4.5 Third ASEAN Workshop (30 March - 1 April 2016)

Sustainable Development Goals and Climate Change

Cassie Flynn
Climate Change Advisor, UNDP
30 March 2016
Climate Change International Technical and Training Centre

UNDP

- UNDP has a presence in over 170 countries and territories and a portfolio of over $2.3 billion in mitigation and adaptation programming
- Support for all mechanisms of the UNFCCC, partnering with GCF, GEF, Adaptation Fund and numerous multilateral and bilateral partners
- Focuses on integrated climate strategies, cross-sectoral climate resilient livelihoods, promoting access to clean and affordable energy services, promoting low emission and climate resilient urban and transport infrastructure and access to new finance mechanisms.

Topics

- How the SDGs were developed and where they stand today
- Climate Change
- Road Ahead

Game Change:
Global Dialogues of 2015

Agenda 2030 and SDGs:

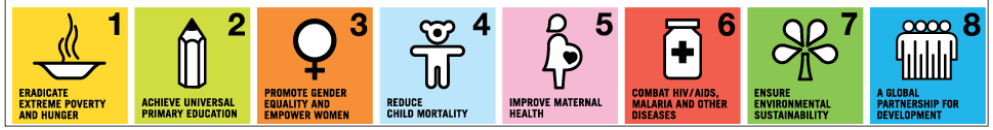
World Leaders committed to 17 Global Goals to achieve in the next 15 years

SDGs

- 17 Goals have 169 targets
- Promote poverty eradication and sustainable development
  - Economic growth
  - Social inclusion
  - Environmental protection

Building on the MDGs

- MDGs adopted in 2000
- Achievements include:
  - Number of people living on less than $1.25 per day was dropped in half
  - Number of kids not in school dropped by almost half
  - People getting treatment for HIV increased by 15x
  - Child mortality down by almost half



Work is unfinished

- Over 800 million people are living on less than $1.25 per day
- 1 in 9 people are hungry each night
- Deforestation is alarmingly high, oceans becoming more acidic
- 1 in every 6 adults is illiterate (2/3 are women)
- Climate change

SDGs

The new SDGs, and the broader sustainability agenda, go much further than the MDGs, addressing the root causes of poverty and the universal need for development that works for all people.

SDG 17 - Partnerships

Means of Implementation addressed in Goal 17 – finance, technology, capacity building and trade

Climate Change

Climate Change (Goal 13)

- Strengthen resilience to climate-related hazards and natural disasters
- Integrate climate change measures into national policies, strategies and planning
- Improve education, awareness-raising and human and institutional capacity
- Implement the commitment of mobilizing jointly $100 billion annually by 2020 from all sources and fully operationalize the Green Climate Fund through its capitalization as soon as possible
- Promote mechanisms for raising capacity in LDCs and SIDS, including focusing on women, youth and local and marginalized communities

** Acknowledging that the United Nations Framework Convention on Climate Change is the primary international, intergovernmental forum for negotiating the global response to climate change.*

Energy (Goal 7)

- By 2030, ensure universal access to affordable, reliable and modern energy services
- By 2030, increase substantially the share of renewable energy in the global energy mix
- By 2030, double the global rate of improvement in energy efficiency
- By 2030, enhance international cooperation to facilitate access to clean energy research and technology
- By 2030, expand infrastructure and upgrade technology for supplying modern and sustainable energy services for all in developing countries, in particular LDCs, SIDS, and land-locked developing countries

The Road Ahead

Two Key Questions:

1. **How can we implement the SDGs in order to achieve the targets the world has set out for ourselves?**

2. **On climate change, how can we bring the SDGs and Paris Agreement together?**

PARIS2015
UN CLIMATE CHANGE CONFERENCE
COP21·CMP11

Level		Examples
Global Level	→	• Continued negotiations under the UNFCCC • Global working groups (e.g. indicators for the SDGs) • Global programming
Regional Level	→	• Regional cooperation and partnerships • Regional Programming, including for SIDS and LDCs, that can be scaled up
National Level	→	• New opportunities with INDCs/NDCs • Programming such as NAMAs, NAPs, LEDS, etc. • Mainstreaming climate change into development

INDCs

As part of the Paris Agreement, all countries – large and small – committed to taking action

189 of 196 countries have submitted INDCs, representing over 98% of global emissions

→ INDCs/NDCs represent a clear pathway to achieve emissions reductions and increasing resilience

From Aspiration to Action

Countries must have support to achieve their goals:

- ✓ Technical
- ✓ Financial
- ✓ Capacity Building

Thank you

Cassie Flynn

Climate Change Advisor

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ITC
Climate Change International Technical and Training Center
: Role as a regional capacity development center to support Southeast Asian countries integration
TGO
Thailand Greenhouse Gas Management Organization (Public Organization)


Well Below 2 Degrees


UNITED NATIONS 'S SUSTAINABLE DEVELOPMENT GOALS
13
GOAL 13: TAKE URGENT ACTION TO COMBAT CLIMATE CHANGE AND ITS IMPACTS
"STABILIZE GREENHOUSE GAS CONCENTRATIONS IN THE ATMOSPHERE AT A LEVEL THAT WOULD PREVENT DANGEROUS ANTHROPOGENIC INTERFERENCE WITH THE CLIMATE SYSTEM"


"ONE VISION, ONE IDENTITY, ONE COMMUNITY"
asean
THE ASEAN COMMUNITY BLUEPRINT
SOCIO-CULTURAL COMMUNITY BLUEPRINT

NATIONAL POLICY

- THE 11TH NATIONAL ECONOMIC AND SOCIAL DEVELOPMENT PLAN (2010-2016)
- THAILAND CLIMATE CHANGE MASTER PLAN (2015-2050)
- MINISTRY OF NATURAL RESOURCES AND ENVIRONMENT STRATEGY (2015-2021)
- THAILAND GREENHOUSE GAS MANAGEMENT ORGANIZATION

CITC IS ESTABLISHED

CLIMATE CHANGE INTERNATIONAL TECHNICAL AND TRAINING CENTER (CITC) IS :

- ESTABLISHED BY THAILAND GREENHOUSE GAS MANAGEMENT ORGANIZATION (TGO)
- A FLAGSHIP PROJECT BY THE MINISTRY OF NATURAL RESOURCES AND ENVIRONMENT, THAILAND
- OFFICIALLY LAUNCHED ON MAY 8, 2014
- SUPPORTED BY JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)

TRAINING

VISION

BECOME A LEADING CLIMATE CHANGE TRAINING CENTER IN ASEAN

MISSION

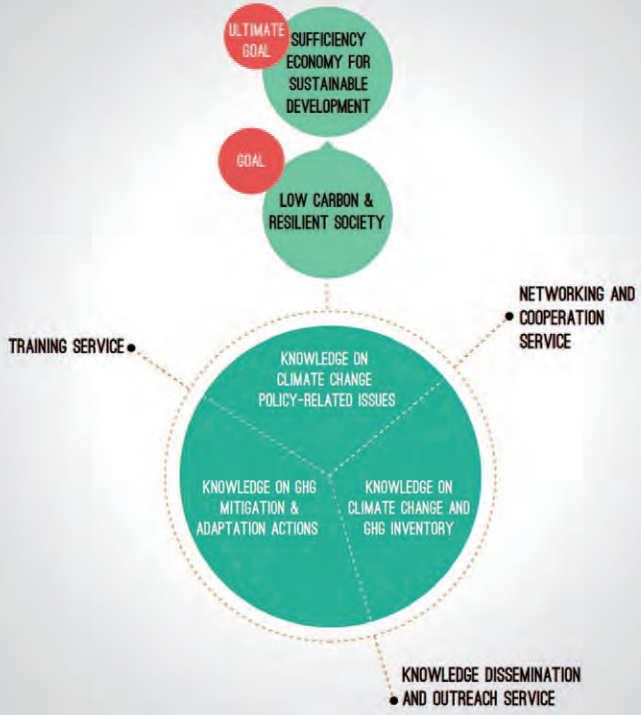
PROVIDE CAPACITY DEVELOPMENT ON CLIMATE CHANGE MITIGATION AND ADAPTATION

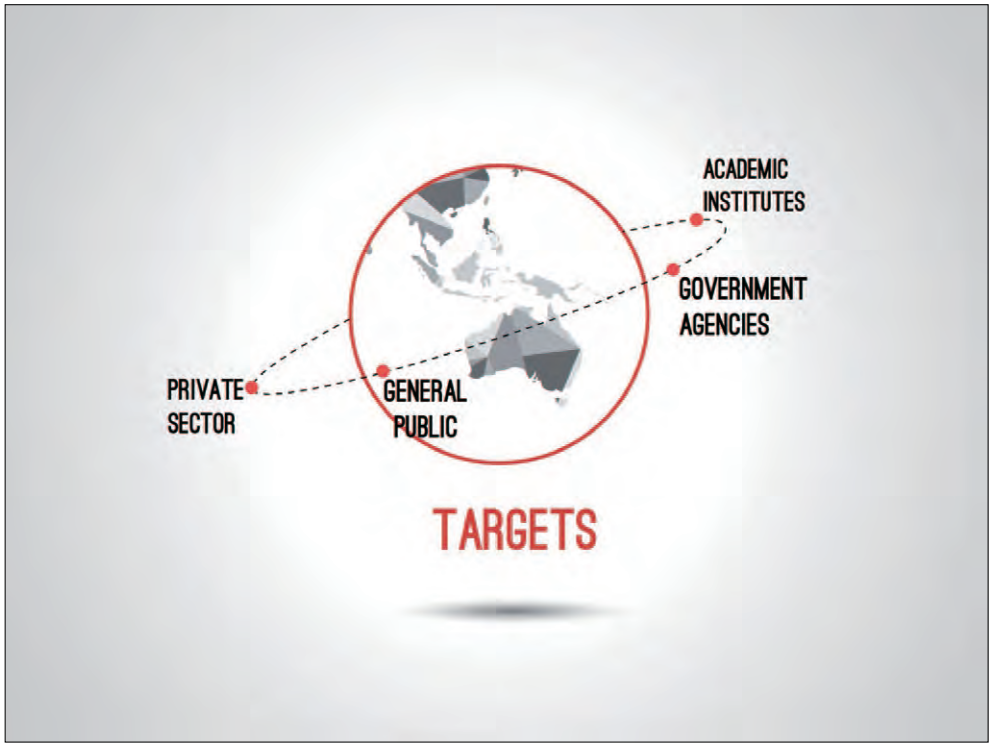
PROMOTE CLIMATE CHANGE NETWORKING PLATFORM

PROMOTE KNOWLEDGE DISSEMINATION ON CLIMATE CHANGE MITIGATION AND ADAPTATION

KNOWLEDGE HUB & DISSEMINATION

NETWORKING & COLLABORATION





2015-2016 ACHIEVEMENTS
TRAINING PROGRAM

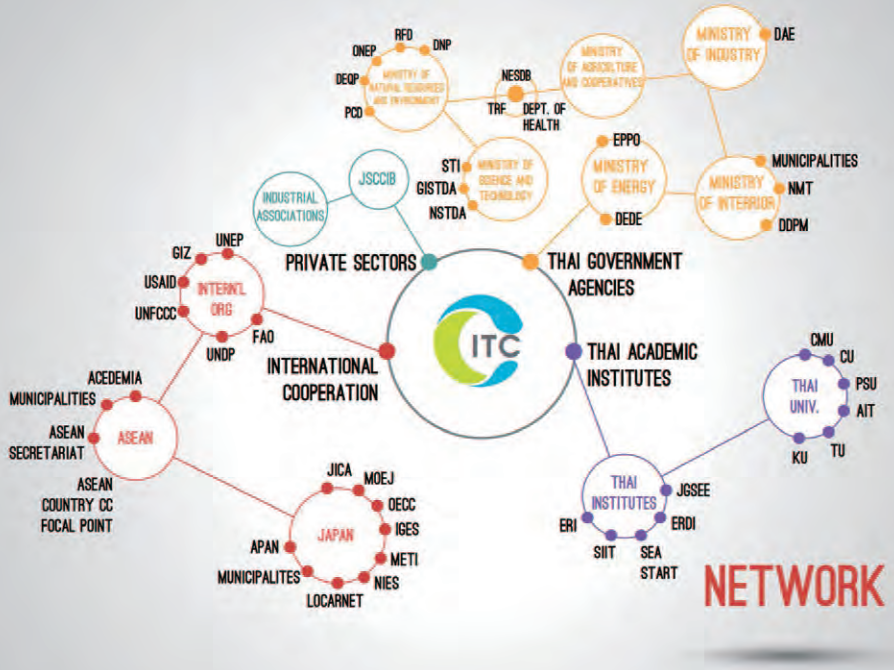
TRAINEES 482

TTT 107

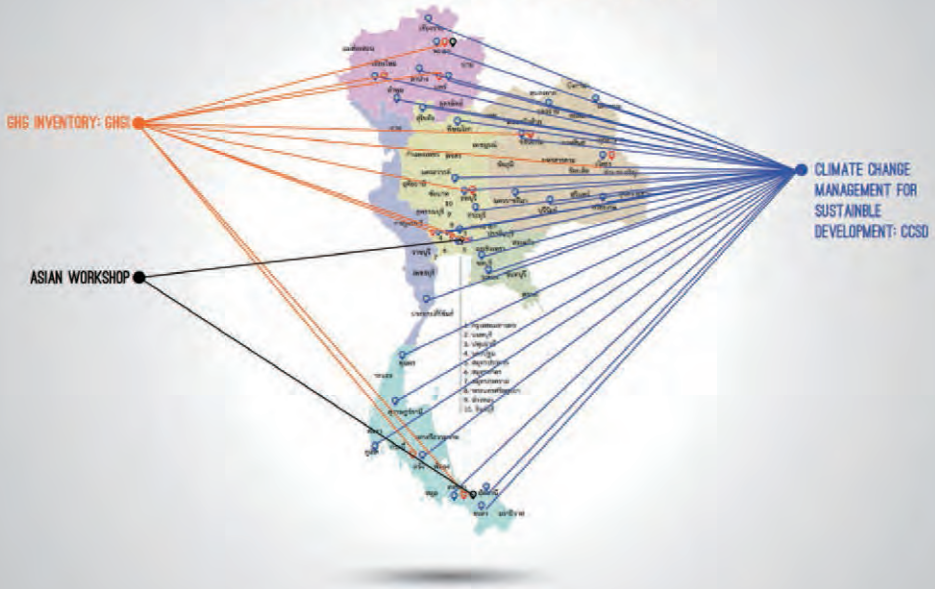
- GREENHOUSE GAS INVENTORY (GHGI)
- LOW CARBON AND RESILIENT SOCIETY DEVELOPMENT (LCRS)
- CLIMATE CHANGE MANAGEMENT FOR SUSTAINABLE DEVELOPMENT (CCSD)
- CLIMATE CHANGE ECONOMICS (CCE)
- MITIGATION MECHANISM (MM)

ACHIEVEMENTS - TRAINING PROGRAM
DOMESTIC AND REGIONAL

CENTRAL GOVERNMENTS	LOCAL GOVERNMENTS	ACADEMIC INSTITUTIONS	PRIVATE AGENCIES
54	39	18	46
AGENCIES			



CITC ALUMNI NETWORK



CITC NETWORK

KNOWLEDGE DISSEMINATION & OUTREACH

WWW.CITC.IN.TH CLIMATE CHANGE CHANNEL EXHIBITION

KNOWLEDGE DISSEMINATION & OUTREACH

COP 20-21




UPCOMING ACTIVITIES

GHG INVENTORY (GHGI)

- CENTRAL GOVERNMENT - PRACTITIONERS
- GOVERNMENT AGENCIES - PRACTITIONERS (ASEAN)

CLIMATE CHANGE ECONOMICS (CCE)

LOCAL GOVERNMENT, CENTRAL GOVERNMENT, AND ACADEMIC INSTITUTIONS

CLIMATE CHANGE MANAGEMENT FOR SUSTAINABLE DEVELOPMENT (CCSD)

GOVERNMENT AGENCIES (ASEAN)

CLIMATE FINANCE (CF)

CENTRAL GOVERNMENT PRIVATE AGENCIES (ASEAN)

MITIGATION MECHANISM (MM)

- LOCAL GOVERNMENT, CENTRAL GOVERNMENT, ACADEMIC INSTITUTIONS AND PRIVATE AGENCIES
- GOVERNMENT AGENCIES (ASEAN)

TRAIN THE TRAINERS (TTT)

320

THANK YOU

ASEAN 2025 : FORGING AHEAD TOGETHER

one vision, one identity, one community

ASEAN Community Vision 2025:

ASEAN Socio-Cultural Community (ASCC)

For Agenda 2.II.1

ASEAN 2025 : FORGING AHEAD TOGETHER

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Outline of Presentation

I. ASEAN Regional Context and ASCC 2025
II. Implementation Strategies
III. Environment Sector Priorities for 2016, Institutional Arrangements, Outcomes/Progress of Sectoral Programmes
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- *Charts the path for ASEAN Community building over the next ten years*
- *A roadmap for ASEAN to realise further consolidation, integration and stronger cohesiveness as a Community*

ASEAN 2025 : FORGING AHEAD TOGETHER

one vision, one identity, one community

- *Greater emphasis on the peoples of ASEAN and their well-being*
- *Enhance awareness of ASEAN and its Vision of a politically cohesive, economically integrated and socially responsible Community*
- *Engage all nationals of ASEAN Member States through effective and innovative platforms to promote commitment and identification with ASEAN policies and regional interests*
- *Ensure fundamental freedoms, human rights and better lives for all ASEAN peoples*

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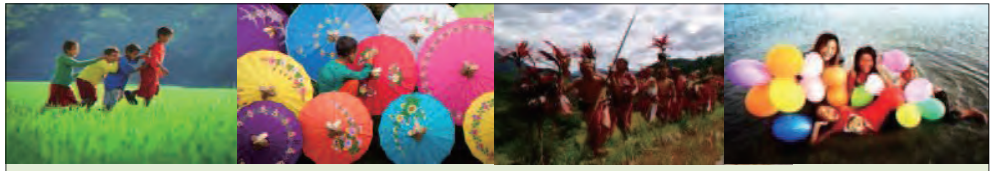
- *Strengthen capacity to deal with existing and emerging challenges while maintaining ASEAN centrality*
- *An outward-looking and global player*
- *Implement the ASEAN agenda while pursuing national aspirations which contribute to ASEAN Community building*
- *Strengthen ASEAN Organs and the ASEAN Secretariat*

ASEAN 2025

FORGING AHEAD TOGETHER

http://www.asean.org/news/asean-statement-communiques/item/kuala-lumpur-declaration-on-the-establishment-of-the-asean-community

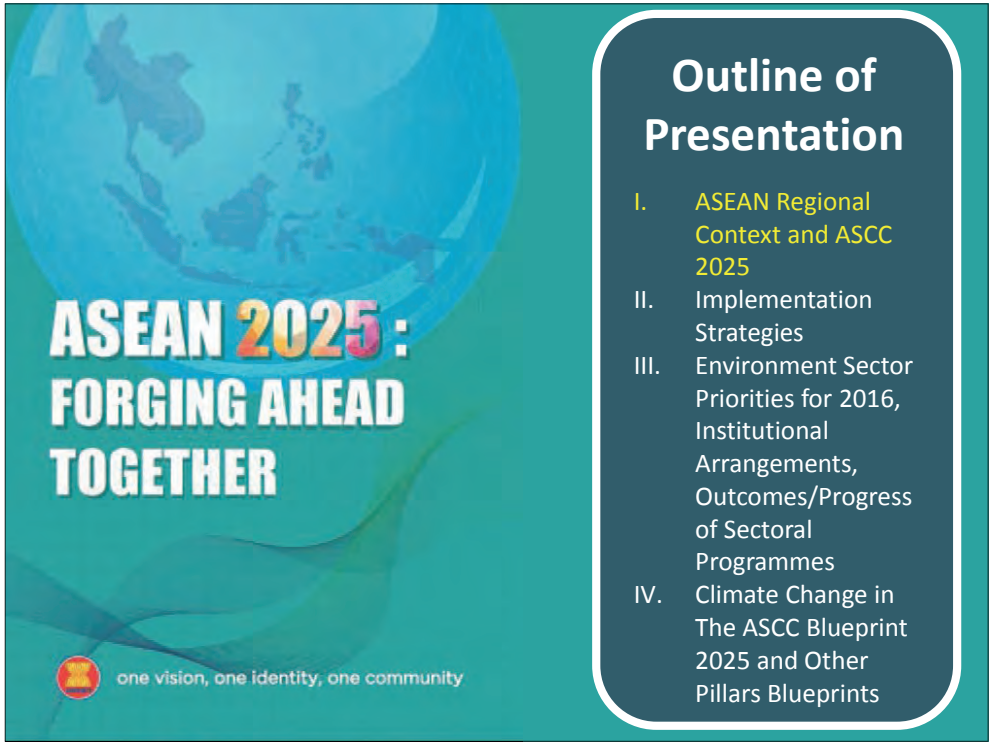


The ASEAN Socio-Cultural Community (ASCC) is committed to lifting the quality of life of its people by putting their welfare and well-being at the heart of its activities. To promote better quality of life for the peoples and their communities in ASEAN, the Member States cooperate on a wide range of areas such as:

- Culture and Information
- Education, Youth and Sports
- Social Welfare and Development
- Gender
- Labour
- Civil Service
- Rural Development and Poverty Eradication
- Environment
- Disaster Management and Humanitarian Assistance
- Health

Recent international frameworks and global discourses have informed the development of the ASCC Blueprint

Relevant SDG items for ASCC are shown in this slide ….



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The ASCC 2025 vision is for an ASEAN Community that engages and benefits the peoples and is inclusive, sustainable, resilient, and dynamic. It aims to realise 5 objectives..

1. 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
2. An inclusive community that promotes high quality of life, equitable access to opportunities for all and promotes and protects human rights of women, children, youths, the elderly/older persons, persons with disabilities, migrant workers, and vulnerable and marginalised groups
3. A sustainable community that promotes social development and environmental protection through effective mechanisms to meet the current and future needs of the peoples
4. 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
5. 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

The ASCC Blueprint comprises 5 Characteristics, with 18 Key Result Areas and corresponding 109 Strategic Measures

ASEAN Socio-Cultural Community (ASCC) Blueprint

5 CHARACTERISTICS

A. Engages and benefits the people
B. Inclusive
C. **Sustainable**
D. Resilient
E. Dynamic

18 KEY RESULT AREAS

109 STRATEGIC MEASURES

Key Result Areas

A Engages and benefits people

- Engaged Stakeholders in ASEAN processes
- Empowered People and Strengthened Institutions

B Inclusive

- Reducing Barriers
- Equitable Access for All
- Promotion and Protection of Human Rights

C Sustainable

- Conservation and Sustainable Management of Biodiversity and Natural Resources
- Environmentally Sustainable Cities
- Sustainable Climate
- Sustainable Consumption and Production

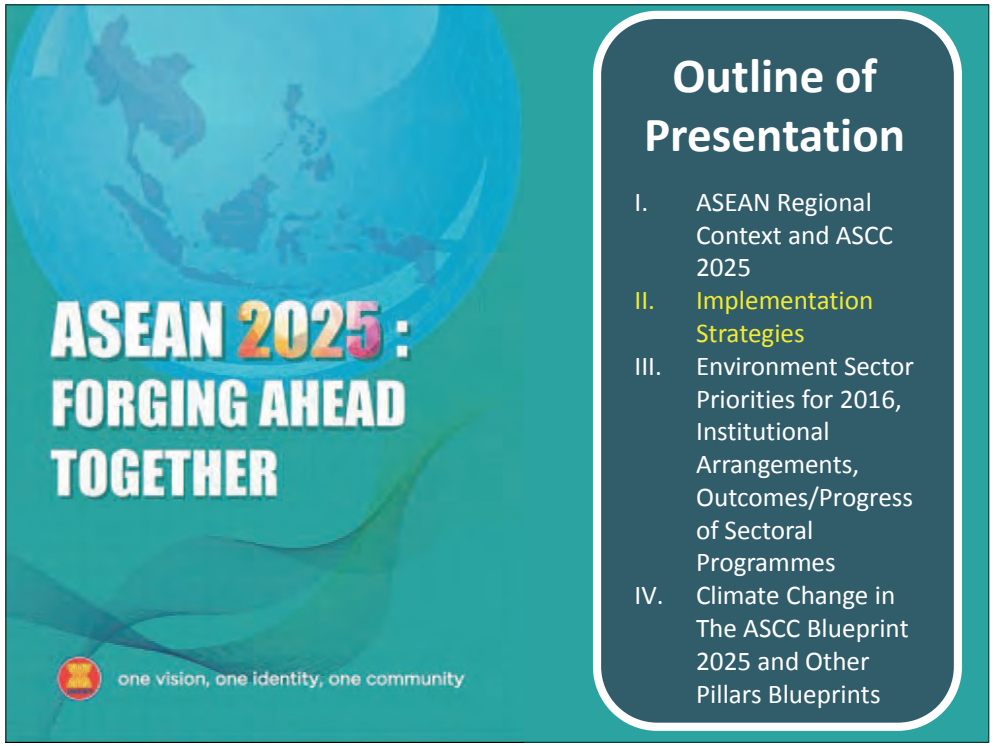
Key Result Areas

D Resilient

- A disaster resilient ASEAN that is able to anticipate, respond, cope, adapt, and build back better, faster and smarter
- A safer ASEAN that is able to respond to all health-related hazards including biological, chemical, and radio-nuclear, and emerging threats
- A climate adaptive ASEAN with enhanced institutional and human capacities to adapt to the impacts of climate change
- Strengthened social protection to reduce vulnerabilities in times of climate change-related crises, disasters and other environmental changes
- Enhanced and optimised financing systems, food, water, energy availability, and other social safety nets in times of crises by making resources more available, accessible, affordable and sustainable
- Endeavour towards a “Drug-Free” ASEAN

E Dynamic

- Towards an open and adaptive ASEAN
- Towards a creative, innovative and responsive ASEAN
- Engender a culture of entrepreneurship in ASEAN



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Implementation Strategies

The implementation of the ASCC Blueprint shall ……

1. Employ strategies and approaches that will maximise the role of ASEAN organs and sectoral bodies, encourage stakeholder engagement, and enhance capacity building mechanisms in cascading relevant knowledge to the peoples of ASEAN
2. Promote the provision of platforms for relevant stakeholders and groups to fully participate in sectoral bodies' and other ASEAN organs' programmes, meetings and other initiatives, as well as the opportunities for partnerships and collaborations
3. Promote public private partnerships (PPP), social entrepreneurship and corporate social responsibility (CSR) for inclusive and sustainable socio-cultural development
4. Develop capacity-building mechanisms for relevant stakeholders in ASCC who are able to cascade the relevant knowledge down to the peoples of ASEAN
5. Intensify strategies, work programmes and initiatives of sectoral bodies under the ASCC pillar to narrow the development gap

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Implementation and Review

Implementation and Review

Oversight & coordination of cross-pillar cross-sectoral matters:
- ASCC Council w/ SOCA
- ASEAN Secretariat's support through SOCCOM

Sectoral Bodies translate the Strategic Measures into specific action lines or programmes, projects and activities as part of their respective work plans

Review & assessment of ASCC Blueprint 2025 shall utilise existing M&E System consisting of
- Implementation-focused monitoring system
- ASCC Scorecard

It shall build on the lessons learned and recommendations of the ASCC Scorecard Assessment Results, and reflected in a results framework, which will be developed

A Mid-Term Evaluation covering 2016-2020, and End-of-Term Evaluation covering 2021-2025 will also need to be done

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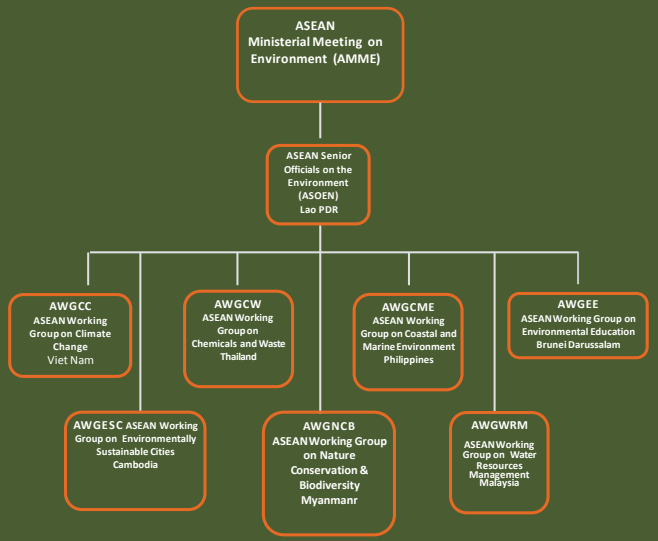
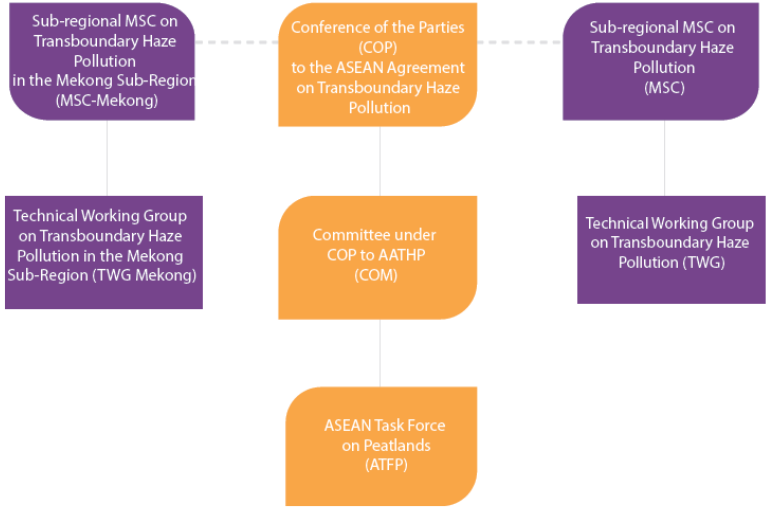
Institutional Arrangement

The institutional framework of the ASEAN cooperation on environment consists of the ASEAN Ministerial Meeting on the Environment (AMME), ASEAN Senior Officials on the Environment (ASOEN), and 7 subsidiary bodies / working groups

AMME meets once every two years while ASOEN and its subsidiary bodies meet once every year



INSTITUTIONAL FRAMEWORK OF THE ASEAN AGREEMENT ON TRANSBOUNDARY HAZE POLLUTION



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CLIMATE CHANGE IN ASCC BLUEPRINTS 2025

Key Result Areas and Climate Change Strategic Measures under Environment Sector

Conservation and Sustainable Management of Biodiversity and Natural Resources

- Strengthen regional cooperation on sustainable forest management in the context of forest fire prevention and control, including through the implementation of AATHP, to effectively address transboundary haze pollution;
- Strengthen global and regional partnerships and support the implementation of relevant international agreements and frameworks;

Environmentally Sustainable Cities

- Promote coordination among relevant sectors to provide access to clean land, green public space, clean air, clean and safe water, and sanitation;
- Strengthen positive economic, social and environmental linkages among urban, peri-urban and rural areas;

Sustainable Climate

i. Strengthen human and institutional capacity in implementing climate change adaptation and mitigation, especially on vulnerable and marginalised communities;
ii. Facilitate the development of comprehensive and coherent responses to climate change challenges, such as but not limited to multi-stakeholder and multi-sectoral approaches;
iii. Leverage on private sector and community to have access to new and innovative financing mechanisms to address climate change;
iv. Strengthen the capacity of sectoral institutions and local governments in conducting Greenhouse Gas (GHG) inventory, and vulnerability assessments and adaptation needs;
v. Strengthen the effort of government, private sector and community in reducing GHG emission from main activities of development;
vi. Mainstream climate change risk management and GHG emission reduction on sectoral planning; and
vii. Strengthen global partnerships and support the implementation of relevant international agreements and frameworks, e.g. the United Nations Framework Convention on Climate Change (UNFCCC).

Sustainable Consumption

i. Strengthen public-private partnerships to promote the adoption of environmentally-sound technologies for maximising resource efficiency;
ii. Promote environmental education (including eco-school practice), awareness, and capacity to adopt sustainable consumption and green lifestyle at all levels;
iii. Enhance capacity of relevant stakeholders to implement sound waste management and energy efficiency; and

Climate Change related Strategic Measures under Other KRAs in ASCC BP 2025

Inclusive

Promotion and Protection of Human Rights

Relevant SM:
Promote sustainable financing mechanism for social protection, particularly universal health coverage, early childhood care and development, financial risk protection for disaster risk reduction and climate change adaptation, and social pension, through strategic partnerships with private sector and other relevant stakeholders

Resilient

A disaster resilient ASEAN that is able to anticipate, respond, cope, adapt, and build back better, faster and smarter

Relevant SMs:

a. Promote policy coherence and interlinkages, and synergise initiatives on disaster risk reduction, climate change adaptation and mitigation, humanitarian actions and sustainable development

b. Institutionalise resilience by strengthening institutional and adaptive capacities to reduce existing risks and prevent future risks;

Resilient (*ctd*)

A climate adaptive ASEAN with enhanced institutional and human capacities to adapt to the impacts of climate change

Relevant SMs:

a. Expand regional cross-sectoral platforms and establish shared strategies to respond to the impacts of climate change;

b. Promote sound scientific and evidence-based policies on climate change adaptation;

c. Promote and consider indigenous and traditional knowledge and practices in responding and adapting to the impacts of climate Change;

A climate adaptive ASEAN with enhanced institutional and human capacities to adapt to the impacts of climate change
Strengthened social protection to reduce vulnerabilities ……

Relevant SMs:

a. Establish platforms to empower people living in at-risk areas to become resilient by reducing their exposure and vulnerability to climate-related extreme events…

Enhanced and optimised financing systems, food, water, energy availability, and other social safety nets in times of crises ..

