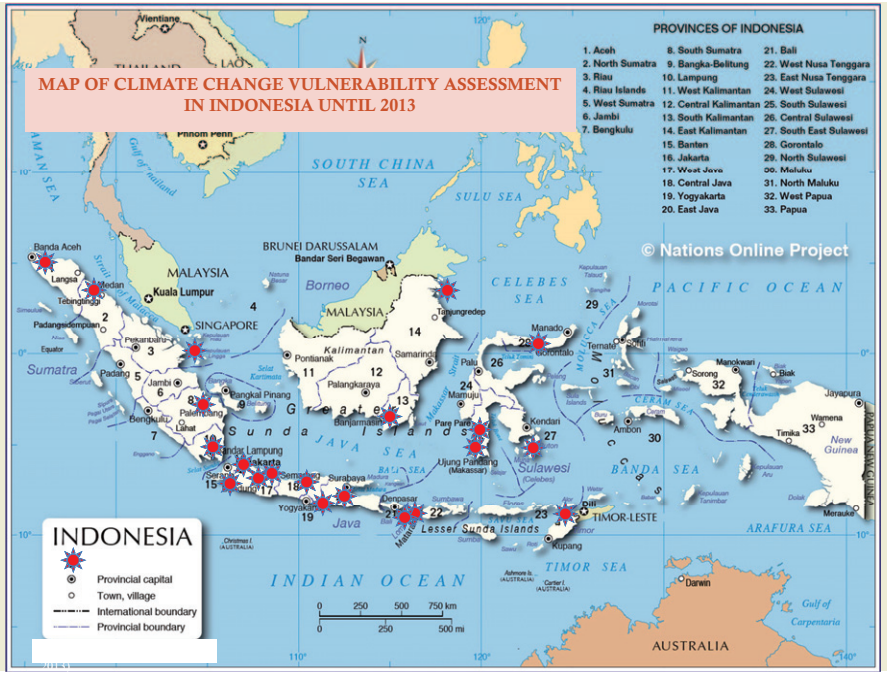
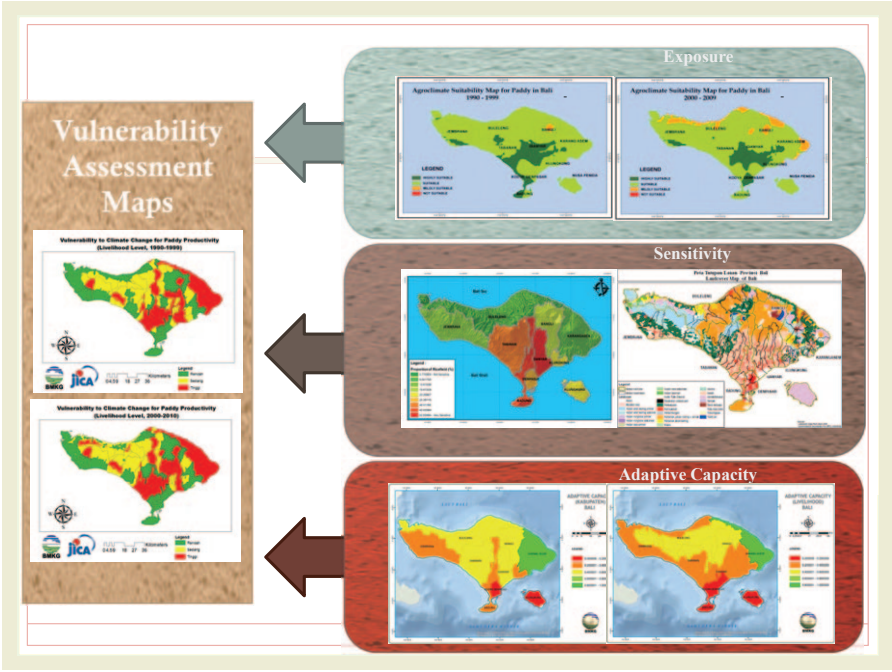
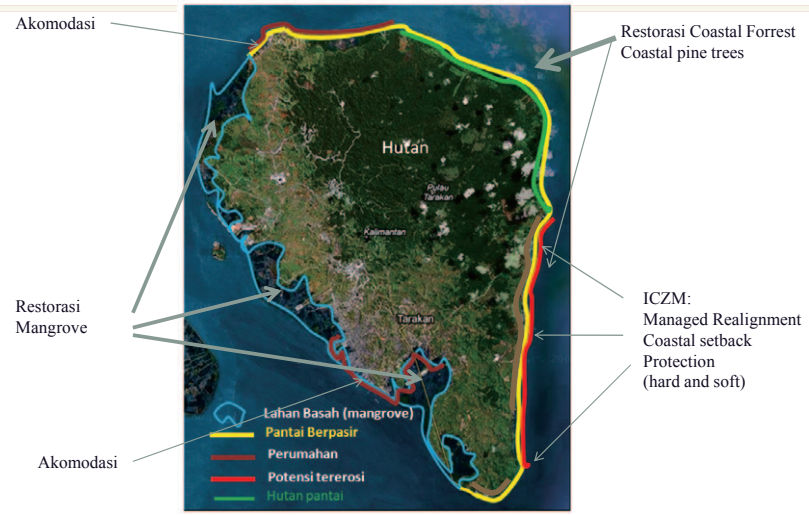


Figure 2 Roadmap Development Approach





Zonasi Adaptasi Risiko Kenaikan Muka Air Laut di Pesisir Pulau Tarakan



BCRCC Project

(Building Coastal Resilience to Reduce Climate Change Impacts)

Durasi Project :
36 bln (2011-2013)

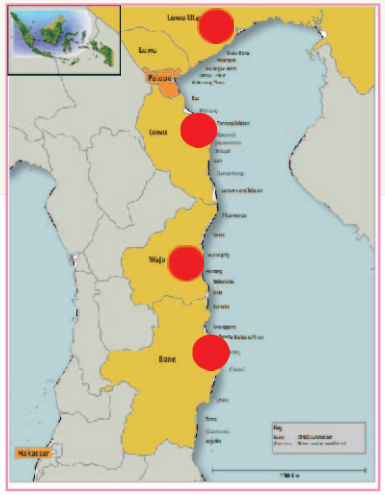
Lokasi Project :

- Thailand: Krabi, Trang, Chumpon, Nakhon Si Thammarat
- Indonesia: South Sulawesi; Bone, Wajo, Luwu and Luwu Utara districts

Project budget:
2.2 million euro

Key partners:
IUCN, SEA START
Local NGOs/CBOs,Local Gov.

Indonesia- (Bone-Wajo-Luwu-Luwu Utara)



LUWU UTARA
Luas : 7.502,58 Km2
Penduduk : 308,000, Jiwa
Panjang grs Pantai : 52 km
9 Kecamatan daratan dan 2 kecamatan pesisir

LUWU
Luas : 3,098 Km2
Penduduk : 320,205 jiwa
Panjang Grs Pantai : 118 km
11 Kecamatan Daratan/rural-dan 10 Kecamatan pesisir

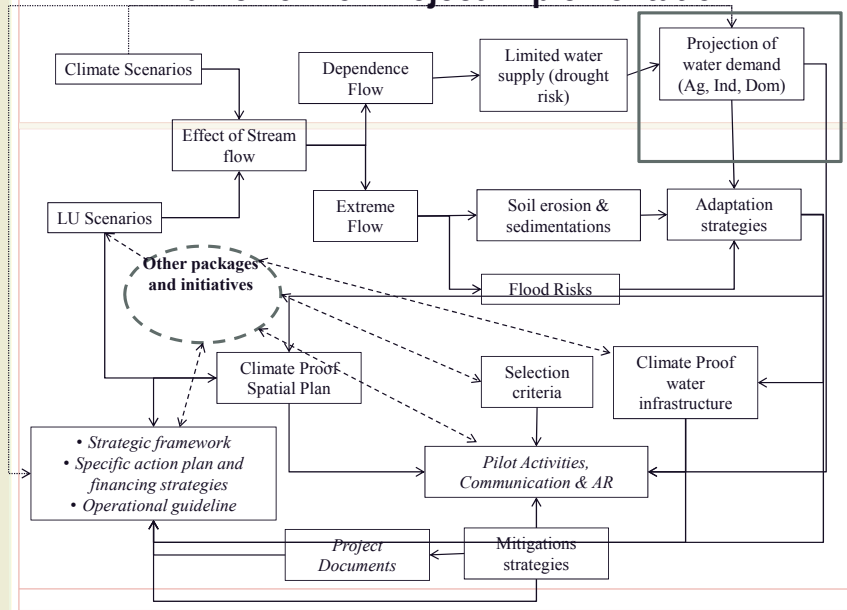
WAJO
Luas : 2.506 Km²
Penduduk : 381,066 jiwa
Panjang Grs Pantai : 103 km
8 Kecamatan Daratan dan 6 kecamatan Pesisir

BONE
Luas : 4,559 km2
Penduduk : 655,091 Jiwa
Panjang Grs Pantai 127 km
16 Kecamatan Daratan dan 11 kecamatan Pesisir

TA ADB 7189 – Package E

KEMENTERIAN NEGARA LINGKUNGAN HIDUP
REPUBLIK INDONESIA

Framework of Project Implementation



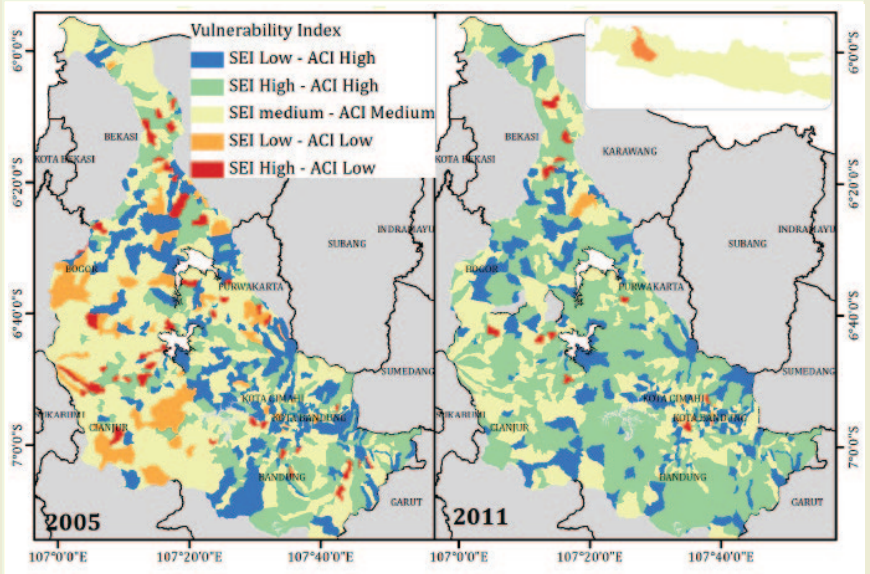


Figure 4-10 Vulnerability level of villages in CRB in 2005 (left) and 2011 (right)

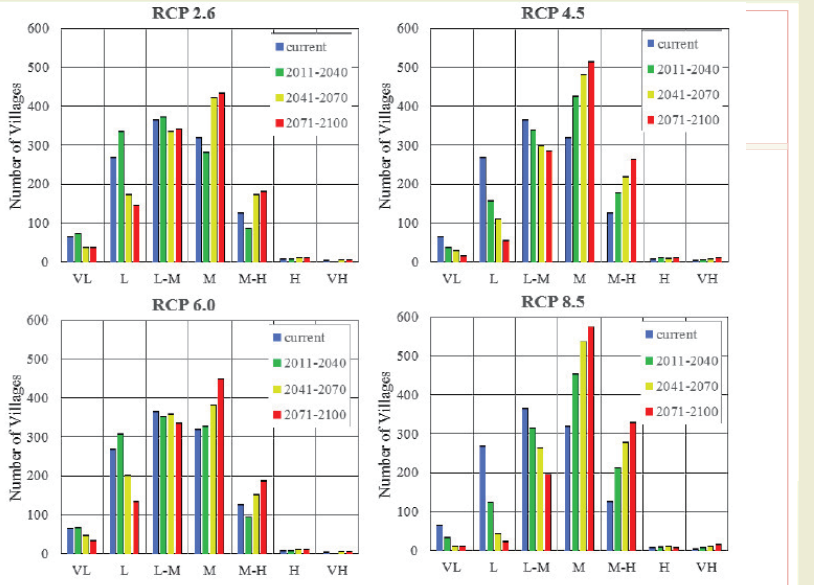


Figure 4-12 Number of villages based on level of flood risk under current and future climate

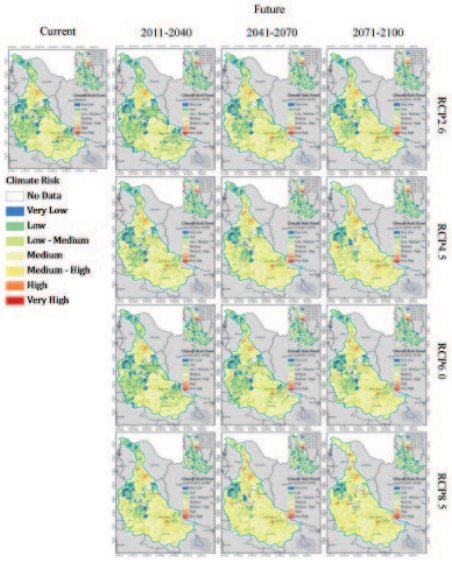


Figure 4-13 Flood Risk Level of Villages at CRB under current and future climate

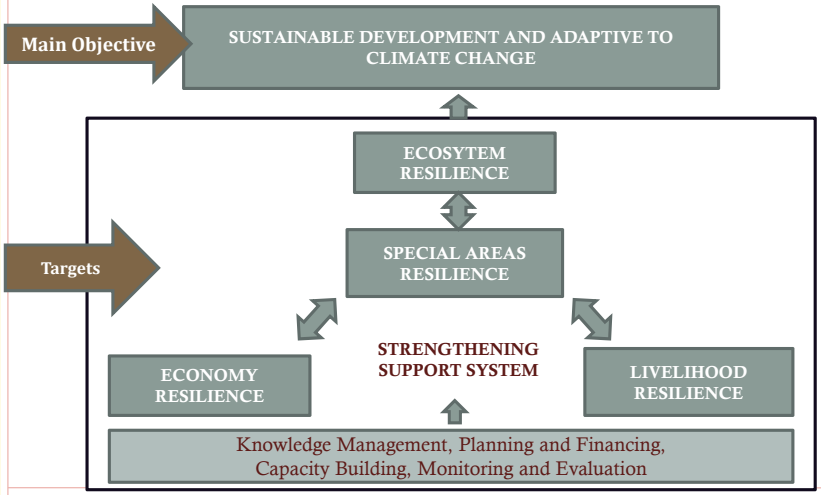
Table 4-15 Urgency of climate change adaptation actions based on on the level of current and future climate risk

Urgency of Adaptation	Current climate risk	Future Climate Risk	Notes	Number of villages
Immediate action (1-5 years)	M-H, H, VH	M-H, H, VH	Climate risk at present is between Medium to High, High or Very High and in the future it may remain Medium to High or increase to High or to Very High or remains High or Very High	21 (Flood) 21 (Drought)
Short-term (5-10 years)	M	M-H, H	Climate risk at present is Medium and in the future it will increase to Medium to High or to High or to Very High	123 (Flood) 112 (Drought)
Medium Term (10-20 years)	M	M	Climate risk at present is Medium and in the future remain medium	321 (Flood) 360 (Drought)
Long Term (10-25 years)	L-M	L-M, M, M-H	Climate risk at present is Medium in the future it remains Medium or increases to Medium to High or to High or to very high	366 (Flood) 346 (Drought)
Very Long-Term (>25 years)	VL, L	VL, L, L-M, M	Climate risk at present is between Low and Low to Medium and in the future it remains Low to Medium or increases to Medium, or to Medium to High, or to High or to Very High	336 (Flood) 328 (Drought)

Table 4-16 List of villages which needs to received immediate adaptation programs/actions

District	Sub District	Villages	Flood		Drought	
			Current	Future	Current	Future
Cianjur	Bojongpicung	Hegarmanah	-	-	H	H
	Cikalongkulon	Cinangsi	-	-	M-H	H
		Gudang	-	-	M-H	H
	Sukaresmi	Ciwalen	M-H	H	M-H	H
Purwakarta	Sukatani	Cibodas	M-H	H	M-H	H
Karawang	Ciampel	Kutamekar	H	H	H	H
		Parungmulya	H	H	M-H	H
	Klari	Cibalongsari	VH	VH	VH	VH
Bekasi	Cikarang Timur	Cipayung	H	VH	H	H
	Kedungwaringin	Bojongsari	H	H	M-H	H
	Pebayuran	Bantarjaya	M-H	H	M-H	H
		Karangsegar	-	-	M-H	H
Bandung City	Babakan Ciparay	Babakan Ciparay	VH	VH	H	H
		Cirangrang	M-H	H	-	-
		Margahayu Utara	VH	VH	H	H
		Margasuka	VH	VH	H	H
	Bandung Kulon	Cigondewah Kaler	H	H	-	-
		Gempol Sari	H	H	-	-
	Batununggal	Binong	VH	VH	VH	VH
		Cibangkong	H	H	M-H	H
		Kebon Waru	H	H	H	H
	Bojongloa Kaler	Babakan Asih	VH	VH	H	VH
		Jamika	H	H	-	-
	Cibeunying Kaler	Cigadung	H	VH	H	H
	Cicendo	Sukaraja	M-H	H	H	H

RAN-API Targets Framework (February 2014)



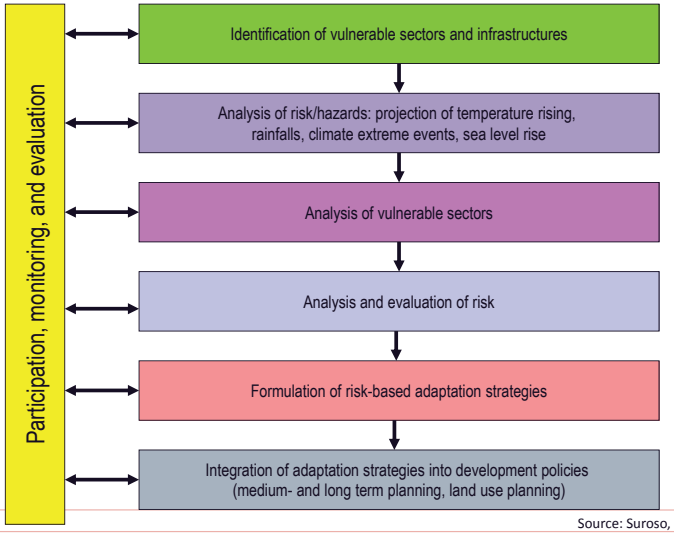
Adaptation Action Plan (RAN-API)

SECTOR	SUB-SECTOR	CLUSTER	ACTION PLAN
Economy Resilience	Food Security	7 clusters	**Cluster 1: Adjustment of Food Production Systems** 1. Minimize yield loss by reducing the area exposed / puso by floods 2. .....
	Energy Independency	4 clusters	
Social and Livelihood Resilience	Health	4 clusters	**Cluster 1: Identification and control factors** 1. Mapping populations and areas vulnerable to climate change 2. .....
	Settlement	4 clusters	
	Infrastructure	4 clusters	
Ecosytem Resilience		7 clusters	**Cluster 1: Repair / Improvement of Spatial Planning and Land Classification of Land** 1. Identification and mapping vulnerability forests, marine ecosystems, watersheds, and biodiversity of the climate change 2. .....
Special Area Resilience	Urban Area	5 clusters	**Cluster 1: Integrating spatial planning with adaptation efforts** 1. Preparation of maps of vulnerability to climate change for urban areas 2. .....
	Coastal and Small Islands Area	5 clusters	
Supporting System		5 clusters	**Cluster 1: Capacity building for stakeholders in the climate change adaptation** 1. Education, counseling, and training on the climate change adaptation 2. .....

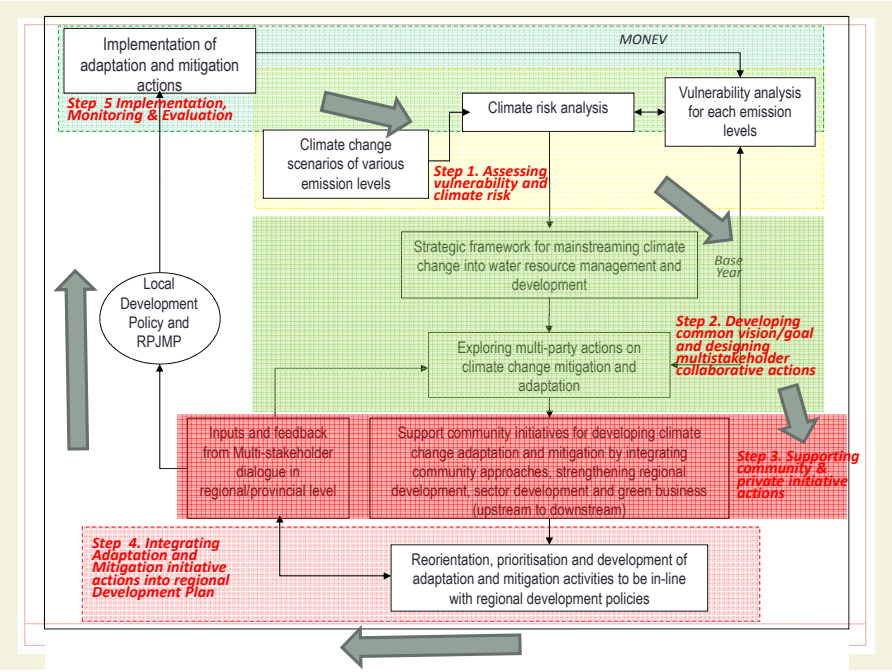
The Ministry of Environment and Forestry Program on Climate Change Adaptation

- Development of Government Regulation on Climate Change Impact Managemet
- Conduct and implement Vulnerabilty and Adaptation Assessment or KRAPI
- Establishing an institutional arrangement for MONEV of CCA in Indonesia: On-Line System (village-based) or SIDIK
- Development of Climate Village Program or ProKlim

Vulnerabity and Adaptation Assessment Process

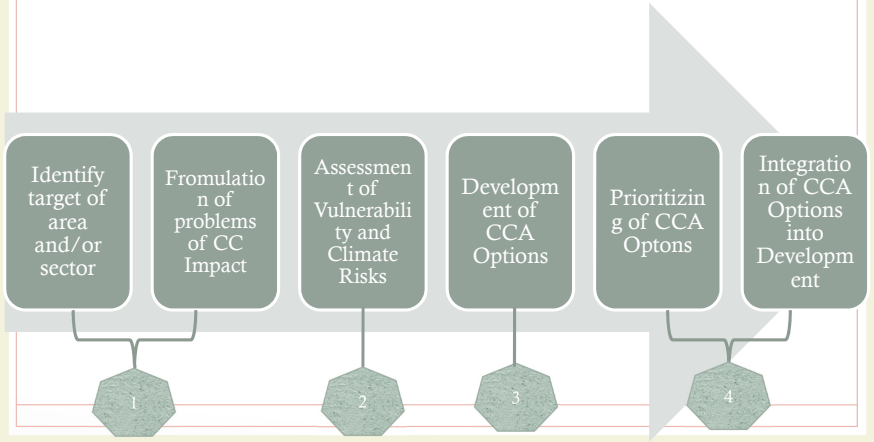


Source: Suroso, et.al (2010)



Guideline for CCA Development (Draft)

Guidance for National Government, NGOs, Local Government in Developing and Mainstreaming of CCA into Development;

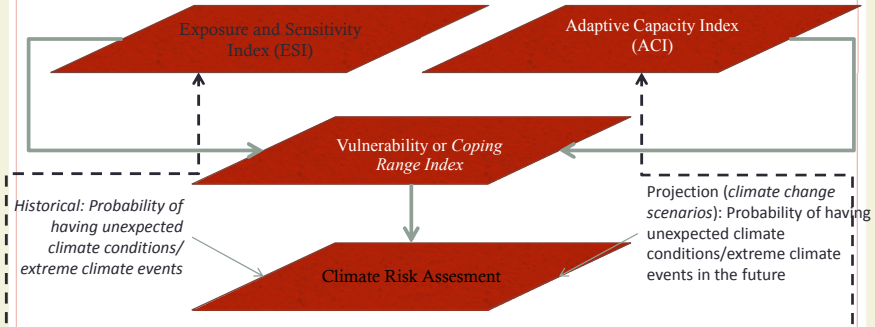


CLIMATE CHANGE VULNERABILITY INDEX (SIDIK)

1. Instrument used for monitoring level of vulnerability at local and national level →check the effectiveness of development policy.
2. Outputs SIDIK:
   - Index showing the coping range of villages to climate change)
   - Showing the level of vulnerability of village (as combination of exposure, sensitivity and adaptive capacity) into quadrant system;
   - Based on biophysics, sosio-economics indicators
   - Could compare the level of Vulnerability between villages at national level.

Climate Risk Assessment

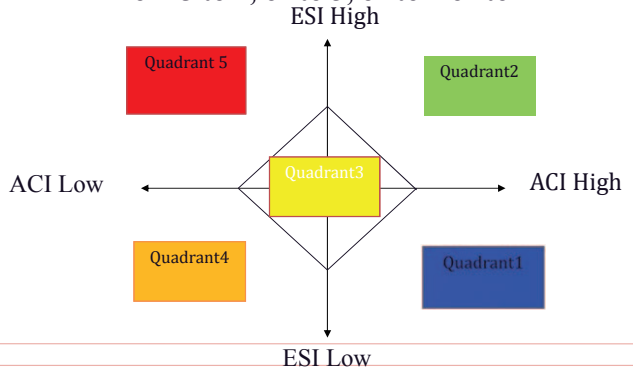
With intervention, exposure, sensitivity and adaptive capacity will change



We can reduce the level of exposure, sensitivity and increase adaptive capacity with structural and non-structural interventions (**Adaptation**)

Applying the Concept: Assessing Vulnerability Using Quadrant Method – Basis for MONEV System

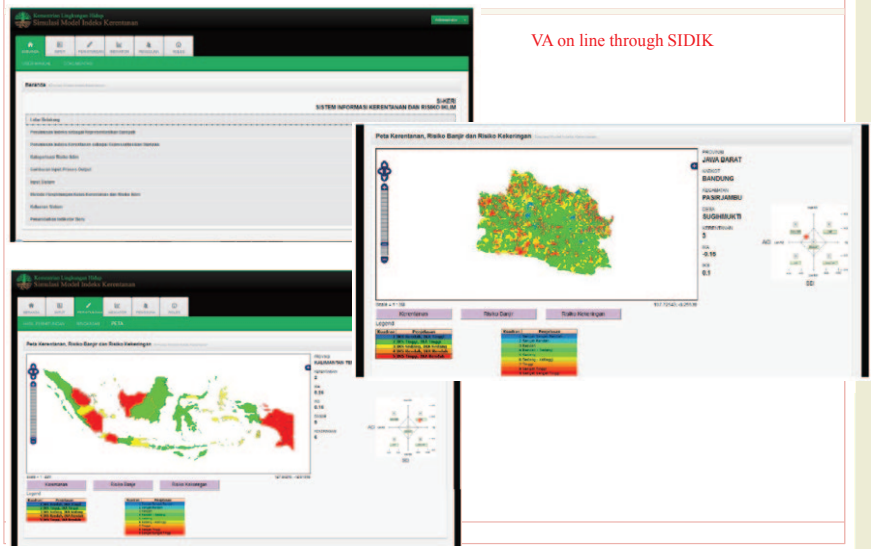
To assess relative position of village based on vulnerability index, Indonesia applies quadrant method to locate position of a village in the quadrant based on the Exposure and Sensitivity Index (ESI) and Adaptive Capacity Index (ACI). If ESI and ACI value in Quadrant 5, we can define the village *very vulnerable*. **With CCA actions, it is expected the position of village will move to better position (e.g. from 5 to 4, or to 3, or to 2 or to 1**



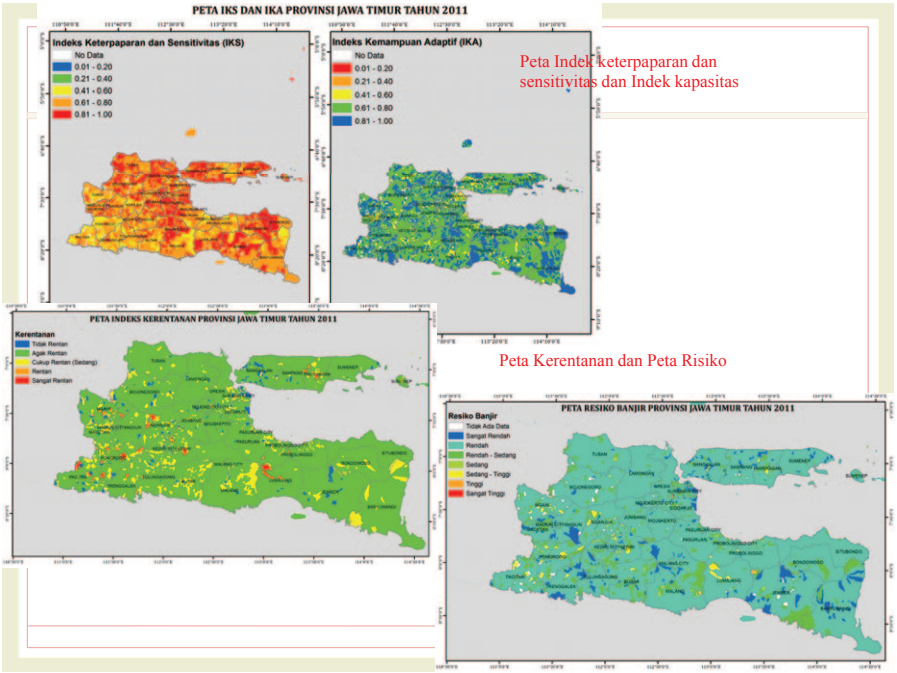
Identification of Indicators for defining Level of exposure, sensitivity and adaptive capacity of Villages: Basis for Developing MONEV of CCA

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 (Yunior 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 ares	0.15
A44	Midwife	0.10	B8	No building in slump area	0.05
A45	Medical doctor	0.20	B9	Land Subsidence	0.10

Sistem Inventory Data Indeks Kerentanan (SIDIK)



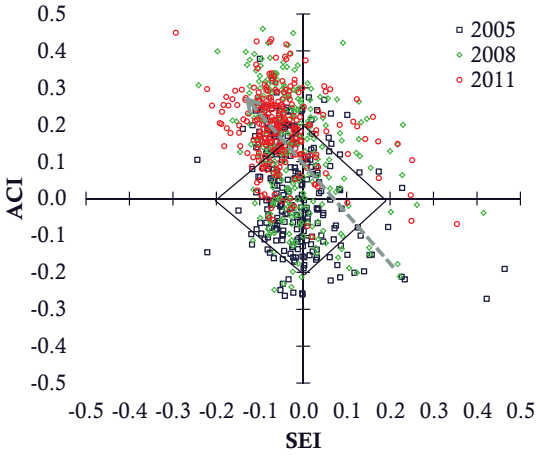
VA on line through SIDIK



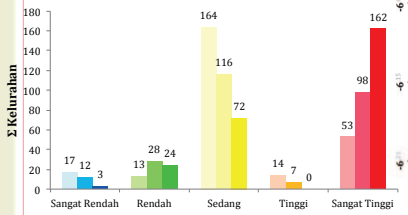
Peta Indek keterpaparan dan sensitivitas dan Indek kapasitas

Peta Kerentanan dan Peta Risiko

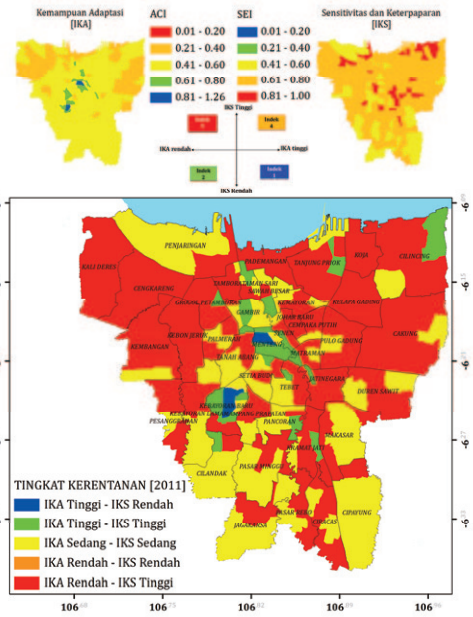
Applying the Concept: Assessing Vulnerability Level of Villages in Jakarta



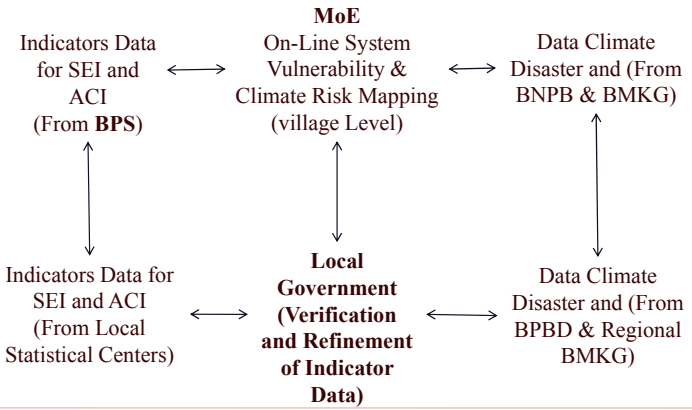
Monitor the change in Vulnerability of Village over time: Jakarta Case [Baseline 2005]



- WHAT policy supports needed?
- WHAT Institutional Arrangement?