Relevant SM:

Explore the possibility of establishing financial and insurance mechanisms and strategies for disaster risk reduction and climate change adaptation.

ASEAN Action Plan on Joint Response to Climate Change

1. Adaptation

- Sharing information on ongoing and planned efforts on research and development (R&D) in hydrological and agricultural management and practices that aim to enhance food security, agricultural productivity and water resources sustainability
- Sharing information on ongoing and planned adaptation efforts in urban, rural, and coastal areas;
- Enhancing existing ASEAN climate/meteorological/oceanographical centers and networks
- Developing ASEAN work programme to address loss and damage, and options for risk management and reduction.

2. Mitigation

- Sharing best practices on mitigating greenhouse gas (GHG) emissions from energy production and use, agriculture, land use, land-use change and forestry (including REDD/REDD+), industrial processes, and waste in the region
- Promoting a common understanding on Nationally Appropriate Mitigation Actions (NAMAs), and Measurement, Reporting and Verification (MRV) through workshop(s) and other activities
- Sharing information and experience on promoting, developing, and enhancing Clean Development Mechanism (CDM) activities
- Exploring the possibility to develop a carbon cap and trade system in the region

3. Finance & Investment

- Promoting common understanding on institutional arrangements for accessing multilateral funds such as Green Climate Fund, Green Investment Fund, Adaptation Fund

ASEAN Action Plan on Joint Response to Climate Change continued

4. Technology Transfer

- Facilitating international support for technology transfer to ASEAN, including through the UNFCCC Climate Technology Centre and Network (CTCN), based on the technology needs assessment for mitigation and adaptation
- Sharing information and experiences on strengthening science and policy interface towards low carbon development and green economy
- Establishing strategic alliances with private sector to promote R&D collaboration and technology transfer and commercialisation

5. Capacity Building

- Facilitating regional and international support for capacity building for ASEAN based on capacity building needs for mitigation and adaptation; such as organizing training courses on developing national GHG inventories for AMS; taking into account all relevant stakeholders, including government officials, national experts and the private sector
- Facilitating long-term regional cooperation in strengthening negotiating skills
- Sharing information and experiences on strengthening of adaptive capacities of communities, including through the enhancement of education on climate change, towards a low carbon society

6. Other Matters of Regional Cooperaton

- Encouraging cooperation/collaboration with other existing regional and sub-regional institutions/initiatives, for example, Greater Mekong Sub-region, Mekong River Commission (MRC) and Heart of Borneo initiative
- Promoting a better understanding of climate change and trade-related issues
- Promoting research cooperation/collaboration in climate related sciences

Relevant Declarations / Statements

- ASEAN Declaration on COP-13 to the UNFCCC and CMP-3 to the Kyoto Protocol (13th ASEAN Summit, 2007)
- ASEAN Joint Statement on Climate Change to COP-15 to the UNFCCC and CMP-5 to the Kyoto Protocol (15th ASEAN Summit, 2009)
- ASEAN Leaders' Statement on Joint Response to Climate Change (16th ASEAN Summit, 2010)
- ASEAN Leaders' Statement on Climate Change to UNFCCC COP17/CMP7 (19th ASEAN Summit, 2011)
- ASEAN Leaders' Statement on Climate Change to UNFCCC COP20/CMP10 (25th ASEAN Summit, 2014)
- ASEAN Leaders' Statement on Climate Change to UNFCCC COP21/CMP11 (27th ASEAN Summit 2015) http://environment.asean.org/download/climate-change/agreement/ASEAN-Joint-Statement-on-Climate-Change-Adopted.pdf

Implemented Activities
ASEAN Action Plan on Joint Response to Climate Change

Past activities:

- Workshop on Vulnerability Assessment and Impact Studies in ASEAN Countries (1 May 2014, Jakarta, Indonesia)
- Climate Change Workshop for Policy Makers from ASEAN Member States (18-19 June 2014, Ha Noi, Viet Nam)
- Capacity building for ASEAN climate change negotiators in preparation of UNFCCC COP 20 organised by MONRE Viet Nam in cooperation with UK-FCO, GIZ, UNDP-Vietnam (19-21 August 2014, Ha Noi, Viet Nam)
- Regional Forum on Climate Change, Low Carbon, Climate Resilience Societies : Bridging Science, Practice and Policy. The event is hosted by ASIAN Institute of Technology, 3-4 June 2015, Thailand, and supported by French Government, EU and ASEAN. The forum is opened for registration for various participant from AMS, further information can be found at: http://www.rfcc2015.ait.asia

On-going Activities:

- ASEAN-India Project on Enhancing Local Level Climate Change Adaptation (Phase I), coordinated by Southeast Asia Disaster Prevention Research InitiativeUniversiti Kebangsaan Malaysia (SEADPRI-UKM) in collaboration with universities/climate research centers in AMS.
- ASEAN-India project Climate Change Projections and Assessment of Impacts; Modelling and Capacity Building Programme - India- ASEAN region led by India Institute of Science.

Side Events at the COP21:

1. **Towards A Low Carbon and Climate Resilient ASEAN Community Post-2015, with Focus on Sustainable Solutions for Peatland Fires and Haze, in collaboration with Global Environment Centre**, 2 December 2015;
2. **ASEAN Cooperation on Climate Change and Post-2015 Vision, in cooperation with Viet Nam** 5 December 2015. (CITC presented a Building Capacity for Climate Change Adaptation and Mitigation)
3. ASEAN Secretariat was invited to be one of the speakers in the CITC side event:Sustainable Development and Climate Change

Other Activities

Environmentally Sustainable Cities

- ASEAN ESC Model Cities Programme

Year 1: 14 Cities

Year 2: 21 cities

(http://modelcities.hls-esc.org/?q=cities)

- ASEAN ESC Award (2008 and 2014)

Environmental Education

- ASEAN Environmental Education Action Plan
- ASEAN Eco-schools Award 2015
- ASEAN Guidelines on Eco-schools
- ASEAN Environment Year


Coastal and Marine Environment

- Climate Change and ASEAN Coastal Areas: Vulnerability, Impacts and Adaptation (Phase I) (Proposed)

Biodiversity

- Biodiversity & Climate Change Project
- ASEAN Heritage Parks Programme

Water Resources Management

- Development of Integrated Water Resources Management Guidelines

WAY FORWARD

ASEAN Strategic Action Plan on Post 2015 Environmental Cooperation (ASPAPEC)

Sep 2015 (26th ASOEN)	March-July 2016	August 2016
• Endorse the Interim Action Plan on ASEAN Post-2015 Environmental Cooperation (IAPAPEC) • Endorse the development of AWG action plans & ASPAPEC	• Workshops to review/develop the Working Group Action Plan is scheduled to be held back-to-back with respective Working Group Meetings • Task Force Meeting(s) to consolidate and finalise the action plans into ASPEN	Final draft ASPAPEC is to be submitted to the 27th ASOEN Meeting for adoption 2016-2020 /2025 Implementation

Proposed AWGCC Action Plans 2025:

1. Timeline of the proposed action plan (2016-2020/ 2025)
2. Programmatic approach, the initiative has few components under key areas, such as: adaptation, mitigation, finance and technology transfer. The proposed activities could address the AMS pre-2020 gaps, and gaps to meet the pledges (INDCs) of the respective AMS
3. Promote cross-sectoral cooperation and coordination; among sub-sectoral bodies/ working groups under ASOEN, among sectors within the ASCC Pillar, and cross pillars.

CLIMATE CHANGE IN APSC and AEC BLUEPRINTS 2025

APSC

Relevant Key Strategic Measures

1. Convene special meetings, as and when necessary, at Senior Officials' level to address challenges of transboundary or transnational nature such as haze pollution, pandemics, transnational organised crimes, irregular movement of persons, hazardous waste, oil spill incidents, trafficking in wildlife and timber;

AEC

Relevant Key Strategic Measures

1. Foster policies supportive of renewable energy and set collective targets accordingly;
2. Develop a framework to support the deployment and utilisation of efficient and low carbon technologies, and call for international support to ensure ASEAN access to mechanisms that foster low carbon technologies more affordably;
3. Promote the use of biofuels for transportation. This includes ensuring free trade in biofuels within the region and investment in R&D on third-generation biofuels

AEC *(ctd)*

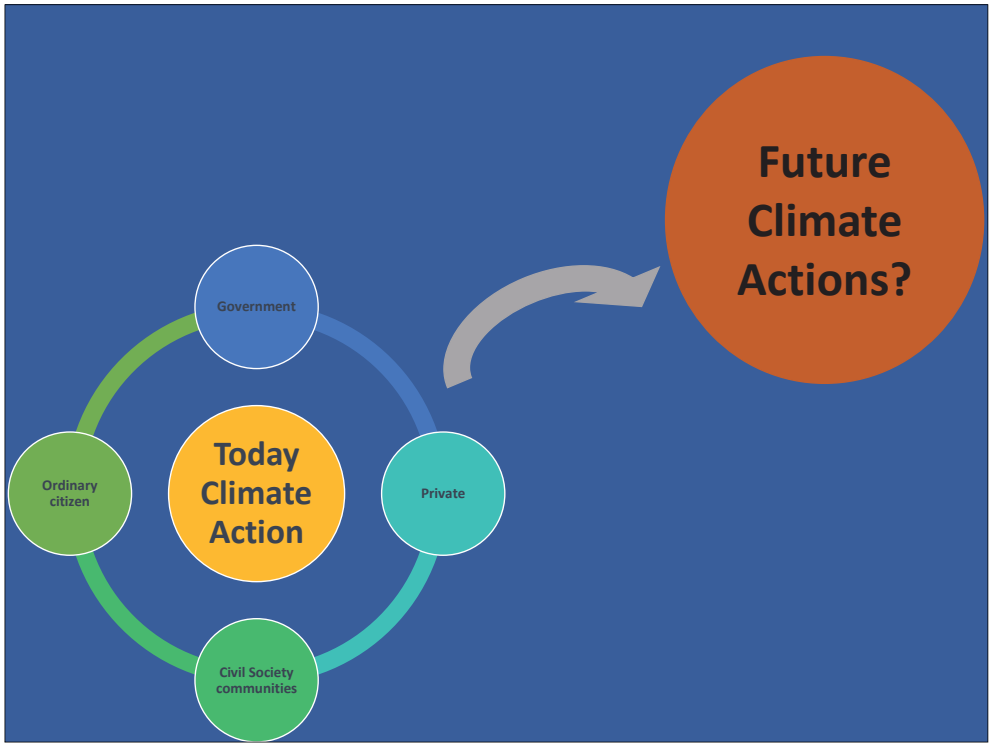
Relevant Key Strategic Measures:

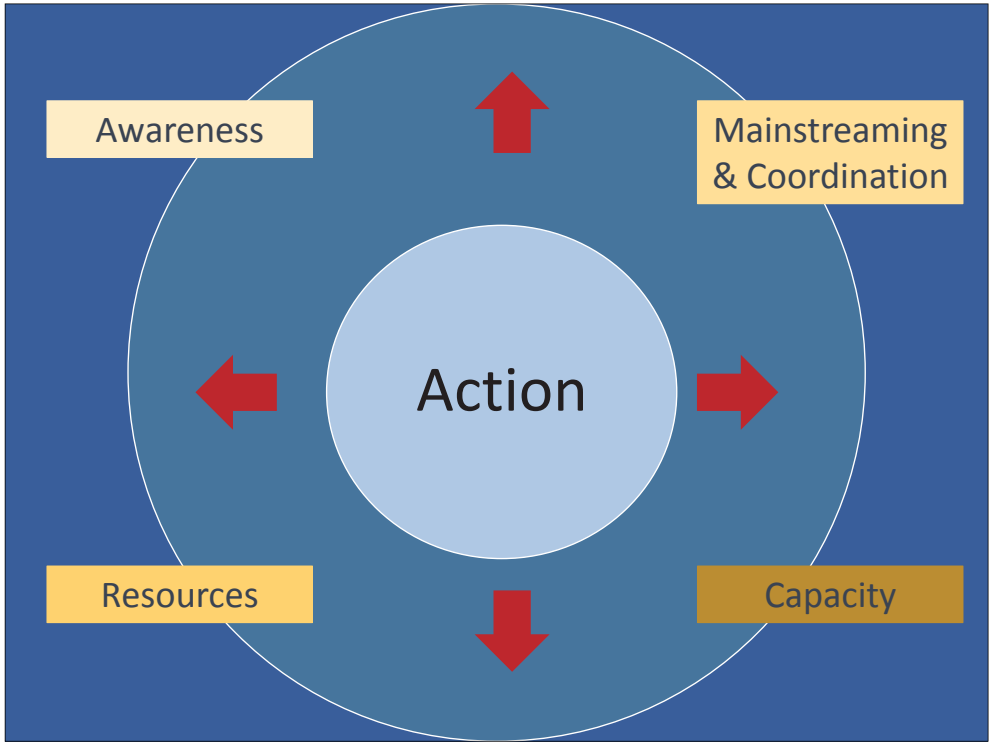
5. Enhance connectivity within ASEAN, including through multilateral electricity trade under the framework of the ASEAN Power Grid (APG) and greater liquefied natural gas (LNG) cooperation under the Trans-ASEAN Gas Pipeline (TAGP);
7. Promote good agriculture practices to minimise the negative effects on natural resources such as soil, forest and water, and reduce the greenhouse gas emission;
8. Promote forest management involving the community living within and surrounding the forest for the sustainability of the forest and prosperity of the people;
9. Energy Efficiency and Conservation: Reduce energy intensity in ASEAN by 20 percent as a medium-term target in 2020 and 30 percent as a long-term target in 2025, based on 2005 level
10. Renewable Energy (RE): Increase the component of RE to a mutually agreed percentage number in the ASEAN Energy Mix (Total Primary Energy Supply) by 2020;
11. Increase resilience to climate change, natural disasters and other shocks;
12. Increase responsiveness to environmental protection and climate change (Sustainable Tourism)

www.asean.org

"Accelerating Implementation of Climate Change Mitigation and Adaptation Actions Across Asia"

Pawin Talerngsri, UNDP



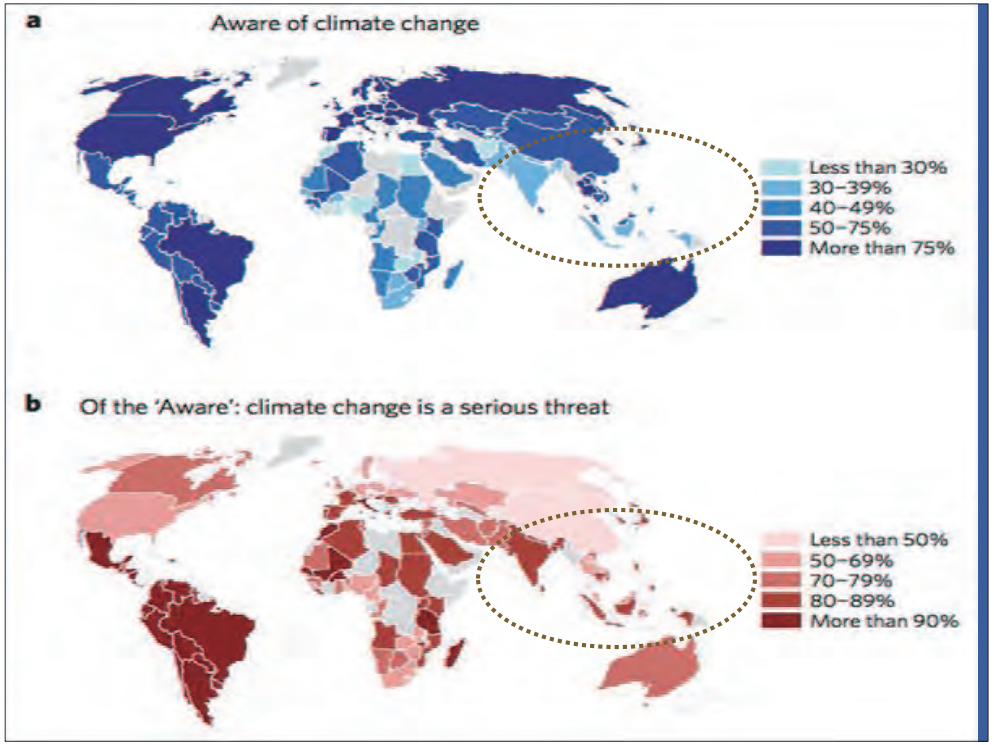


Public Awareness and Understanding

Awareness and Understanding about the Nature and effect of Climate Change!

Global Survey **Using data from the 2007-2008 Gallup World Poll, conducted in 119 countries by researchers from several universities (e.g. Yale, Columbia, Princeton….)**

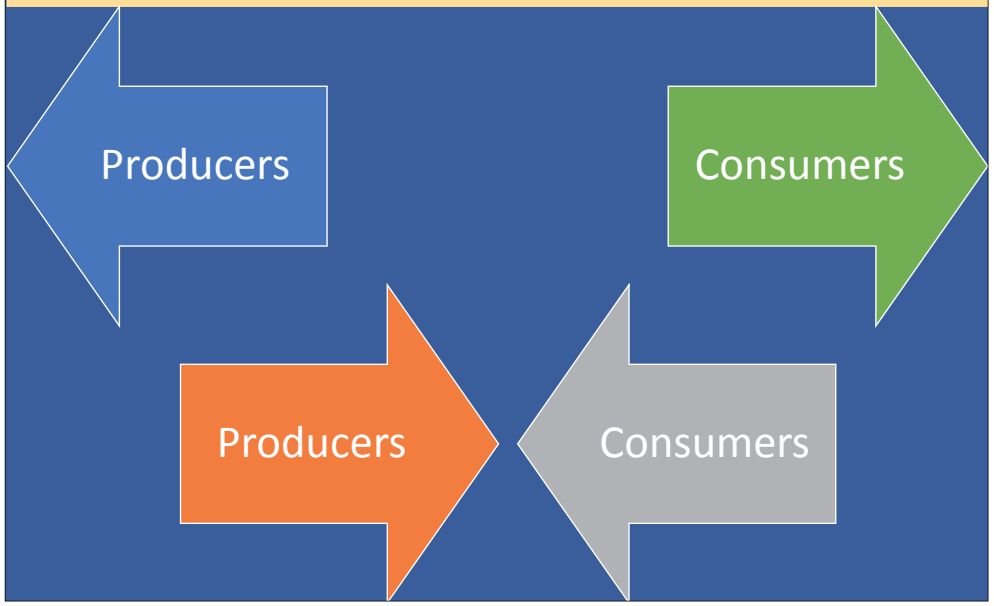
More than 1/3 of the world's adults have not heard of climate change. For developing countries, this rises to more than 2/3!!



Climate Change Mitigation

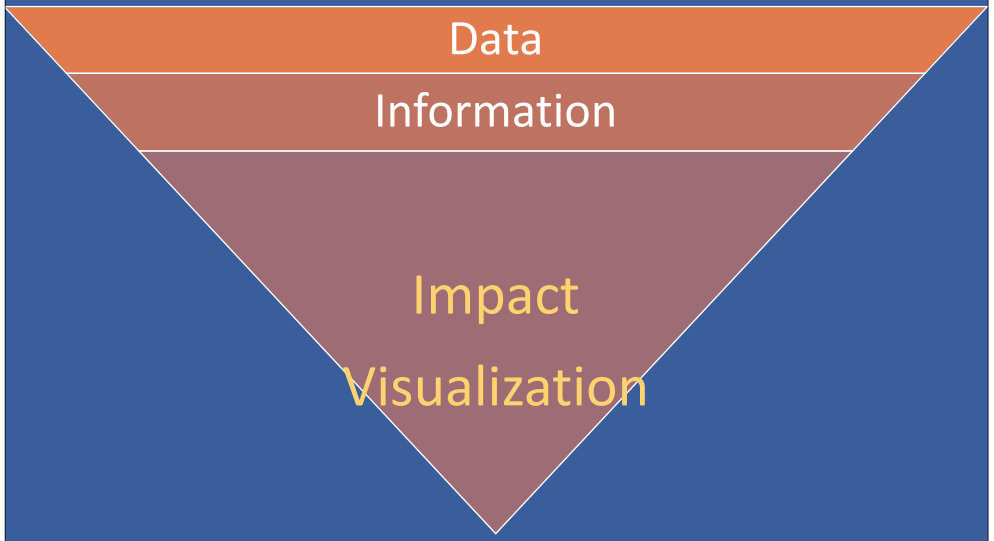
What is happening across value chain???

Climate Change Mitigation

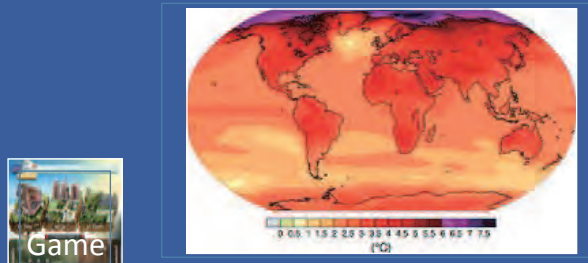


Consumers' Attitude towards Carbon Labelling???

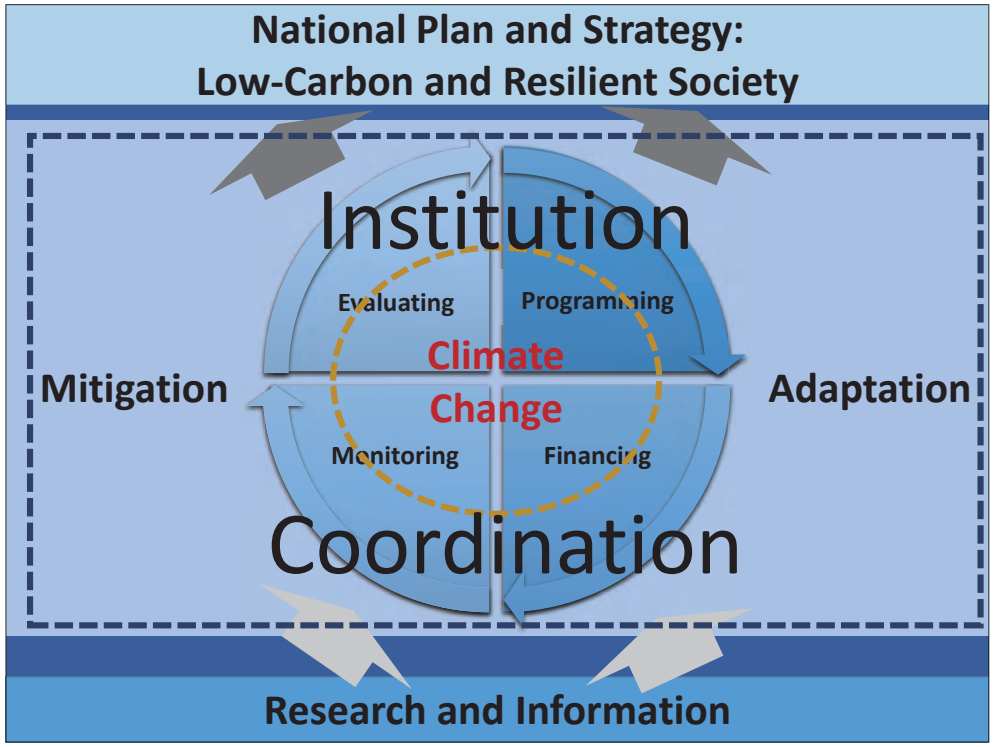
Climate Change Adaptation

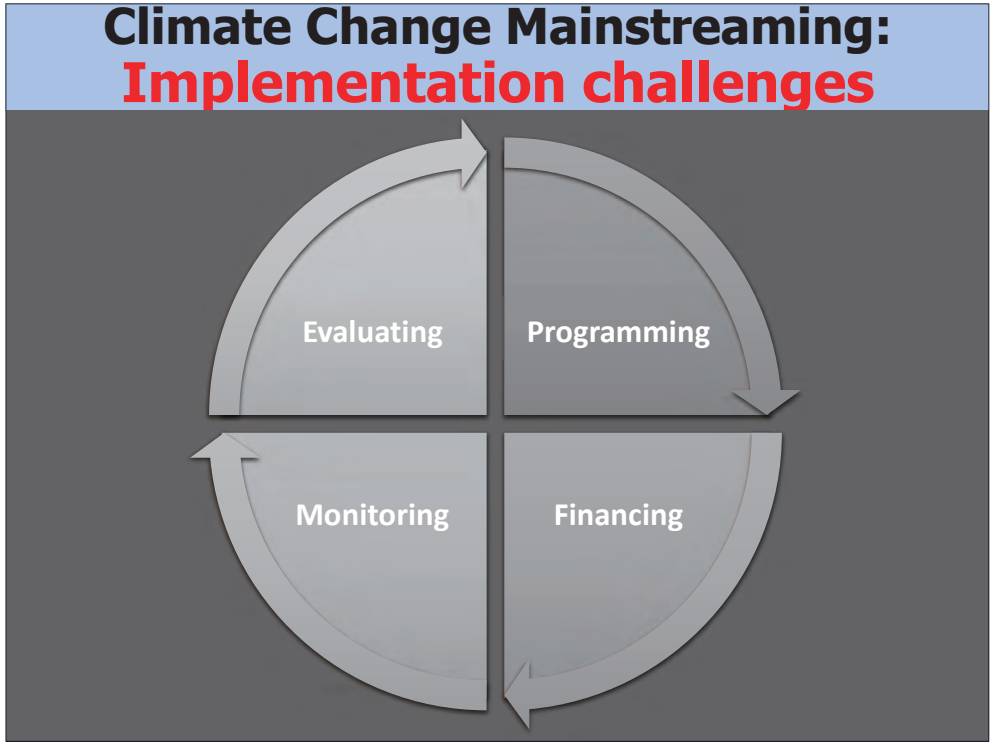


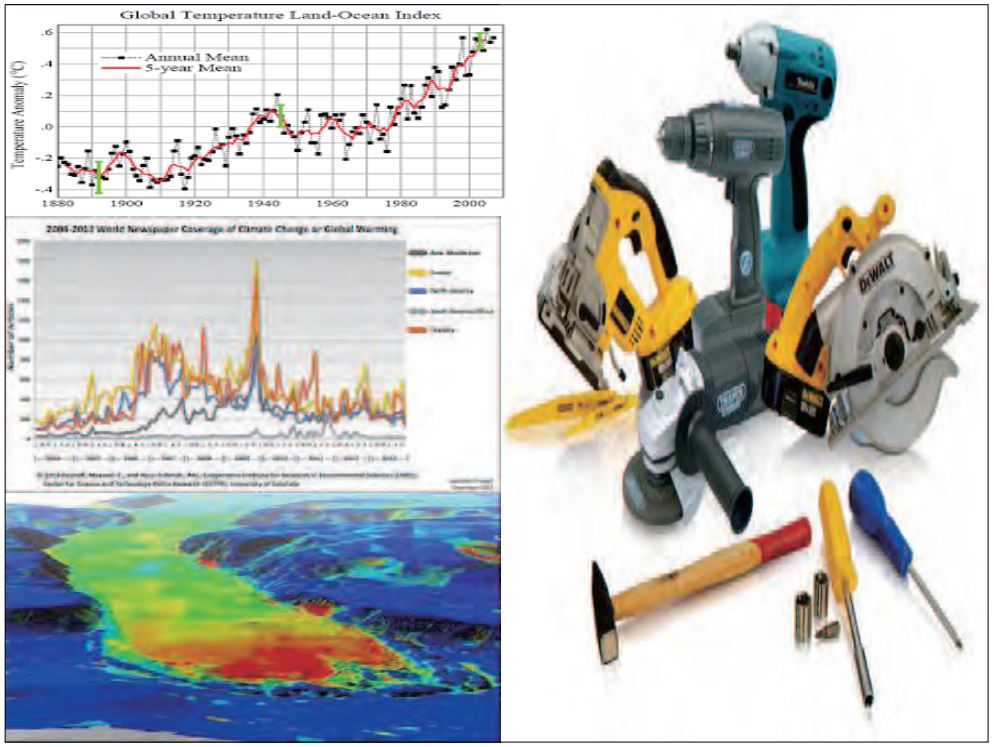
Innovative Ways to Sensitize Climate Change Impacts



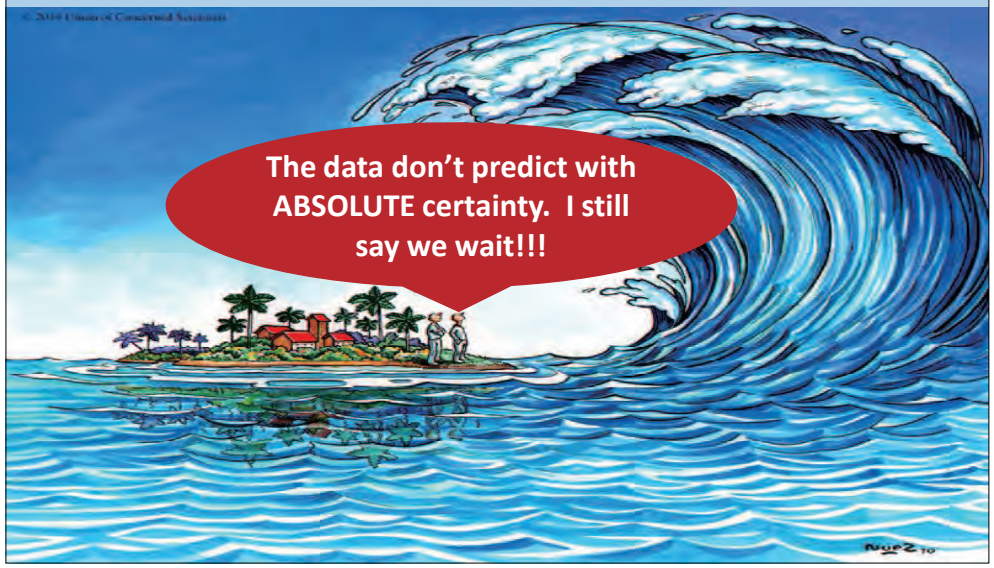
Mainstreaming & Coordination







Imperfection of Climate Change Modeling!



Climate Change Risks and Uncertainty

Risks

An event that **may or may not** occur

Anticipation with **incomplete** evidences

Prevention & Mitigation Steps

Like buying an insurance!

Is it worth buying?

Technical Tools are Available…but How can we apply them practically???

Climate modelling

- Issue of Data and Information

Planning and Decision making tools (e.g. vulnerability and risk analysis, cost-benefit, cost-effectiveness, multi-criteria, etc.)

- Appropriateness and Capacity

Monitoring and Evaluation (e.g. climate tracking, budget tag, MRV, adaptation indicators…)

- Policy commitment and understanding

Mainstreaming of Climate Change:

Thinking of Climate Change

Recognition on The Benefits

Formulating Programme / Project with Climate Change Concerns

Identification of Co-Benefits related to Climate Change

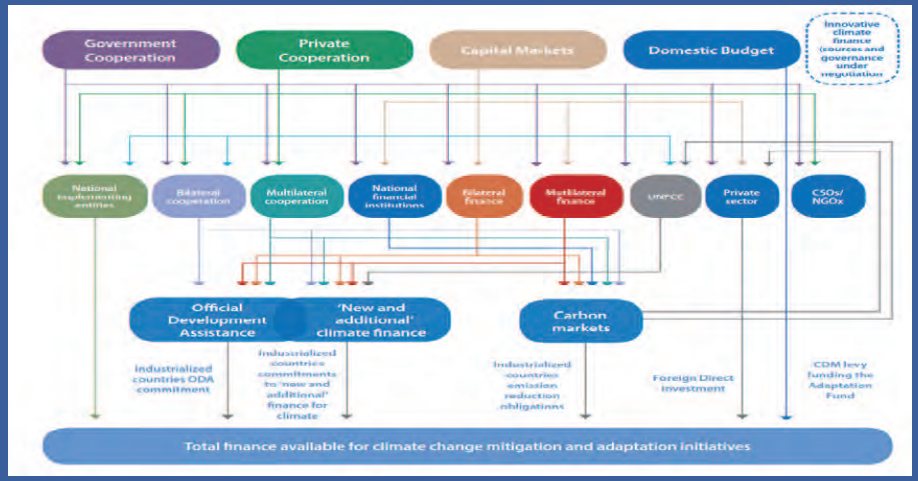
	Green Development					
	Sustainable Development			Climate Change CC%		
	EC%	SO%	EV%	MI%	AD%	Total
Highest CC Relevance						
CC Planning, Management, Capacity, Studies	0	0	0	100		100
Hydrometeorology, Early Warning	40-60	10-20	0	0	33	33
Livelihoods for CC Vulnerable Households	40-60	10-20	0	0	33	33
Coastal Protection from Sea Level Rise	0	0	0	0	100	100
Protection from Saline Intrusion	20-60	10-30	5-10	0	25-75	25-75
Irrigation and Drainage	60-70	5-20	0-5	0	10-33	10-33
Flood Protection/Proofing	40-60	10-20	0	0	33	33
Disaster Risk Reduction and Management	25-60	25-60	0-10	0	33	33
Middle CC Relevance						
Agriculture, Rural Development, Food Security	40-60	10-20	0-10	0-5	5-20	5-25
Forestry Protection	5-10	5-10	80-95	5-15	0-10	5-25
Forest Management	20-60	5-20	30-60	5-20	5-20	10-40
Renewable Energy	70-90	0-10	0-10	5-20	0-5	5-25
Energy Efficiency	70-90	0-10	0-10	5-20	0-5	5-25
Lower CC Relevance						
Livelihoods for General Households	50-70	20-30	0	0	5-10	5-10
General Infrastructure (roads, urban...)	90-99	0-10	0	0-1	1-5	1-5
Sanitation and Waste	20-30	20-30	50-75	0-5	5-15	5-20
Water Quality	50-70	20-30	0	0	5-10	5-10
Public Health for Climate Sensitive Diseases	30-50	30-50	0	0	5-10	5-10
Public Transport	60-80	10-20	5-10	1-5	0	1-5

Range of Climate Change co-benefit in relation to other SD Benefits

Resources

Lack of Financing???