Institutional Arrangement for MONEV of CCA in Indonesia: On-Line System or SIDIK



ProKlim: Climate Change Actions in Community Level

- Local initiatives relevant to adaptation-mitigation actions supported by different sources of financing mechanism → government, public, private, donor agencies, NGOs, others
- Existing various local inititiatives on climate change adaptation and mitigation → Climate Village Program or ***ProKlim***

ProKlim

- is a program to recognize active participation of local communities in implementing actions of 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.

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)

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 "Potensial Location for ProKlim Development"

No	Location	Disctricts/Municipalities	Province
1	Sukunan Village	Sleman	Yogyakarta
2	Jetis 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	Nglegi Village	Gunungkidul	Yogyakarta

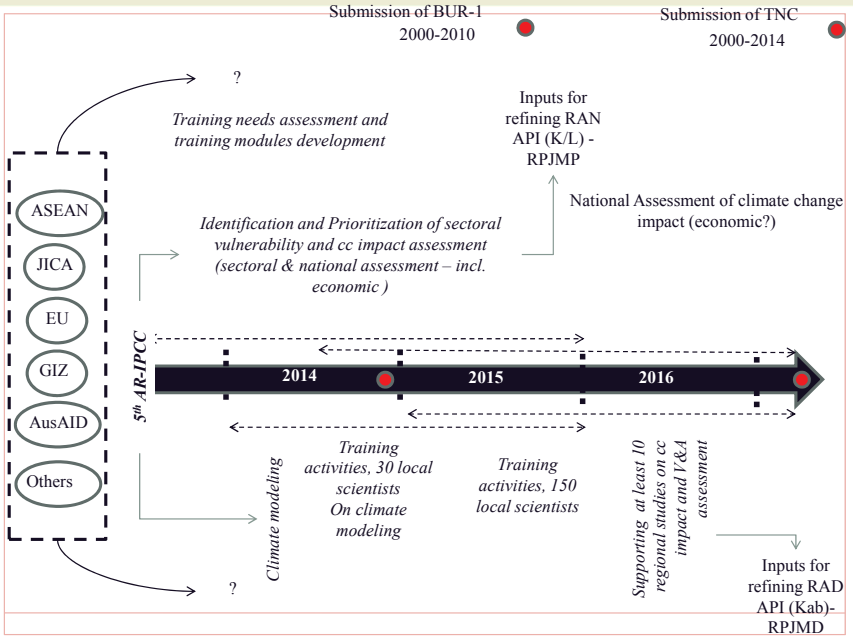
No	Location	Disctricts/Municipalities	Province
1	Kerta Village	Gianyar	Bali
2	Kembang Village	Pacitan	East Java
3	Jomblang Village	Semarang	Central Java
4	Mekarjaya Village	Cianjur	West Java


Local Actions of Sukunan Village

Local Actions of Sambangan Village

Local Actions of Mukti Jaya Village

Other Local Initiatives




Thank you....
Email: adaptation.moe.id@gmail.com
Ph/Fax. +62 21 8590 4934

Climate Change International Technical and Training Center: CITC

One-stopTechnical and Training Center

REGIONAL WORKSHOP FOR CAPACITY DEVELOPMENT on LOW CARBON AND RESILIENT SOCIETY IN SOUTH EAST ASIA AT ANANTARA HOTEL BANGKOK ON JUN 22-24 2015

Pursuing Green growth for sustainability and Resilience in Malaysia – Low carbon Society approach.

Science into Policy (Adaptation)

SATREPS
Science and Technology Research Partnership for Sustainable Development Program

Ho Chin Siong (UTM)
Faculty of Built environment/ UTM Low Carbon Asia Centre

Project for Development of Low Carbon Society Scenarios for Asian Regions

Email: ho@utm.my/ csho59@yahoo.com

Content- Structure of Presentation

- **Background**
  - **Overview Malaysia development 1970-2020**
- **Challenges And Solution**
  - **Green growth for sustainability and resilience policies in Malaysia under 11th Malaysia Plan 2016-2020**
- **LCS Malaysia**
  - **Low carbon sustainable development Actions in Malaysia**
  - **Conclusion**

Background

Iskandar Malaysia: Key Challenges

Size: 2,216.3 km²

Population: 1.3 mil. (2005) I 3.0 mil. (2025)

GDP: 35.7 bil. RM (2005) I 141.4 bil. RM (2025)

Voluntary 40% reduction of CO_2 emission intensity by 2020

Issues

_ Rapid urbanization and industrialization (7%pa)
_ Relatively high carbon intensity dependence on fossil fuel
_ High private car ownership
_ Low density development and urban sprawl
_ Low efficiency appliances and Renewabl energy

Government Policy Directions

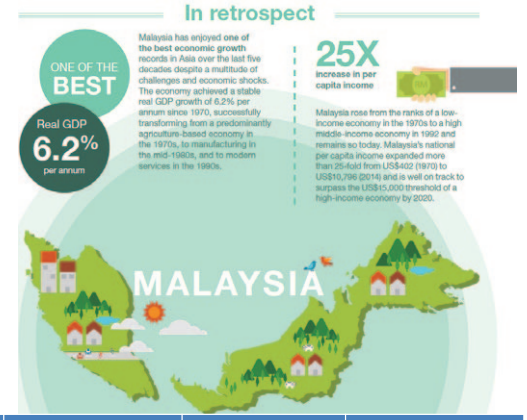
_ National Green Technology Policy
_ National Policy on Climate Change
_ National Renewable Energy Policy and Action Plan
_ National Policy on the Environment
_ 11th Malaysia Plan (2016-2020)
_ Green Neighborhood Planning Guideline
_ Low Carbon Cities Framework and Assessment System

Malaysia- background

Journey realizing Vision 2020- A fully developed nation along all dimensions – economically, politically , socially, psychologically and culturally by 2020.

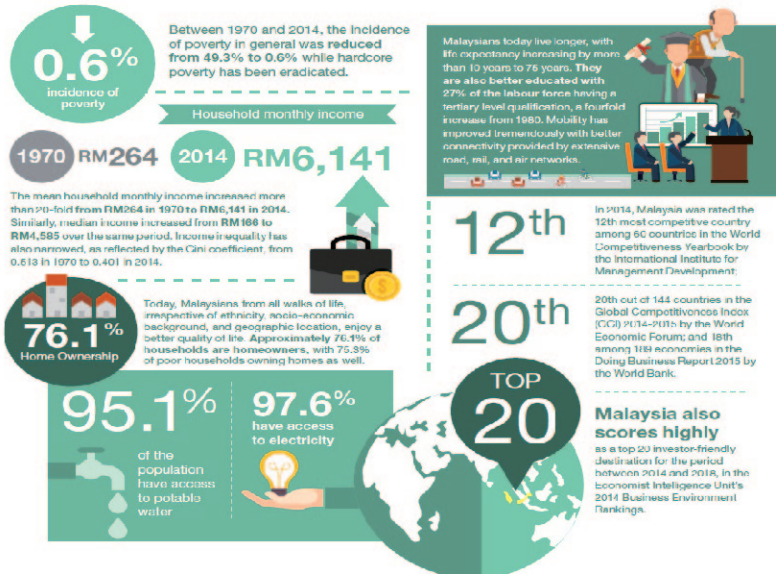
Themes related to low carbon development

- Digital nation,
- Green growth cities
- Competitive cities
- Promote biodiversity
- Environmental awareness,
- Enable energy plan,
- Inclusiveness,
- Enable energy plan

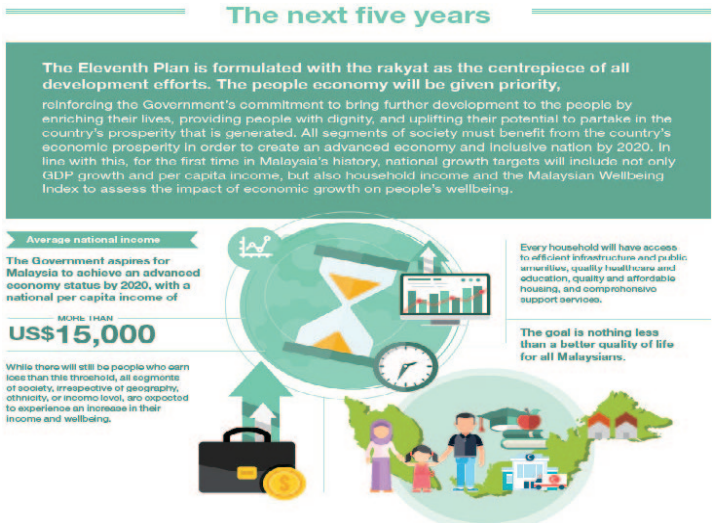


	CO2 emission ('000metric tons	CO2 per capita metric ton	Carbon intensity Kg / kg oil equiv
1990	56,593	3.1	2.6
2000	216,804	7.7	3.0

Malaysia 1970- 2014



Vision 2020



SUCCESSION OF MALAYSIAN DEVELOPMENT POLICY 1971-2020

All these gains were made possible by Malaysia's development philosophy, which places the prosperity and wellbeing of the *rakyat* at the heart of economic growth. This commitment can be seen in each successive development policy:

New Economic Policy 1971-1990

The New Economic Policy, 1971-1990, focused on poverty eradication irrespective of ethnicity and eliminating identification of ethnicity by economic function.

POVERTY ERADICATION

National Development Policy 1991-2000

The National Development Policy, 1991-2000, focused on ensuring the balanced development of major sectors of the economy and regions, as well as reducing socio-economic inequalities across communities.

BALANCED DEVELOPMENT

National Vision Policy 2001-2010

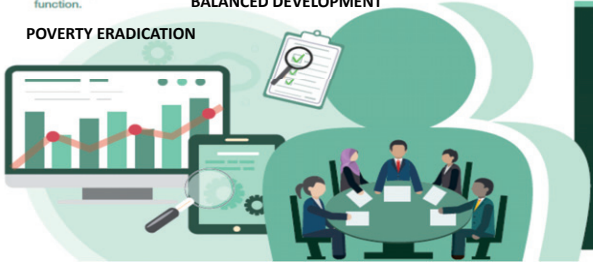
The National Vision Policy, 2001-2010, focused on building a resilient and competitive nation.

RESILIENT AND COMPETITIVE

National Transformation Policy 2011-2020

The National Transformation Policy, 2011-2020, maintains the people-centric focus through the New Economic Model, which sets the goal of becoming a high-income economy that is both inclusive and sustainable.

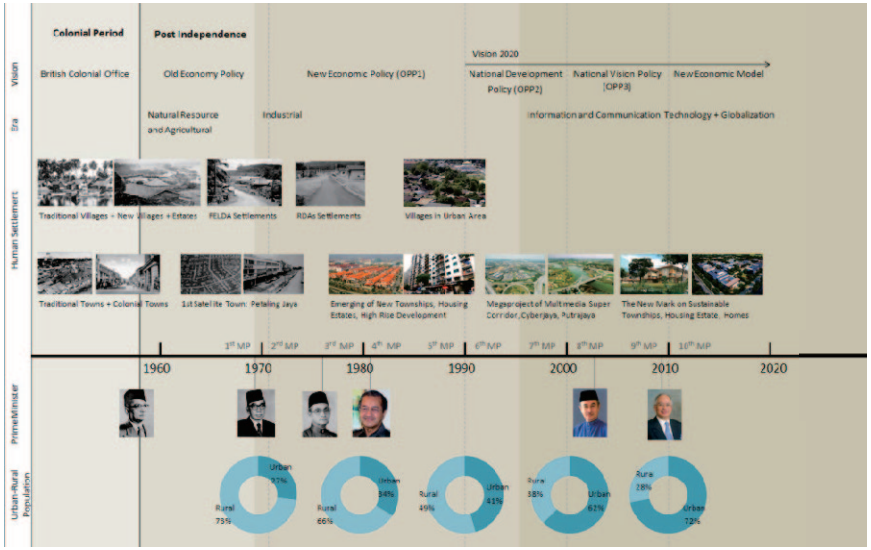
INCLUSIVE AND SUSTAINABLE



This transformation agenda is supported by the Economic Transformation Programme, which focuses on the 12 economic areas that are most critical to the nation's continued growth, and the Government Transformation Programme, which focuses on transforming areas of public service that are of greatest concern to the *rakyat*. The Government has also introduced MyNDS to strengthen implementation approach.

2 Sustainable Development in Malaysia

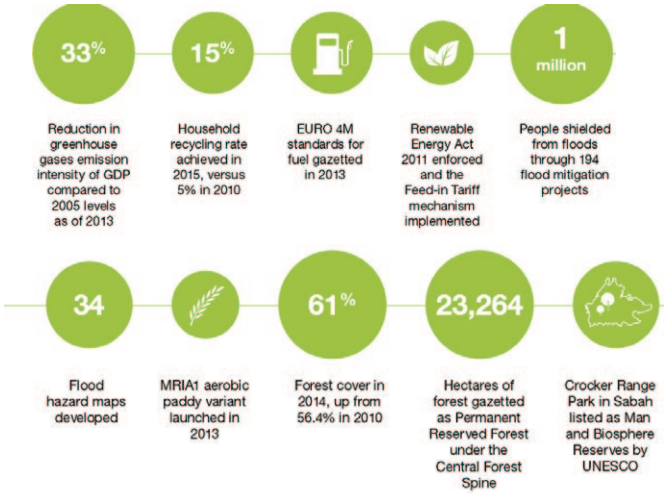
Moving Towards Sustainable Human Settlement



Eleventh Malaysia Plan 2016-2020 – Green Growth Policy

Shift away from 'grow first and clean up later'' development model towards one that is **resilient, low carbon, resource efficient and socially inclusive development**.

Green growth Initiatives 2010-2015



Climate adaptation: protecting the nation

In terms of adapting to the impact of climate change, focus was given **to water resources and the agriculture sector.** The implementation of **194 flood mitigation projects has shielded nearly one million people from floods**. In addition, 34 hazard maps were developed to **facilitate Eleventh Malaysia disaster prevention and development planning in major high-risk areas**.

Coastal erosion prevention efforts were undertaken to rehabilitate and protect coastal areas from being further eroded. In this regard, **24.4 kilometres of coastal areas in Johor, Kelantan, Pulau Pinang, Sabah, Sarawak, Selangor, and Terengganu** were rehabilitated. In addition, the **National Water Resources Policy was launched in 2012 t**o provide clear directions and strategies for water resources management, including collaborative governance to ensure water security and continued sustainability.