Existing Climate Change Finance Flow



Source: UNDP

Climate Finance Readiness

Financial Planning	Accessing Finance	Delivering Finance	Monitor, Report & Verify
• Assess needs and priorities, and identify barriers to investment • Identify policy-mix and sources of financing	• Directly access finance • Blend and combine finance • Formulate project, progamme, sector-wide approaches to access finance	• Implement and execute project, programme, sector-wide approaches • Build local supply of expertise and skills • Coordinate implementation	• Monitor, report, and verify flows • Performance-based payments

Source: UNDP

Capacity Development

Capacity Development which lead to

Learning within each agency about the extent of CC related in their works. Addressing CC Risks rather than CC Issues

Capacity Development which lead to

Clearer needs further research and information. Subsequent training become more structured, areas focused.

Capacity Development which lead to

Readjustment of Internal coordination and institutional arrangement

Capacity Development which lead to

Clearer financing requirements with more supportive analysis and evidences

Climate Finance

- Key driving force to enabling actions for sustainable development -

Tomonori SUDO, Ph. D.,
Associate Professor,
Ritsumeikan Asia Pacific University

CITC Regional Conference on Climate Change and Sustainable Development
30-31 March 2016
Bangkok, Thailand

Today's menu

- What is Climate Finance?
- Invest needs
- Trend of Investment
- Climate Finance Flow
- Expectation and reality
- Characteristics of financial resources
- What can government do?
- Towards better climate finance in Asia

What is Climate Finance?

- Climate finance refers to local, national or transnational financing, which may be drawn from public, private and alternative sources of financing.
  - Climate finance is critical to addressing climate change because large-scale investments are required to significantly reduce emissions, notably in sectors that emit large quantities of greenhouse gases.
  - Climate finance is equally important for adaptation, for which significant financial resources will be similarly required to allow countries to adapt to the adverse effects and reduce the impacts of climate change.

Annual estimated investments needed under a business-as-usual and low-carbon scenario (US$ billions per year between 2010 and 2030)

	Business-as-usual scenario investment needs		2C scenario investment needs		Incremental investment required		
Sector	Cumulative 2010-2030	Annual Average	Cumulative 2010-2030	Annual Average	Cumulative 2010-2030	Annual Average	Sources
Power generation	6,933	347	10,136	507	3,203	160	IEA
Power transmission and development	5,450	272	5,021	251	-429	-21	IEA
Energy Total	**12,383**	**619**	**15,157**	**758**	**2,774**	**139**	
Buildings	7,162	358	13,076	654	5,914	296	IEA
Industry	5,100	255	580	290	700	35	IEA
Building & Industry total	**12,262**	**613**	**18,876**	**944**	**6,614**	**331**	
Road	8,000	400	8,000?	400?	-	-	OECD
Rail	5,000	250	5,000?	250?	-	-	OECD
Airports	2,300	115	2,300?	115?	-	-	OECD
Ports	800	40	800?	40?	-	-	OECD
Transport Vehicles	16,908	845	20,640	1,032	3,732	187	IEA
Transport total	**33,008**	**1,650**	**36,740**	**1,837**	**3,732**	**187**	
Water	26,400	1,320	26,400?	1,320?	-	-	OECD
Agriculture	2,500	125	2,500?	125?	-	-	FAO
Tele-communications	12,000	600	12,000?	600?	-	-	OECD
Forestry	1,280	64	2,080	104	800	40	UNEP
Other sectors	unknown	unknown	unknown	unknown	unknown	unknown	
Total Investment	**99,833**	**4,991**	**113,753**	**5,689**	**13,934**	**698**	
	~$100tr	~$5tr	^$114tr	~$5.7tr	~$14tr	~$0.7tr	

- An investment gap under a business-as-usual scenario: $100 trillion
- Responding to an anticipated 2 °C temperature rise will add only $14 trillion, or 14 % to the total gap.

Asia's Total Infrastructure Investment Needs by Sector, 2010–2020

Million USD

Sector/Subsector	New Capacity	Replacement	Total
Energy (Electricity)	**3,176,437**	**912,202**	**4,088,639**
Telecommunications	**325,353**	**730,304**	**1,055,657**
Mobile phones	181,763	509,151	690,914
Landlines	143,590	221,153	364,743
Transport	**1,761,666**	**704,457**	**2,466,123**
Airports	6,533	4,728	11,260
Ports	50,275	25,416	75,691
Railways	2,692	35,947	38,639
Roads	1,702,166	638,366	2,340,532
Water and Sanitation	**155,493**	**225,797**	**381,290**
Sanitation	107,925	119,573	227,498
Water	47,568	106,224	153,792
Total	**5,418,949**	**2,572,760**	**7,991,709**

$ = United States dollar.
Sources: ADBI (2009); Bhattacharyay (2008).

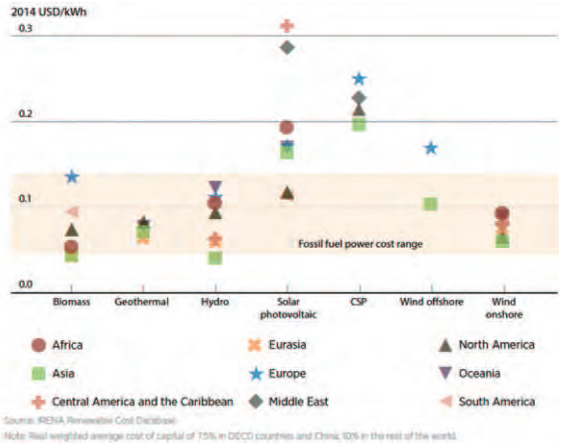
- According to the WEF (2013), incremental investment required in Energy sector is 2774 billion US dollar, which is 22.4 % of investment needs at Business-as-usual scenario. In case of transport sector, incremental cost is 11.3 % of Business-as-usual investment needs.
- If those coefficients are applied in the figures shown in ADB and ADBI 2009, incremental investment needs in Energy sector and transport sector are **915,855 million US Dollar** and **246,612 million US Dollars**, respectively. That is, 58 billion US dollars are incrementally required annually for low carbon development.

Energy in SDGs

- 2030 Development Agenda
  - Goal 7. Ensure access to affordable, reliable, sustainable and modern energy for all
    - 7:1 By 2030, ensure universal access to affordable, reliable and modern energy services
    - 7:2 By 2030, increase substantially the share of renewable energy in the global energy mix
    - 7:3 By 2030, double the global rate of improvement in energy efficiency
    - 7:a By 2030, enhance international cooperation to facilitate access to clean energy research and technology, including renewable energy, energy efficiency and advanced and cleaner fossil-fuel technology, and **promote investment** in energy infrastructure and clean energy technology
    - 7:b By 2030, expand infrastructure and upgrade technology for supplying modern and sustainable energy services for all in developing countries, in particular least developed countries and small island developing States and land-locked developing countries, in accordance with their respective programmes of support

(United Nations 2015)

Weighted average cost of electricity by region for utility-scale renewable technologies, compared with fossil fuel power generation costs, 2013/2014.



Cost of Many of RE technologies are enough competitive to Fossil fuel power in Asia.

- Even though the cost of renewable energy technology declines, mobilization of investment and finance in low carbon development is still one of the key issues for Asian developing countries

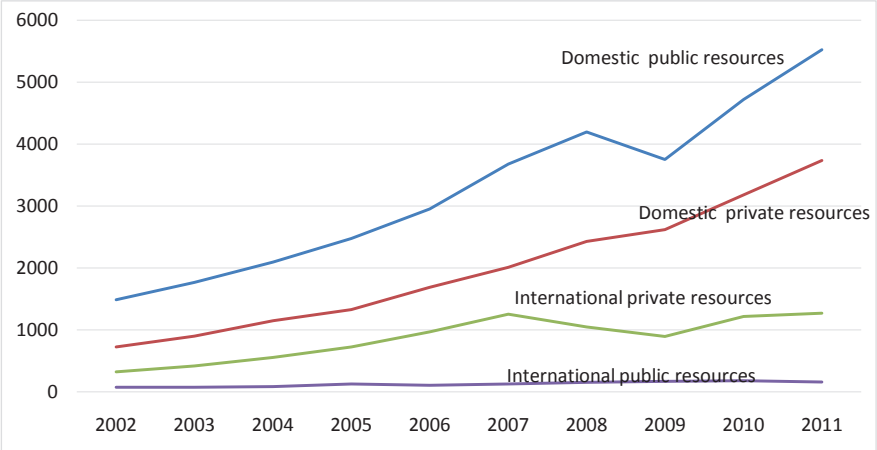
Barriers to promote RE

- **High upstream costs** for project development. Public support may be essential to realize the initial phases of project identification and development that may seem unattractive to private investors.
- **High capital costs** requiring adequate financial instruments.
- **High perceived risks**, requiring specific risk mitigation measures—financial or institutional—since standard risk mitigation tools are often unsuitable or unavailable for RE projects. When perceived risk is higher than real risk, public action may be needed to convince value chain actors to change their perception.
- **Need to adapt rules and institutional frameworks** for RE projects. Operational integration of RE into power grids or other energy systems often requires changes in institutional frameworks, notably to guarantee long term access to resources.
- **Smaller size and return** that offer lower economies of scale.
- **High fossil fuel subsidies** prevent RE deployment.

(IDFC 2015)

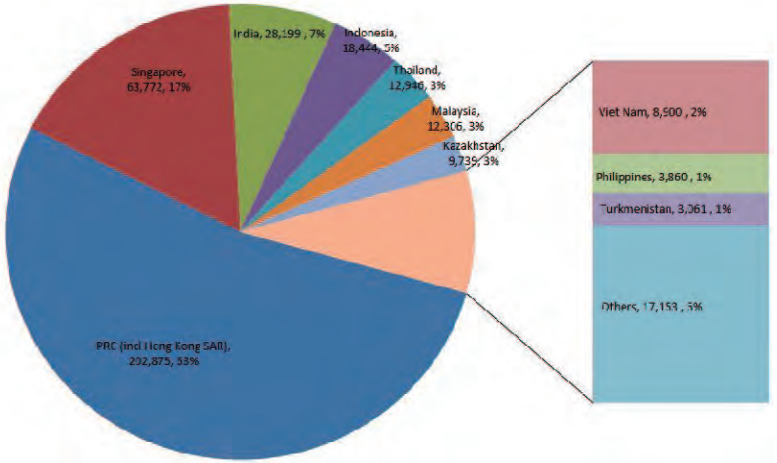
Trends in finance to developing countries

($ billion, 2011 prices), 2002–2011



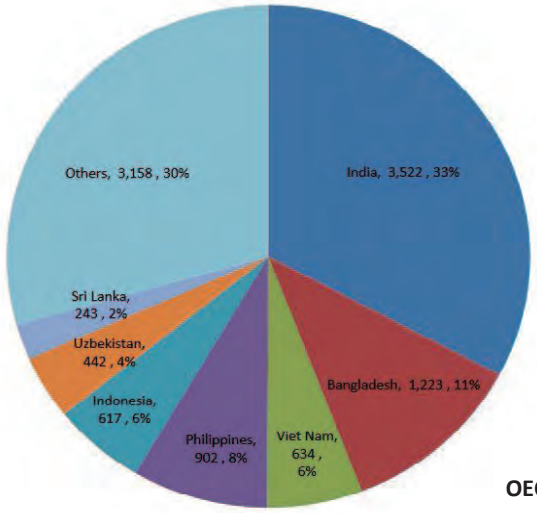
Sources: IMF, OECD, WDI, etc.

Share of Foreign Direct Investment Flows into Asian Developing Countries (2013, $ million)



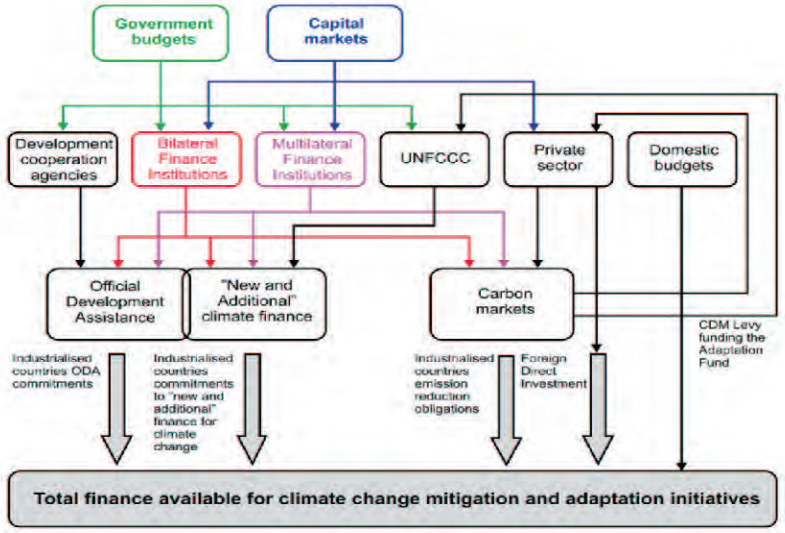
UNCTAD (2015)

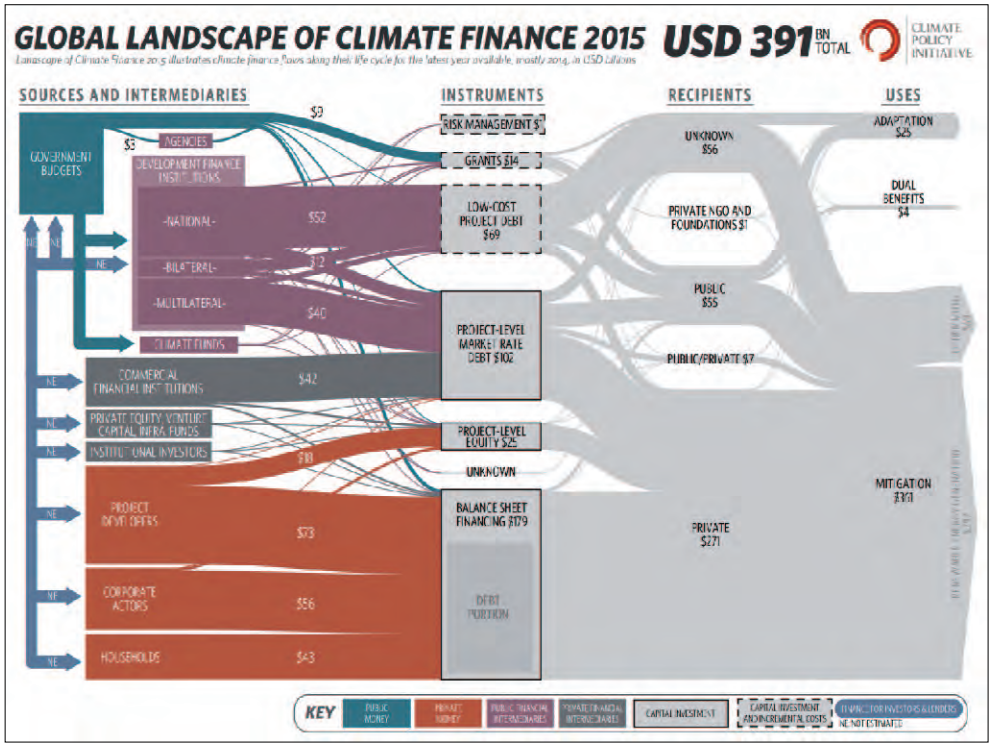
Share of Climate Change Official Development Assistance Flow into Asian Developing Countries (2013, $ million)



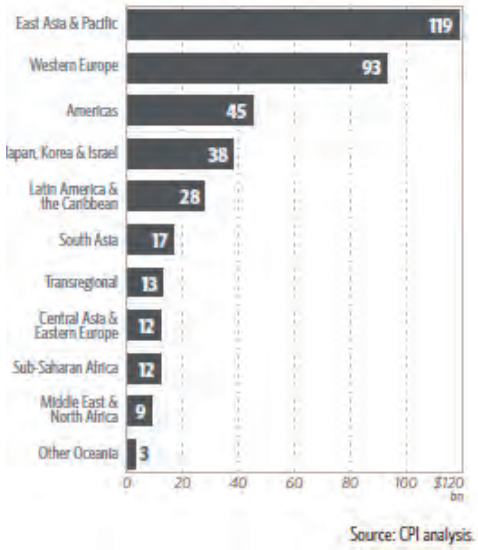
OECD (2015)

Financial flows for climate change mitigation and adaptation in developing countries





Total climate finance breakdown by region, 2014 in USD billion



- East Asia and the Pacific remained the largest destination of climate finance flows, accounting for 31% of the total or USD 119 billion, up by 22% from 2013.
- China alone accounted for 22% (USD 84 billion) of total finance.

Gaps between Expectations and Reality on Climate Change Finance

	Expectation	Reality
Scale of finance	Availability of climate change is still limited	Almost $100 billion is currently available
Development and climate change	Large volume of finance can contribute to address climate change and development	Volume of finance does not necessarily result in better climate change and developmental benefit.
Fund allocation	Climate change finance should be allocated to mitigation and adaptation equally, and distributed in an equal manner Climate finance should be allocated to developing countries equally	Finance for adaptation is still limited. In particular, the private sector tends to finance mitigation rather than adaptation. The amount of climate change finance a country can receive may depend on its capacity such as economic scale.
Private sector investment	Private sector should invest in climate change activities in developing countries	Lack of social infrastructure and limited profitability, often means the private sector finds climate change activities too risky
Capacity	Climate change finance should be managed through countries' own systems	Climate change finance depends on absorptive capacity and financial management
Monitoring, reporting, and verification (MRV)	Monitoring, reporting and verification should be done through countries' own systems	MRV systems often require support

Characteristics, potentials and risks of finance

	Characteristics	Potential	Risk
Domestic public finance ・Nat'l budget(Nat'l tax) ・Municipality budget ・Bonds ・Domestic DFIs	• Most stable and low risk finance source. • Good for finance in low profit public projects • Contribute to leveraging domestic private finance	• Improved governance and financial system lead to increase of domestic finance flows and FDI.	• Political difficulty in increase of tax revenue • Lack of capacity of appropriate public fiscal management • Risk to crowd-out private finance
International Public Finance ・ODA ・OOF ・Multilaterals	• Stable and low risk finance but low predictability • Limited volume of finance • Need to use efficiently and effectively	• Leveraging private finance	• Risk to crowd-out private finance. • Need to appropriate foreign reserve and forex management
Private finance	• Largest finance source. • Contribute to SD by investing in the project where social benefit will be increased while private benefit will be maximized. • Generate employment opportunity and sustainable development impact by expansion of business.。	• Increase of private finance flow into developing countries • Increase of finance flows between developing countries	• Unstable due to economic situation and sensitive to risks • Hard to capture the total flow of private finance • Hard to make sure the transparency and accountability due to business confidentiality
Blended finance ・PPP ・EU Blending mechanism	• Sharing risks and cost by public, private finance will be mobilized and contribute to establish better business environment and market.	• Increase of private sector participation	• Risk of market distortion • Risk of dependency to public

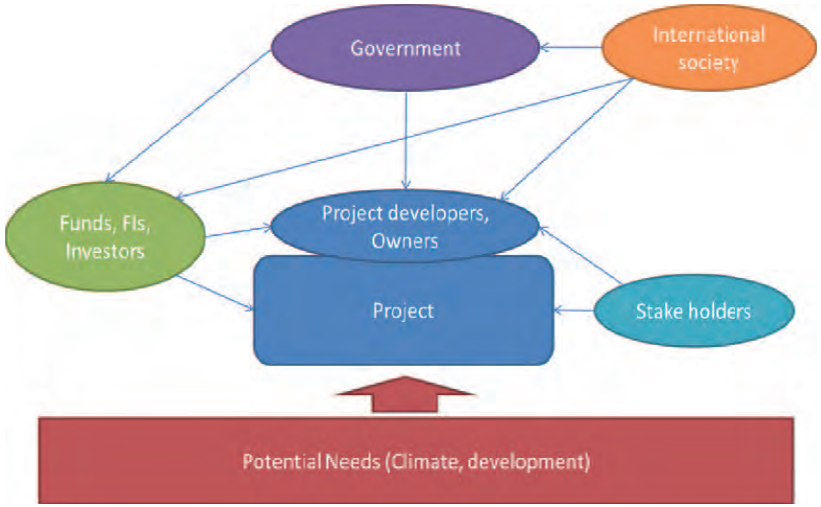
Accessing climate finance

- There are a lot of and a variety of financial institution in the world. In this sense, accessing climate finance is not so difficult task.
- However, receiving financial support is another issue. The financial institutions will see the project through their own view.
- Therefore, it is helpful to understand how financial institutions and investors consider and make decision on financing.

Key factors for investment decision making

- Expected **output and outcome** are important factor for decision making by investors and financiers.
  - Recently, most of investors and financial institutions concern on the ESG (Environment, Social and Governance) investment.
  - They think their investment and finance will generate additional (or indirect) value for the society.
  - This is because investors and financiers need to secure their prudence from the market otherwise they will not be able to raise fund from the market.
- Thus, for effective project development and management, risk management and realization of expected outcome by the project are indispensable.
- Therefore, well-documented project can show not only the risks and expected outcome identified but also the measures on **how to mitigate risks and ensure the realization of expected outcomes**.

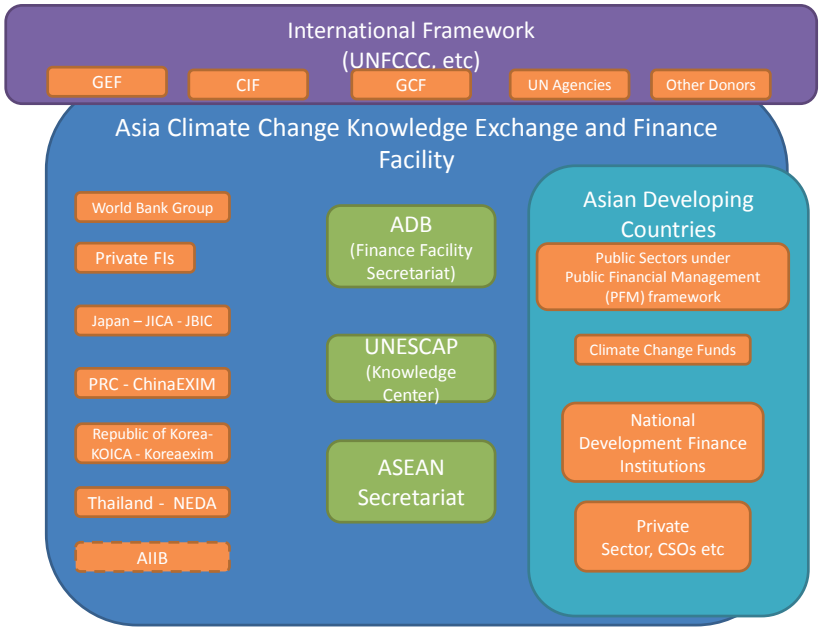
Relations among stakeholders of the project



Role of public sector to attract investors

- Public sector is expected to play important roles
  - To support improvement of bankability of the project
    - By support for mitigating political and project risks
    - By support for improving profitability
- What can Government do?
  - Assessing domestic needs and priorities for climate finance
  - Policy Instruments for Financing Climate Activities
  - Public development of supportive institutions & infrastructures
  - Securing Multi-Stakeholder Cooperation and Expertise in projects
  - Strategies for enhanced delivery of international support
  - Cooperation mechanisms and South-South Collaboration

Idea on ASEAN regional cooperation framework for effective low carbon development finance in Asia



United Nations Framework Convention on Climate Change

3rd CITC Regional Conference on Climate Change and Sustainable Development: "How to Accelerate Climate Actions in Asia through Capacity Building and Climate Finance"

Capacity-building within the Paris Agreement

30 March 2016

Ms. Enrica Melandri
UNFCCC Climate Finance, Capacity-building and Technology Programme

Within the Paris Agreement

Article 11 – Capacity-building

paragraph 3: **All Parties should cooperate** to enhance the capacity of developing country Parties to implement this Agreement. **Developed country Parties should enhance support** for capacity-building actions in developing country Parties.

paragraph 4:. **All Parties** enhancing the capacity of developing country Parties to implement this Agreement, including through regional, bilateral and multilateral approaches, **shall regularly communicate on these actions or measures on capacity-building**. **Developing country Parties should regularly communicate progress made** on implementing capacity-building plans, policies, actions or measures to implement this Agreement.

paragraph 5: **Capacity-building activities shall be enhanced through appropriate institutional arrangements to support the implementation of this Agreement, including the appropriate institutional arrangements established under the Convention that serve this Agreement**. The Conference of the Parties serving as the meeting of the Parties to the Paris Agreement shall, at its first session, consider and adopt a decision on the initial institutional arrangements for capacity-building.

Within the Paris Agreement

Article 12 – Climate change education, training, public awareness, public participation and public access to information

Parties shall cooperate in taking measures, as appropriate, to enhance climate change education, training, public awareness, public participation and public access to information, recognizing the importance of these steps with respect to enhancing actions under this Agreement.

Article 13 – Transparency

paragraph 9: Developed country Parties shall, and other Parties that provide support should, provide information on financial, technology transfer and capacity-building support provided to developing country Parties under Article 9, 10 and 11.

paragraph 10: Developing country Parties should provide information on financial, technology transfer and capacity-building support needed and received under Articles 9, 10 and 11.

paragraph 11: Information submitted by each Party under paragraphs 7 and 9 of this Article shall undergo a technical expert review, in accordance with decision 1/CP.21. For those developing country Parties that need it in the light of their capacities, the review process shall include assistance in identifying capacity-building needs.

Within the Paris decision 1/CP.21

Capacity-building

- **establishment of the Paris Committee on Capacity-building** that aims to address gaps and needs under the current framework for capacity building in implementing capacity-building in developing country Parties and further enhancing capacity-building efforts, including with regard to coherence and coordination in capacity-building activities under the Convention
- **launch of a workplan for the period 2016–2020**

  (a) Assessing how to increase synergies through cooperation and avoid duplication among existing bodies established under the Convention that implement capacity-building activities, including through **collaborating with institutions under and outside the Convention;**

  (b) Identifying capacity gaps and needs and recommending ways to address them;

  (c) Promoting the development and dissemination of tools and methodologies for the implementation of capacity-building;

  (d) Fostering global, regional, national and subnational cooperation;

  (f) Exploring how developing country Parties can take ownership of building and maintaining capacity over time and space;

  (g) Identifying opportunities to strengthen capacity at the national, regional and subnational level;

  (h) Fostering dialogue, coordination, collaboration and coherence among relevant processes and initiatives under the Convention, including through exchanging information on capacity-building activities and strategies of bodies established under the Convention;

  (i) Providing guidance to the secretariat on the maintenance and further development of the web-based **capacity-building portal**;

Within the Paris decision 1/CP.21

Climate change education, training, public awareness, public participation and public access to information

- **All Parties to ensure that education, training and public awareness**, as reflected in Article 6 of the Convention and in Article 12 of the Agreement **are adequately considered in their contribution to capacity-building**

Transparency

- **Capacity-building Initiative for Transparency** in order to build institutional and technical capacity, both pre- and post-2020. This initiative will support developing country Parties, upon request, in meeting enhanced transparency requirements as defined in Article 13 of the Agreement in a timely manner; the Capacity-building Initiative for Transparency will aim:

  (a) **To strengthen national institutions for transparency-related activities in line with national priorities**;

  (b) **To provide relevant tools, training and assistance for meeting the provisions stipulated in Article 13 of the Agreement**;

What's next?

PARIS2015
CONFÉRENCE DES NATIONS UNIES SUR LES CHANGEMENTS CLIMATIQUES
COP21·CMP11

Bonn Climate Change Conference - May 2016

►Subsidiary Body for Implementation (SBI 44)

- ✓ Membership of the Paris Committee on Capacity-building
- ✓ Terms of reference of the Paris Committee on Capacity-building
- ✓ Third comprehensive review of the implementation of the framework for capacity-building in developing countries (decision 2/CP.7)
- ✓ Enhancing the information included in the capacity-building portal
- ✓ 5th meeting of the Durban Forum on Capacity-building
- ✓ Review of Doha work programme on Article 6 of the Convention

► Ad Hoc Working Group on the Paris Agreement (APA 1)

- ✓ Modalities, procedures and guidelines for the transparency framework for action and support referred to in Article 13 of the Paris Agreement.

COP22
Window on
Marrakech2016

UNFCCC Climate Finance, Capacity-building and Technology Programme

UNFCCC: http://unfccc.int/2860.php

Contact information (capacity-building): emelandri@unfccc.int

UNFCCC Capacity-building on the web: http://unfccc.int/1033.php

Capacity-building Portal: http://unfccc.int/capacitybuilding/core/activities.html

Importance of capacity building for low carbon transition with country's ownership

3rd CITC Regional Conference on Climate Change and Sustainable Development : How to Accelerate Climate Action in Asia through Capacity Building and Climate Finance

Climate Change International Technical and Training Center

March 30, 2016

Shuzo Nishioka

Low Carbon Asia Research Network

Institute for Global Environmental Strategies (IGES)

Institute for Global Environmental Strategies

2015: starting point of action for transition to new age

- From MDGs to SDGs: recognizing "Planetary Boundary"
- IPCC AR5: "Carbon Neutral", the only one solution
- Paris Agreement: Party is over, Act now. CC as front-runner

Millennium Development Goals (MDGs 2000-15)

1. Eradicate extreme hunger and poverty	2. Achieve universal primary education	3.Promote gender equity & empower women	4. Reduce child mortality
5. Improve maternal health	6. Combat HIV/ AIDS, malaria et al.	7. Ensure environmental sustainability	8. Develop a global partnership for development

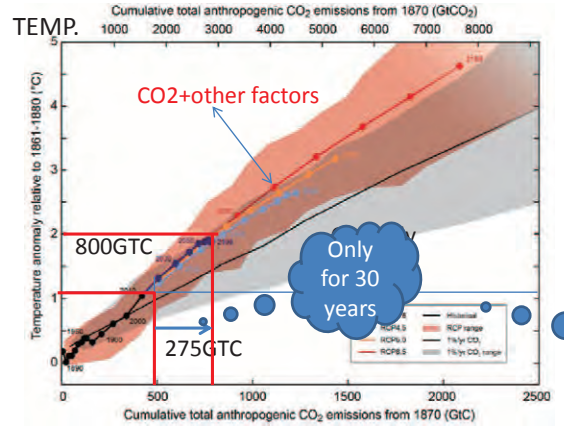
Sustainable Development Goals (SDGs 2015-2030)

nature & climate Related Agenda

IPCC AR5 (2013)

As long as emission continues, temperature rises in proportion to it.

➡Zero emission is only one ultimate solution to stabilize climate



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

Transform to low carbon society within 50-100 yr.

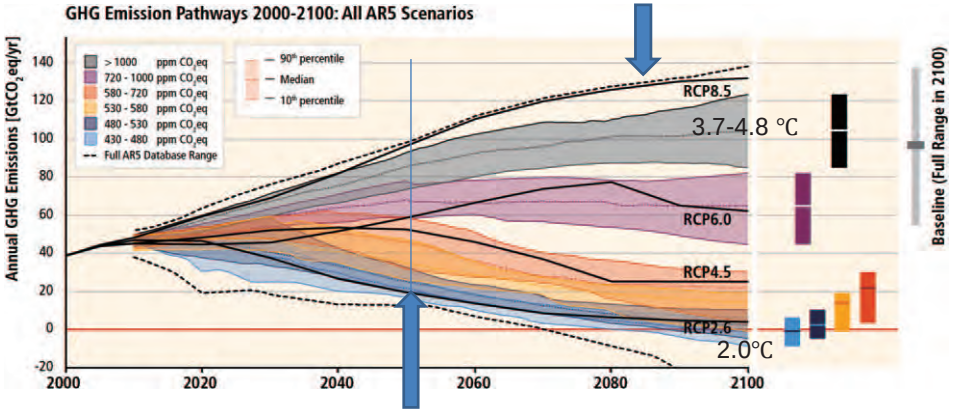
Cumulative total anthropogenic CO2 emission from 1870 (GtCO2)

linear relation between cumulative GHG emission & temperature rise

(IPCC AR4 and Emori, NIES)

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% reduction from now in 2050 is feasible and reasonable .

I IPCC AR5 2013

Energy related GHG emission by countries(2012)

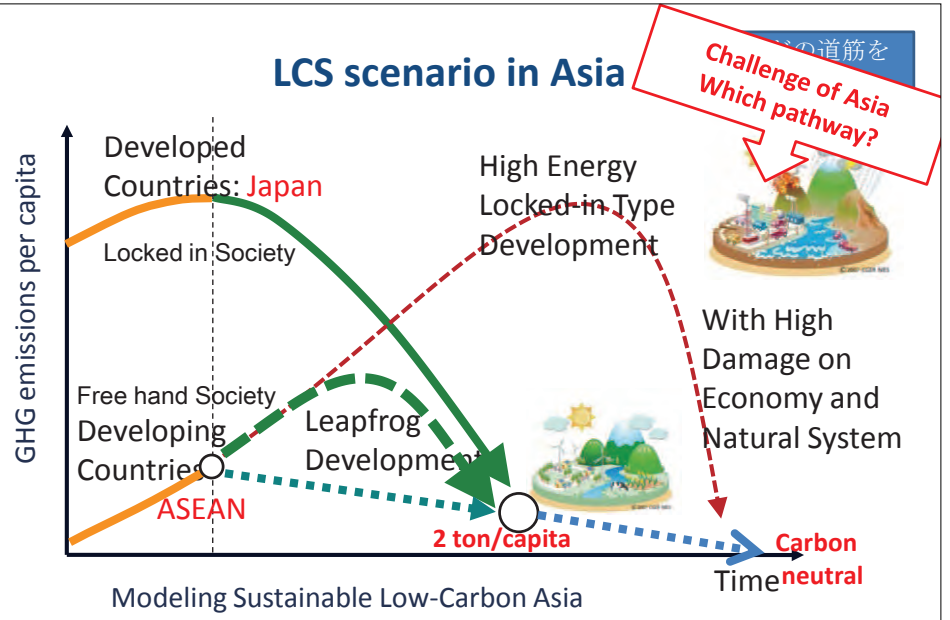
Country	CO2 emission Million Ton	Energy Intensity Energy/GDP TOE/million US$	Carbon Intensity CO2/Energy consump tCO2/TOE	CO2 Emission Ton/Capita
USA	5139	137	2.40	16.0
Germany	727	91	2.33	9.04
France	324	96	1.29	4.94
China	9,067	415	3.13	6.71
Japan	1,220	82	2.70	9.57
Indonesia	405	266	1.09	1.64
Malaysia	196	295	2.44	6.78
Philippines	84	193	1.98	0.87
Thailand	244	168	1.92	3.65
Vietnam	139	500	2.14	1.56
EU15	2,741	91	1.99	6.86
World	32,562	196	2.44	4.63
2050 GHG Halving	20,000 (20G)	(divided by population of 10G)		2.00

Institute for Global Environmental Strategies

Why capacity development for CC ?

- **Climate: Global common: All countries required participation**
- **CC response decides country's future: ownership/country driven**
- **Science (evidence) based policy and action: condense wisdom**
- **New challenge for all human-being: No template exist**

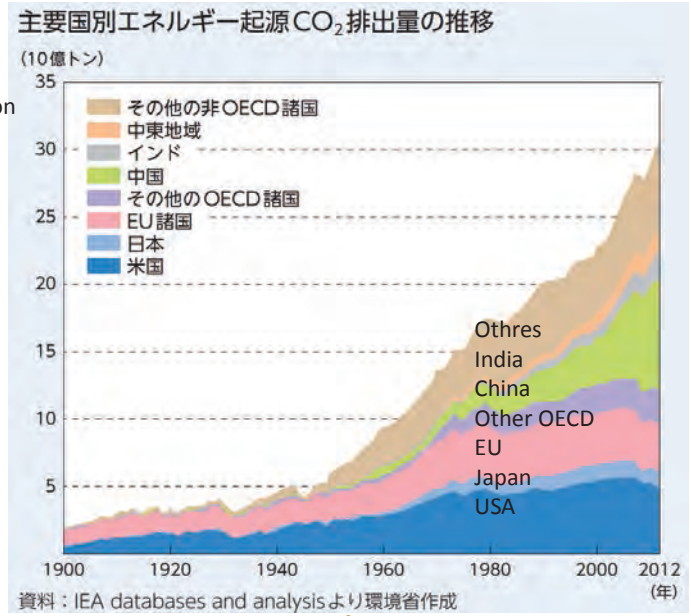
LCS scenario in Asia



"Asian Low-Carbon Society Scenario Development Study" FY2009-2013, funded by Global Environmental Research Program, MOEJ

http://2050.nies.go.jp/index.html

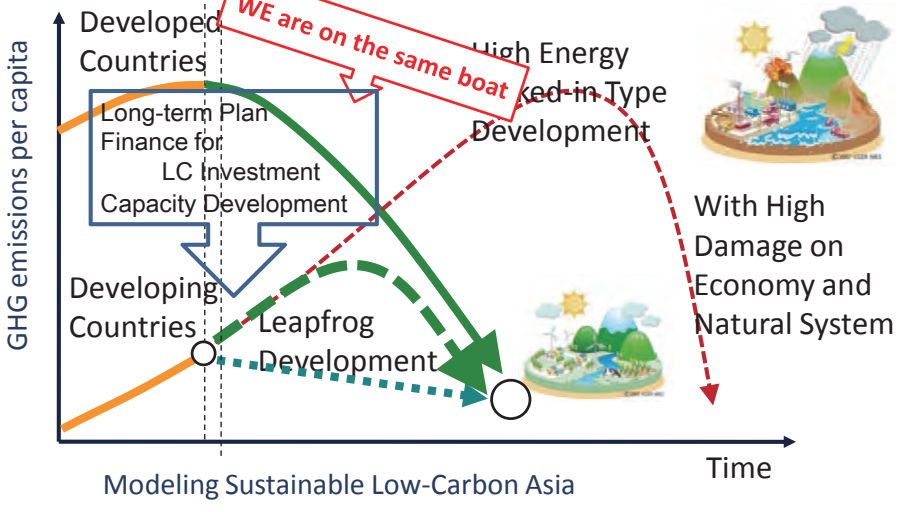
Trend of Global CO_2 Emission



出典：平成26年版 環境・循環型社会・生物多様性白書（PDF版）

LCS scenario in Asia

アジアはどの道筋を選択するのか



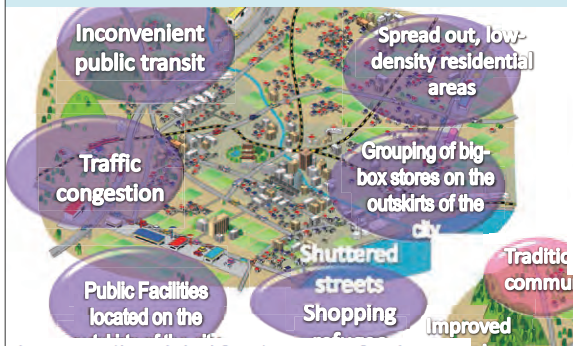
Modeling Sustainable Low-Carbon Asia

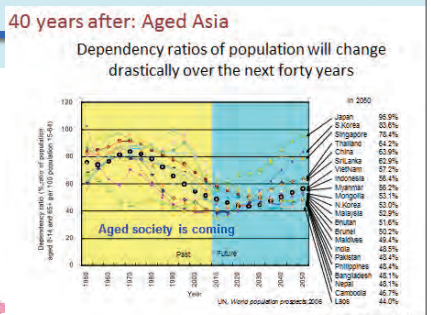
"Asian Low-Carbon Society Scenario Development Study" FY2009-2013, funded by Global Environmental Research Program, MOEJ

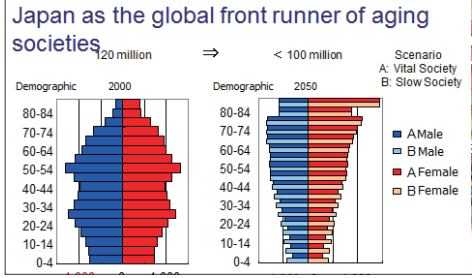
http://2050.nies.go.jp/index.html

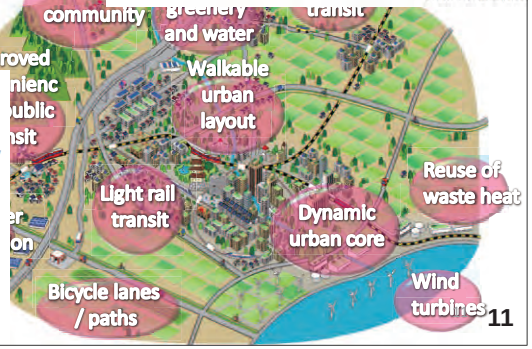
Bubble burst: hi-energy locked-in and aged society

Now restoring to compact city

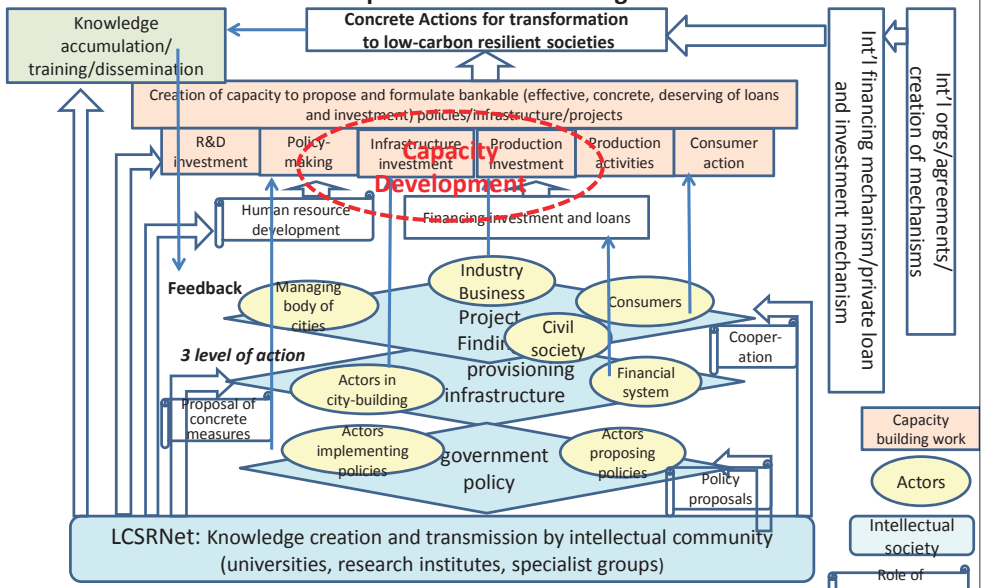








Capacity building system to evoke effective (bankable) concrete actions in response to climate change



Objective is Transform low-carbon resilient societies

3rd level: Individual actors take action based on appropriate policies and infrastructure

Concrete action: planning/infrastructure development/investment/management/behavior modification

Characteristics of Old and New "Mission-Oriented" Projects
Source: Soete and Arundel (1993, p. 51)

Old: Defence, Nuclear and Aerospace	*New: Low Carbon Technologies*
The mission is defined in terms of the number of technical achievements with little regard to their economic feasibility	The mission is defined in terms of **economically feasible technical solutions** to particular environmental problems.
The goals and the direction of technological development are defined in advance by a small group of experts	The direction of technical change is **influenced by a wide range of actors** including the government, private firms and consumer groups
Centralised control within a government administration	**Decentralised control** with a large number of involved agents
Diffusion of results outside the core of participants is of minor importance or actively discouraged	**Diffusion of the results** is a central goals and is actively encouraged
Limited to a small group of firms that can participate owing to the emphasis on a small number of radical technologies	An emphasis on the **incrementalist** development of both radical and incremental innovations in order to permit a large number of firms to participate
Self-contained projects with little need for complementary policies and scant attention paid to coherence	**Complementary policies vital** for success and close attention paid to coherence with other goals

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).

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Institute for Global Environmental Strategies

Why capacity development for CC ?

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IGES

LoCARNet: Low Carbon Asia Research Network

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 develop Asia.

Lessons learnt from activities and outcomes from dialogues between Researchers and Policy-makers 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".

2012 October, Bangkok (LoCARNet 1st Annual Meeting)

planing ⇒2014 Nov. 24-26 Bogor, Indonesia (LoCARNet 3rd Annual Meeting)

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

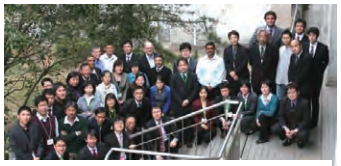
AIM Training WS since 1991 for integrated policy making

15th AIM International Workshop on 20-22 February 2010

AIM Training Workshop on 27-31 October 2008

AIM Training Workshop on 16-20 October 2006

Asian Modeling Meeting at Tsukuba on 17-18 September 2009



14th AIM International Workshop on 14-15 February 2009

AIM Training Workshop on 2-14 August 2010

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

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

16th AIM International Workshop on 19-21 February 2011

AIM Training Workshop on 22-26 October 2007

LCS-RNet

LoCARNet

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

E-mail: lcs-rnet@iges.or.jp
Fax: +81 (0)46 855 3809

CAPACITY BUILDING IN PREPARING CLIMATE MAINSTREAMING, INDC AND SDG: INDONESIA EXPERIENCE

Dr. Medrilzam
Deputy Director for Forest Economy and Management

Ministry of National Development Planning/
National Development Planning Board (BAPPENAS)
Indonesia

Prepared for CITC Conference, Bangkok, 30 March 2016

Introduction and Presentation Structure

Capacity Building → Learning Process → Policy Exercise → **Shifting Paradigm: LED/ Green Economy/ SDG**

1. Mainstreaming climate change into national development agenda
2. INDC as a learning process for policy exercise across sector
3. Linking INDC to SDGs

Mainstreaming Climate Change into National Development Agenda

Article 3.4 of UNFCCC:

'policies and measures to protect the climate system against human-induced … should be integrated with national development program…'

Mainstreaming:
the informed integration of a relevant value, theme or concern into the decisions of institutions that drive national, local and sectoral development policy, rules, plans, investment and action (adapted from Dalal-Clayton & Bass 2009)

*) Institutional strengthening and change and capacity building are at the heart of any mainstreaming effort

Mainstreaming Climate Change into National Development Agenda

National Development Planning Board (BAPPENAS)

Ministry of Environment

Parliament

Ratification process

KYOTO PROTOCOL

Ratifying the Kyoto Protocol in 2004 was the first learning process in mainstreaming climate change into development agenda. CDM was introduced as a bridge between economic investment and environmental consideration.

Brief explanation about the importance of climate change to Minister of Development Planning, Minister of Finance and Cabinet Secretary were conducted prior to ratification process.

Mainstreaming Climate Change into National Development Agenda

International Climate Politics

National Domestic Interests

Fiscal Capacity

Financing Mechanism

The role of mainstreaming champion is crucial.

Capacity Building

Capacity Buildind and Awareness Raising

BAPPENAS

MINISTRY OF FINANCE

Directorate for Environmental Management
National Development Planning Board

Mainstreaming Climate Change into National Development Agenda

- COP 13 UNFCCC Bali in 2007 was used as an important milestone for raising public awareness and increase domestic policy commitment

UN Climate Change Conference 2007
Bali - Indonesia

BALI ACTION PLAN

Initiate policy exercises that lead toward mitigation and adaptation policies for the next National Development Planning (2010-2014)

- In addition to various extreme climate event in Indonesia, After COP 13, Climate change becomes one the trending topic in public policy issue, media, and political discourses. ➔ public raising awareness

Mainstreaming Climate Change into National Development Agenda

- Announcement of 26% emission reduction in 2020 followed by establishment the National Action Plan on GHG Emission Reduction (RAN-GRK);
- RAN-GRK 2010-2020 consists of mitigation policy set taken from National Development Planning Document 2010-2014.
- Domestic budget commitment for Climate Change increased significantly (see attachment)

Economic Development Target
+ 7% Economic Growth

LED

- 26/41% Reduction of GHG
Climate Change Objective

Presidential Regulation No. 61/2011 on GHG Emission Reduction Action Plan

"We are devising …a policy … that will reduce our emissions by **26 percent by 2020** from BAU (Business As Usual). With international support… we can reduce emissions by as much as **41 percent**"

President Susilo Bambang Yudhoyono
at the G20 Summit in Pittsburgh, 2009

Sector	Emission Reduction Target (Gton CO2e) by 2020	
	26%	41%
Forest and Peat Land	0.672	1.039
Agriculture	0.008	0.011
Energy and Transportation	0.036	0.056
Industry	0.001	0.005
Waste	0.048	0.078
Total	0.767	1.189

The first stage of RAN-RAD GRK from 2010-2014 had been completed…

Year 2015 was the time to review the RAN GRK… and engaged for further process to establish Indonesia-INDC

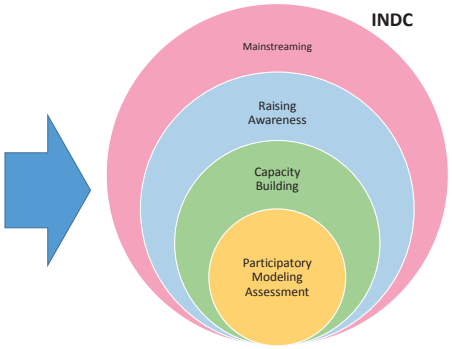
INDC as Mainstreaming Learning Process

Regulation base:
Article 9 of the
Presidensial Regulation No 61/2011

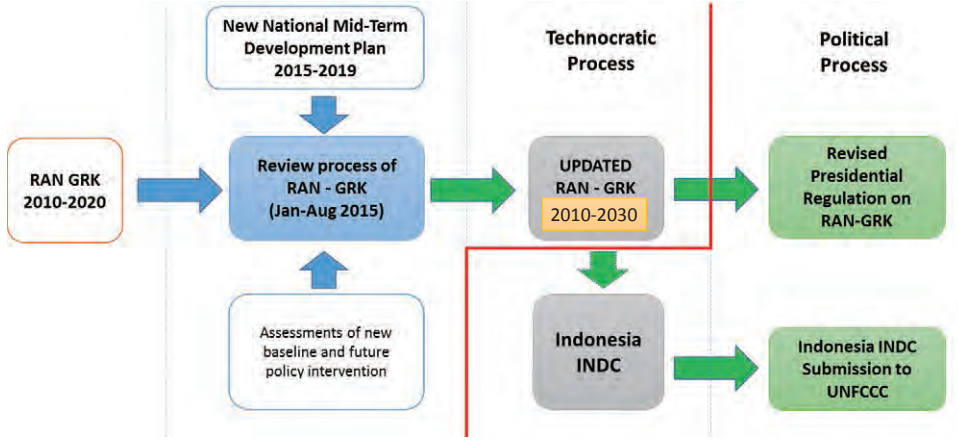
RAN-GRK may be updated regularly according to national demand and international dynamics circumstances

Prerequisite for the 'Updated' RAN-GRK leading towards Indonesia INDC:

- Based on rigorous scientific-policy assessments.
- Comprehensive policy impacts and carrying capacity assessments:
  - Sectoral policies
  - Interlinkages policies across sectors and economy
- Involvement of sectoral line agencies and related economic ministries.

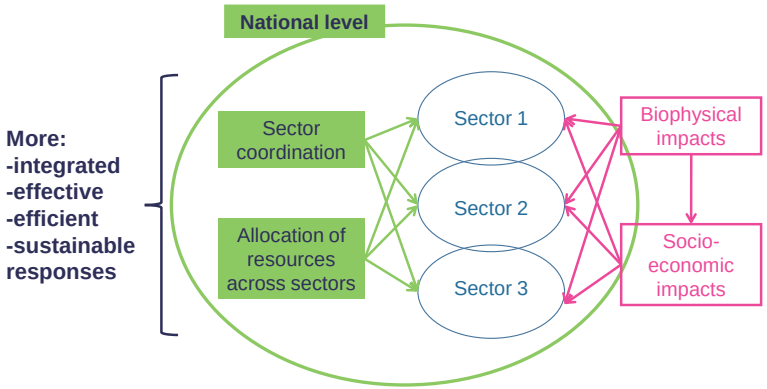


INDC as Mainstreaming Learning Process

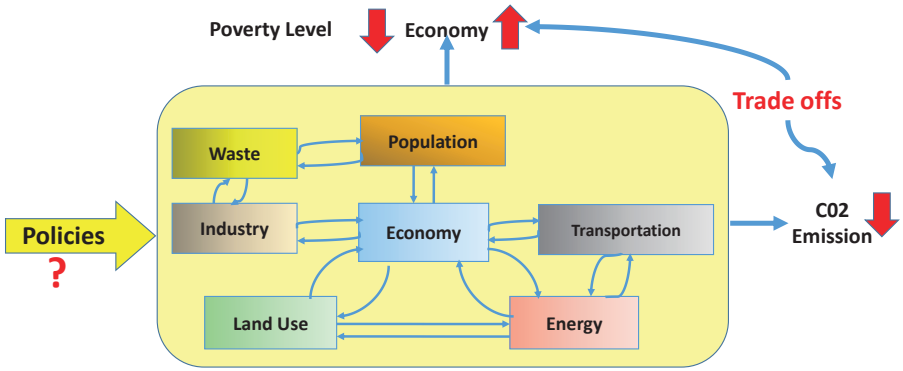


Mainstreaming Climate Change into National Development Agenda

The nature of Climate Change Mainstreaming:



INDC as Mainstreaming Learning Process



Nature of INDC: Integrated and shared response to the complexity and challenges of sustainable development

INDC as Mainstreaming Learning Process

Review RAN-GRK objectives:

- Find suitable policy interventions to maintain green economic growth while reducing GHG emissions → Low Emission Development Strategy (LEDS)/ Green Growth
- Measuring the medium and long term impact of climate change policy interventions on each sector and the economy.

Methodology:
Systems thinking and System Dynamics methodology.
Implemented at the national level (aggregated model).

Sectors:

- Economy and household (GDP, Green GDP, employment, Green Job, Saving)
- Forestry and Peat (Forest stocks and flows)
- Agriculture (Agriculture stocks and flows)
- Energy (Energy stocks and flows)
- Mining (Mining stocks and flows)
- Industry
- Transportation

INDC as Mainstreaming Learning Process

- ❑ Focus Group Discussions
- ❑ Informal meetings
- ❑ Resource persons: national line ministries staff
- ❑ Using national modellers from ITB
- ❑ Involve line-ministries since the beginning
- ❑ Wide stakelholders' engegament including CSO, Business Community & Local Governments
- ❑ Using existing data & information
- ❑ Attenting international iNDC workshops & seminars
- ❑ Budget support from Indonesian Government and Development Partners

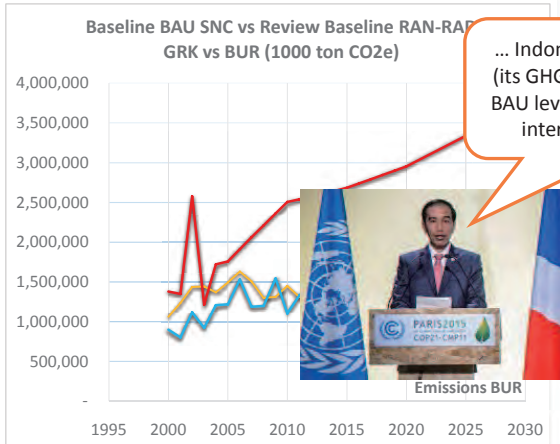
FGD with Line-Ministries & Modellers

FGD with CSO & Modellers

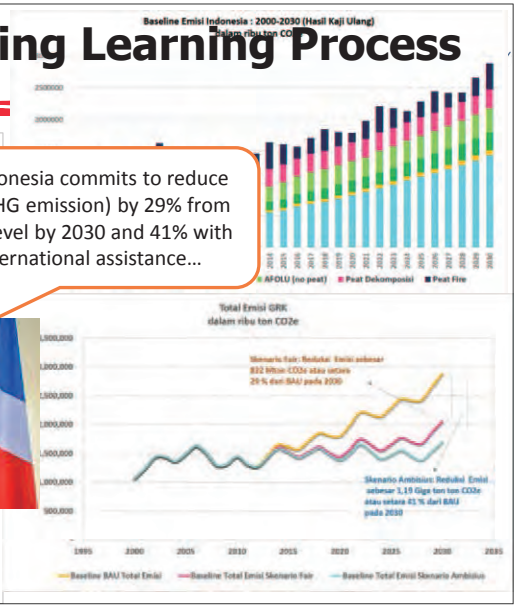
FGD with Line-Ministries & Modellers

FGD with Line-Ministries & Modellers

INDC as Mainstreaming Learning Process



… Indonesia commits to reduce (its GHG emission) by 29% from BAU level by 2030 and 41% with international assistance…



INDC as Learning Process for Policy Development

Challenges in developing Indonesia INDC:

- Lack of understanding → The impact of new government regime.
- Limited time.
- Robust data are limited and scattered. No integrated database system.
- Several methodologies are available, but the experts only prefer to the one that they know/understand → changing the mind-set.
- Lack of capacity in developing a modeling framework.
- Not easy to achieve a mutual agreement among sectoral line agencies. → particularly in setting-up baseline
- No suitable examples provided by the UNFCCC.

INDC as Learning Process for Policy Development

Lesson learned

- Participatory modeling assessment create dialog venue and allow policy makers to communicate across sector;
- Formal/regular development plan can become an appropriate entry point to talk with decision makers;
- Improve and streamlining CC database: *Inventory-monitoring and evaluation based on project/policy intervention-System Modelling input*;
- Involvement of line ministries middle staffs level in any stage of RAN-GRK review and INDC process;
- Conduct series of capacity building enhancement to line ministries, particularly in using system dynamics modeling.

Linking INDC to SDG:

INDC ⟷ SUSTAINABLE DEVELOPMENT GOALS

… Tackling climate change and fostering sustainable development are two mutually reinforcing sides of the same coin; sustainable development cannot be achieved without climate action. Conversely, many of the SDGs are addressing the core drivers of climate change.. (UNDP, 2016)

- Require understanding of the whole system ➔ "see the forest for the trees"
- Interconnected parameters and goals
- Develop at horizontal and vertical level
- Closely linked to National and Local Development Plan
- Established through Participatory approach
- Require "SMART" Indicators performance

Linking INDC to SDG

- Indonesia INDC was developed based on system dynamics modeling (INDOCLIMO v1);
- INDOCLIMO consists of several sub-models: Economy and household (GDP, Green GDP, employment, Green Job, Saving), Forestry and Peat (Forest stocks and flows), Agriculture (Agriculture stocks and flows), Energy (Energy stocks and flows), Industry, Transportation and waste.
- Poverty sub-model is being included and analysed.

Many INDC parameters can be used to measure the performance of Indonesia SDGs (For the time being: 6 Goals)

Linking INDC to SDG

CLOSING REMARKS

Lesson learned from Mainstreaming, INDC and SDG

- Capacity building is not only about training. Capacity building can be embedded and included into policy development and decision making process;
- Improvement on technical capacity of government staff (particularly local government staffs) should be prioritized in particular for scientific assessment, modeling development, database development and GIS;
- Technical exercises can become a good platform for sharing data and information, policy dialogs and decision making process;
- International gathering for sharing experience and lesson learned should be intensified for capacity building and raising awareness.

Thank You

Further Contact:

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Mobile: +62 811 802824

Climate Change Funding in State Budget

- **Indicative budget for climate change in National Medium Term Development Plan (RPJMN) 2010-2014 is USD 11.03 BILLIONS**

→ ***before issuance of Perpres No. 61/2011 on RAN-GRK, distributed in 16 line ministries/agencies***

No.	Activity	RPJMN 2010-2014 (USD BILL)
1	Adaptation Activities	6.84
2	Mitigation Activities	3.79
3	Supporting Activities	0.40
	TOTAL	11.03

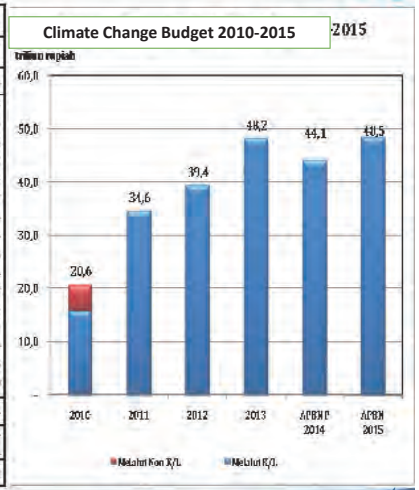
Total budget allocation for climate change in Annual Development Plan (RKP) 2011-2014 is **USD 16.58 BILLIONS**, exceeding USD 11.03 BILLIONS budget allocated in RPJMN 2010-2014 → *after issuance of Perpres No. 61/2011 on RAN-GRK, distributed in 16 line ministries/ agencies*

No.	Activity	RKP 2011 (USD BILL.)	RKP 2012 (USD BILL.)	RKP 2013 (USD BILL.)	RKP 2014 (USD BILL.)	Total 2011-2014 (USD BILL)
1	Adaptation Activities	1.37	1.63	1.73	1.64	6.37
2	Mitigation Activities	0.74	0.47	2.89	5.57	9.67
3	Supporting Activities	0.11	0.13	0.15	0.15	0.54
	TOTAL	2.22	2.23	4.77	7.36	16.58

CLIMATE CHANGE BUDGET 2010-2015

Source: Website of DG of Budget, Ministry of Finance

KODE BA	URAIAN	2010	2011	2012	2013	2014 APBNP	2015 APBN
	KEMENTERIAN NEGARA/LEMBAGA	15,8	34,6	39,4	48,2	44,1	48,5
018	KEMENTERIAN PERTANIAN	4,3	6,4	7,7	6,6	6,1	7,2
020	KEMENTERIAN ENERGI DAN SUMBER DAYA MINERAL	2,2	6,0	6,2	7,4	7,5	6,4
024	KEMENTERIAN KESEHATAN	0,4	1,5	1,0	2,1	1,8	2,2
029	KEMENTERIAN KEHUTANAN	1,6	3,6	3,5	4,2	3,2	3,1
032	KEMENTERIAN KELAUTAN DAN PERIKANAN	0,7	1,1	0,9	1,2	1,1	1,3
033	KEMENTERIAN PEKERJAAN UMUM	5,0	12,0	16,4	20,9	19,4	23,7
035	KEMENTERIAN KOORDINATOR BIDANG PEREKONOMIAN	0,0	-	-	-	-	-
042	KEMENTERIAN NEGARA RISET DAN TEKNOLOGI	0,1	-	-	-	-	-
043	KEMENTERIAN NEGARA LINGKUNGAN HIDUP	0,3	0,5	0,5	0,6	0,6	0,6
079	LEMBAGA ILMU PENGETAHUAN INDONESIA	0,0	-	-	-	-	-
080	BADAN TENAGA NUKLIR NASIONAL	0,0	0,5	0,6	0,6	0,6	0,7
075	BADAN METEOROLOGI KLIMATOLOGI DAN GEOFISIKA	0,5	0,9	0,9	1,1	1,1	1,3
081	BADAN PENGKAJIAN DAN PENERAPAN TEKNOLOGI	0,2	0,6	0,2	0,6	0,4	0,4
082	LEMBAGA PENERBANGAN DAN ANTARIKSA NASIONAL	0,1	-	-	-	-	-
083	BADAN KOORDINASI SURVEY DAN PEMETAAN NASIONAL	0,3	0,3	0,3	0,4	0,6	0,6
103	BADAN NASIONAL PENANGGULANGAN BENCANA	0,2	1,1	1,0	2,5	1,6	1,0
	NON KEMENTERIAN NEGARA/LEMBAGA	4,8	-	-	-	-	-
	DANA REBOISASI (GERHAN)	-	-	-	-	-	-
	BIAYA SARANA DAN PRASARANA KONVERSI MINYAK TANAH KE LPG	4,8	-	-	-	-	-
	TOTAL	20,6	34,6	39,4	48,2	44,1	48,5



BACK

Implications of "two degrees"

3rd CITC Regional Conference on Climate Change and Sustainable Development

Panel session "*Capacity building and awareness raising as key success factors to achieve SDGs and Paris Agreement in Asia*"

30 March 2016

Masato Kawanishi, Senior Advisor, JICA

Paris Agreement

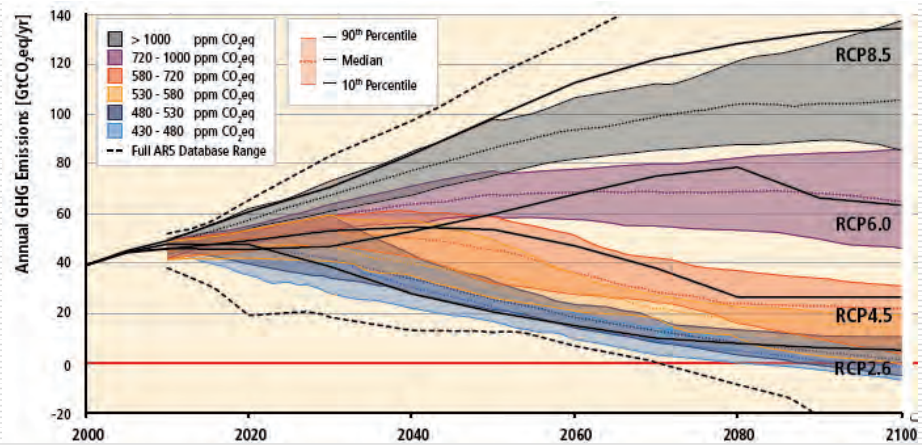
- Article 2
  - (a) *Holding the increase of the global average temperature well below 2 °C above pre-industrial levels …*;
  - (b) *Increasing the ability to adapt to the adverse impacts of climate change … in a manner that does not threaten food production*.