In addition to building the resilience of the **nation against flooding or prolonged drought, new strategies to improve food security were introduced**. A new aerobic paddy variant, known as MRIA1, was launched in 2013 with improved resistance to heat and water scarcity, allowing plantation of this staple food in water-poor areas and during off season. The **aerobic variant will help to increase rice production while adapting to climate change.**

Climate adaptation: protecting the nation

Marine water quality of selected estuaries in Malaysia

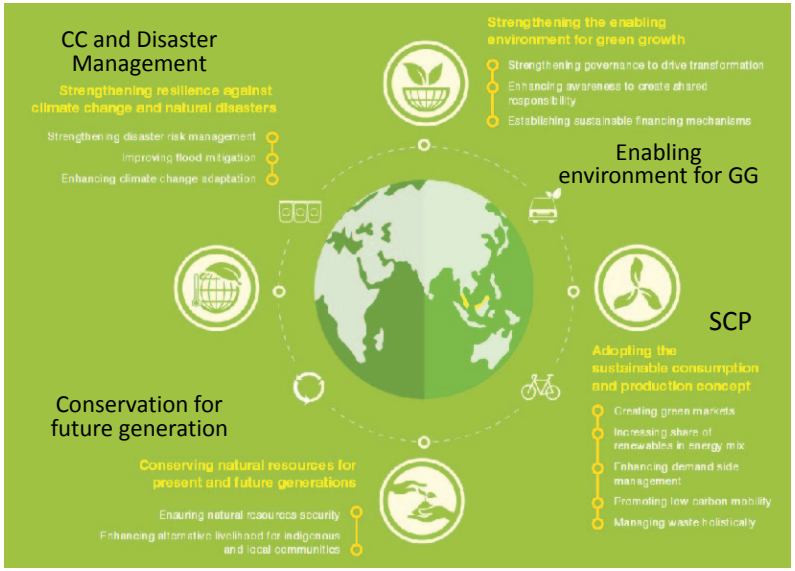
Unit = Marine water quality index[1]

	2011, index	**2013,** index	**Change,** %
Kuala Balang Rejang, Sarawak	70.8	86.8	15.9
Kuala Kedah, Kedah	65.4	84.2	18.8
Kuala Sungai Lukut, N. Sembilan	67.9	66.8	-1.2
Kuala Sungai Segget, Johor	67.5	61.5	-6.0
Kuala Sungai Setiu, Terengganu	49.8	61.1	11.3
Muara Sungai Inanam, Sabah	58.8	59.2	0.4
Kuala Sungai Kelantan, Kelantan	45.1	53.9	8.8
Kuala Sungai Langat (Jugra), Selangor	53.0	53.6	0.6
Kuala Sungai Gula, Perak	22.9	50.9	28.0
Kuala Sungai Juru, Pulau Pinang	49.6	49.7	0.1
Kuala Sungai Perlis	54.7	48.8	-5.9
Kuala Sungai Kesang, Melaka	67.1	45.3	-21.8

[1] Index measures water quality on a 0-100 scale, with <50 classified as 'Poor', 50-79.85 as 'Moderate', 80-89.83 as 'Good' and ≥90 as 'Excellent'

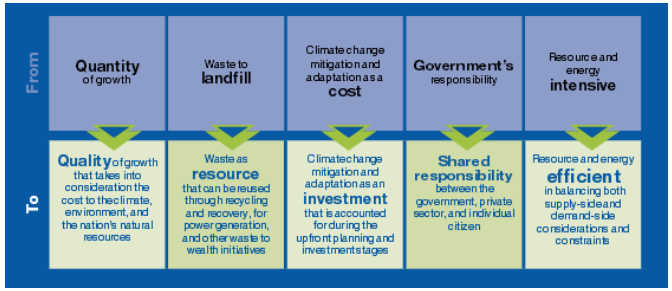
Source: Department of Environment

Focus area of green sustainability

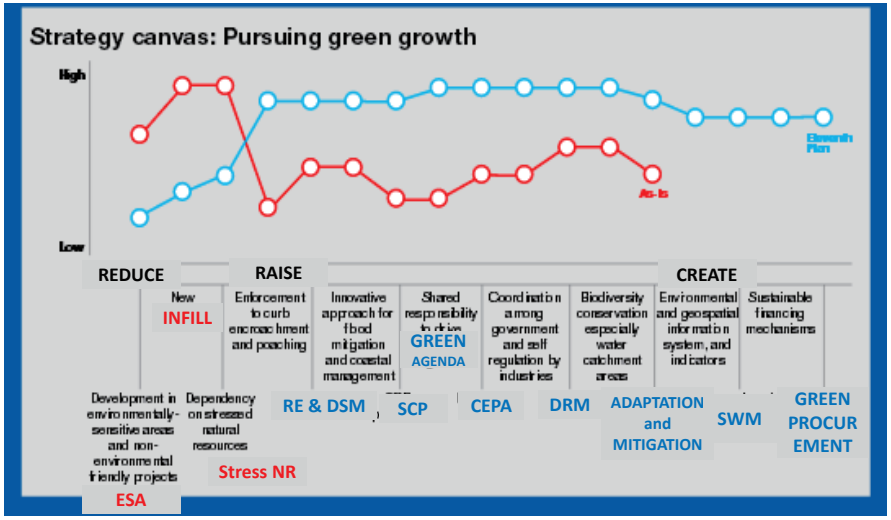


Outcomes of Strategic thrust 4
Pursuing green growth for sustainability and resilience

Game changer-Green growth for Sustainability and Resilience



Green growth for Sustainability and Resilience



INVESTING IN COMPETITIVE CITIES- Major Shifts

- **Economic Density**
  - Increase Density
- **Urban Form**
  - Transit Oriented Development (TOD)
- **Resource usage**
  - Efficient SWM
- **Housing**
  - Quality and Affordable
- **Industry Focus**
  - Knowledge Intensive Industries
- **Role of Local authorities**
  - Strategic drivers of local economy and social development

	From	To
Economic density	Economic density in cities is unplanned and organic, resulting in lower productivity	Increased economic density to enhance productivity
Urban form	Uncontrolled and automobile-focused sprawl	Transit-oriented development to increase use of public transportation and reduce reliance on personal vehicles
Resource usage	Resource use not streamlined, leading to high usage of natural resources	Efficient waste management through guidelines on resource use and effective enforcement
Housing	New developments are expensive and exclusive with limited affordable options	Affordable and quality housing is accessible to targeted segments of the society
Industry focus	Current industries are predominantly labour- and space-intensive industry	Growth of knowledge-intensive industries with efficient use of space
Role of local authorities	Local authorities focused on licensing, enforcement, and provision of basic services	Local authorities as strategic drivers of local economic and social development

CO2 Modelling /LCS blueprint on the Case study of Iskandar Malaysia

Project Background

Site: Iskandar Malaysia

(Iskandar Regional Development Authority)

Objective:

i. To draw up **key policies and strategies** in guiding the development of Iskandar Malaysia in **mitigating carbon emission**. *Transforming Iskandar Malaysia into* ***a sustainable low carbon metropolis by adopting green growth strategies/roadmap.***

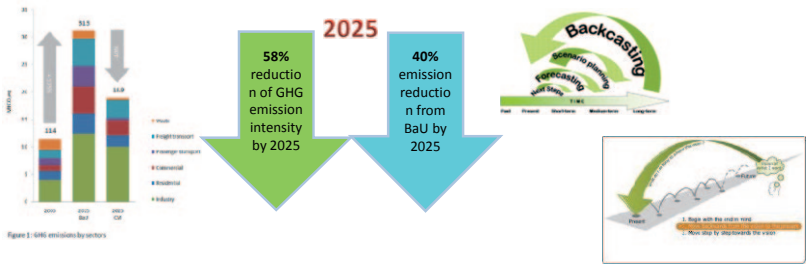
ii. To respond to the nation's aspiration for **ensuring climate-resilient development for sustainability**.

Target Year: 2025 (2005 – 2025)

Pursuing green growth at local level using modelling and community engagement (FGD) to prepare Low Carbon Society blueprint/ roadmap

Step 1 Low Carbon Society Blueprint for Iskandar Malaysia
- Clear GHG target for year 2025

Step 2 Low Carbon Society Implementation Roadmap 2015-2025 using Backcasting Tool

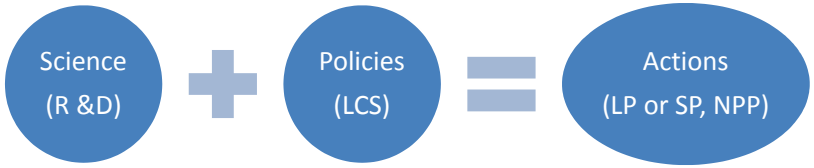


Low Carbon Society Blueprint for Iskandar Malaysia 2025

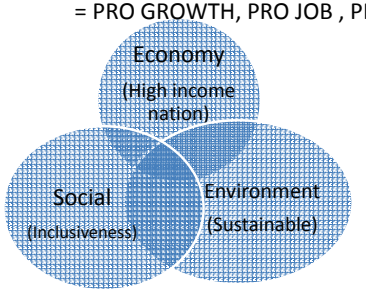
- The LCSBPIM– a quick reference for all policy-makers in both public and private sectors as well as IRDA;
- 12 Actions grouped in 3 parts namely: (Green Economy), (Green Community), and Green Environment);281 programmes;
- Each Chapter contains an analysis, list of programmes and the potential GHG emissions reduction;
- IRDA launched its Low Carbon Society Blueprint for Iskandar Malaysia 2025 on 30 November 2012 at the United Nations Climate Change Conference in Doha, Qatar. The ultimate goal is to reduce Iskandar Malaysia's carbon intensity emissions by 50 per cent by 2025.
- The Blueprint was subsequently endorsed by the Prime Minister of Malaysia in December 2012

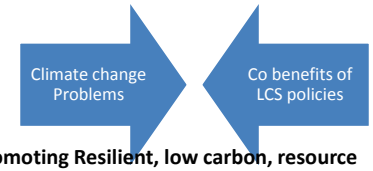
	Action Names	Themes
1	Integrated Green Transportation	GREEN ECONOMY
2	Green Industry	
3	Low Carbon Urban Governance	
4	Green Buildings & Construction	
5	Green Energy System & Renewable Energy	
6	Low Carbon Lifestyle	GREEN COMMUNITY
7	Community Engagement & Consensus Building	
8	Walkable, Safe, Livable City Design	GREEN ENVIRONMENT
9	Smart Growth	
10	Green and Blue Infrastructure & Rural Resources	
11	Sustainable Waste Management	
12	Clean Air Environment	

Sustainable development approach/ Climate Actions



Key element Sustainable development
= PRO GROWTH, PRO JOB , PRO POOR and PRO ENVIRONMENT





Promoting Resilient, low carbon, resource efficient and socially inclusive development

CONCLUSION REMARKS

- **Shift away from 'grow first and clean up later**'' development model towards one that is **resilient, low carbon, resource efficient and socially inclusive development**.
- Broadly on Climate actions - **Resources and energy (EE and RE), waste management, SCP , Procurement, Green Conservation.**
- At local level LCS blueprint needs to link with **urban policies (land use and density , compact cities, landscaping, walkable cities**) can complement **global climate policies .**
- In the case of Malaysia, most importantly LCS BP approach helps to **strengthen economic competitiveness and improve quality of life**, and its aspiration for **promoting green economic growth and greater sustainability** in line with national policy on competitive cities.
- Ultimately, these **co benefit approaches** can effectively will help to reduce **national/global energy demand and CO2** emissions

Thank You Terima Kasih 谢谢 धन्यवाद ありがとう

Thank you for your attention!

ho@utm.my

Adaptive Strategies for Climate Resilient Society in Singapore

For TGO ASEAN Workshop
Bangkok, Thailand
22-24 June 2015

Dr Belinda Yuen
Lee Kuan Yew Centre for Innovative Cities
Singapore University of Technology & Design

Talk Outline

- Introducing Singapore
- Impacts of Climate Change
- Singapore's Position on Climate Change
- Vision and Approach
- Selected Strategies
- Conclusion

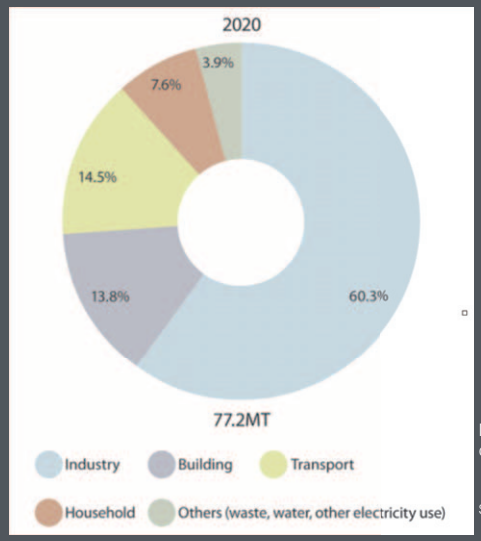
Singapore

- Location: 1°22'N 103°48'E
- Land area: 715 sq km
- Population: 5.3 million
  - Density: 7422 persons per sq km
    >90% live in high-rise housing
- Landscape: urban island, lowlying (most land less than 15m above mean sea level, 30% less than 5m), flat coast

Impacts of Climate Change

- Sea level rise – mean sea level could rise by up to 0.65m by 2100 leading to erosion and flooding of coastal areas
- Increase in Temperature – could increase by up to 4.2 deg C by 2100
  - Impact biodiversity and greenery - mean temperature increase of 1.5 to 2.5 deg C could affect ecosystem
  - Impact public health - vector-borne diseases, heat waves
  - Aggravate urban heat island effect - heat stress
- Change in Rainfall– more frequent extreme weather events cause drought and intense rainfall, flash floods and water shortages
  - Impact food security - import more than 90% of food, vulnerable to fluctuations and disruptions in global food supply

Urgent Action Needed



Projected 2020 Business-As-Usual GHG Emissions

Note: Greenhouse gases other than CO2 are converted to CO2-equivalent

Source: Singapore National Climate Change Strategy 2012

Singapore's Emissions Profile

- Contributes less than 0.2% of global emissions
  - Refining and petrochemical industry is major source of emissions
- Ranks 123rd of 137 countries in CO2 emissions/$ GDP
- Ranks 27th of 137 countries in per capita emissions

Source: CO2 Emissions from Fuel Combustion - 2011 Highlights © OECD/International Energy Agency, 2011

Singapore's Position on Climate Change

- the need for all countries to act, the importance of economic growth to provide resources to address climate change, and for each country's contribution to take account of its national circumstances …(UNFCCC 2007)

Vision

- Singapore as a climate resilient global city that is well positioned for green growth

Tackling Climate Change

- Reducing carbon emissions in all sectors
- Adapting to impact of climate change
- Harnessing green growth opportunities
- Forging collaborations & partnerships




Singapore's Adaptation Approach

Source: Singapore National Climate Change Strategy 2012

Key Thrusts

- Improving knowledge and expertise to develop effective adaptation measures and to build resilience
  - Amassing knowledge in local climate change and coastal protection through applied research
- Developing Technology Roadmaps to guide government agencies in formulating technology master plans and funding initiatives
  - Developing Technology Primers to discuss state of technology, its technical feasibility for Singapore, related research activities in Singapore, and possible research goals

Guiding Principles

- Long-term and integrated planning
- Pragmatic and economically sound measures
- Developing innovative solutions for Singapore and global markets

Central to Adaptation Approach

- Being flexible to incorporate future findings
- Taking a whole-of nation effort, involving people, private and public sectors to realize its vision