Paris Agreement (continued)

- Article 4
  - *… to achieve a balance between anthropogenic emissions by sources and removals by sinks of greenhouse gases in the second half of the century, on the basis of equity, and in the context of sustainable development and efforts to eradicate poverty.*

GHG emission pathways

(IPCC AR5 WGIII)



Characteristics of mitigation scenarios (IPCC AR5 WGIII)

CO_2eq Concentrations in 2100 (ppm CO_2eq) Category label (concentration range)[9]	Subcategories	Relative position of the RCPs[5]	Cumulative CO_2 emissions[3] ($GtCO_2$)		Change in CO_2eq emissions compared to 2010 in (%)[4]		Temperature change (relative to 1850–1900)[6,7]				
								Likelihood of staying below temperature level over the 21st century[8]			
			2011–2050	2011–2100	2050	2100	2100 Temperature change (°C)[7]	1.5°C	2.0°C	3.0°C	4.0°C
< 430	Only a limited number of individual model studies have explored levels below 430 ppm CO_2eq										
450 (430–480)	Total range[1,10]	RCP2.6	550–1300	830–1180	−72 to −41	−118 to −78	1.5–1.7 (1.0–2.8)	More unlikely than likely	Likely	Likely	Likely
500 (480–530)	No overshoot of 530 ppm CO_2eq		860–1180	960–1430	−57 to −42	−107 to −73	1.7–1.9 (1.2–2.9)	Unlikely	More likely than not		
	Overshoot of 530 ppm CO_2eq		1130–1530	990–1550	−55 to −25	−114 to −90	1.8–2.0 (1.2–3.3)		About as likely as not		
550 (530–580)	No overshoot of 580 ppm CO_2eq		1070–1460	1240–2240	−47 to −19	−81 to −59	2.0–2.2 (1.4–3.6)		More unlikely than likely[11]		
	Overshoot of 580 ppm CO_2eq		1420–1750	1170–2100	−16 to 7	−183 to −86	2.1–2.3 (1.4–3.6)				
(580–650)	Total range	RCP4.5	1260–1640	1870–2440	−38 to 24	−134 to −50	2.3–2.6 (1.5–4.2)				
(650–720)	Total range		1310–1750	2570–3340	−11 to 17	−54 to −21	2.6–2.9 (1.8–4.5)		Unlikely	More likely than not	
(720–1000)	Total range	RCP6.0	1570–1940	3620–4990	18 to 54	−7 to 72	3.1–3.7 (2.1–5.8)	Unlikely[11]		More unlikely than likely	
>1000	Total range	RCP8.5	1840–2310	5350–7010	52 to 95	74 to 178	4.1–4.8 (2.8–7.8)		Unlikely[11]	Unlikely	More unlikely than likely

Global energy use for RCP2.6 (van Vuuren et al. 2011)

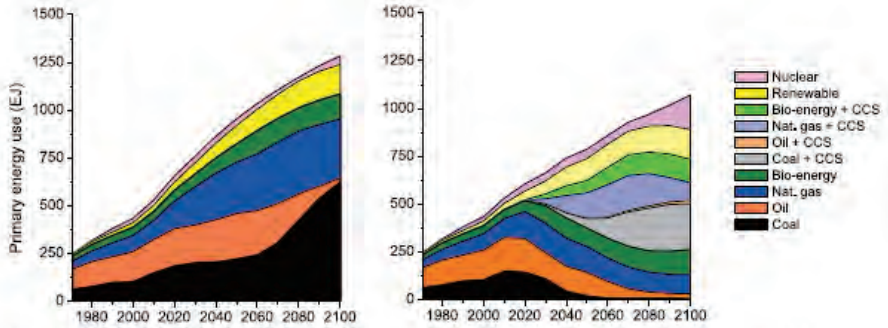
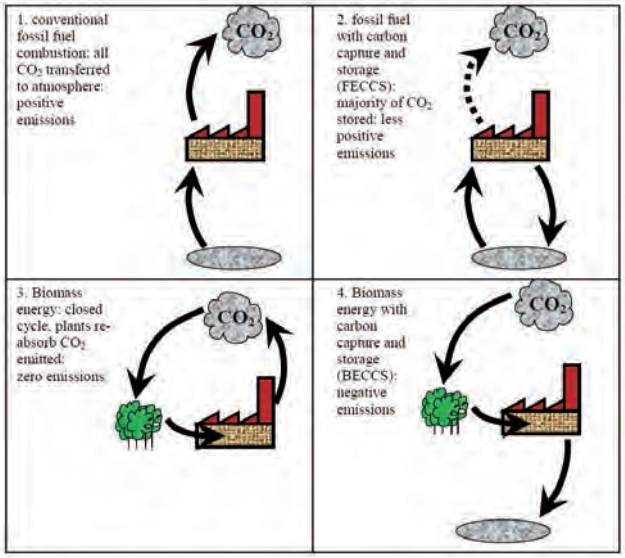


Fig. 2 Trends in global energy use for the baseline (*left*) and the mitigation scenario RCP2.6 (*right*) (CCS=Carbon Capture and Storage)

Bioenergy with CCS (BECCS) (Gough et al. 2010)

Figure 1. BECCS and negative emissions concept (after Karlsson, BECCS workshop presentation)



RCP2.6: critical conditions & potential effects (van Vuuren et al. 2011)

- Significant role of bioenergy, CCS, and the combination (BECCS)
- Potential negative effects
  - Increasing competition for land and water
  - Impact on biodiversity
  - Concern about equity, etc.
- More efforts required for harmonization between global, national & local concerns

Public attitudes matter

Example of public survey (Oct. 2003, USA)

Table 1. Response to: *There is a growing concern about increasing levels of carbon dioxide in the atmosphere. How do you think the following contribute to these levels?*

Technology or System	Increases CO_2 (%)	Decreases CO_2 (%)	No Impact (%)	Not Sure (%)
Automobiles	78	3	2	18
Factories	73	3	2	23
Coal burning power plants	70	2	3	25
Home heating	53	3	9	36
Nuclear power plants	30	8	20	43
Trees	7	66	8	19
Oceans	4	29	26	41
Windmills	3	21	49	27

(Curry et al. 2004)

"Decide – announce – defend" approach doesn't work. (Devine-Wright, 2011)

- Public acceptance affects investment decisions & priority setting of policy makers.
- Capacity of policy makers for:
  - Ensuring availability of information about technology, its impacts & benefits
  - Aligning the expectations and interests of different stakeholders

(IPCC AR5 WGIII Ch. 7)

Kyoto Environmental Activities Association
How we promote environmental education and environmental activities

Shunsuke SHIMBORI
Environmental Activities Section,
Kyoto Environmental Activities Association

About us

"Kyoto Environmental Activities Association(KEAA) "was established in 2014 to promote the public interest for environmental activities especially through the works in Kyoto Municipal Center for Promotion of Environmental Protection (Miyako Ecology Center, established in 2002).
*The forerunner of this association was "Kyoto city Association for Environmental Projects(KAEP)", established in 2001.

Our Mission

We increase number of citizens that participate to environmental activities and coordinate citizens and various groups to realize sustainable communities and society.

- We develop programs including environmental volunteer training to increase number of citizens that have basic skills to start environmental activities. We also create opportunities to participate in environmental activities for citizens so that they will gain the skill to start their activities by own.
- We collaborate with communities, NGOs, businesses, administrations, and academic sections to spread and support various environmental activities.

- We develop environmental programs that trained citizens can implement in various areas to spread environmental activities in various areas.
- We create opportunities to learn about and participate in environmental activities and share our know-how and outputs from our activities with everyone to spread environmental activities in various areas.

Our Work

We work on various projects to realize our mission;
We increase number of citizens that participate to environmental activities and coordinate citizens and various groups to realize sustainable communities and society.

Our Work

- Administration of “Kyoto Municipal Center for Promotion of Environmental Protection (Miyako Ecology Center)”
- Eco-School districts support center（ Supporting environmental activities in communities）
- International cooperation
- Consulting for environmental activities / human resource development etc.

Miyako Ecology Center

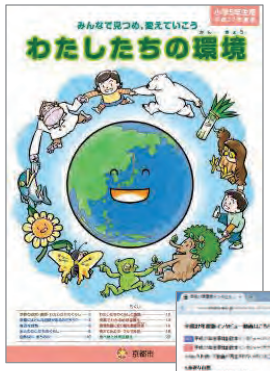
Citizens' participation

Partnership

For sustainable society…

Developing and implementing various environmental education programme

Developing tools for EE



Seminars and programmes for developing human resources

Seminars and programmes for developing human resources

Events to enlighten citizens

Providing and spreading information for eco-lifestyle

Training & Manageing environmental volunteers as human resources to spread environmental activities

Knowledge

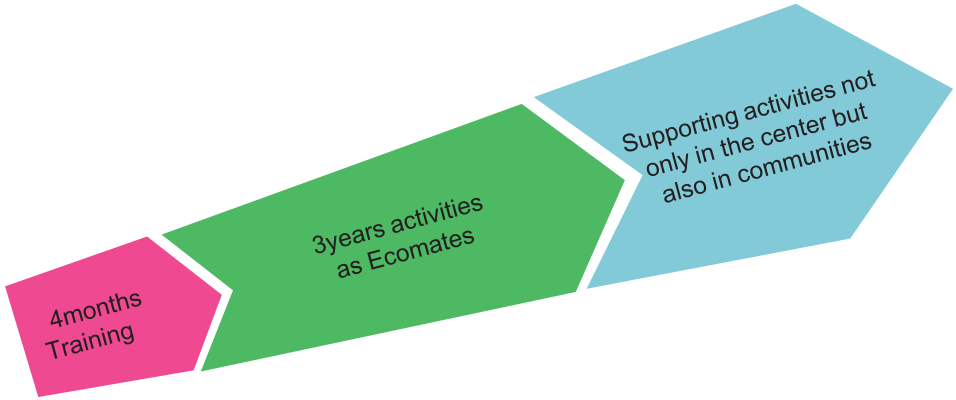
Messages

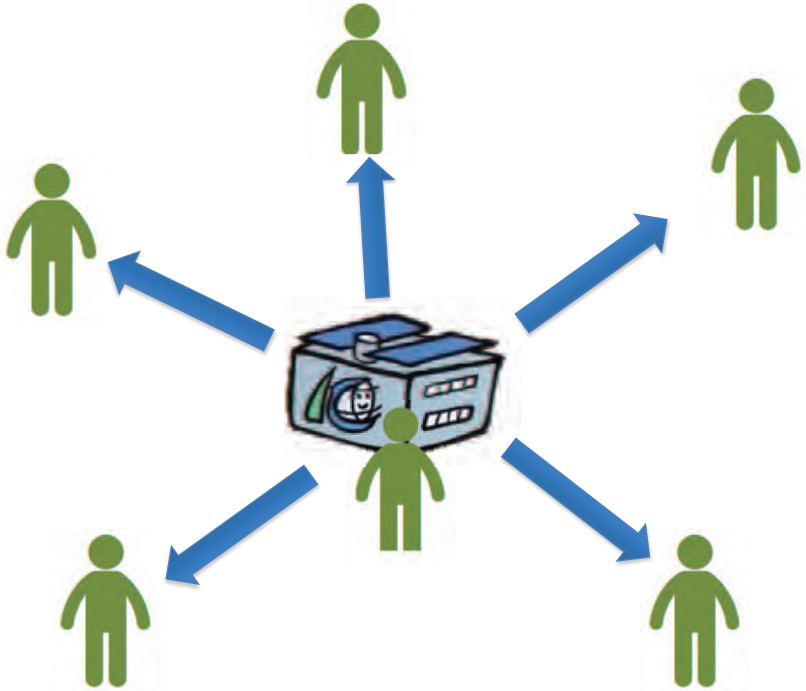
Environmental Volunteers (Citizens)

Wishes

Wisdom of life

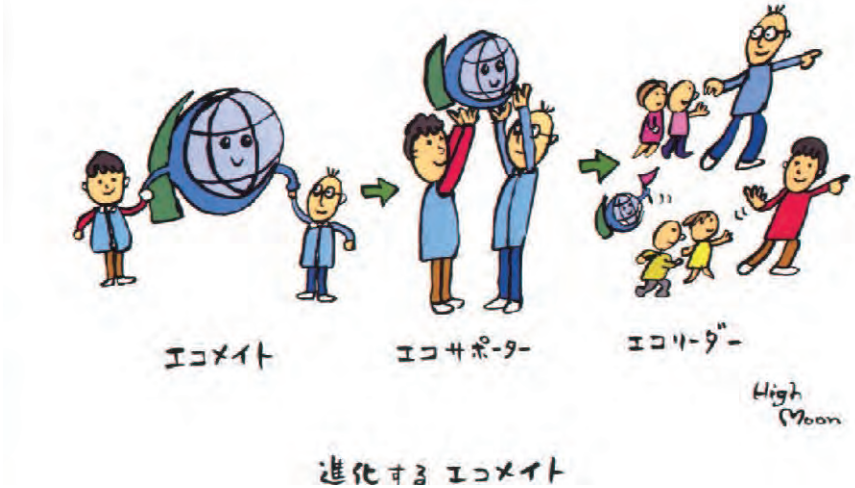
Flow of environmental volunteers' activities





As environmental leaders…

- Establish new group / NGO to promote their environmental activities
- Supporting other environmental NGOs as staffs or volunteers
- Supporting activities in Miyako Ecology center
- Activities in their community groups and schools

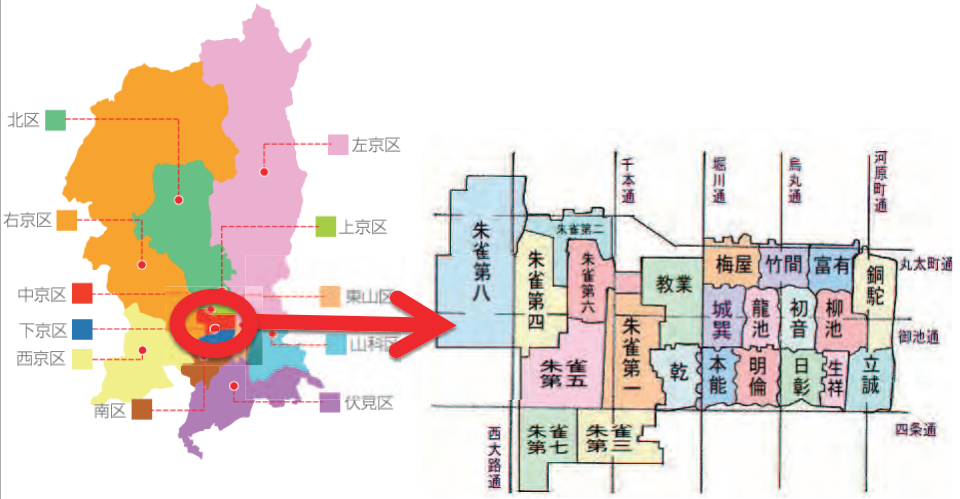


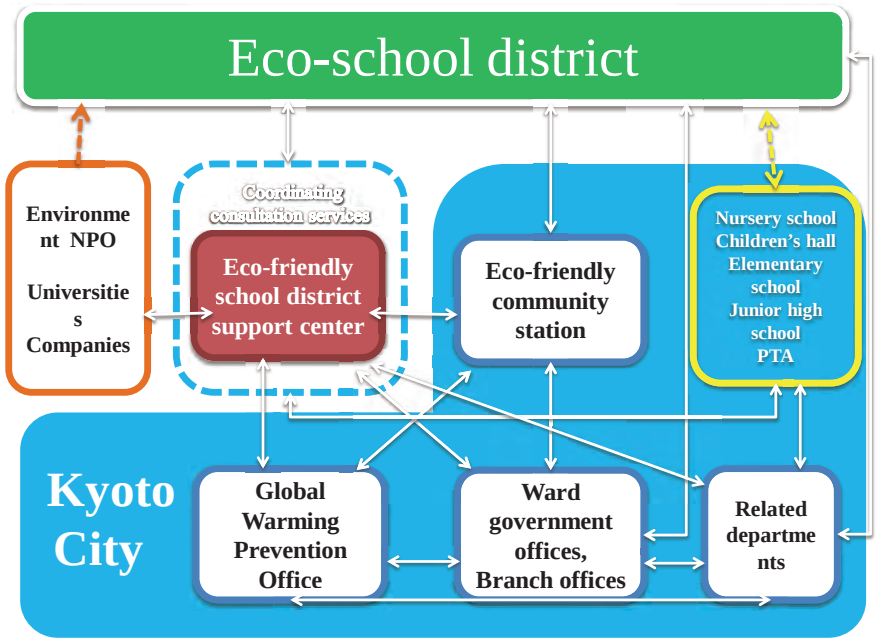
Eco-School district support center

・Eco-School district is one of the community units in Kyoto city.

・We raise awareness towards environment in communities and support environmental activities in Eco-School districts.

We coordinate human resources from Miyako Ecology Center to communities as well.





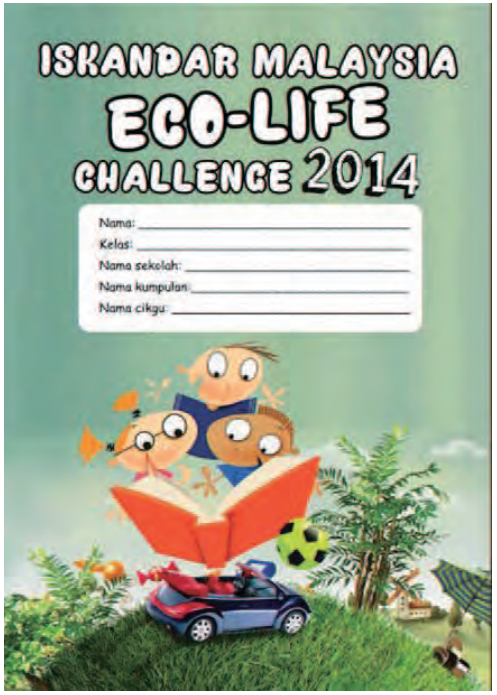
Promoting and supporting environmental activities in communities

Seminars in communities

International cooperation

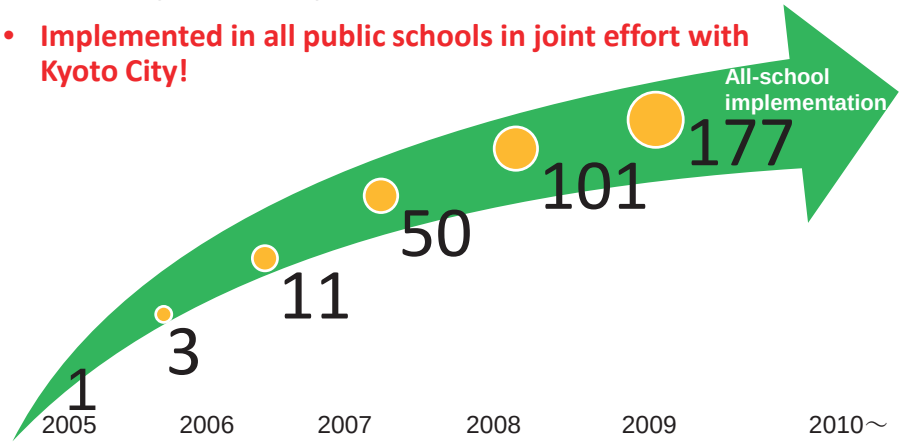
Capacity building and Community development for Low-Carbon Society

- Improving the quality of environmental education (IMELC) for LCS
- Developing PBL based learning programme for LCS in Secondary schools
- Supporting the communities' activities for LCS and share the experiences and know-how to the area.

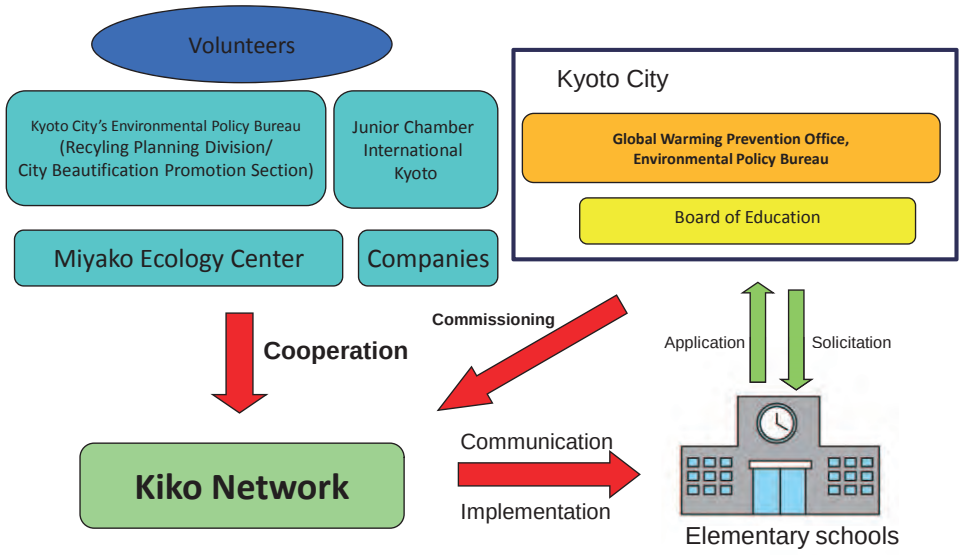


About ELC in KYOTO

- **Joint efforts starts in FY2005**
  - As a joint project with the Junior Chamber International Kyoto, study groups are hosted at elementary schools to tell the children about global warming and eco-life.
- **Implemented in all public schools in joint effort with Kyoto City!**



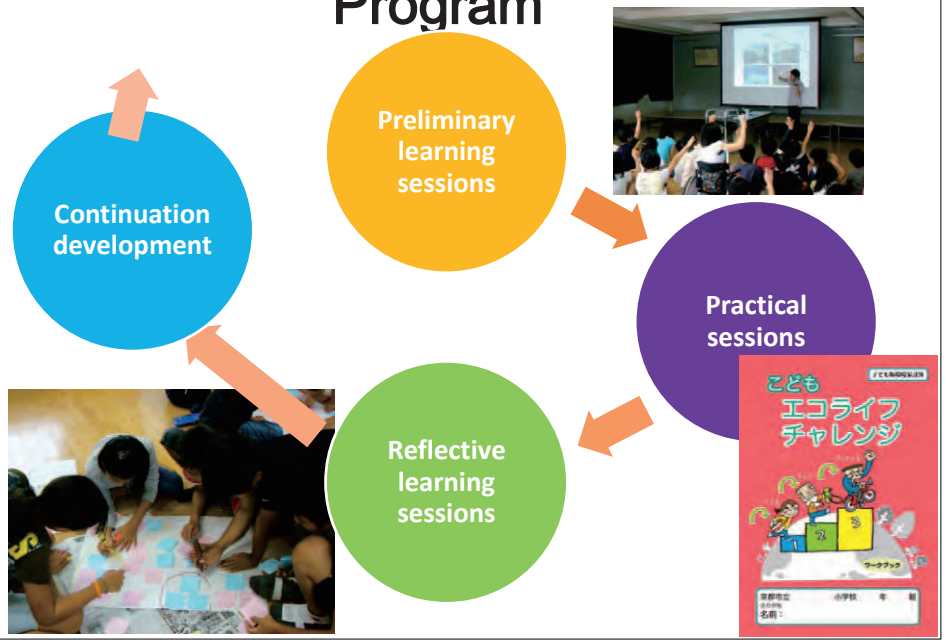
Planning and Management through Partnerships



The Three Special Features

- Learning program consisting of study, practical work and reviews
- Planning and management through partnerships
- Participation of varied groups

Learning/Practicals/Reflection Program



Preliminary Learning Sessions – Learning –

- By learning about global warming and eco-life, the children think about the significance of the Eco-life Challenge

Practical Work during School Holidays

必ず取り組むページ

2 やってみよう！エコライフチェック

5段階でチェックしてみよう

1. エコライフチャレンジに取り組む前に、13個のエコライフができているか（①前に）チェックしてみよう。
2. 休み中エコライフに取り組んだ後、もう一度（②後に）チェックしてみよう。

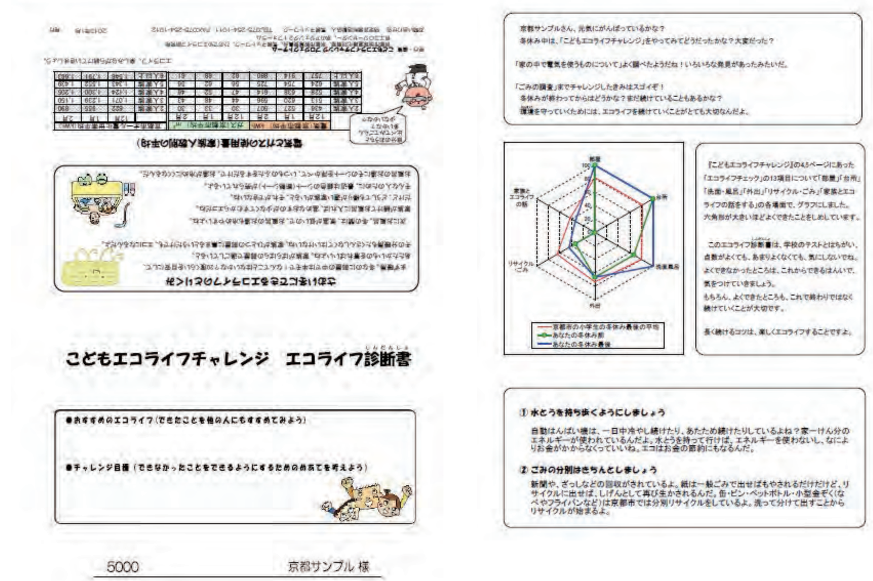
◎：よくできている
○：だいたいできている
△：半分くらいできている
X：できていない
—：関係ない、もっていない

	エコライフ	①前	②後	アドバイス
1	テレビを見ていない時は消す。			テレビを見ながらねてしまったり、つけたまま本を読んだりすると電気のムダだよ。
2	だれもいない部屋の電気は消す。			照明は、白熱電球から省エネ型電球やLED電球にかえると、1個あたり最大90%以上も電気が節約できるよ。
3	エアコンはあまり使わない。使う時は、設定温度に気をつける。			できるだけ、せん風機やこたつを使おう。エアコンの設定温度は、夏は28℃、冬は18℃～20℃だよ。
4	冷蔵庫は開けたらすぐに閉める。用がない時は開けない。			夏は、冷たいお茶をまほうびんに入れておくと、1日に何度も冷蔵庫を開けずにすむよ。
5	歯みがきや顔を洗う時は、水を流しっぱなしにしない。			水道からは、1分間で12リットル（500mLのペットボトル24本分）もの水が出るんだ。出す量にも気をつけよう。
6	シャワーは、流しっぱなしにしない。			シャワーのお湯を1分間使うと、テレビ200台をつけるのと同じだけのエネルギーが必要だよ。
7	買い物に行く時は、マイバッグを持って行く。			京都市内で使われているレジ袋の数は、1年間で約5億2000万枚だって！いくらなんでも多すぎるよね？
8	文ぼう具は、再生紙のノートやエコマークのついたものを買う。			紙は新しい木をたくさん切って作られているんだよ。できるだけ再生紙のノートやエコマークのついたものを選ぼう。
9	外出するときは、水とうを持ち歩くようにする。			自動はん売機やコンビニでは、一日中冷やしたり、温めたりして電気をたくさん使っているね。水とうを持っているとごみも出ないしエコだね。
10	ごみの分別をきちんとして、リサイクルに出す。			新聞などを古紙回収に出しているかな？リサイクルも大事だけれど、まずはごみを出さないように工夫をしよう。
11	近くへは車を使わずに、自転車か歩いて行く。			自転車や徒歩で出かけると、二酸化炭素（CO_2）を出さないから、とってもエコだね。
12	ごはんは残さず食べる。食べ物を粗末にしない。			日本では、1年間に約2,000万トンもの食べ物が捨てられているんだって！食べ物を大切にしよう。
13	家族で環境問題や、エコライフについての話をする。			環境問題を解決するには、一人でも多くの人が協力することが大切だね。まずは身近な家族と話してみよう。

7

8

Eco-life report



Reflective Learning Session

- Looking back over what they have done during the summer and winter holidays, the children think about targets they can continue to aim for during the future, as well as sharing their work between each other.

Capacity building and Community development for Low-Carbon Society

- **Improving the quality of environmental education (IMELC) for LCS**
- Developing PBL based learning programme for LCS in Secondary schools
- Supporting the communities’ activities for LCS and share the experiences and know-how to the area.

Learning/Practicals/Reflection Program

Preliminary learning sessions

Practical sessions

Reflective learning sessions

Continuation development

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Thank you for your attention!

Shunsuke SHIMBORI
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shinbori@miyako-eco.jp
www.keaa.or.jp

Experience of IMPAC-T and ADAP-T

ADAP-T

Advancing co-Design of integrated strategies with AdaPtation to climate change in Thailand

2016-2020

Associate Professor
Dr. Thanya Kiatiwat

March 31, 2016

IMPAC-T

Integrated study on Hydro-Meteorological Prediction and Adaptation to Climate Change in Thailand

2009-2014

IMPAC-T

Integrated study on Hydro-Meteorological Prediction and Adaptation to Climate Change in Thailand

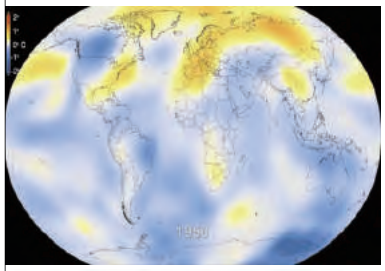
2009-2014

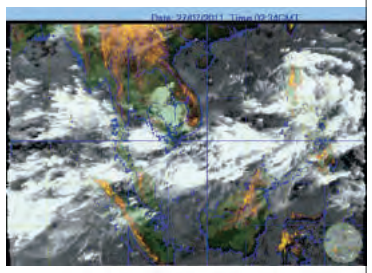
25 March 2009

IMPAC-T

Integrated study on Hydro-Meteorological Prediction and Adaptation to Climate Change in Thailand

Research Project





Climate Change
การเปลี่ยนแปลงสภาพภูมิอากาศ

Hydro(Water)
น้ำ

Meteorology
อุตุนิยมวิทยา

IMPAC-T

Integrated study on Hydro-Meteorological Prediction and Adaptation to Climate Change in Thailand

IMPAC-T Thai-Japanese Researchers

Thais = 50

Japanese = 15

Project Overview

Climate Change is the major security issue for human beings for both developing and developed counties.

Human Activity is one of the major factors threatening the sustainable development of the world particularly by the demo-graphic & economic growths in Asia

Earth observation considering climate change

Validation & Analysis

Hydrological Models

Water related Information System

Web Services

Sensor field

Base stations

Local monitoring

GPR

Network

Data Center

Early warning system on the risks of water-related disasters by integrating observations and model

Developing National Strategic Plan in Water Sectors for Adaptation Measures under CC.

Decision-making support system (DMSS) for adaptation in water-related areas under climate change

Integrated Study Project on Hydro-Meteorological Prediction and Adaptation to Climate Change in Thailand (IMPAC-T)

Chao Phraya River Basin

IMPAC-T Research Groups/Sub-Groups

Thai-Japan joint research teams

Earth observation and Climate change

- Atmospheric model
- Quantitative radar rainfall estimates
- Rainfall observation by satellite
- Land flux analysis
- Detection of global changes impacts and monsoonal variations
- Telemetry and information server system

Model development

Integrated hydrological model (HO8, SiBUC)

Impact assessment and adaptation to CC

- Land slide
- Coastal zone
- Extreme Events
- Social Applications

OUTPUTS /OUTCOMES

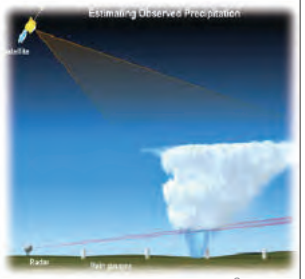
IMPAC-T

Integrated study on Hydro-Meteorological Prediction and Adaptation to Climate Change in Thailand

2009-2014

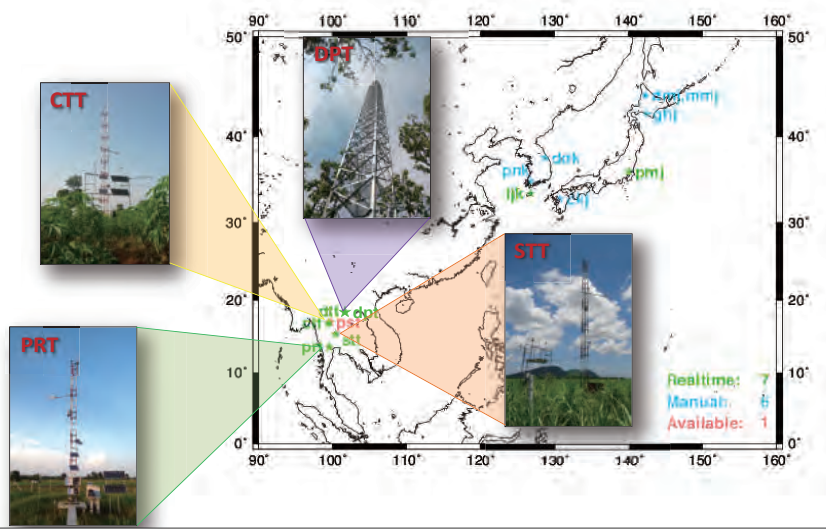
JICA JST

Highlight of Output/Outcome

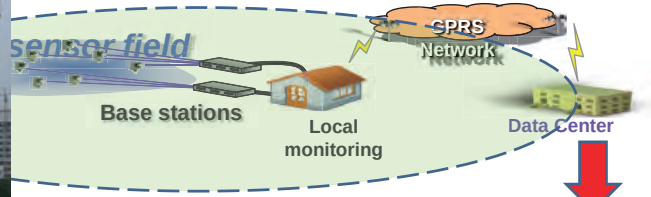


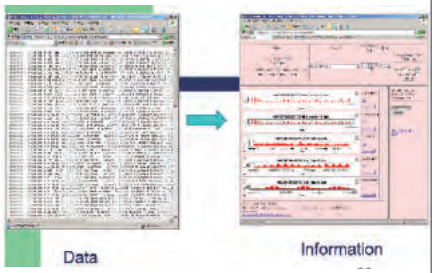
1) Monitoring Climate Change

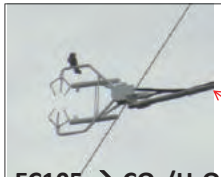
IMPAC-T Flux towers in Thailand



IMPAC-T with Weather Observation





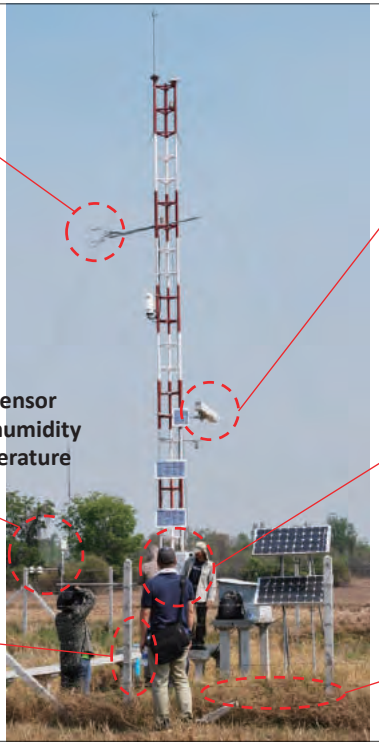


EC105 → CO_2/H_2O vapor
CSAT3 → anemometer

- Camera → rice plant growth
-Infrared sensor

Net radiation
Short-long wave In & Out

-Rainfall sensor
-relative humidity
Air temperature



CR1000 Data logger

-water temperature
-water level

Soil moisture 2.5, 15, 60 cm

Flux Observation Stations

Paddy (Rice) Field
at Rajchaburi Province
(KMUTT)

Flux Observation Stations

Sugar Cane Field
at Tak Fa
(Nakonsawan)

Department Of Pollution Control and KMUTT

Flux Observation Stations

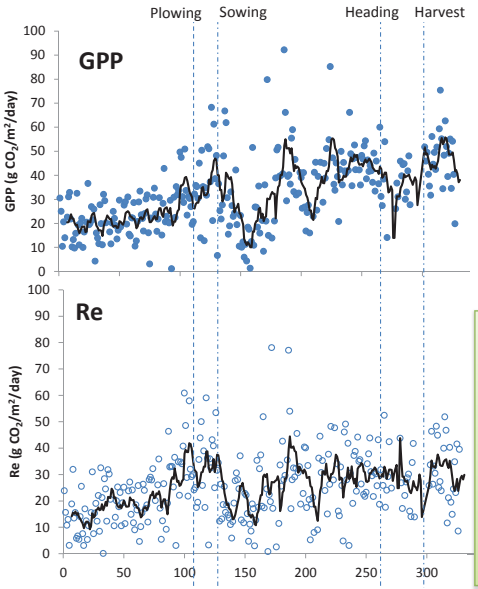
- Cassava Field at Tak Province

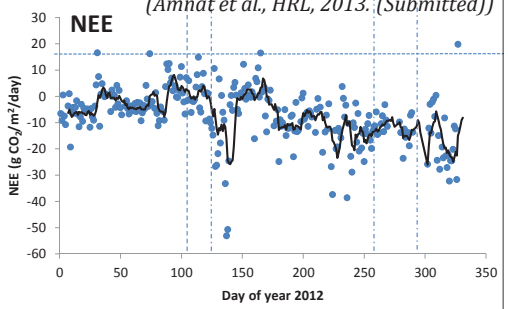
Naresuan University

Flux Tower # 4, Forestry
at Phayao University

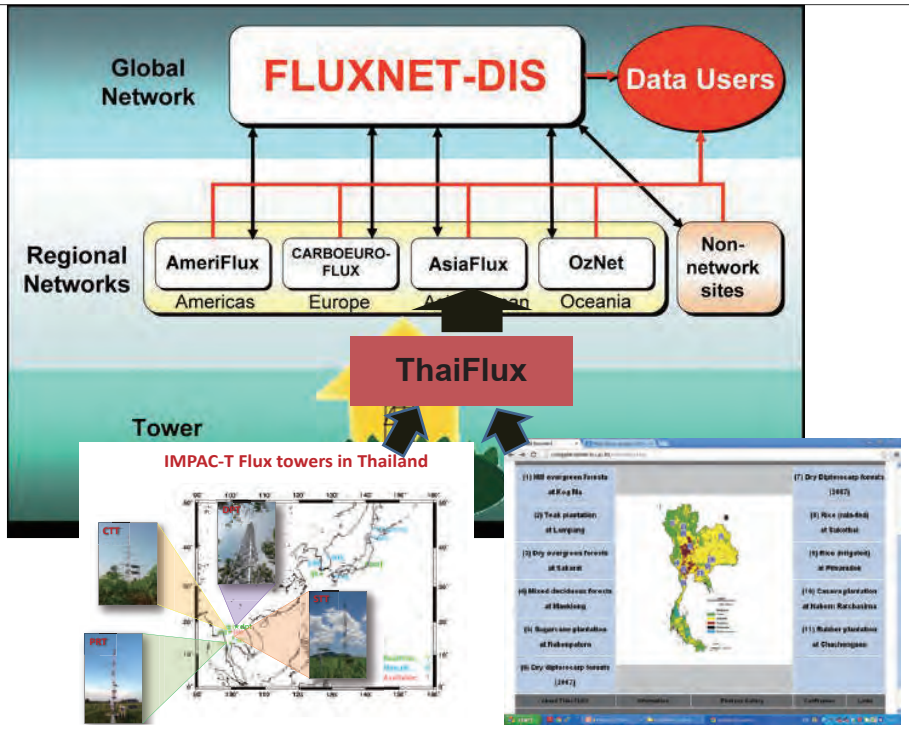
Fluxes of sensible heat, latent heat and CO_2 from a rainfed rice field in Thailand

(Amnat et al., HRL, 2013. (Submitted))

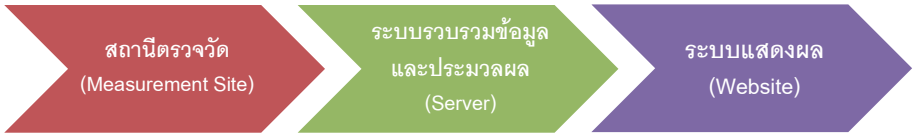




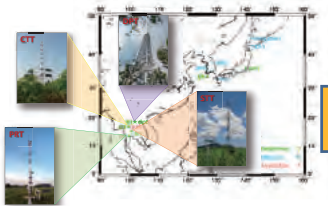
- *Negative NEE was observed year round, but the field became significant sink of atmospheric CO_2 only during the late wet season (late July-October).*
- *Such period was characterized by waterlogged conditions that promoted active GPP and relatively stable Re.*
- *The annual basis, the sensible heat, latent heat and CO2 fluxes were 1,020 MJ/year, 1,029 mm/year and 1.48 kgCO_2/m^2/year, respectively.*



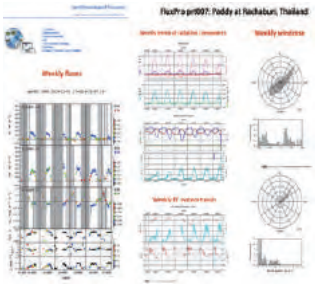
Data System and Linkage to FluxPro



IMPAC-T Flux towers in Thailand

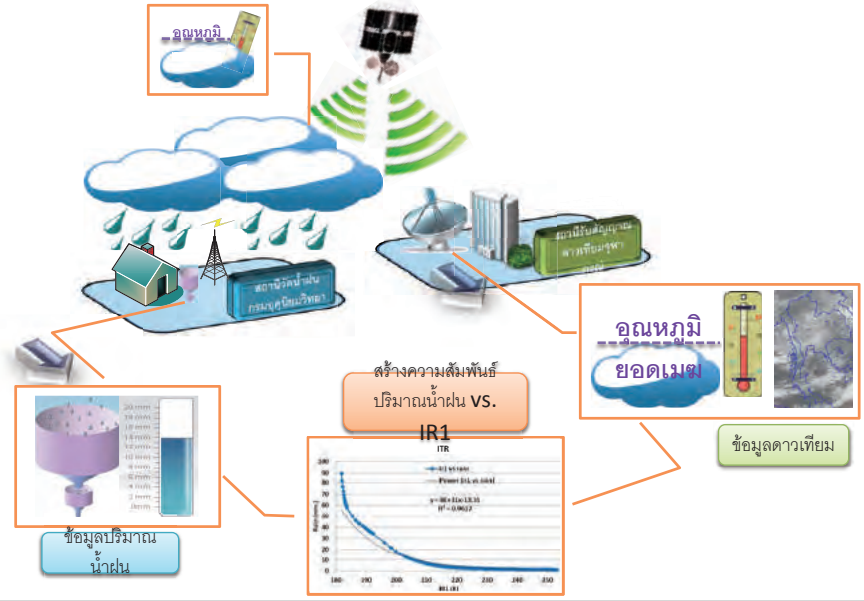


Server @ KU, NIAE

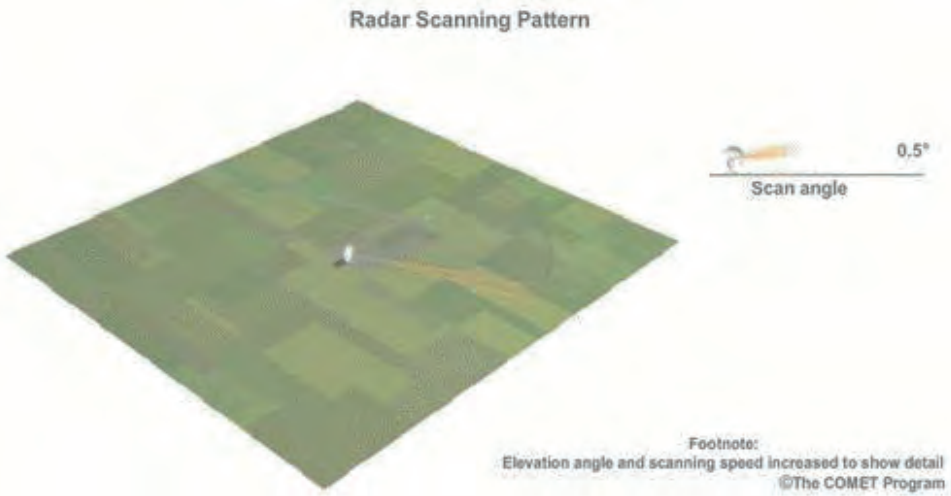


- **Data from Receiving Stations**
- **Maintenance**
- **Data coverage**

2. Rainfall Estimation by using Satellite Image



Rainfall Estimation by Radar



Weather Radar Observations

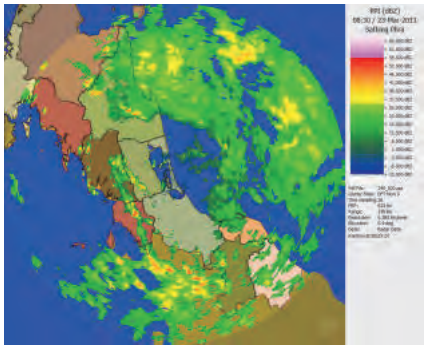
Rainfall Estimation by Radar

- The rain fall rate was calculated from the Doppler radar reflectivity (*dBZ)* by using this equation:

The rainfall rate calculation

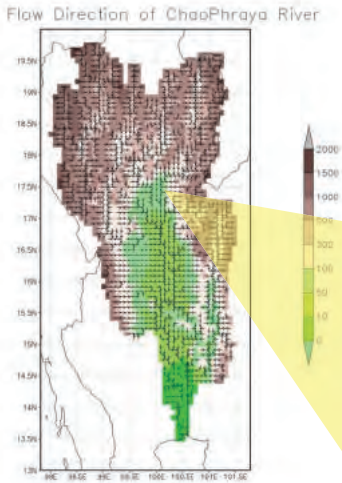
$$q = \frac{1}{a}\left(10^{\frac{dB}{10}}\right)^{\frac{1}{b}}\left(\frac{10^{-3}}{3600}\right)$$

q : rainfall rate,
a, b : site specific,
dB : the measured radar reflectivity index.
(These parameters were taken as a=200 and b=1.6 from Seliga [1997].)

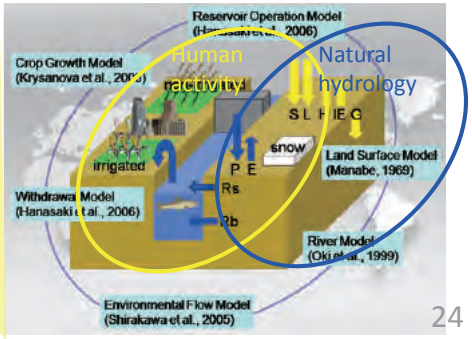


The Doppler radar image at Sathing Phra station

3) Hydrology Model : H08



- H08 model
1. Simulate both natural water cycle and human water activities at daily basis
2. Open source software



Hanasaki et al., 2006, J. of Hydrol.
Hanasaki et al. ,2008a,b, Hydrol. Earth Sys. Sci.
Hanasaki et al., 2010, J. of Hydrol

Hydrology Model : SiBUC

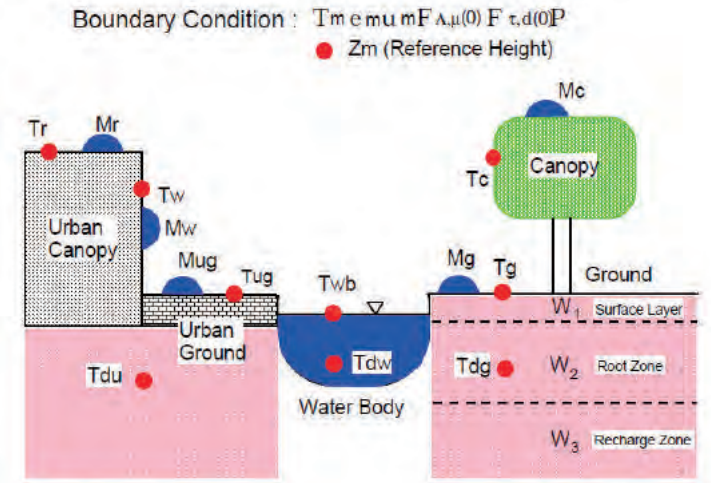


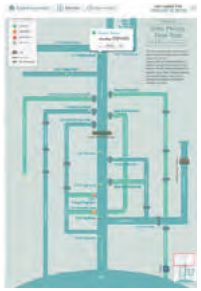
Figure 1.2: Schematic image of surface elements in SiBUC.

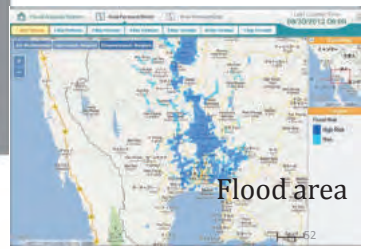
4)OUTCOMES

IMPAC-T WITH FLOODING IN 2011

Early flood warning system Open to Public

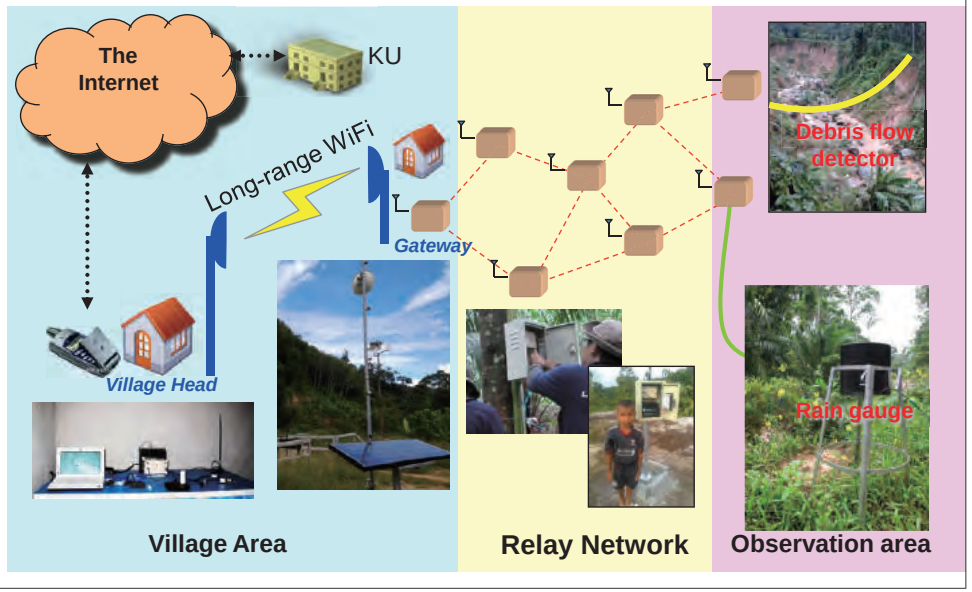
Flow Rate





Flood area

5) Landslide Monitoring



Landslide Monitoring

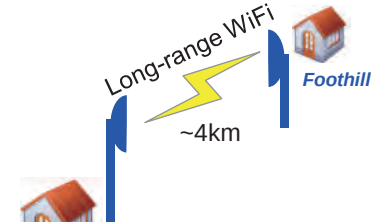
- Two purposes
  - Provide real-time alert for the villagers
  - Provide field data for researchers

Social Application : Village in Krabi

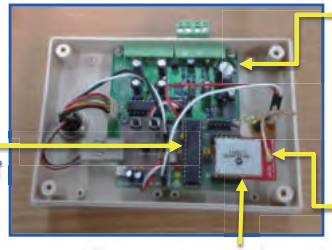
cooperation with Landslide teams

Long-Range Communication

- IEEE 802.11 (Wi-Fi) @5GHz



Wireless Sensor Nodes



Sensor interfaces
- debris flow detector
- soil moisture sensor
- rain gauge
- internal volt. and temp.

8-bit microcontroller

External antenna connector

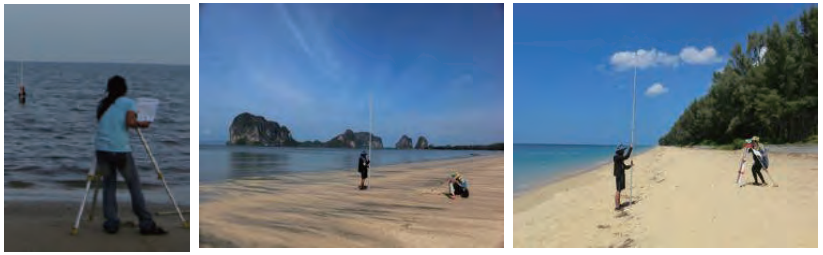
Low-power RF module

Outdoor Unit

6) Coastal study

Chao Phraya river mouth

Coastal study

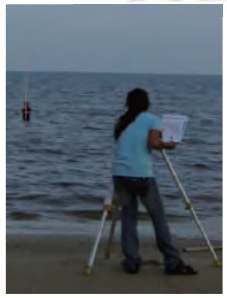


Beach observations

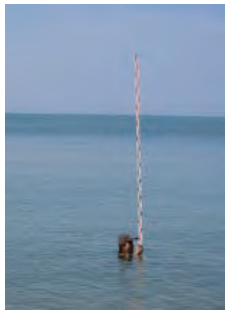
Photo by : Ritphring, 2011-2013

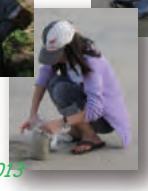
Erosion Protection

Sea level rise monitoring







Beach observations

Photo by : Ritphring, 2011-2013

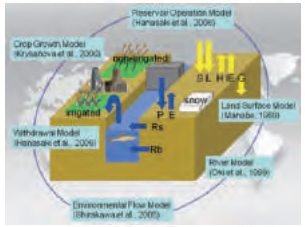
River Sediment Monitoring

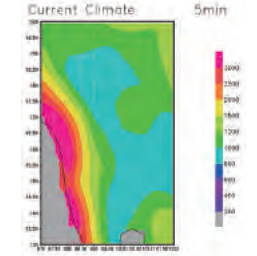


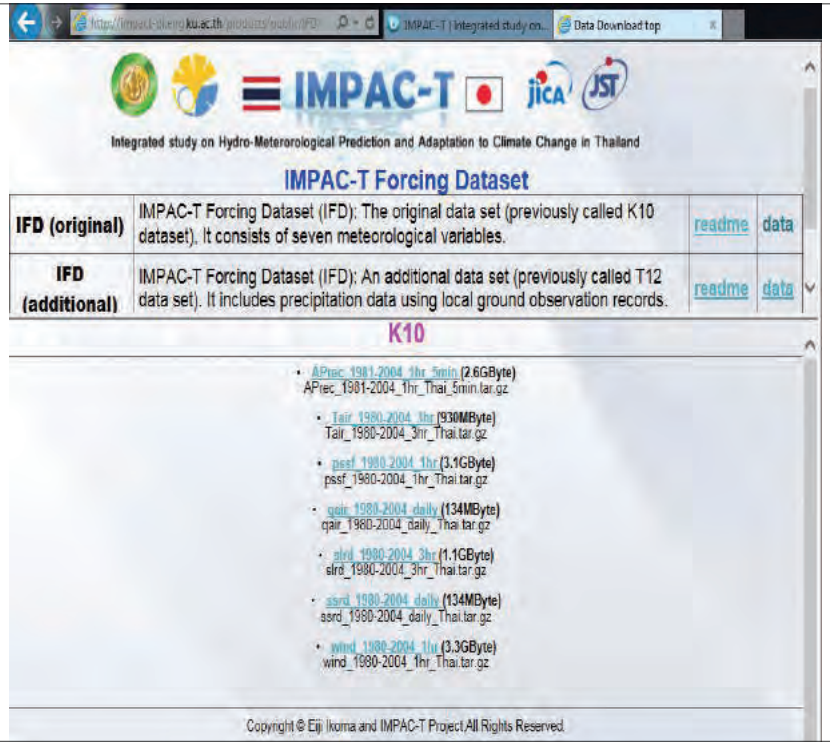

Suspended sediment sampling

7) Forcing Data Sets
(Chao Praya river basin)

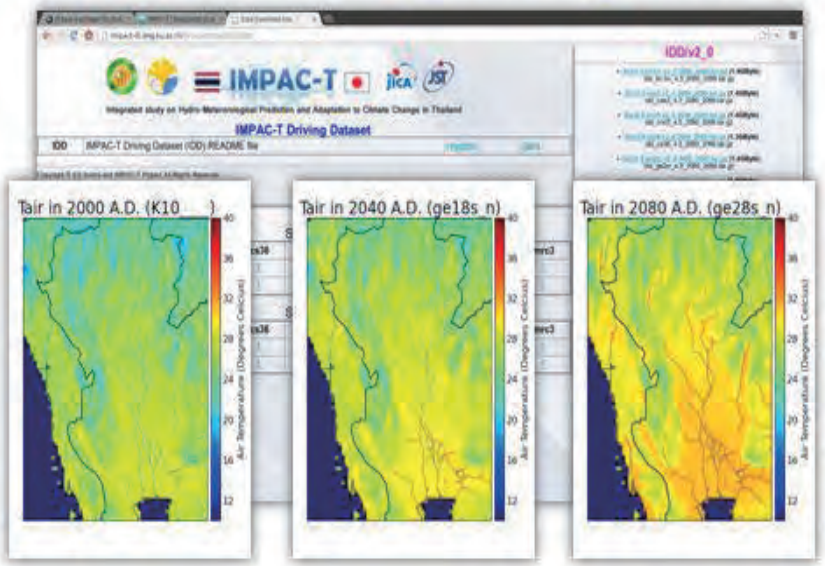
H08 Model



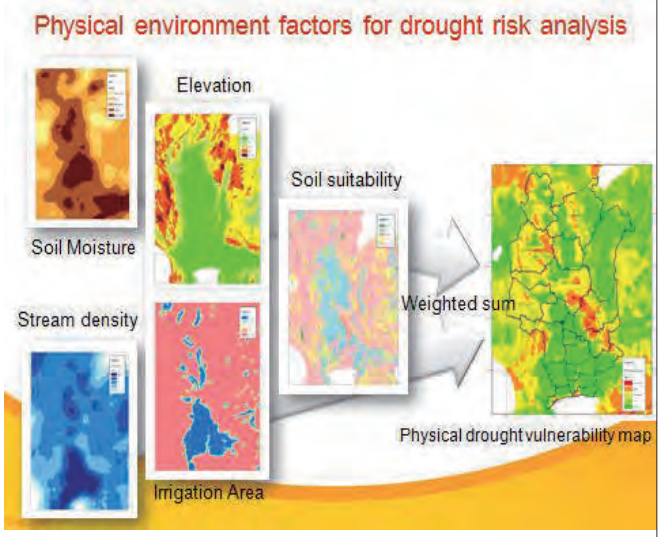




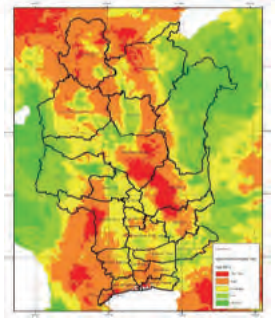
IMPAC-T Forcing/Driving Data



8) Drought Risk Analysis



Drought Risk Analysis



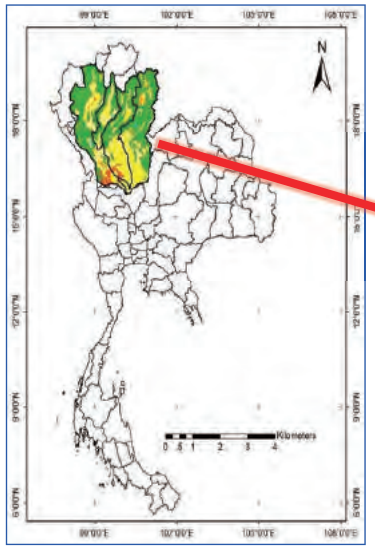
Standardized Precipitation Index (SPI)

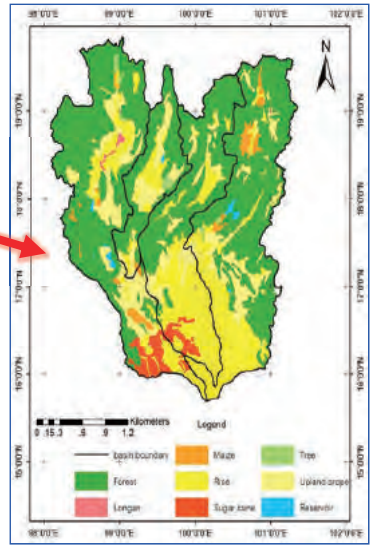
- meteorological drought index- SPI

McKee et al. (1993) used the classification of SPI values to define the criteria for a drought event for any timescales.

SPI	Event
2.0 +	Extremely wet
1.50 to 1.99	Very wet
1.00 to 1.49	Moderately wet
-0.99 to 0.99	Near normal
-1.00 to -1.49	Moderately dry
-1.50 to -1.99	Severely dry
-2 and less	Extremely dry

Drought Risk Analysis





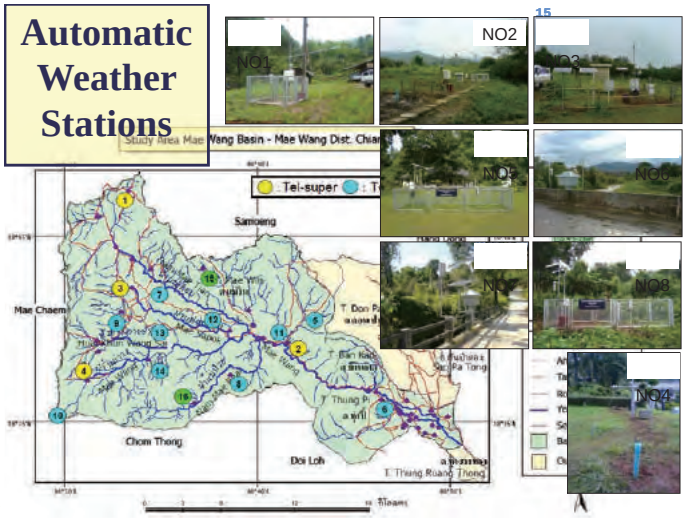
9) Regional Climate Model (RCM)

Flash Flood

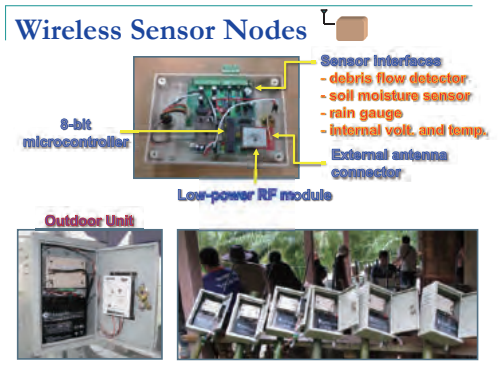
Chao Phraya river mouth

10) Automatic Weather Stations

30 units



11) Wireless Sensor Nodes

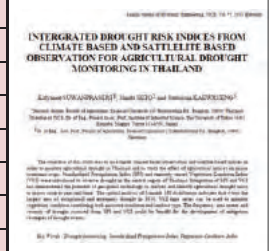


Chao Phraya river mouth

12) Climate Change Data Center

Group	IMPAC-T Sub-group	Published Papers
Earth Observation and Climate	Simulation of Temperature and Precipitation	3
	Hydroinformatics for Agricultural Drought	2
	Rainfall Observation by Sattellite	2
	Space Rainfall for Hydrological Analysis	6
	Quantitative Radar Rainfall Estimation	1
	Land flux analysis	12
	Anthropogenic Impact and Monsoonal Variation	1
	Telemetering and Information Servers	3
Model Development	H08	5
	SIBUC	5
	River Sediment	5
	Water Resources Stability Vulnerability	1
Impact Assessment and Adaptation	Water Availability	3
	Soil Moisture and Landslide	2
	Extreme Events 1 Sugarcane	2
	River Hydraulic by Sanit	4
	Extreme Events 2 Predicting drought	1
	Coastal Zone	8
	Total	66

13)Papers


INTERGRATED DROUGHT RISK INDICES FROM CLIMATE BASED AND SATTLELITE BASED OBSERVATION FOR AGRICULTURAL DROUGHT MONITORING IN THAILAND

Technology Transfer Indicators

More than 20 TRG members are trained and obtained necessary knowledge and skills in developing, implementing, and managing the continuous monitoring of climate change impact.

JICA President Awards at KU

JICA President Awards in Japan

Introduction to ADAP-T

ADAP-T

Advancing co-Design of integrated strategies with AdaPtation to climate change in Thailand

2016-2020

ADAP-T'S GOAL

Development of resilient and sustainable solutions for climate change in Thailand

ADAP-T'S OBJECTIVES

1) Determine Appropriate Adaptation Technology and Measures due to CC to support Thailand Adaptation to Climate Change Strategies.

2) Support and Review National Adaptation Plans (NAPs) of Thailand.

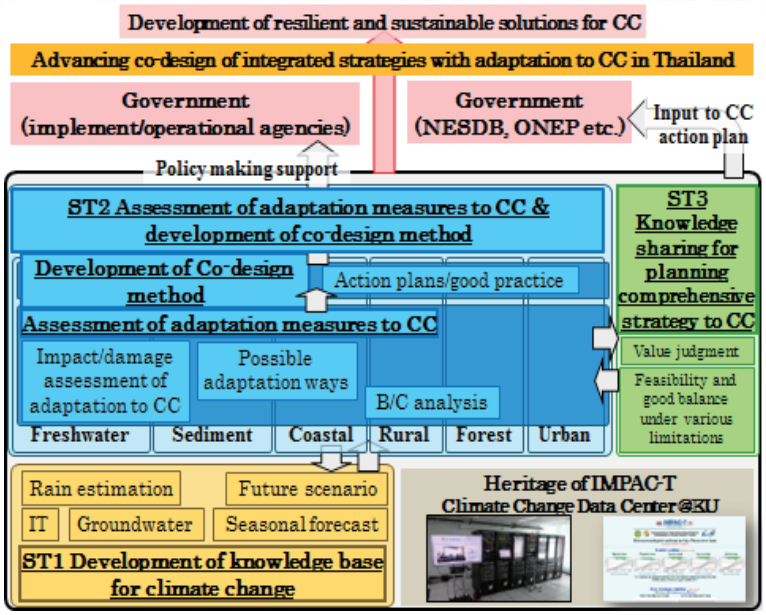
ADAP-T'S OBJECTIVES

3) Support related action plans for the corresponding government agencies.

4) Transfer Technologies and Knowledge based on Adaptation to CC from Japanese researchers.

5) Develop Thai researchers through the Adaptation to CC Issue.