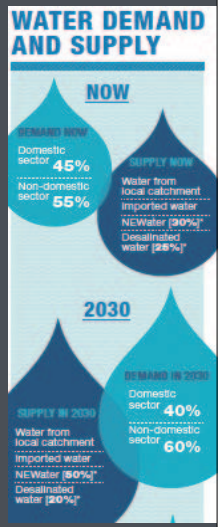
Our Home
Our Environment
Our Future

Coastal Protection

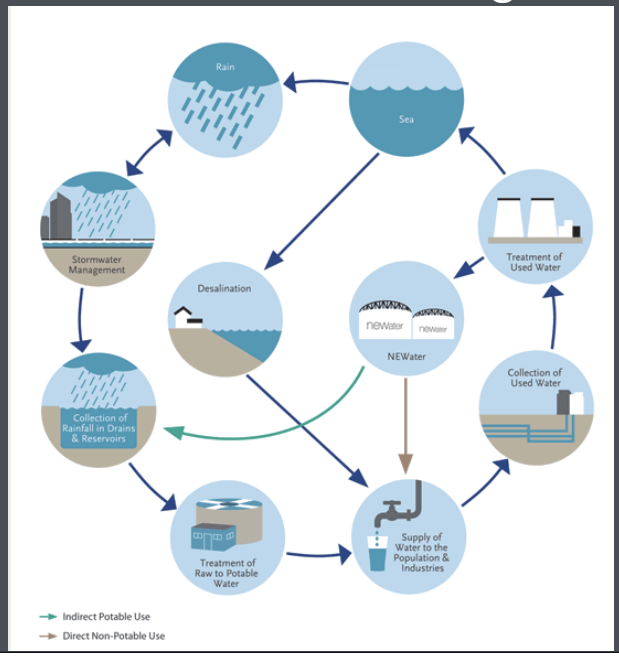
- Protecting coastline and improving drainage is a priority
  - Risk Map Study identifies specific coastal areas most at risk to effects of inundation
- Minimum reclamation levels for newly reclaimed land raised to 2.25m above highest recorded tide level
- Defending coastal areas from erosion, e.g. construction of walls and stone embankments covering 70% to 80% of Singapore's coastline
- Researching 'soft' coastal protection measures, e.g. use of mangroves and sea grasses as natural barrier to inundation

Water Resource Management

- 4 National Taps to provide sustainable water supply: local catchment water, imported water, NEWater, Desalinated water
- Developing resilient water resources - NEWater and desalinated water, that are not dependent on rainfall (to meet 70% of Singapore's water demand by 2030 and 80% by 2060)

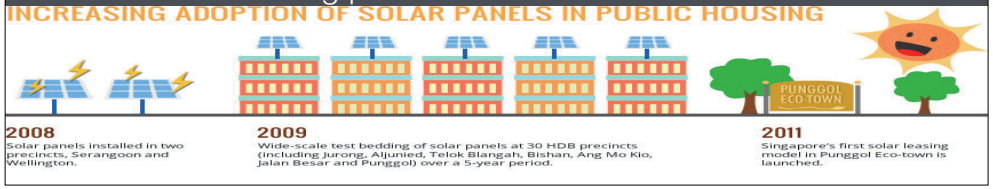


Water Resource Management

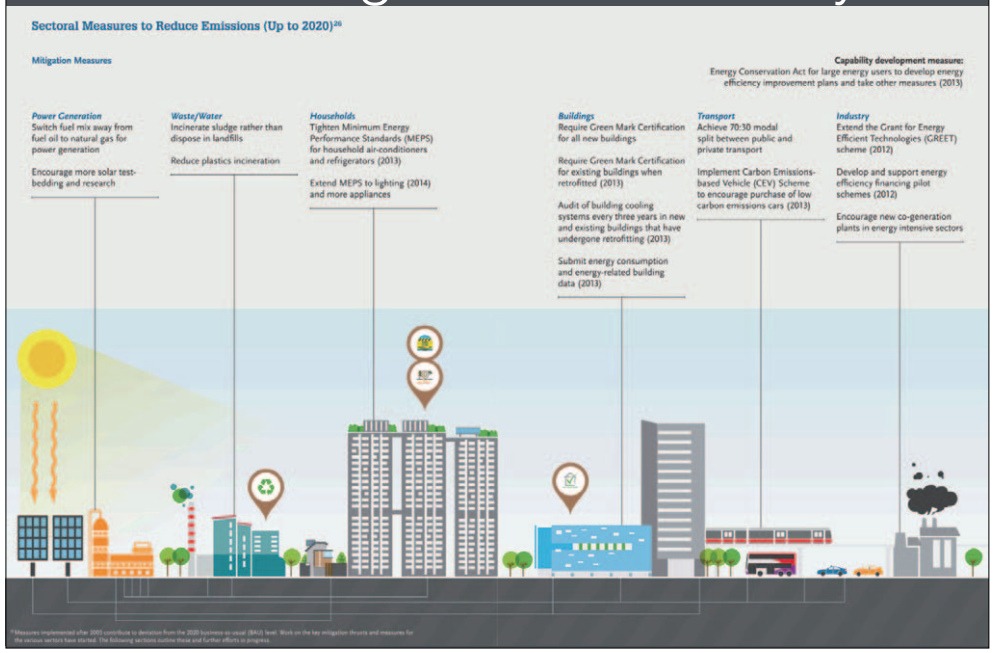


Alternative Energy

- Small size and resource-constrained limit its renewable energy option
- Imports almost all its energy needs
- Solar energy is possible but constrained by available land and presence of high cloud coverage and urban shading
- Test-bed solar panels on rooftops of high-rise public housing
- Test-bed floating photovoltaic on reservoirs



Reducing Emissions is Key

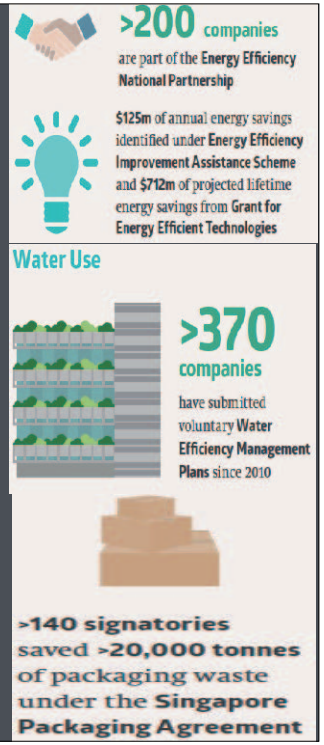


4 Thrusts in Energy Efficiency Strategy

- Promoting adoption of energy efficient measures and technologies
- Building capability to sustain and drive energy efficiency efforts and developing local knowledge base in energy management
- Raising awareness amongst households, industry and public sectors
- Supporting R&D efforts to enhance capability in energy efficient technologies

Industry

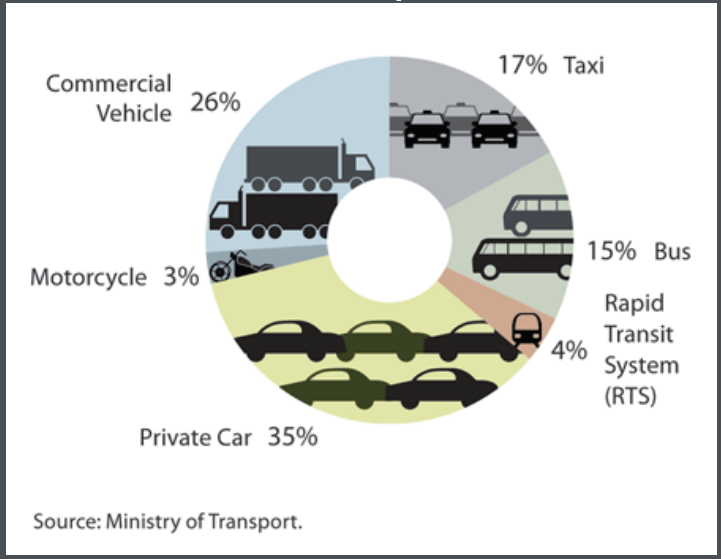
- Energy Conservation Act to help larger energy consumers identify and address inefficiency gaps within their organisations
- Facilitating energy-efficient investments through co-funding to defray initial costs, e.g. Design for Efficiency Scheme (DfE), Energy Efficiency Improvement Assistance Scheme (EASe), Grant for Energy Efficiency Technologies (GREET). Investment Allowance Scheme (IA), Energy Performance Contracting (EPC)
- Development of Expertise to drive energy efficiency improvements, e.g. Energy Service Company (ESCO) Accreditation Scheme, Singapore Certified Energy Manager (SCEM) Programme, Energy Efficiency National Partnership (EENP) Programme



Buildings

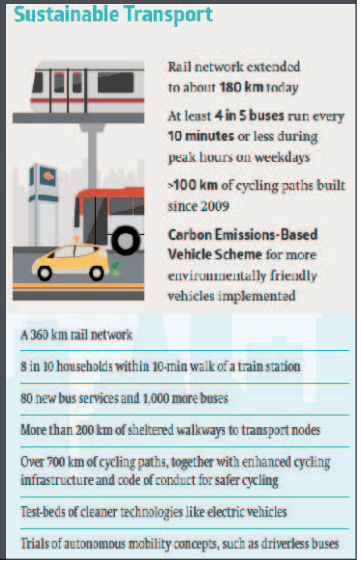
- Reducing emissions through Green Mark Standards
- Retrofitting existing buildings to incorporate design for increased energy efficiency
  - Facilitating existing buildings to improve energy efficiency e.g. Green Mark Incentive Scheme for Existing Buildings, Building Retrofit Energy Efficiency Financing Pilot Scheme

Transport



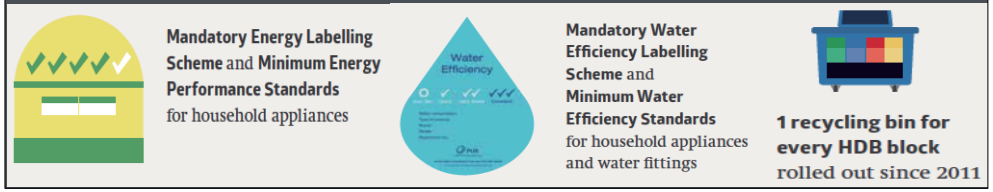
Transport

- Increasing investment in Mass Rapid Transit (MRT)
- Improving bus service - high capacity buses and more stops, greater road priority for buses, e.g. bus lanes and Mandatory Give Way to Buses Scheme
- Stricter vehicle ownership, e.g. Vehicle Quota System (VQS), Certificate of Entitlement (COE)
- Changing driving habits, e.g. Electronic Road Pricing (ERP) system
- More vehicle fuel excise duty
- Promoting green vehicles, e.g. Carbon Emissions-based Vehicle (CEV) scheme



Households

- Informing consumers on energy efficiency performance of appliances, e.g. Mandatory Energy Labelling Scheme (MELS)
- Prohibiting sale of energy-inefficient appliances, e.g. Minimum Energy Performance Standards (MEPS) scheme
- Public education programmes, e.g. 10% Energy Challenge, encourage 3R, media publicity and outreach programmes

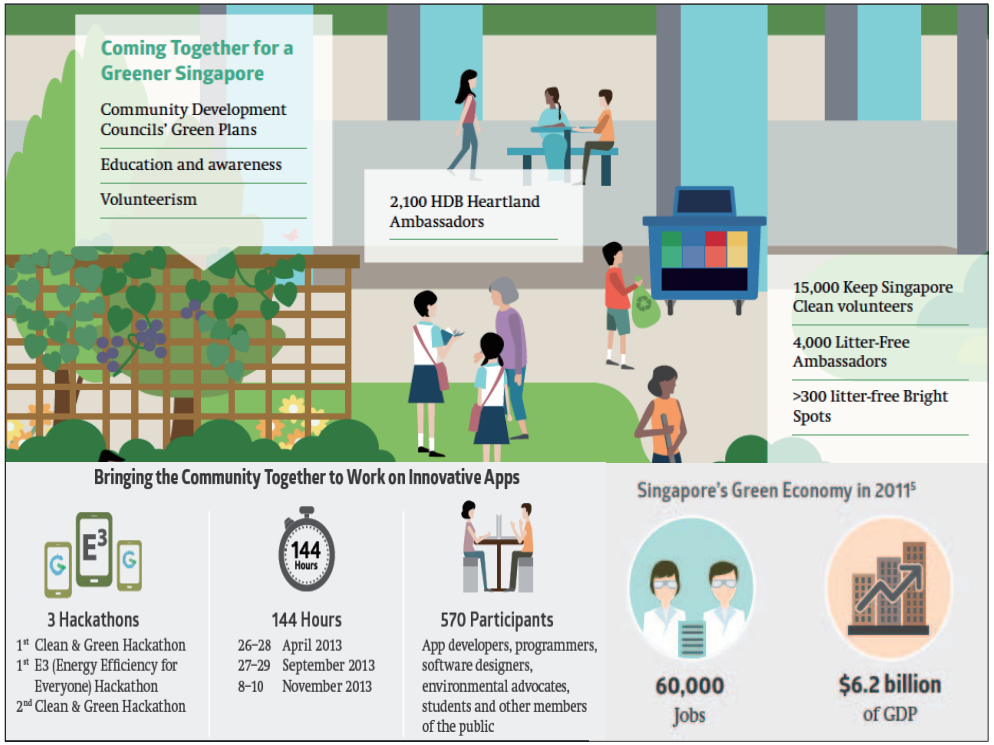


Treelodge @ Punggol

- HDB 1st Eco-Precinct
- BCA Green Mark Platinum

3 Pillars of Sustainable Development

- Promote social and economic well-being while protecting the environment
- A balance between development and conserving the environment



National and Local Strategies and ways forward for climate change resilient society in Thailand

By

Mr.Prasert Sirinapaporn

Director of Climate Change Management and Coordination Division

Office of Natural Resources and Environmental Policy and Planning

Ministry of Natural Resources and Environment

Climate Policy Integration in Thailand

Environmental Quality Management Plan B.E. 2550-2554

Environmental Quality Management Plan B.E. 2555-2559

National-level planning

10th National Economic and Social Development Plan B.E. 2550-2554

11th National Economic and Social Development Plan B.E. 2555-2559

Issue-based planning

National Strategic Plan on Climate Change B.E. 2551-2555

Climate Change Master Plan B.E. 2558-2593

Local-level planning and implementation

Sectoral planning

- Power Development Plan
- Energy Conservation Plan
- Renewable Energy Development Strategies
- Sustainable Transport Master Plan , etc.

(draft) Thailand National Climate Change Master Plan (2015 – 2050)

objective of the Climate Change master plan

1. In order to have Thailand long-term framework which covers the issues of climate change
2. To use as policy framework to bring about the creation of mechanisms and tools for solving climate change effectively and efficiently
3. To make government agencies and organizations involved be able to use as a framework for the preparation of the action plan in detail
4. To make authorities responsible for budget management be able to use as a framework to allocate the budget

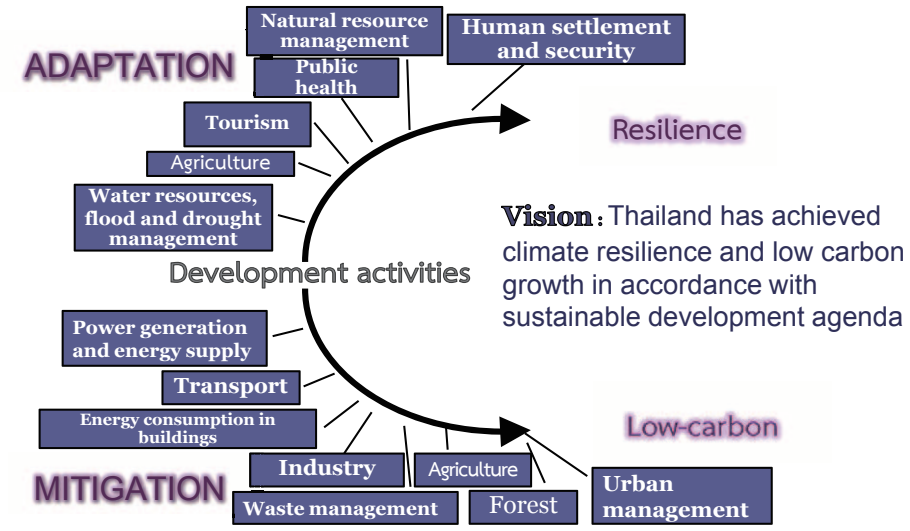
(draft) Thailand National Climate Change Master Plan (2015 – 2050)

Vision: Thailand has achieved climate resilience and low carbon growth in accordance with sustainable development agenda

Mission:

1. Build climate resilience for Thailand's development by mainstreaming climate change adaptation into development planning of all sectors and levels
2. Reduce GHG emission and establish policy instruments to encourage sustainable and low-carbon development
3. Develop appropriate knowledge base, databases and technologies to support climate change adaptation and low-carbon development
4. Enhance capacity and awareness of development partners at all levels to enable effective engagement in executing climate change policy and plan

Climate Change Master Plan (2014-2050)