ADAP-T'S STRUCTURE

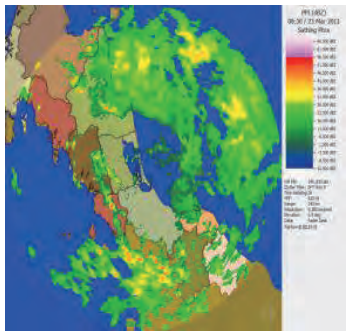


ADAP-T'S ST1 :

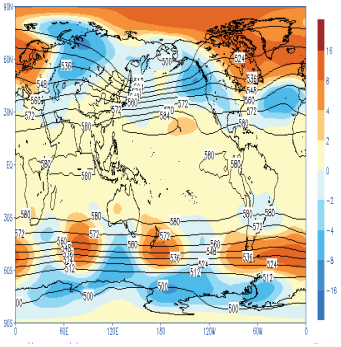
Development of Knowledge Base for Climate Change

1) IT

2) Rain Estimation



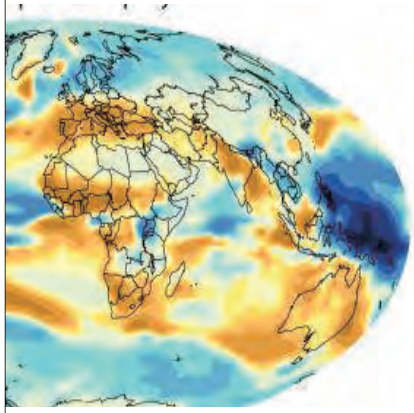
3) Seasonal Forecast



ADAP-T'S ST1 :

Development of Knowledge Base for Climate Change

4) Future Scenario

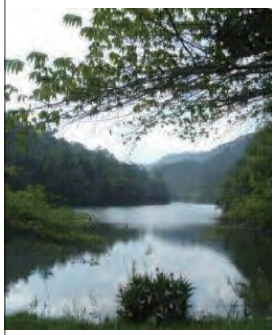


5) Ground Water

ADAP-T'S ST2 :

Assessment of Adaptation Measures for Climate Change and Development of Co-Design methods

1) Freshwater



2) Forest

3) Rural

ADAP-T'S ST2 :

Assessment of Adaptation Measures for Climate Change and Development of Co-Design methods

4) Urban

5) Coastal

6) Sediment

ADAP-T'S ST3 :

Knowledge Sharing for Planning Comprehensive Strategies to Climate Change

1) Support and Review National Adaptation Plans (NAPs) of Thailand

2) Output/Outcome

➔ Portfolio of co-Design of integrated strategies based upon Adaptation to CC

CORRESPONDING WORKING AGENCIES

- 4 major core agencies
  ➔ KU+RID+TMD+ONEP

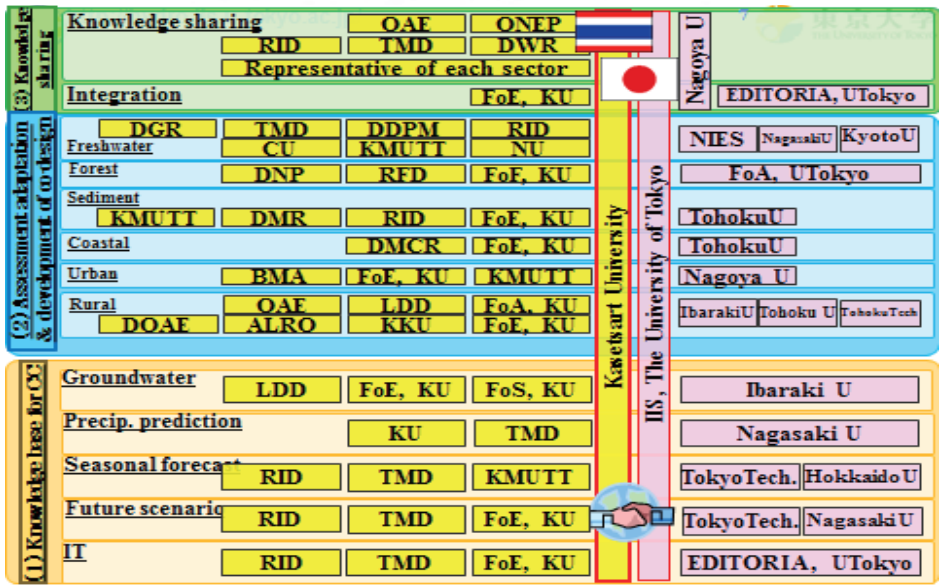
- 11 related Thai Agencies

- 4 Thai Universities

- UT + Japanese Universities

- JICA + JST

CORRESPONDING WORKING AGENCIES



CORRESPONDING WORKING AREAS

CORRESPONDING WORKING PLAN

Thank You

Thank You

Climate policy integration to development

3rd CITC Regional Conference on Climate Change and Sustainable Development

Parallel session "Climate change adaptation to achieve sustainable development goals"

31 March 2016

Masato Kawanishi,
Senior Advisor, JICA

Assistance for adaptation:

JICA project Capacity Development for Climate Change Strategies in Indonesia (2010-15)

Policy development

- Advisory council on mainstreaming adaptation
- National Action Plan on Climate Change Adaptation (RAN-API)
- *Integration to the National Mid-term Development Plan (RPJMN) 2015-19*
- Integration to national spatial planning

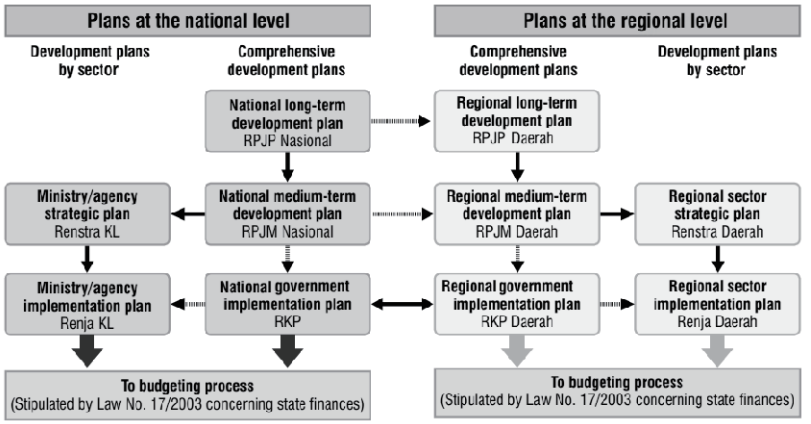
Policy tool
Insurance

Application to local contexts

Policy basis
Cap. dev. for seasonal forecasting, CC projection, VA

Horizontal / vertical integration :

Building upon the existing development planning system



BAPPENAS (2012)

National development plan in Indonesia:

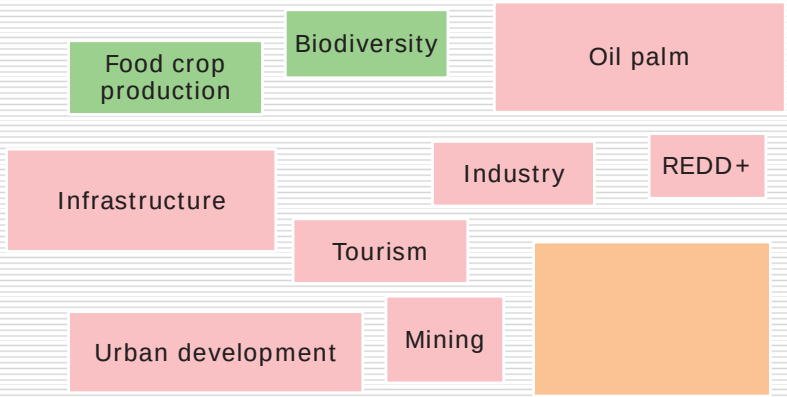
Climate policy and development priorities

- Development priorities (2015-19)
  - Economic growth under increasing population
  - Tackling poverty and unemployment
  - Food and energy security
  - Marine and coastal development, etc.
- Integration of climate change mitigation and adaptation policies
  - Emission reduction by 26-41% from BAU
  - Resilience (food, energy, biodiversity, etc.)

Climate change policy integration:
Assessment criteria of Mickwitz et al. (2009)

Inclusion	To what extent has climate change policy been covered?
Consistency	Have the contradictions between the aims related to climate change and other policy goals been assessed, and have there been efforts to minimize such contradictions?
Weighting	Have the relative priorities of climate change policy compared to other policy aims been decided, and are there procedures for determining the relative priorities?
Reporting	Are there clearly stated evaluation and reporting requirements for climate change policy *ex ante*, and have such evaluation and reporting happened *ex post*? Have indicators been defined, followed up, and used?
Resources	Is know-how about climate change policy available and used, and are resources provided?

Not only co-benefits but also conflicts:
Multiple points where contradictions may be found



"Two degrees" mitigation scenario:
Significant roles of bioenergy, CCS and the combination (BECCS)

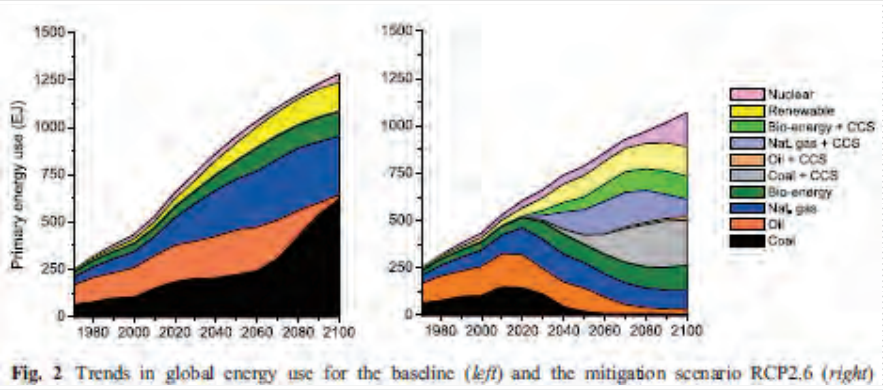


Fig. 2 Trends in global energy use for the baseline (*left*) and the mitigation scenario RCP2.6 (*right*)

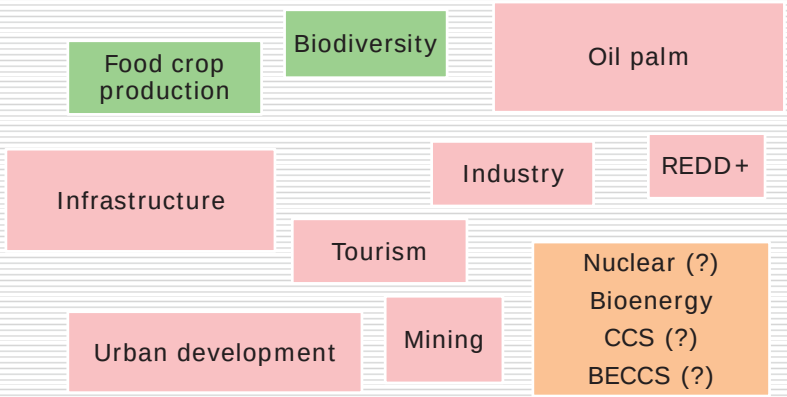
(van Vuuren et al. 2011)

Potential effects of "two degrees" on climate policy integration

- Potential adverse effects
  - Increasing competition for land and water
  - Impact on biodiversity
  - Equity concern, etc.

    (van Vuuren et al. 2010; Delucchi 2011)
- Climate policy integration
  - May become more difficult to achieve consistency

More efforts required for harmonization between global, national & local interests



Learning for "*effective and progressive response*"

- Taking effective steps without panicking
  - Sharing pioneering examples on the ground for collective learning and adapting strategies (Jaeger et al. 2011)
- Need to learn from national/ local level experiences & studies
  - besides global simulations at an aggregate level (Kraxner et al. 2015)

Thank you

with high expectations for the future of TGO/CITC as a regional learning hub

Strengthening Resilience and Designing Adaptation Options: Water Resources

By
Dr. Pongsak SUTTINON
Faculty of Engineering, Chulalongkorn University

External Impacts (Global Development Goals)

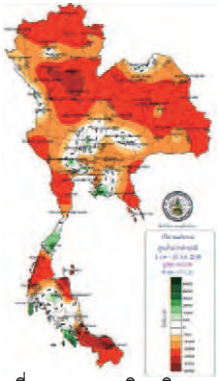
- Sustainable Development Goals (2030)
- UN Climate Change Conference 2015: COP21 (Nov-Dec 2015, France)

Internal Impacts (National Development Goals)

- Strategic Plan for Water Resources Management: 12 years (2015-2026)
- National Economic and Social Development Plan 12th (2017-2021)
  - Water Investment
  - Sustainable Development, Adaptation, Climate change
- National Strategy 20 years (2036)

Water for Development VS Water-Related Disaster

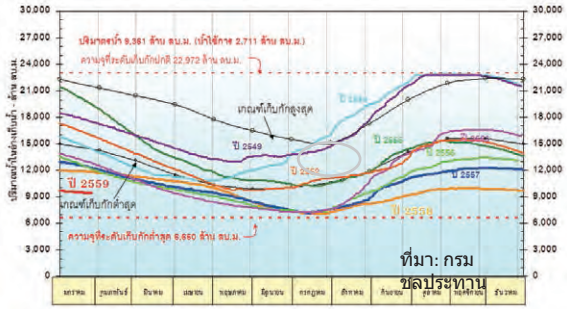
- Water Security and Food security
- Water management under future uncertainties and new risks (CC, market)



ที่มา: กรมอุตุนิยมวิทยา

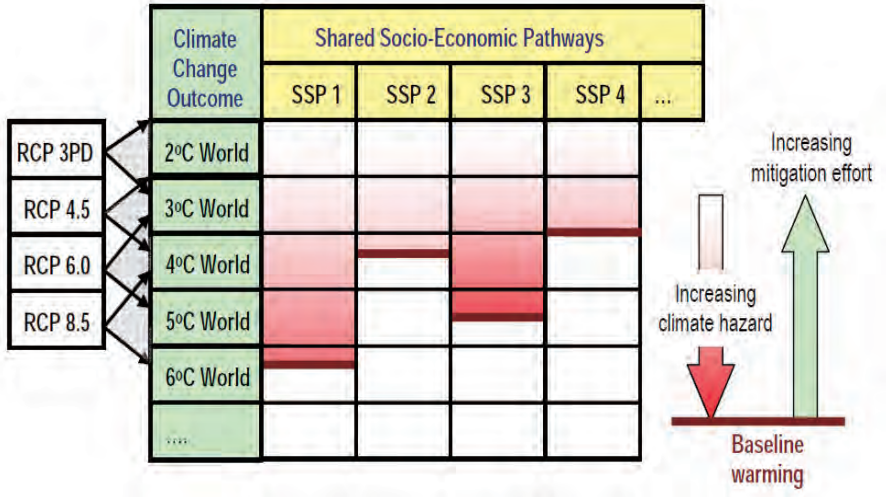
Natural condition Rainfall in 2015 is under average record of 30 years.

Controllable condition: reservoir operation



ที่มา: กรมชลประทาน

Thailand in development scenarios



THE GLOBAL GOALS
For Sustainable Development

Speech by PM. **In High Level Special Event "Catalyzing Implementation and Achieving of the Water Related SDGs**
"Thailand is ready to be one part to meet the target of Sustainable Development Goals in Water Resources Issue at 27 September 2016, UN, New York

- **Water resources management**
  - Safe Water
  - Wastewater treatment
  - Ecology
  - **CC Adaptation**
  - water –related disaster
  - Strategic Plan for Water Resources Management: 12 years (2015-2026)

National Strategy 20 years and 12th NESDB plan

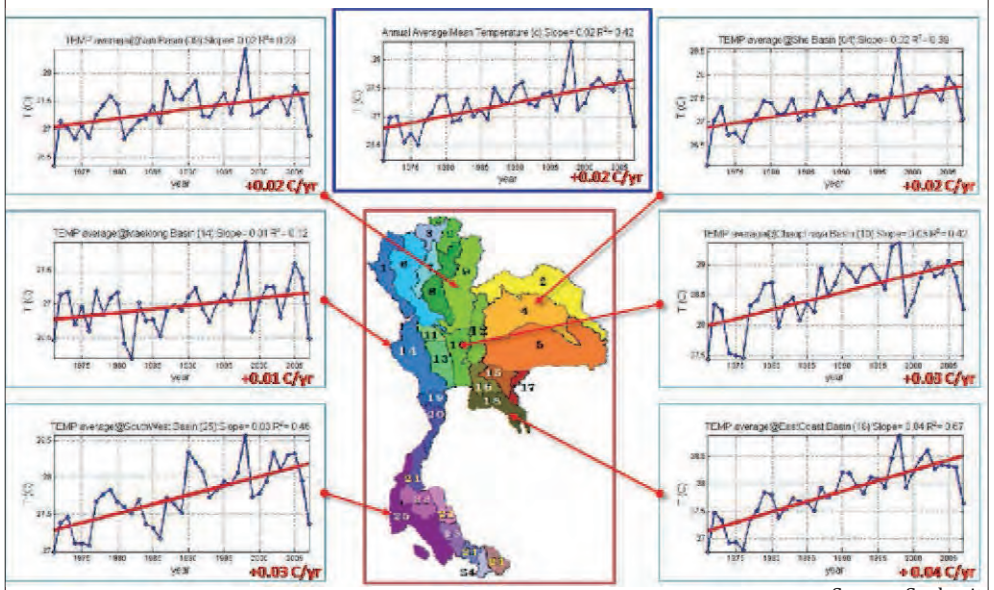
National development strategy	Linkage with water issues
1. Security	Security in natural resources → Water-Energy-Food NEXUS
2. Competitiveness improvement	Water for production development (AGR, MANF, SER)
3. Human Resources	Water Infrastructure Investment
4. Equality	Global-National-Local linkage with Water-Energy-Food NEXUS Water-related disaster
5. Green growth	effective IWRM
6. Good governance	CC adaptation

NESDB, 2015

Linkage of UN SDG, National goals, Water Strategy and Gap

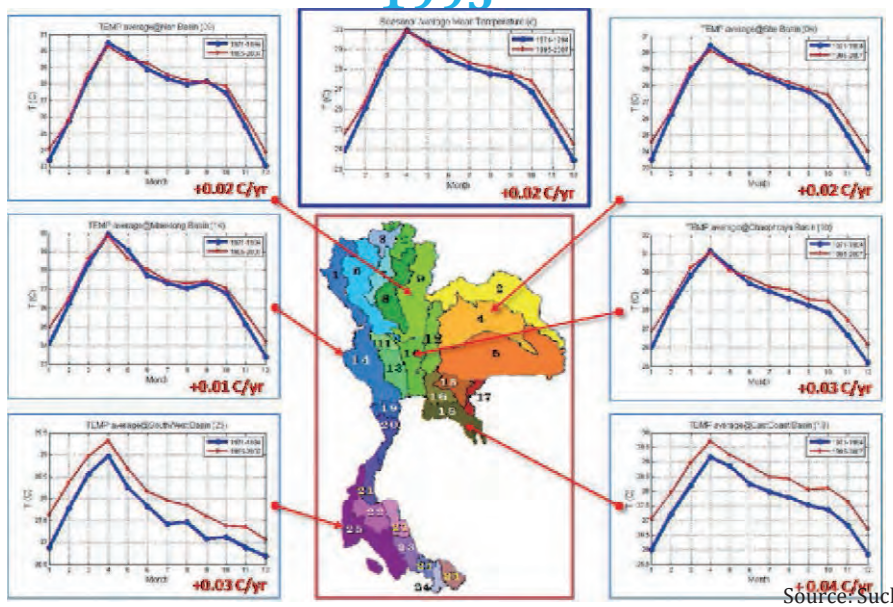
SDG (2030)	National Strategy 20 years and 12th NESDB plan	Strategic Plan for Water Resources Management: 12 yrs	Gap, risk
6 CLEAN WATER AND SANITATION 8 GOOD JOBS AND ECONOMIC GROWTH 13 CLIMATE ACTION	1. Security 2.Competitiveness improvement 5. Green growth	1 Water for household 2 Water for production (AGR,M) 3 Disaster 4 Water quality 5 Forest conservation 6 Management	GAP Climate change adaptation

Temperature change in the past



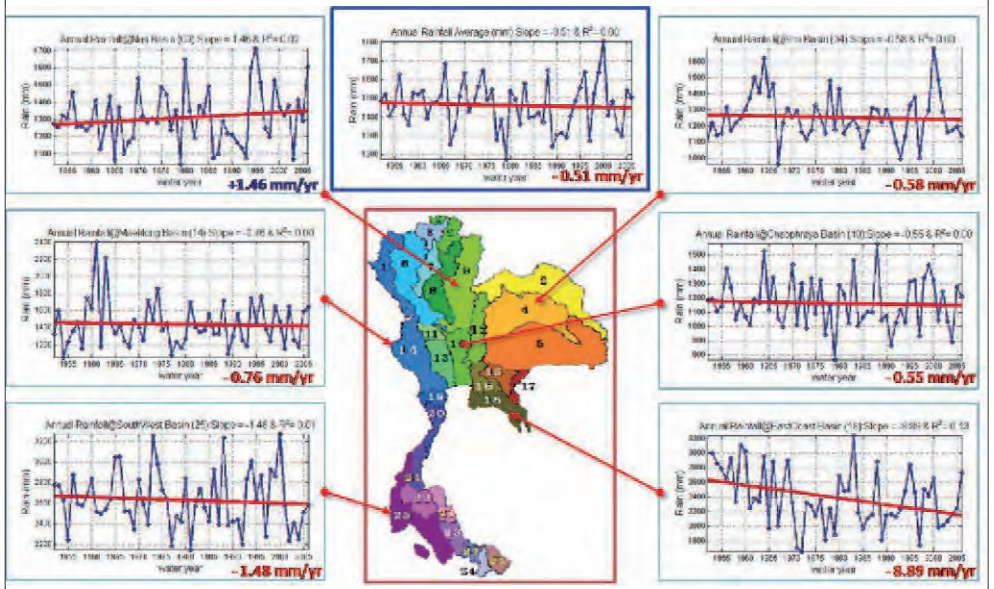
Source: Sucharit,

Temperature change before and after 1995



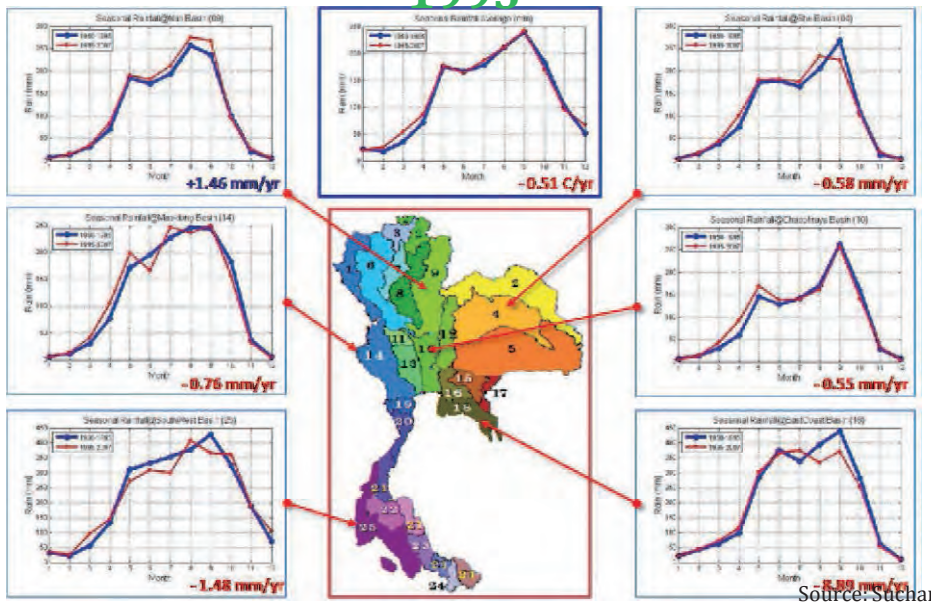
Source: Sucharit,

Change in rainfall in the past



Source: Sucharit,

Annual rainfall change before and after 1995



Source: Sucharit,

Extreme Precipitation Indices for Future

Index	Definition	Unit
CDD	Maximum number of consecutive dry days (Rday < 1 mm)	Days
CWD	Maximum number of consecutive wet days (Rday ≥ 1 mm)	Days
R10	Number of days with precipitation ≥ 10 mm	Days
R20	Number of days with precipitation ≥ 20 mm	Days
Rx1Day	Maximum 1-day rainfall amount	mm
Rx5Day	Maximum 5-day rainfall amount	mm
SDII	Simple daily intensity index	mm/day
R95T	Fraction of 95th percentile to annual precipitation	%

Source: Sucharit,

River Basin	Percentage change in near future (AR5)							
	Extreme Precipitation Indices							
	R10	R20	SDII	RX1D	RX5D	CWD	CDD	R95T
Salawin	34%	256%	42%	225%	63%	-35%	-17%	39%
Mekong	-32%	-51%	-6%	+ 50 %	25%	29%	-27%	3%
Kok	-32%	-51%	-6%	20%	-5%	29%	-27%	3%
Chi	17%	-51%	13%	50%	63%	29%	-5%	-4%
Mun	34%	-51%	13%	50%	10%	67%	-5%	-17%
Ping	34%	51%	23%	100%	63%	3%	-32%	39%
Wang	17%	51%	23%	100%	10%	29%	-32%	12%
Yom	17%	-16%	13%	50%	10%	29%	-27%	3%
Nan	17%	-16%	13%	75%	37%	29%	-22%	3%
Chao Phraya	52%	12%	13%	-46%	10%	387%	-5%	-48%
Sakaekrang	52%	51%	42%	75%	10%	24%	-5%	12%
Pasuk	17%	51%	4%	50%	-7%	-23%	-13%	12%
Tha Chin	91%	51%	23%	-46%	37%	204%	-32%	-48%
Mae Klong	145%	196%	52%	120%	63%	25%	-5%	23%
Prachinburi	17%	-16%	4%	-46%	-7%	107%	-5%	-25%
Bang Pakong	52%	-51%	13%	20%	-7%	204%	-13%	-25%
Tonle Sap	34%	51%	13%	50%	10%	107%	-5%	-17%

Source: Sucharit, 2016

River Basin	Percentage change in near future(AR5)							
	Extreme Precipitation Indices							
	R10	R20	SDII	RX1D	RX5D	CWD	CDD	R95T
East-Coast Gulf	52%	-16%	23%	20%	-7%	153%	-13%	-35%
Phetchaburi	145%	322%	71%	100%	63%	-23%	-22%	12%
West-Coast Gulf	145%	396%	71%	163%	63%	-23%	-22%	12%
Peninsula-East Coast	52%	51%	42%	163%	200%	-23%	-27%	-17%
Tapi	116%	51%	42%	163%	125%	-23%	-32%	-17%
Thale sap Songkhla	52%	51%	23%	163%	63%	-23%	-32%	-35%
Pattani	70%	-16%	23%	163%	225%	68%	-46%	-35%
Peninsula-West Coast	52%	51%	23%	163%	225%	29%	-32%	-25%

Source: Sucharit, 2016

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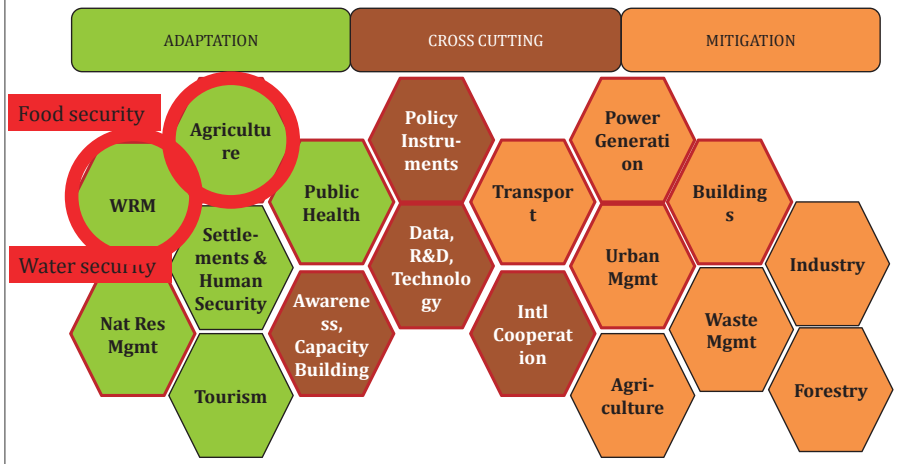
Foundation toward Innovation

Based on the Draft of Climate Change Master Plan (2014-2050), the main priorities of national adaptation can be shown by these following issues;



Source: Office of Natural resources and Environmental Policy and Planning (ONEP)

CC Impact on Water Resources

- climate change
  - Higher temperature
  - Seasonal changing
  - Change in intensity and frequency
  - Impact on extreme events
  - Higher sea level rise

Impact on WR

- Flood Drought Landslide (Greater in some area)
- Beach erosion (coastal shoreline change)

Source: Sucharit,

Impacts on Thailand in Other Dimensions

Environmental and natural resource

- Increased risk of drought, wildfire, and floods
- Endangered land and marine ecosystems
- Lessen biodiversity

Economic

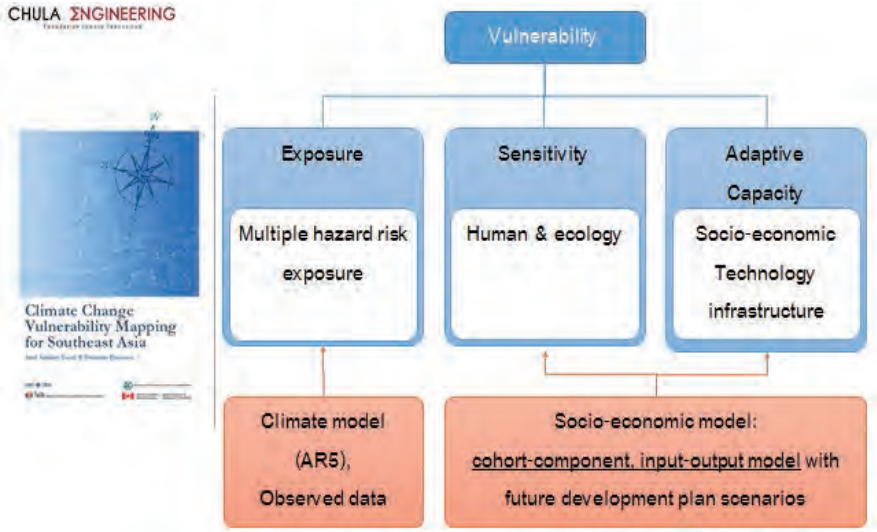
- Decreased agricultural productivities
- Growing production costs
- More intensive trade barriers
- Damaged tourist attractions and infrastruc

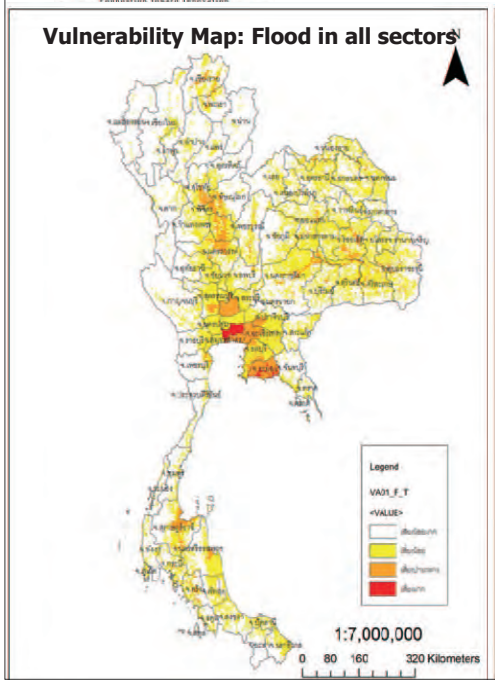
Social

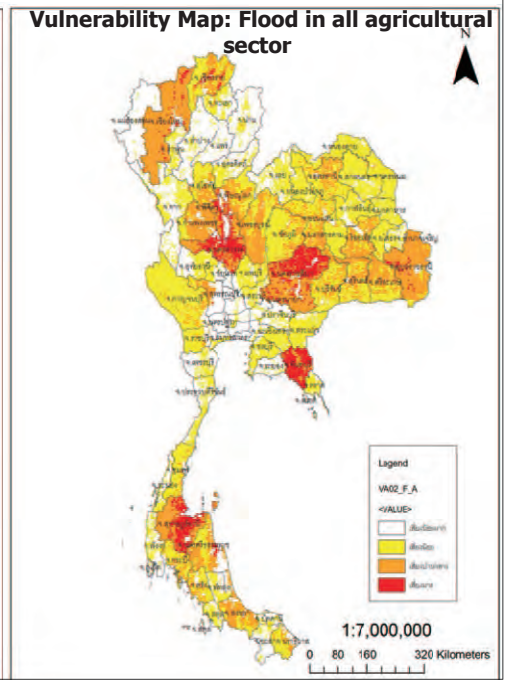
- Escalated migration and career changes
- More Heat-Related Illnesses and Diseases

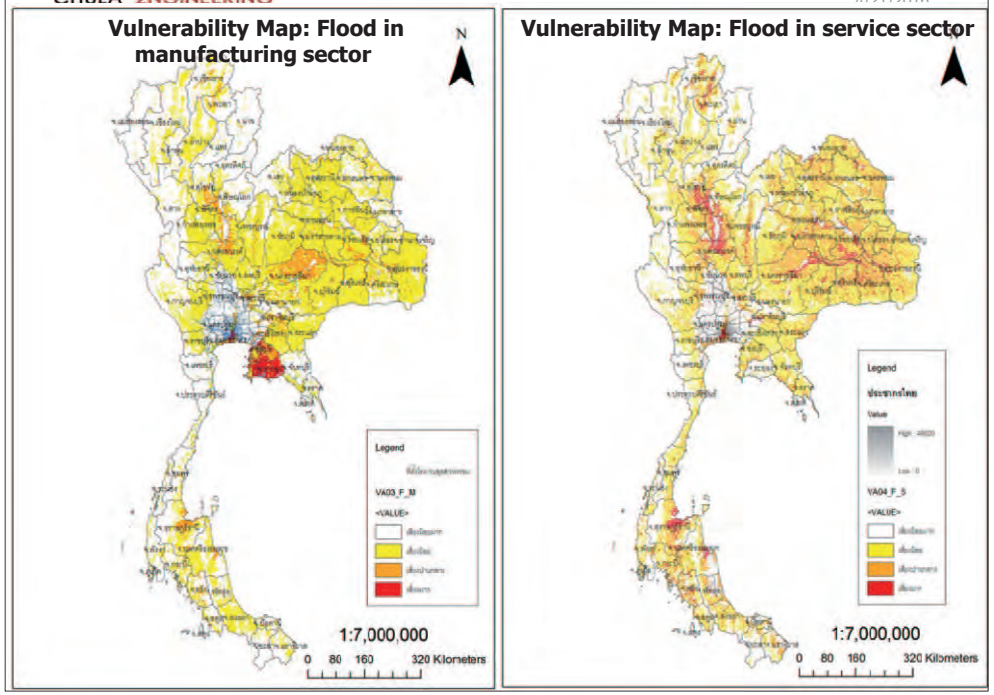
Source: Sucharit, 2016

Vulnerability assessment









Example of adaptation

- Prevention and mitigation measures for risk reduction and sustainable development
- Local-regional-national adaptation plan
- co think, co design, co implement
- Database system