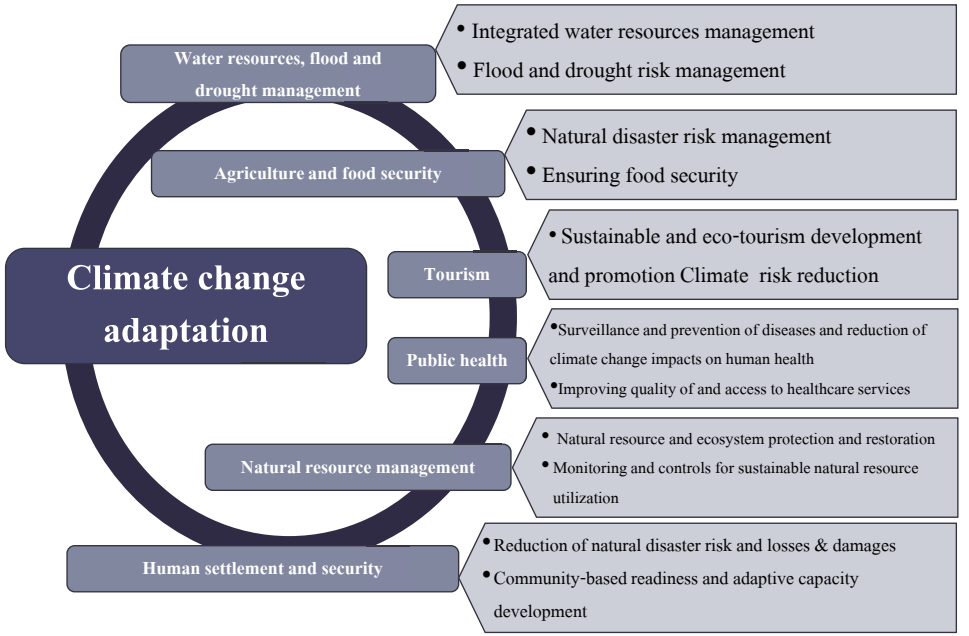
Vision : Thailand has achieved climate resilience and low carbon growth in accordance with sustainable development agenda

Climate Change Master Plan (2014-2050) : goals

Short-term (2016)	Medium-term (2020)	Long-term (2050) & continuous
• vulnerability maps formulated	• forecasting and early-warning	• more farm land and farmers with irrigation system
• 19% biodiversity protected area and 5,000 rai (about 800 hectares) additional mangroves annually	• climate insurance systems	• more farm land outside irrigation area with water resource development
• 50% of coastal cities with coastal restoration plan	• national adaptation fund	• more farmers in hot spots with training on natural disaster management and vocational training
• establishment of NAMAs and MRV	• 40% growth in forest cover	• more farmers with climate insurance
• development of policy instruments to encourage low-carbon growth	• maximum conservation area for biodiversity protection	• less climate-related agricultural loss per agricultural GDP
	• all coastal cities with coastal restoration plan	• more land in natural disaster hot spots with soil and water conservation and restoration
		• more managed surface water
		• more population with access to clean water
		• more natural disaster hot spots with surveillance systems

Climate Change Master Plan (2014-2050) : goals

Short-term (2016)	Medium-term (2020)	Long-term (2050) & continuous
• center or platform for climate change R&D network	• 7-20% reduction of GHG emission from energy and transport sectors, relative to BAU	• fewer endangered species
• databases including GHG emission database, GHG mitigation registry, database to support climate change negotiations	• 25% share of renewable energy in final energy consumption	• more eco-tourism
• development of relevant action and/or strategic plans in line ministries	• more municipalities with over 10 m^2 per capita of urban green space	• 20% reduction of final energy consumption relative to BAU
	• development of local-level action plans on climate change adaptation	• 25% reduction in energy intensity relative to BAU
	• smart grid technology deployed	• more public transport travel
		• less GHG emission from land transport sector
		• more low-carbon and environmental-friendly investments in industry
		• less open dumping area
		• more farm land with GAP or organic standards
		• less agricultural burning
		• less GHG emission per GDP



20/06/58

Adaptive Measures (1)

- Increase the capacity of local governments to manage water for consumption and utilization of water resources sustainably.
- Potential development of local government and tour operators. And promoting community participation in the development and management of ecotourism and sustainable tourism.
- Enhance awareness of stakeholders to understand climate change and support potential development of entrepreneurship, community, business sectors, and local government about adaptation and the integration of climate change into development plans and strategies at provincial and local level.

20/06/58

Adaptive Measures (2)

- Collaboration with local communities and civil society to evaluate the effectiveness of various alternative forms of adaptation to cope with climate change, including the valuation of ecosystem services and livelihoods to contribute to the economic analysis about the process and options for adaptation to climate change at the local level.
- Urge the local authorities to plan climate change adaptation with the vision and strategy of urban, community and local development, together with the development approach that is consistent with climatic factors and adaptation measures that combine traditional knowledge and modern science to fit their lifestyle and be accepted by the community
- ETC.

Case: Support to the Development and Implementation of the Thai Climate Change Policy Project

connecting climateaction

ONEP and GIZ are operating “Support to the Development and Implementation of the Thai Climate Change Policy Project”, which has been supported by BMUB. The project was aimed at promoting the development and implementation of the national policy on climate change.

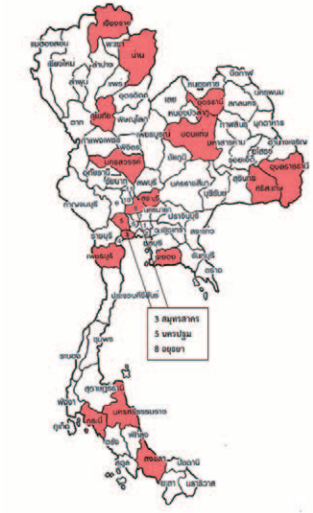
The project supports pilot provinces and municipalities in defining local issues, local visions, specific targets, and action plans for implementation (bottom-up approach).

giz Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH

On behalf of:
Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety
of the Federal Republic of Germany

Case: Support to the Development and Implementation of the Thai Climate Change Policy Project

connecting climateaction



ONEP and GIZ have selected pilot areas in 17 provinces and 32 municipalities for implementation.

The main operation area will focus on building awareness and developing human resources in the planning of integration based on the concept of climate change in accordance with the development of the area and context. Through training in mainstreaming of climate change into development planning process involved.

Conceptual Pathway to NAP

Adaptation

Mitigation & Low-Carbon

Cap. Building

NAP project

Phase1: 2015

- Vulnerability Assessment
- Vulnerability Database
- Proposed process of creating NAP

Phase2: 2016

- Reviewing Best Practices Knowledge and Tech. from National/Local Projects and Programs
- **Drafted NAP**

Thank you for your attention

MINISTRY OF NATURAL RESOURCES AND ENVIRONMENT
DEPARTMENT OF METEOROLOGY, HYDROLOGY
AND CLIMATE CHANGE

National and local strategies and way forward for climate resilient in Viet Nam

NGUYEN VIET DUNG
DEPARTMENT OF METEOROLOGY, HYDROLOGY AND CLIMATE CHANGE
MINISTRY OF NATURAL RESOURCES AND ENVIRONMENT

Country context

- Sq of 330,000 km^2 with coastal line of > 3000 km and 3000 islands
- Monsoon tropical climate with Temp. of 13 - 28^{o}C, high humidity > 80% and avg. rainfall of 1400 – 2400 mm/yr
- Dense river system with 9 large river system, > 2360 rivers, streams and avg. drainage density of 0.6 km/km^2
- Population of 90 mil. by 2013

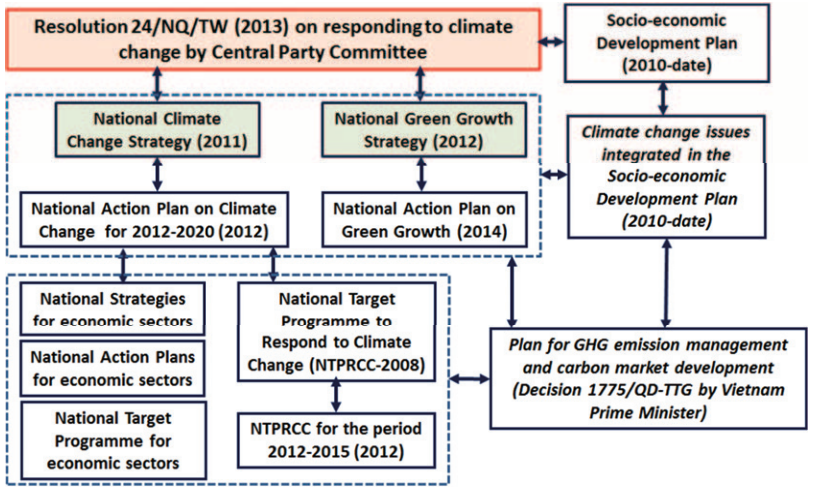
Country context

- In the past 50 years, the avg. annual temp. has increased by about 0.5°C;
- Increased rainfall in rainy season;
- Large floods occurs more frequently in the Central and the South;
- Reduced rainfall in dry season;
- Annual serious droughts in most areas of the country;
- CC increases natural disasters, especially extreme events, hurricanes, floods, droughts and landslide.

Climate change in Viet Nam

- **Vietnam climate change scenarios (2012)**
  - At the end of the 21st century, temp. may increase by 2.3°C compared to 1980-1999;
  - Temp. increases from 1.6 to 2.8°C; that of northern and north central increase faster than the south;
  - Winter temp. may increase higher than summer temp.
  - Total rainfall in rainy season increase, rainfall during dry season tends to decrease in the South;
  - Precipitation may increase about 5% compared with 1980-1999; that of the North increase higher than the South.
  - Sea level rise of about 30 cm (2050) and 75cm (2100) compared to 1980 -1999.

Legal document on climate change



Legal document on climate change

Related Laws

- Law on Mining activities, 1996 and 2010.
- Land Law, 2001 and Amended Land Law, 2013.
- Law on Environmental Protection, 2005 and 2014.
- Law on Biodiversity, 2008.
- Law on Water Resources, 2012.
- Law on Natural Disaster Risk Prevention and Reduction, 2013

National Climate Change Strategy

Adaptation

- Actively respond to natural disasters and monitor climate change
- Ensuring food security and water security
- Respond to SLR for vulnerable areas
- Protection and sustainable development of forests and biodiversity conservation for effective response to climate change

Mitigation + Adaptation

- Protection and sustainable development of forests and biodiversity conservation for effective response to climate change

Cross-cutting

- Strengthen the Government's leading role in responding to climate change
- Develop measures for communities to effectively respond to climate change
- R&D in science and technology to serve responding to climate change
- Strengthen international cooperation and integration in global community on climate change issues
- Diversification of financial resources and investment for responding to climate change

Agriculture, Coastal zones and Water resource are priority adaptation areas.

National Climate Change strategy

THE IMPLEMENTATION PHASE

- **From 2011 to 2012**:
  - The urgent adaptation activities, can not be delayed;
  - Capacity building, strengthening science - technology
  - To review, adjust and supplement mechanisms and policies to suit local conditions and international.
- **From 2013 to 2025**:
  - Aiming to be a modern industrialized country, climate change adaptation and mitigation of GHG emissions associated with the conduct of economic development - economic development of the country.
- **From 2026 to 2050**:
  - Reducing GHG emissions become operational criteria of economic development - social.
  - The task of the Strategy will be reviewed, adjusted and supplemented with new development oriented to building and strengthening the economy with low carbon resilience and high adaptation to the impacts of climate change.

Legal document on climate change

Development from NTPRCC to NCCS

Awareness	Global responsibility, adaptation prioritized, mitigation was not a priority	Vital to socio-economic development, actively respond to climate change, change of development path
Policies	Adaptation, awareness raising, development of policies and institutions	Climate change as development issue, adaptation and mitigation are both prioritized, domestic and international efforts
Actions	Scenarios, assessment, action plans, awareness raising	Adaptation and mitigation implemented in parallel, enhance R&D, complete policies and improve capacity

All of the provinces and cities within the country had issued an action plan to respond to climate change.

URBAN DEVELOPMENT OF VIETNAM RESPONDING TO CLIMATE CHANGE IN THE PERIOD 2013 - 2020

1) Scope of the project:

- Urban systems across the country (63 provinces and cities directly under the central government), focusing on the provinces and municipalities influenced from climate change. By 02 affected areas:
- Coastal urban systems, riverine, urban areas delta risk of flooding, sea level rise, storm surges, losing land and water salinity.
- Urban System mountainous plateau flood affected tubes, flash floods and landslides, groundwater depletion.

2) Overall objective:

- To actively respond to climate change, the rational use of resources in improving and upgrading and urban development, review, supplement and perfect the system of legal documents, planning and investment management for urban development in the context of increased risk from climate change, raising awareness, strengthening coordination among ministries, sectors and localities in execution, management urban development to respond to climate change.

Example: Implementation of action plans in Ben Tre Province

- Building the foundation about responding to climate change (Plan of Action, the scheme cope with climate change and the Steering Committee to respond to climate change);
- Update scenarios for climate change in Ben Tre based on Vietnam climate change scenarios; Assess the impact of climate change on areas: biodiversity, tourism, coastal residential area;
- Build 15 farms on soil salinity in terms of climate change;
- Select 04 high yield rice varieties with salt tolerance; determining threshold salinity some fruit trees in the province (durian, rambutan, mangosteen, green grapefruit);
- Construction works 06 local dike; water plant, planted 200 ha of coastal forests,…

THANK YOU

Adaptation to Climate Change
Mie Prefecture's strategies and efforts towards Low Carbon and Resilient Society

June 22, 2015
Global Warming Prevention Division
Department of Environmental and Social Affairs
Mie Prefecture, Japan

Global warming and Climate change Issues

▪▪▪▪ Problems that induce rapid changes in climate

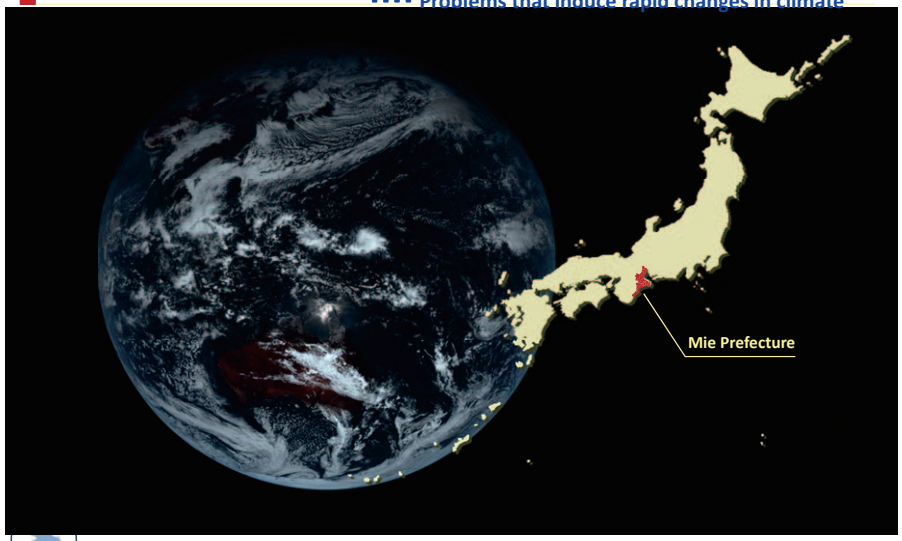
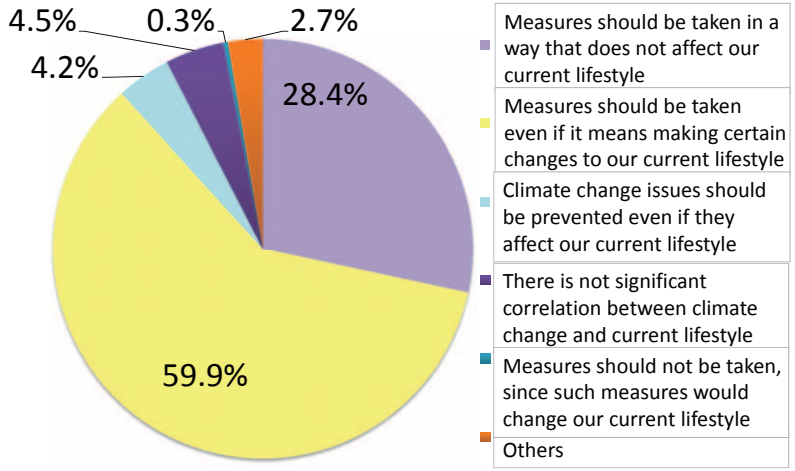
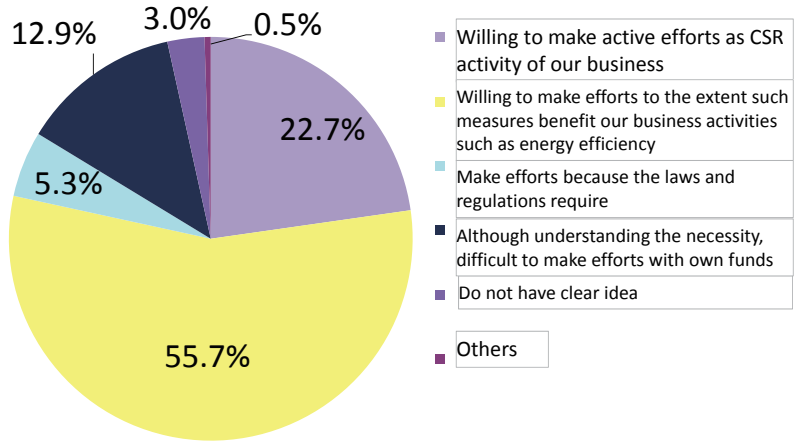


Image of earth captured by Japanese Satellite Himawari-8 (Source: Website of Japan Meteorological Agency: http://www.jma-net.go.jp/sat/data/web89/himawari8_first_image.html)

Awareness of Mie Prefecture residents on climate change issues



Awareness of business sectors on climate change issues



Discussion to formulate an adaptation policy (2012 – 2013)

Mie Prefecture Climate Change Adaptation policy (draft)

- **Basic information**

Background, objective and aim, significance of adaptation, domestic and international trends on adaptation, etc.

- **Climate change and its impact in Mie Prefecture**

Current status and future prediction of the climate and its effects , challenges facing Mie Prefecture, etc.

- **Direction of adaptation in Mie Prefecture**

Basic approach towards adaptation

(Relationship between the climate change and our lives, understanding scientific knowledge, addressing risks, integration of adaptation and mitigation, prioritization of measures, incorporation of adaptation into existing measures, coordination with relevant stakeholders, monitoring of implementation of adaptation measures and their effects etc.)

- **Timeframe for implementation, taking into account the nature of impact**

Set an implementation timeframe of adaptation measures considering effects and required time

- **Addressing uncertainty**

Adaptation measures' co-benefits, review of measures based on the latest projections of climate and its impacts

Coordination with relevant sections and sharing awareness

[Areas subject to study and analysis]

(1) Food
(2) Water environment and resources
(3) Natural ecosystem
(4) Disaster and coastal damage
(5) Health
(6) Lifestyle culture and industry

▼ Relevant sections in the prefectural office
◎ Disaster Prevention
◎ Strategic Planning
◎ General Affairs
◎ Health and Welfare
◎ Environmental and Social Affairs
◎ Regional Coordination
◎ Agriculture, Forestry and Fisheries
◎ Employment and Economic Affairs
◎ Prefectural Land Development
◎ Mie Prefecture Public Utilities Agency
◎ Secretariat of Education Committee

- Sharing awareness
  - Information provision by weather observatory and prefectural research institutions
- Participation: **36** sections from the governor's bureau, Public Utilities Agency and Education Committee, **6** research institutions, weather observatory, etc. (**54** participants)

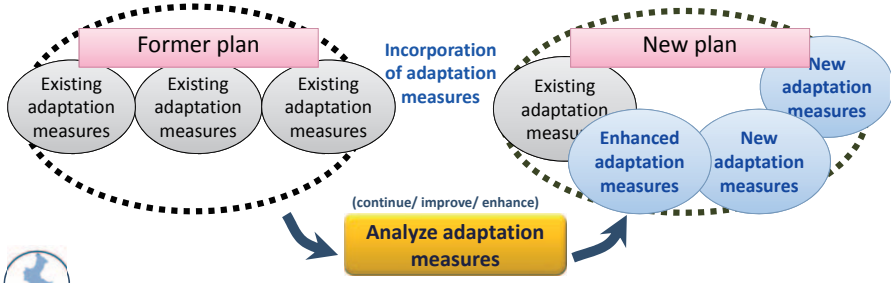
Questionnaire on awareness towards climate change issues from various sections of prefectural office（2015）

Sector	Extremely concerned	Highly concerned	Slightly concerned	Less concerned	Total
Water and landslide disasters	2	3	2		7
Water resources (drought/water quality)		7	2	2	11
Natural ecosystem (land area)		1			1
Natural ecosystem (water area)		1			1
Agriculture and husbandry		2			2
Heat stroke		1	1		2
Infectious disease		1	1		2

Promotion of adaptation measures

- **Identify the plans and measures that can be adaptation measures, and continue these measures in the future plans that will be developed by each sector**
- **Consider the relationship between various plans/measures and adaptation measures**
- **Incorporate newly-required adaptation measures into related plans/measures.**

Relationship between various plans/ measures and adaptation measures



Procedures to analyze climate change adaptation measures

1. Analysis of potential impact in future

Existing literatures

Simple estimation tool

- (1) Identify current status and future predictions of the climate
- (2) Identify effects already observed in Mie prefecture
- Interview surveys in relevant sections
- (3) Estimate the potential impact in Mie prefecture

2. Analysis of vulnerability

- (1) Identify sensitivity to impact in Mie prefecture
- (2) Identify resilience against impacts in Mie prefecture
- Interview surveys in relevant sections
- (3) Estimate vulnerability in Mie prefecture

4. Analysis of monitoring indicators

3. Estimation of the scale of damage
- Estimate overall future impacts
- Identify priority issues

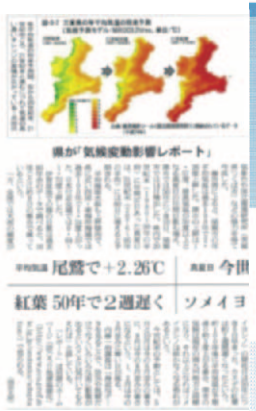
Expert advice

Issues/ lessons learned:
Lack of objectiveness in the summary of sensitivity (level of impact) and resilience (resilience to the impact)

Mie Prefecture Climate Change Impact Report 2014

Compiled a report focusing on regional-level "changes in climate" and "impact caused by the climate" with cooperation of Tsu Local Meteorological Observatory and National Institute for Environmental Studies (NIES).

Workshop events on Mie Prefecture Climate Change Impact Report 2014



Asahi Newspaper, Oct. 21, 2014

Lecture workshops for public

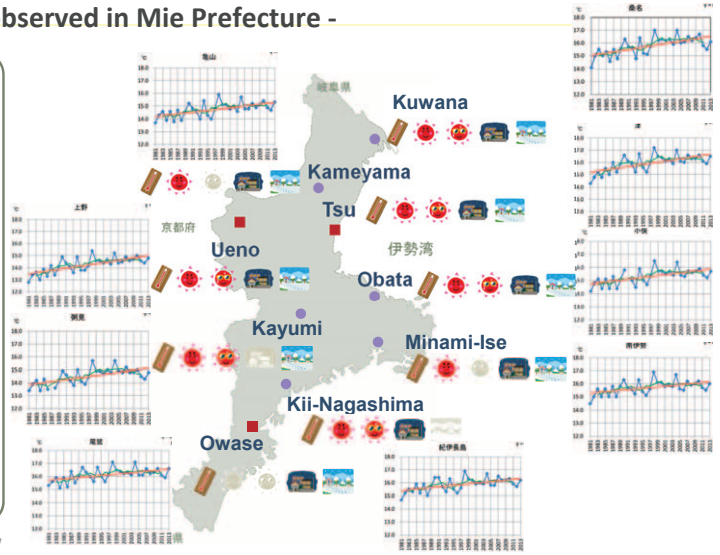
Mainichi Newspaper Nov. 4, 2014

Yomiuri Newspaper, Oct. 25, 2014

Changing climate in Mie prefecture
- Changes observed in Mie Prefecture -

- Average annual temperature
- Max. temperatures reaching higher than 30˚C
- Extremely hot days (35˚C over)
- Nights with outdoor temperatures not falling below 25˚C
- Days with min. temperatures falling below 0˚C

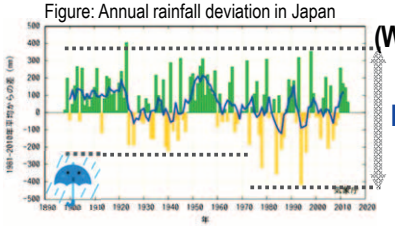
*Items colored in grey show significant changes in trend were not observed



Source: created based on data provided by Tsu Local Meteorological Observatory

Changing climate in Mie prefecture - Change in precipitation-

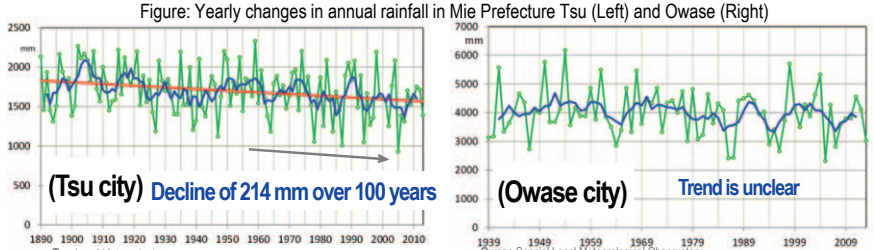
Figure: Annual rainfall deviation in Japan



(Whole Japan)

Increased fluctuation

Figure: Yearly changes in annual rainfall in Mie Prefecture Tsu (Left) and Owase (Right)

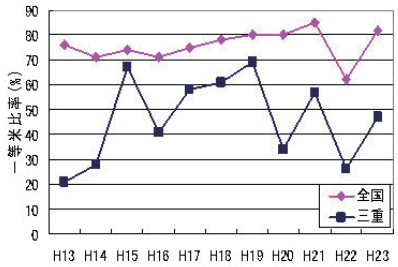


Source: (Upper Fig.) Climate Change Monitoring Report 2013 (Jun. 2014, JMA)
(Lower left and right Fig.) data provided by Tsu Local Meteorological Observatory

Agricultural products affected by high temperature in summer season

Figure: Trend in share of grade 1 rice

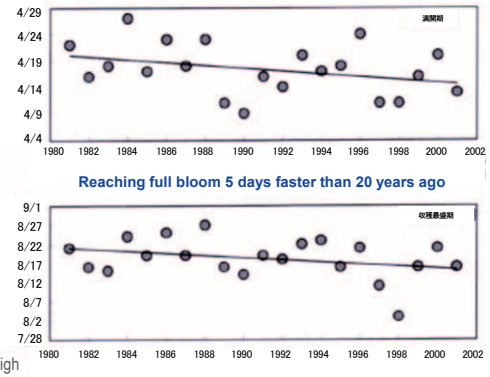
(Rice)



(rice plant suffering white immature grains due to high temperature)

(Pear)

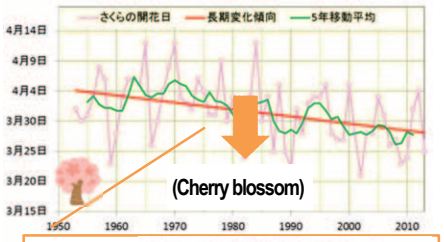
Figure: Changes in full blooming period and harvest heyday of pear



Source: (left figure) "Changes in agriculture and forestry in Mie Prefecture 2011" (1999~2011) (Agriculture, Forestry and Fishery Department, Mie Prefecture)
(right figure) "Brief report on agricultural technology No.58 ""impact of global warming found in unexpected places"" (Mie Prefecture Agricultural Research Institute)

Changes in blooming and autumn-coloration dates

Figure: Changes in cherry (Yoshino cherry) flowering date in Tsu (1953~2013)



Cherry blossoms starting to flower about 6 days earlier than 50 years ago

Around 50 years ago, cherry flowering used to start at the same timing as present flowering in Fukui, Toyama and Kanazawa (April 3~5)

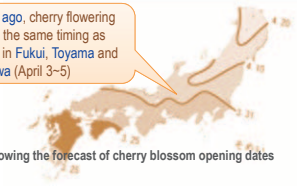
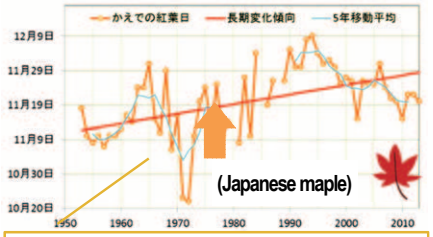


Figure: Diagram showing the forecast of cherry blossom opening dates

Figure: Changes in autumn tints date of maple (Japanese maple) in Tsu (1953-2013)



Maple starting to tint about 14 days later than 50 years ago

Around 50 years ago, leaves used to tint at the same timing as present tinting in Niigata and Fukushima (November 12~13)

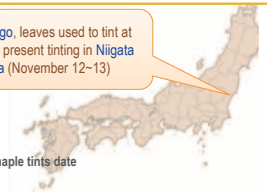


Figure: Changes in maple tints date

Source: (upper left) date provided by Tsu Local Meteorological Observatory, (lower left) Meteorological Agency of Japan website (information on phonological observation)
Source: (upper right figure) data provided by Tsu Local Meteorological Observatory

Projected future
- Changes in annual average temperature in Mie Prefecture -

Conditions used for future climate projection:

Temperature projections across Japan at the end of the 21st century vary depending on the future scenario.

RCP2.6 Scenario

<Less GHG emissions>
Increase by **1.1 ˚C** compared to the end of the 20th century [1)]

SRES A1B Scenario

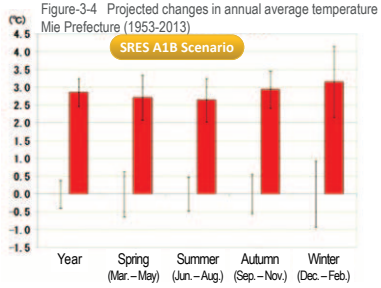
<More GHG emissions>
Increase by **3.0 ˚C** compared to the end of the 20th century [2)]

RCP8.5 Scenario

<Extremely large amounts of GHG emissions>
Increase by **4.4 ˚C** compared to the end of the 20th century [1)]

Source: 1) "Results of considering uncertainties of climate change prediction in Japan" (December 2014, Japan Meteorological Agency, Ministry of Environment)
2) "Global Warming Projection Information Vol.8" (JMA, 2011)

Figure-3-4 Projected changes in annual average temperature in Mie Prefecture (1953-2013)



Red: Difference in days between the averages of "1980 to 1999"and "2076 to 2095"
Black: Standard deviation of inter-annual fluctuation (left: present climate. Right: future climate)

In Global Warming Projection of Japan Vol.8, numerical projections were made based on the IPCC scenario issued in 2000 (SRES A1B (assuming continued rapid economic growth, with declining regional gaps as a result of advanced globalization, and a futuristic society where new technologies are rapidly spreading, focusing on balance among all energy sources)).

Annual average temperature up about 3˚C

	The end of the 20th century	The end of the 21st century
Tsu	Approx. 16.3˚C	Approx.19.3˚C
Owase	Approx.16.4˚C	Approx.19.4˚C

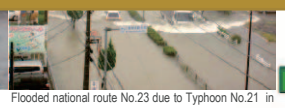
Source: (upper right figure, lower right chart) data provided by Tsu Local Meteorological Observatory

Projected future

- How much a super typhoon becomes more powerful ? -

Past super typhoons:
- Isewan Typhoon (Vera)‥‥‥895hPa, 73m/s
- Daini Muroto Typhoon (Nancy)‥890hPa, 75m/s
- Kanogawa Typhoon (Ida)‥‥‥877hPa, 80m/s
- Typhoon Tip in 1979‥‥870hPa, 87m/s

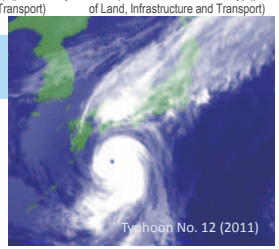
Kumano river overflow due to Typhoon No.12 in 2011 (Kihou town, Minamimuro-gun) (provided by: Ministry of Land, Infrastructure and Transport)



Flooded national route No.23 due to Typhoon No.21 in 2004 (Shimazaki town, Tsu City) (provided by: Ministry of Land, Infrastructure and Transport)

Comment made by Japan Weather Association on September 7, 2011

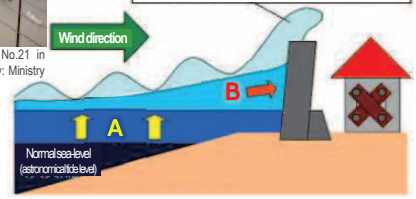
"We have come to an era where heavy rain with a total rainfall of 2000mm is no longer categorized as an "unexpected" event"



Typhoons & low atm. pressure

High tides and drifts caused by unprecedented levels of decrease in pressure and strong wind

High tide brings waves to higher level than normal conidtion, inducing larger damages

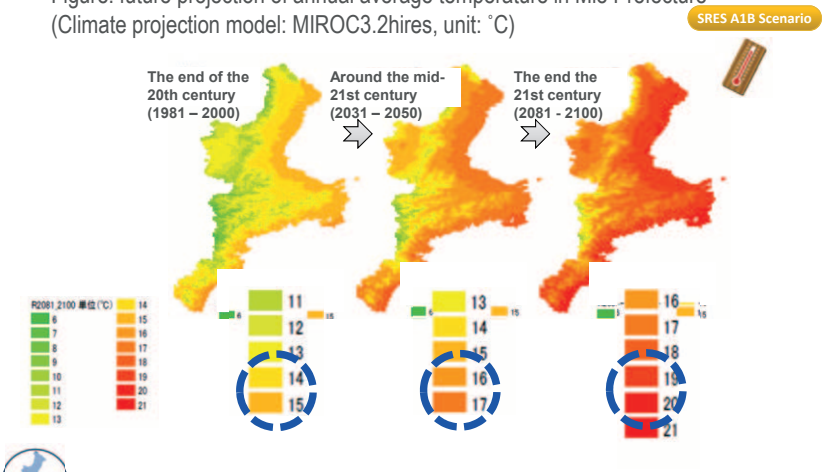


Source: (upper left image) Ministry of Land, Infrastructure and Transport, (center image) "Abnormal weather report 2005" (issued by Meteorological Agency in 2005)
Source: (lower left image), right figure) from Meteorological Agency website

Projected future

- Distribution of annual average temperature in Mie Prefecture -

Figure: future projection of annual average temperature in Mie Prefecture (Climate projection model: MIROC3.2hires, unit: ˚C)

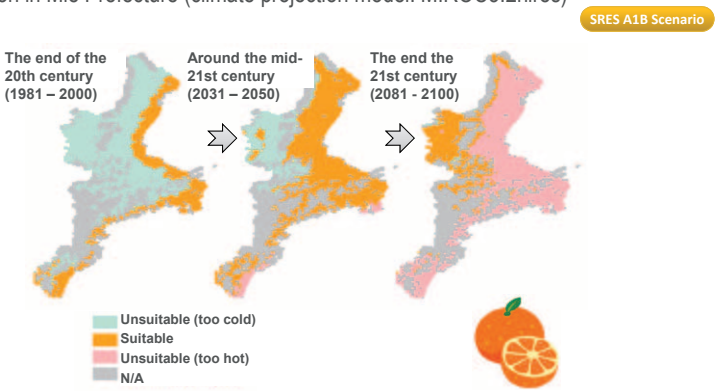


Source: Data stored in the simple estimation tool (National Institute for Environmental Studies) (2012)

Projected future

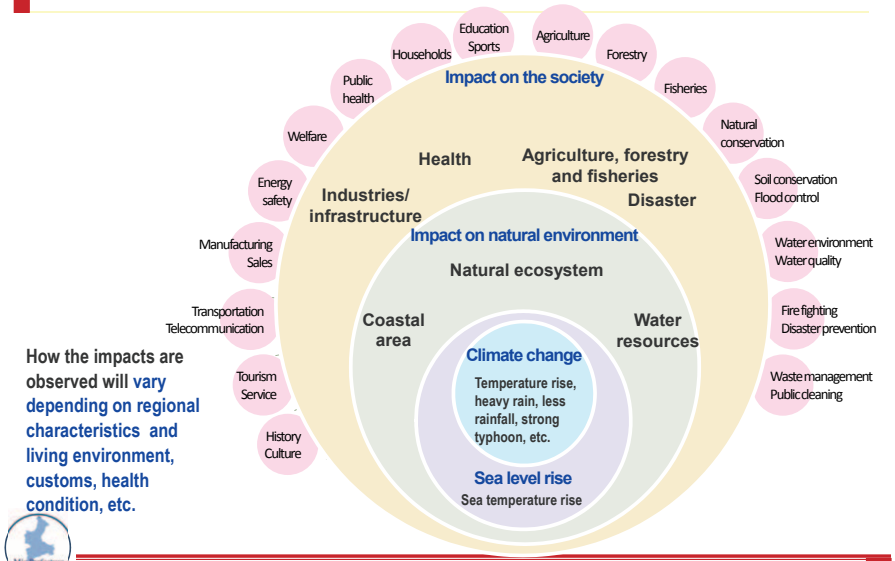
- Projection on places suitable for orange production in Mie Prefecture -

Figure: Projection of areas suitable or unsuitable for orange production in Mie Prefecture (climate projection model: MIROC3.2hires)



Source: Data stored in the simple estimation tool (National Institute for Environmental Studies) (2012)

Climate change brings various impacts



How the impacts are observed will vary depending on regional characteristics and living environment, customs, health condition, etc.

Source: created with references from "Wise response to climate change" (Global warming impact/response research committee, Ministry of Environment 2008), " STOP THE global warming 2005" (Ministry of Environment 2005), "Global warming "Impact on Japan"" (Ministry of Environment, environmental study comprehensive promotion fund, strategic research and development area S-8 2014 Report) (March 2014)

To alleviate the impact of climate change

緩和

- Energy-saving equipment
- Environment Management system

M-EMS

Measures by business sector

- Choosing energy-saving products
- Eco-friendly lifestyle

Consumption & household

- Seminars/events

Promotion of education/learning about climate change countermeasures

- Improving insulation performance
- Energy management

Buildings

- Public transportation
- Eco driving

Automobile/transportation

- Forest management
- Carbon offsetting

Enhancing forest management/conservation

- Reducing waste
- Renewable energy

Effective use of resources

Responding to the impact by climate change

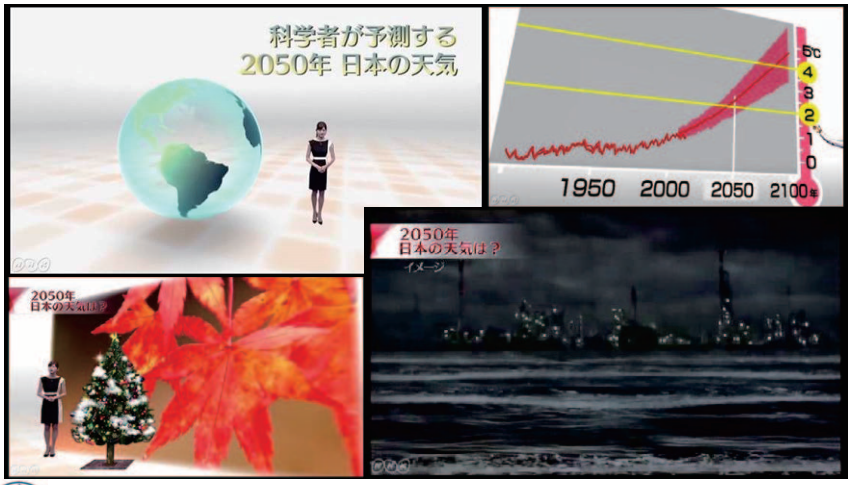
適応

What is "adaptation"?

Ways to respond (adapt)	Health	Industry/infrastructure	Agriculture, forestry and fisheries	Disaster
Impact → Resist and project from impact	Sunshade, air conditioner, water intake, etc.	Enhancing refrigerating/cooling systems, preserving functioning conditions for equipment, etc.	Development/ conversion of varieties, environmental conservation of cultivated land, etc.	Land preservation, installation of pump truck, water-resistant building, etc.
Impact → Avoid impact	Moving to cool locations, using shelters, etc.	Relocation of offices, installation of stand-by equipment, installation of emergency equipment, decision- making for business discontinuation, etc.	Relocation of breeding space, changes of timing for seeding/ re-planting, etc.	Strengthening forecast/ warning, evacuation assistance, disaster preparedness, building regulations, etc.
Impact → Accept impact Enhance resilience	Enhancing body temperature adjustment function, taking a proactive rest and treatment, anti-obesity, etc.	Diversification of supply sources, dispersing bases, development of recovery plan, etc.	Cultivation of multiple varieties, develop recovery plan of cultivated land	Disaster recovery, infectious disease prevention, waste treatment, etc.

Projected future

– Pojrected weather forecast show for September 23, *2050* -



Source: NHK Eco Channel "Weather Forecast of Japan in 2050"

Mie Prefecture climate change lecture workshop

- in coordination with the meteorological observatory -

緩和 適応

Mie Prefecture climate change lecture meeting Nov. 6, 2014

(at Mie Prefecture Human Rights Center)

Lecturer: Dr. Koji Ishihara
Senior Researcher
Climate Prediction Division
Global Environment and Marine Department
Japan Meteorological Agency

Enterprise | Administration | Education | General public

174 participants

Adaptation seminars for the public

Start from common issues such as extreme weather, infectious diseases.
Think about the impact and our life and preparation for climate change.

Mr. Eiichi Ishigaki, Deputy Governor of Mie prefecture
"The issue of global warming is one that changes the climate and affects our environment."

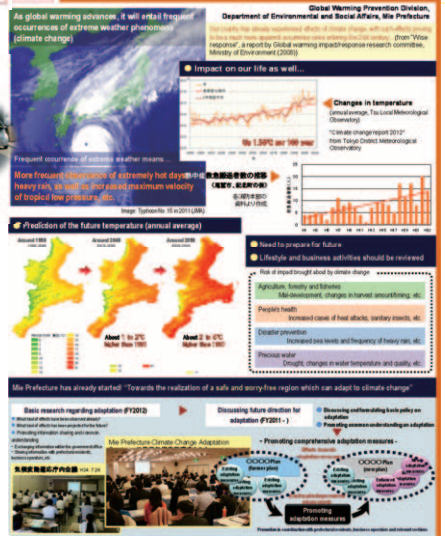
Education through events

Changing climate and preparing for the future

General public | Parents and children

Children eco-fair (Yokkaichi City) Jul. 20-21, 2013

General public | Parents and children



Start for our future, start for the future generations

1.
In order to prevent global warming and to mitigate climate change, it is necessary to reduce greenhouse gas emissions and increase sink of CO_2 by proper forest management.

2.
It is necessary to incorporate risk management perspective, having a clear understanding of climate change and its impact to our life.

Efforts towards the future:

Identify and analyze the impacts (and their significance & urgency) which will be observed in each sector, based on the future climate change projection in Mie Prefecture

All people in Mie prefecture should think and take actions with understanding the impacts of global warming and climate change that is already taking place

Thank you very much for your attention.

Key factors for integrating adaptation into development strategies and plans in Southeast Asia

Regional Workshop for Capacity Development on Low Carbon and Resilient Society in Southeast Asian countries
23rd June, 2015,
Bangkok, Thailand

Puja Sawhney
Coordinator of the Regional Hub for Asia Pacific Adaptation Network (APAN),
Institute for Global Environmental Strategies (IGES), Bangkok Regional Center

Outline

- Background
- Climate Change trends
- SE Asia and Climate Change Adaptation
- What is required
- Conclusion

SE Asia and Economic Development

- Since many SEA countries are experiencing rapid economic growth, recognition of the impacts of CC on development is crucial.
- Several SEA countries have incorporated CC in their national development plans.

SE Asia Climate Change Trends

- Southeast Asia (SEA) has been identified as one of the highly vulnerable regions to the impacts of climate change due to geographical, geological, economic, and social factors.
- The impacts of climate change have been evident in incidences of super typhoons, drought, heat waves, sea level rise, salt water intrusion, forest fires among others.

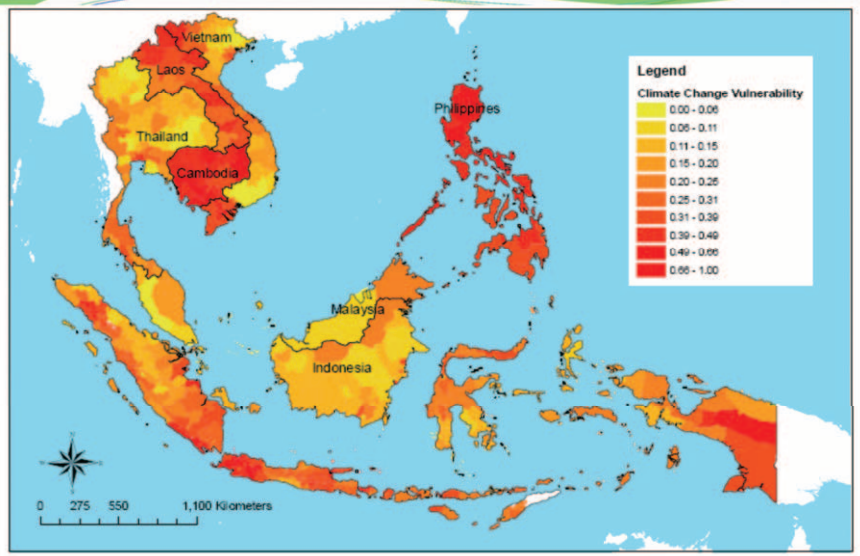


Figure . Climate change vulnerability of the Southeast Asian region.
Source: Yusuf and Francisco (2009)

SE Asia and Climate Change Adaptation (CCA)

- Being signatories of the UNFCCC, all eleven countries in the sub-region recognise the relevance of adapting to climate change and have started to take action.
  - Responsible bodies have been established,
  - Policies and strategies/plans formulated,
  - CCA programmes and projects are being implemented.

SE Asia and Climate Change Adaptation (CCA)

- In general, CCA is progressing in the region, but the level of advancement in terms of translating CCA into policy and action varies per country depending on:
  - vulnerability levels,
  - capacities,
  - priorities,
  - resources, and
  - political will

What is required

- Prioritising adaptation
- Relook at the national development plans/ 5 year plans
- Promoting climate proofing of existing infrastructure project
- Incorporation of climate change in the implemented and future investment projects (pipeline projects)
- Co-benefits, i.e. adoption of 'no regrets' strategies or those initiatives which will also provide adaptation benefits of vice-versa, overlapping with development priorities

Integrating CCA in Development Plans

- Providing enabling environment for incorporation of adaptation into existing plans and policies
- Establishment and maintenance of CCA M&E to ensure that CCA measures implemented are appropriate and relevant to target stakeholders and the overall development goals of the country.
  - Where existing, build on existing M&E systems at the national level and identify areas where CCA can be incorporated and link with existing national development plans.
- Regular updates of the tools and methodologies used to integrate CCA into development planning to include emerging issues and trends.

Integrating CCA in Development Plans

- Need for coordinated efforts among the planning ministry/ commission / department and line minsters and agencies responsible for CCA.
  - lack of coordination can lead to fragmented initiatives, turf issues and overlapping responsibilities.

Conclusion

- Analysis reveals that there remains a huge potential to enhance CCA in the sub-region,
  - Challenges and barriers to be addressed include: proper implementation of climate policies and laws, poor coordination among relevant ministries,
  - Inadequate mechanisms to generate alternative sources of climate financing,
  - Economic priorities,
  - limited access to information especially at the level of local communities, and
  - A lack of systems for monitoring and evaluation of CCA programs and projects at the national level.

Conclusion

- Although it is ideal for countries to aim for enhanced adaptation options to reach their respective adaptation goals, countries would face potential constraints that include cost effectiveness of the adaptation initiatives, the level of certainty of the risks involved, and the weight of other development priorities, among others.
  - CCA issues that the countries need to overcome including financial, technical, and institutional barriers.

Conclusion

- Possibility of setting up a climate change unit in the planning ministry/ commission/ department.
- CCA should be viewed as an approach to poverty alleviation, social equity, and improved quality of life-
  - help achieve development goals.

Thank you!

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