Planning (Long term)

- infrastructure measure
- water grid
- smart water system for sustainable development
- disaster risk reduction
- Co-design

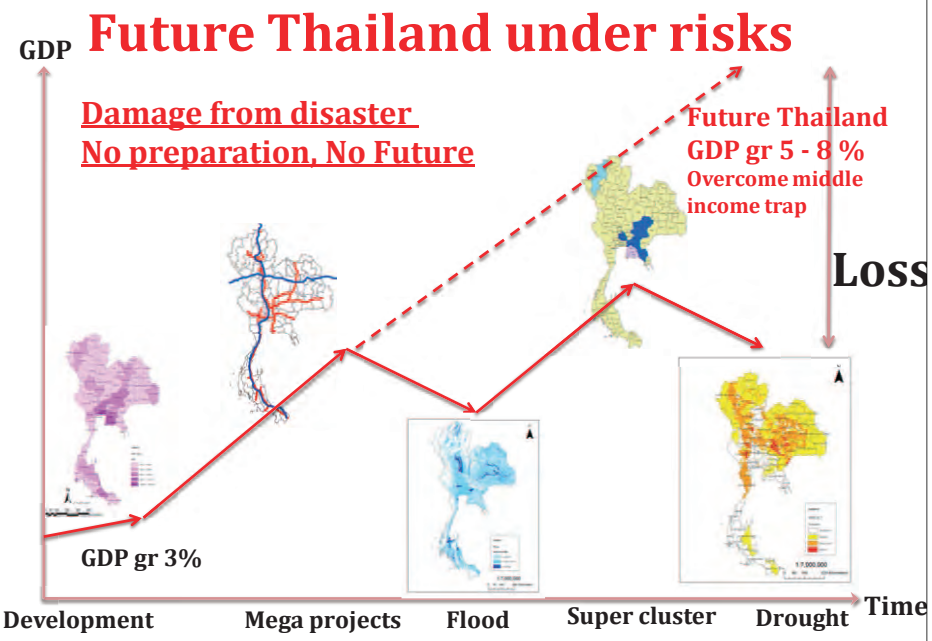
Source: Sucharit

Conclusion

- Climate is changing → impact on WR and the other sectors
- Now Thailand has long term water strategy
- Climate change should be entered in water strategy
- Best practice example for implementation
- Support from oversea to increase adaptive capacity and Thailand will contribute to the ASEAN countries

Source: Sucharit

Future Thailand under risks



Thank you very much

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Overview

1. Challenges for food security
2. Climate-Smart Agriculture
3. Scaling-up action

Climate Change & Food Security

Challenges

Progress - Undernourishment

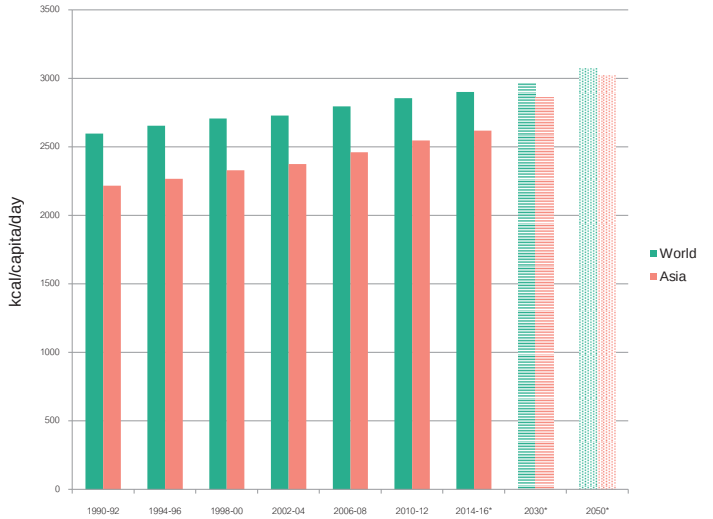
Source: FAO, Regional Office for A & P. 2015. Regional Overview of food insecurity Asia and the Pacific. Bangkok, FAO

But, millions still suffer from hunger

- 490 million people are still undernourished in Asia and the Pacific
  - 281 million in the Southern Asia sub-region
  - 62 percent of the world's total
- 93 million children are still stunted in Asia and the Pacific
  - 68 million in the Southern Asia sub-region alone
- Micronutrient deficiencies remain widespread

Calculated and projected change in per capita daily calorie intake

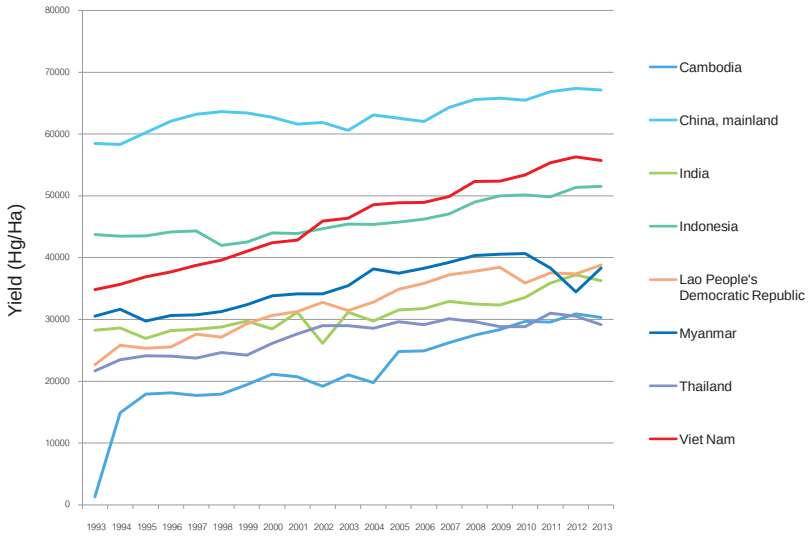
(selected 3-year averages 1990-2016 and projects for 2030 and 2050)



Source: FAOSTAT, 2015; Alexandratos & Bruinsma, 2013

Comparison of rice yields of selected rice producers in Asia

(1993-2013, Hectograms per Hectare)



Source: FAOSTAT, 2015

Challenges

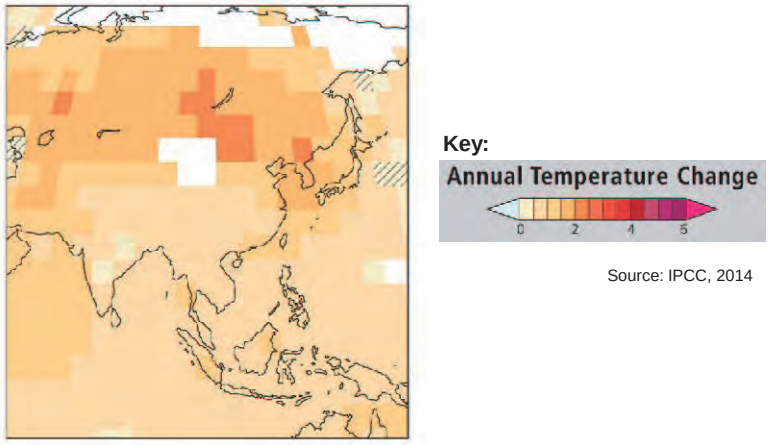
- Additional livestock production (meat, milk, eggs)
  - Expected to treble in Southern Asia to 2050
  - Increase by 80 percent in East Asia to 2050
- Additional crop production
  - 90 percent from yield increases
- Additional irrigation
  - Only 8 million (EAS) and 4 million (SAS) additional hectares to be equipped for irrigation by 2050

Challenges (continued)

- Urbanization and structural changes
- Obesity
- Empowering rural women
  - Share of women in labour force: 35 – 52 percent but limited access to productive resources
- Strengthening statistical systems
- Climate change….

Climate change

Observed temperature trend in Asia, 1901-2012 (Degrees Celsius over period)



Source: IPCC, 2014

Average temperatures are rising

Impacts of climate change

1. **Impacts** of climate change on **food production** and food security in Asia will **vary by region**, with **many** regions to **experience** a **decline** in **productivity** (medium confidence)

Example - Rice

- Most models show that higher temperatures will lead to lower rice yields as a result of shorter growing periods
- Number of regions that are already near the heat stress limits for rice

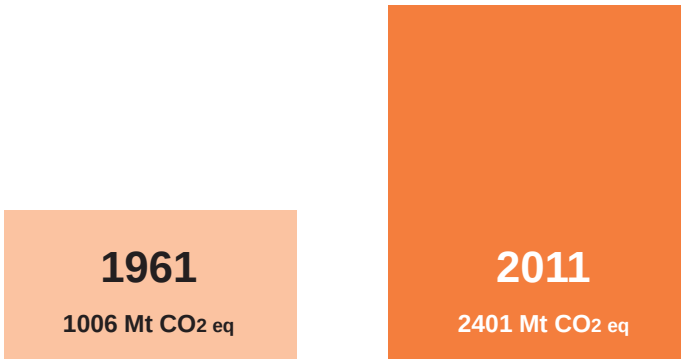
Source: IPCC, 2014

2. **Extreme climate events** will have an **increasing impact** on human health, security, livelihoods, and poverty (high confidence)

Selected key impacts

Driver of climate change

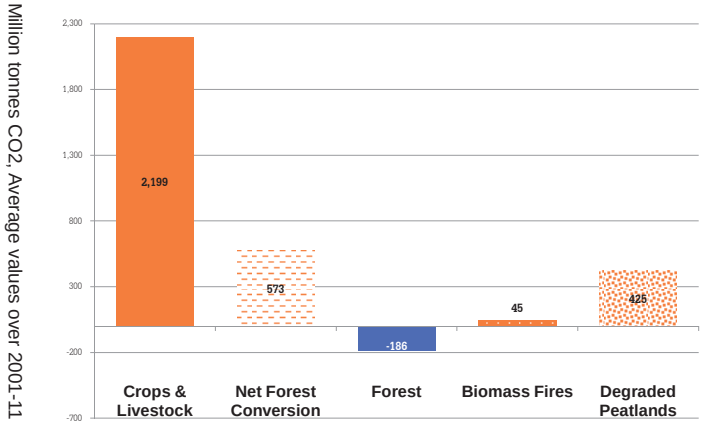
Total emissions from agriculture in Asia, 1961 & 2011



Emissions have doubled

Driver of climate change

Sources of emissions from agriculture and land use in Asia, 2001-2011

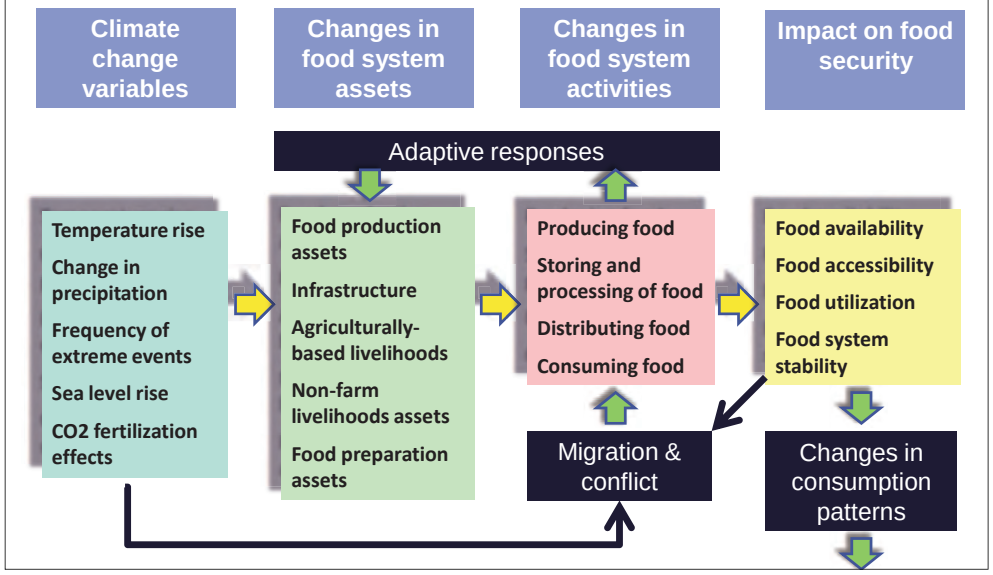


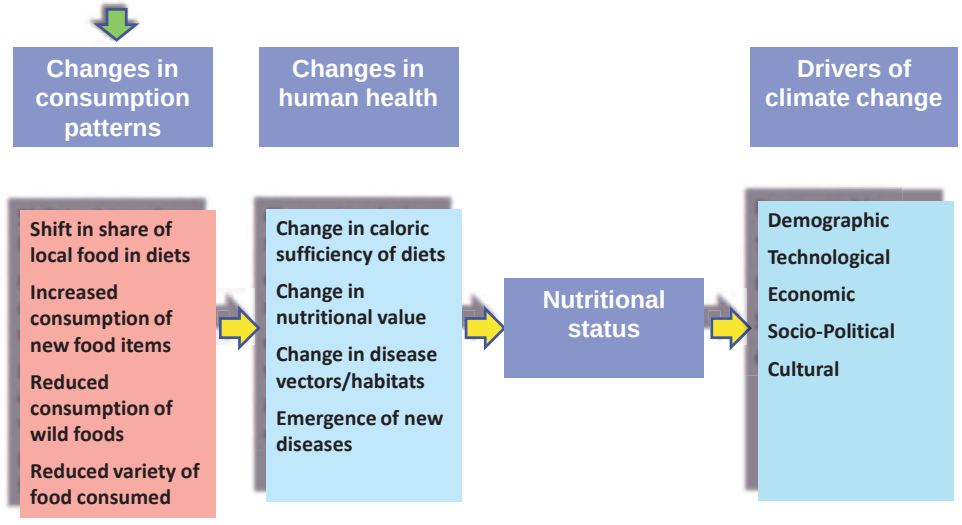
Source: FAOSTAT

Emissions sources & sinks

Climate change and food security

FAO Framework





Climate change and food security

FAO Framework Continued

Climate-Smart Agriculture

Adaptation as part of a three-pronged approach

Global Strategy

Climate Smart Agriculture

An **approach** to help guide actions to **transform** and re-orient **agricultural systems** to effectively and sustainably **support food security** under the new realities of **climate change**.

Climate Smart Agriculture

Three pillars of **CSA**:

1.**Increase**, in a sustainable manner, **productivity** and income growth in agriculture.

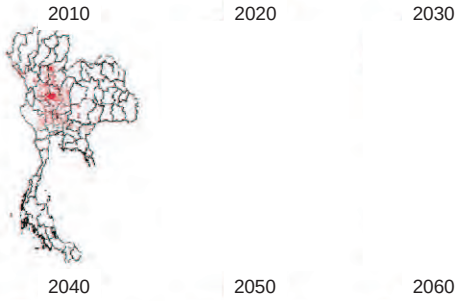
2.Support **adaptation** across the agricultural sectors to expected climatic changes and **build resilience**.

3.**Reduce**, where possible, the greenhouse gas **emissions** of production systems.

Vulnerability Assessment

Area over threshold average growing season temperature for rice

(Thailand example using A1B (SRES) Scenario – area indicated in red)



Source: OAE & FAO, 2013

Average Growing Season Maximum Temperature > 34 Degrees Celsius

Vulnerability Assessment

Lessons from FAO Regional Rice Inititive

- Climate **risks** to the rice sector will develop gradually **affect**ing different **locations at different times**
- This knowledge is an **opportunity** for policy makers to **target adaptation** measures and l**earn** from what works and what does not in higher risk areas
- **Targeted adaptation** measures to higher risk areas may be **more effective** than **blanket**, nation-wide measures
- **Climate models** will not provide a certain picture of the future, but can be **useful** in **guiding** where to target **action**

Sustainable Rice Intensification

Lessons from FAO Regional Rice Initiative and Farmer Field Schools in Vietnam

- Reduced seed: 50-90%
- Reduced chemical pesticides: 50-70%
- Reduced nitrogen fertilizer: 20-25%
- Reduced water requirement: 30 – 35%
- Reduced GHG emissions: 20-27%
- Increased productivity (yield/ha): 10-25 %
- Increased economic efficiency (ROI): 15-35%
- Improved adaptive capacity
- As of 2015 > 1.5 Million rice farmers adopted SRI in Vietnam as a result of participation in season-long Farmers Field Schools

Climate Change Farmer Field Schools

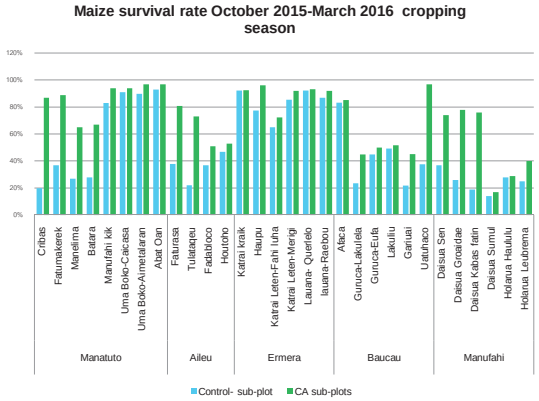
Indonesia and Philippines

- Climate observation
- Varietal studies
- Hazard Assessments

Conservation Agriculture

Enhancing Food and Nutrition Security and Reducing Disaster Risk through the Promotion of Conservation Agriculture in Timor Leste

CA vs non-CA



Scaling-up action

For improved resilience and food security

Sustainable Development Goals

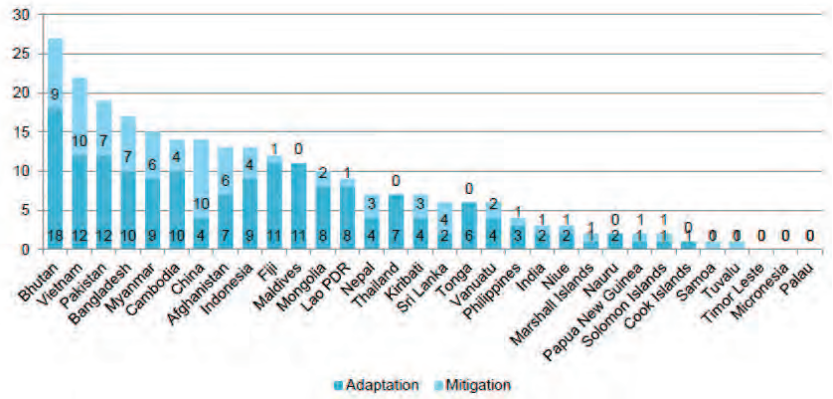
- Globally agreed targets to:
  - End Hunger and malnutrition (SDG 2)
  - Double agricultural productivity (SDG 2)
  - Strengthen resilience and adaptive capacity (SDG 2 & 13)
  - Increase investment (SDG 2 & 13)

Paris Agreement - Features

- All Parties to UNFCCC required to implement Nationally Determined Contributions (NDC)
- INDCs likely need to be revised in the coming year
- NDCs will also need to be revised regularly every 5 years in parallel with existing country planning processes
- Countries required to monitor, verify and report their greenhouse gas emissions using a to be developed, uniform global system

Ag & Land-use prominent in INDCs

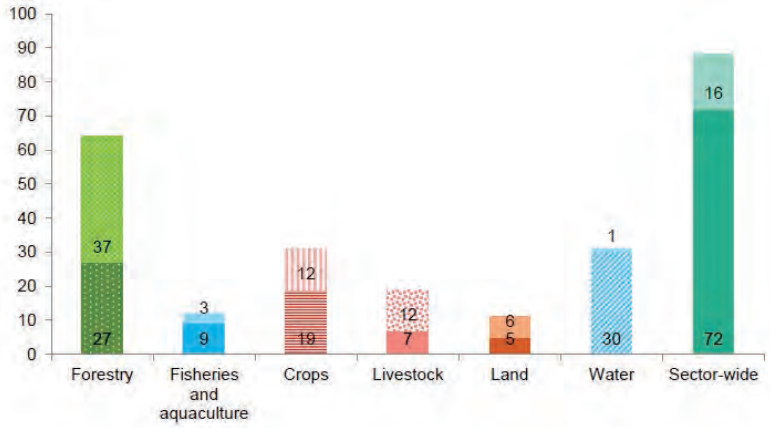
Number of agriculture and land-use sector actions identified in country INDCs (by country)



Ag & Land-use prominent in INDCs

Agriculture and land-use sector INDC actions in Asia-Pacific

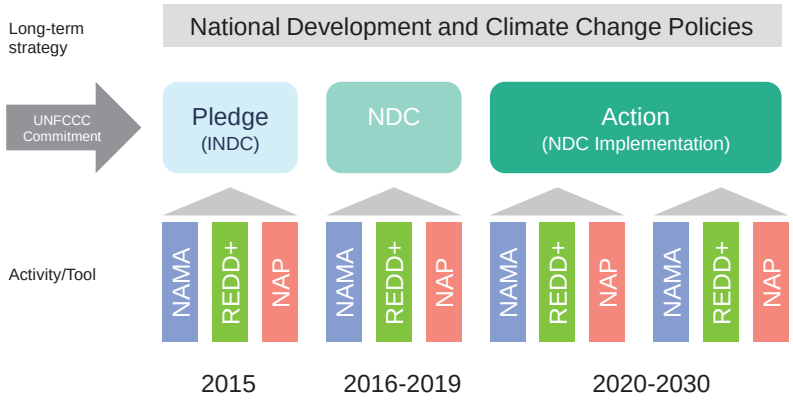
Number of actions by sector and type



NDCs and prioritizing action

INDCs and other planning mechanisms

Illustrative example



Adapted from: GIZ, 2015

FAO programs

- Mitigation of Climate Change in Agriculture (MICCA)
  - Guidance for NAMA and MRV
- Integrating Agriculture in National Adaptation Plans
  - Mainstreaming adaptation in agriculture
- UN-REDD
  - Evidence base

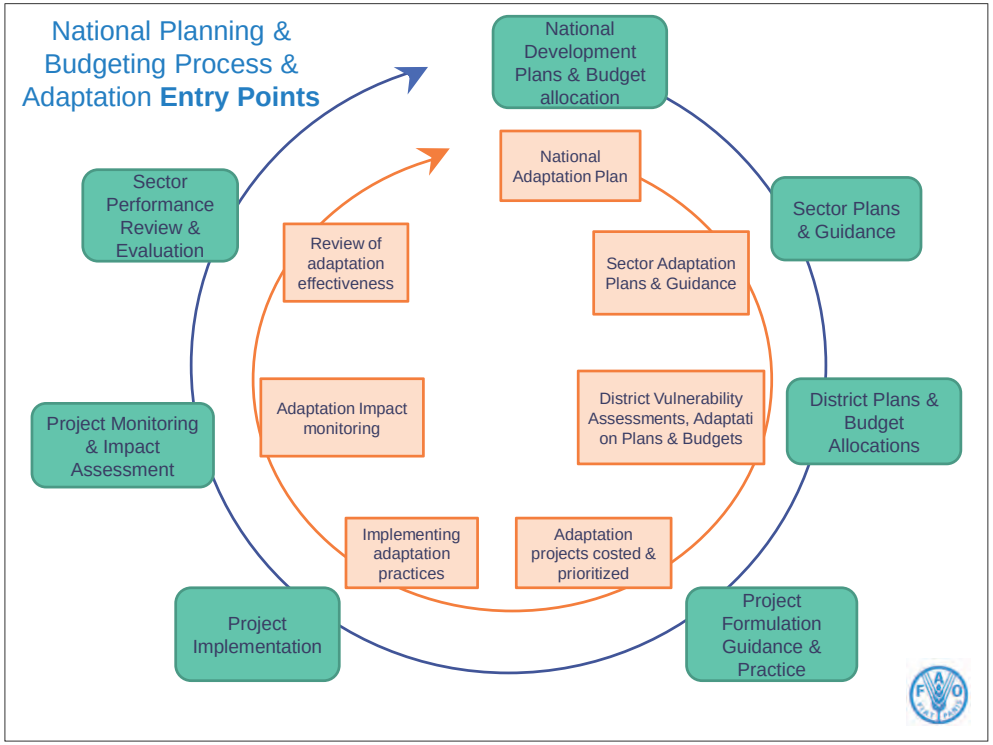
Integrating Agriculture in NAPs

Objective

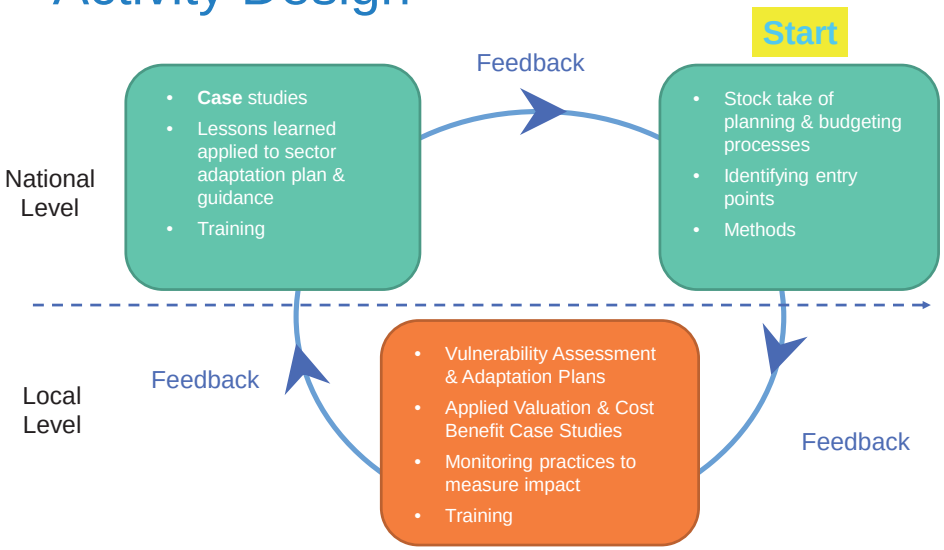
To **integrate** climate change **risks and opportunities** as they relate to **agriculture sector**-related livelihood options within **existing** national **planning** and **budgeting processes**

Key Features

- Funded by the German Government (BMUB ICI)
- UNDP and FAO Joint Program
- 8 countries:
  Nepal, Philippines, Thailand, Vietnam, Kenya, Uganda, Zambia, Uruguay
- Duration: 4 years (2015 to 2018)
- Global Programme Budget: US$12 million



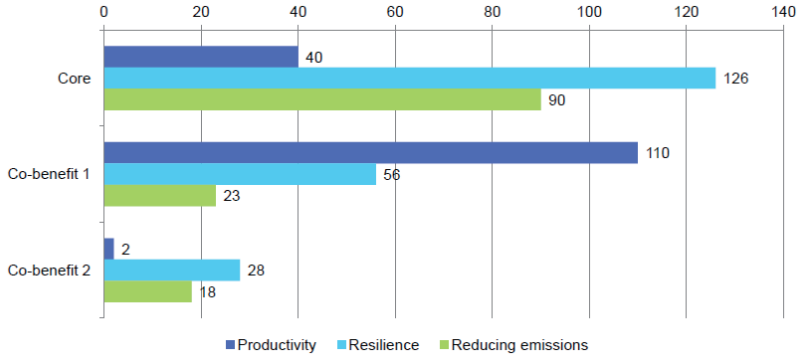
Activity Design



Mapping INDCs against CSA pillars

Agriculture and land-use sector INDC actions in Asia-Pacific & CSA

Number of actions relevant to different CSA pillars



Future for CSA - FAO View

- Strong synergies between SDGs and UNFCCC processes to end hunger and tackle climate change
- Climate-Smart Agriculture will be crucial way to put these shared goals within reach
  - Particularly those regarding enhancing food system **productivity** and **resilience**
- SDGs and UNFCCC processes provide a framework to prioritize and implement CSA

Future for CSA - FAO View

- Countries in Asia and the Pacific have prioritized agriculture actions as part of the UNFCCC INDC process
  - Many can be categorized as CSA
- INDCs represent an opportunity to drive a climate-smart transformation in agriculture and leverage investment

Thank You

Adaptation policies and actions in Asia

- Adaptation after Paris

3rd CITC Regional Conference
31st March, 2016,
Bangkok, Thailand

Osamu Mizuno
Director
Regional Resource Center for Asia and the pacific (RRC.AP),
Asian Institute of Technology (AIT)

Outline

- Background
- Paris agreement
- Unique nature of Adaptation
- Climate Change Asia
- Conclusion

Background

- In the last 15 years, significant attention has been paid to Adaptation under the UNFCCC process
- Most countries in Asia being signatories of the UNFCCC, are aware of their vulnerabilities to climate change and the need to increase their resilience to be able to better adapt to its future impacts

Background

- Hence so much efforts are being made to address Adaptation challenges in Asia:
  - formulation and undertaking policies, plans and projects at the national and community level
    e.g
    Thailand the National Strategic Plan on Climate Change (2008-2012) and the Climate Change Master Plan B.E. 2558-2593 (2015-2050),
    Local Adaptation Plans of Action (LAPAs and community adaptation Plans of Action (CAPAs), Nepal
    Projects and programmes related to agriculture to promote Climate Resilience in Farming Systems and Agriculture Infrastructure and Appropriate Technologies for Climate Change Adaptation, Laos. And many other initiatives….
  - setting up responsible national level entities/bodies

Then,

Does Paris Agreement mean something significant for Adaptation Policies and Actions in Asia?

Answer: Yes, definitely !!

What is Paris Agreement ?

- A historical achievement and the (only) foundation for future actions
- all countries –developed and developing alike – commit to take actions as NDCs
- With ambitious long-term goal (well below 2 ℃ /1.5 ℃)

➡ *We cannot redo it!*

➡ *Need to enhance the level of actions significantly (beyond what we have been doing)*

Adaptation in Paris Agreement (1)

- **Global goal on adaptation** *of enhancing adaptive capacity, strengthening resilience and reducing vulnerability to climate change, with a view to contributing to sustainable development and ensuring an adequate adaptation response in the context of the temperature goal….(Article 7.1)*

➡ *Recognized as a global challenge and could become a basis to strengthen actions and support*

Adaptation in Paris Agreement (2)

- **Global stocktake** (linkage between bottom-up approach (NDCs) and top-down approach)

➡ *Established a process to enhance the level of actions and support, as appropriate*

Adaptation in Paris Agreement (3)

- Strong Linkage between Adaptation and Mitigation
  - Global goal
  - Many other Articles
  - COP Decision

➡ *Comprehensive Risk Management approach*

➡ *Co-benefits/joint opportunities*

Again Paris Agreement is crucially important for future Adaptation actions and we need to enhance the level of efforts significantly

…but how?

Step back and let's think about the unique nature of Adaptation (in comparison with mitigation)

What is unique for Adaptation (1)
(in comparison with mitigation)

- Much more diverse in nature and may differ locally
- And challenging to have an overview of the real needs, options and priorities

➡ *Essential to do such a exercise as national adaptation planning*

➡ *May need local planning as well*

➡ *Also need to promote knowledge sharing and networking*

Asia-Pacific Climate Change Adaptation (APAN) Forum

- The APAN Forum has been organized since 2010. The forum has emerged as one of the biggest forum on climate change adaptation for knowledge sharing and networking in the region.
- Over 500 climate change adaptation experts and practitioners attended the last forum in Kuala Lumpur, Malaysia.
- The next forum will be held on **17-19 October in Colombo, Sri Lanka**.

What is unique for Adaptation (2)
(in comparison with mitigation)

- Much more diverse in nature and intrinsically linked with other social objectives

➡*Essential to mainstream and secure the linkage with SDGs and Sendai Framework on DRR*

➡ *Also important to mobilize financial resources for Adaptation*

What is unique for Adaptation (3)
(in comparison with mitigation)

- Adaptation cannot stand alone
- Possible only if combined with impact assessment + vulnerability assessment

➡ *Important to give proper weight on Impact assessment and vulnerability assessment (and CB for them) together with adaptation options* ***(also essential to use Global Stocktake effectively)***

What is unique for Adaptation (4)
(in comparison with mitigation)

- Tend to discuss with no "time" dimension. But it should not be

➡ *Need to be more conscious on "TIME"*
- *Avoid "lock-in" effects for long-life policies and investments*
- *Appropriate to have more flexible and adjustable system for short-life actions*

➡ *Important to have* ***proper indicators*** *and* ***monitoring system***

Finance for Adaptation

- Tends to discuss only its scale (for both mitigation and adaptation)
- In reality, while significant amount of climate finance is available, they are not fully utilized

➡
- *Need to be more conscious on how to bridge climate finance and actions on the ground*
- *Need to enhance the capacity of the countries to access to climate finance*

Climate Change Asia (CCA)

- launched in January 2016 as a regional flagship initiative at the Asian Institute of Technology (AIT) with its like-minded partners and regional experts to meet the capacity building needs in Asia
- Special emphasis on developing capacities to access climate through "Bankable" Project Proposals
- We are still looking for like-minded partners and experts

Conclusion

- *Paris Agreement is a historical achievement and guide our future efforts on adaptation*
- *We need to enhance the level of efforts significantly to achieve the goal of Paris Agreement*
- *In doing so,*
  - *Need more synergies with mitigation*
  - *Mainstream adaptation and integrate with SDGs and Sendai Framework on DRR*

Conclusion (2)

- *Essential to do national (and local) adaptation planning*
- *Need knowledge sharing (and join the APAN Forum!)*
- *Give proper weight on impact and vulnerability assessment (and CB for them)*
- *Need to be more conscious on "TIME"*
- *Need indicators and monitoring system for adaptation*
- *Need to enhance the capacity to access to climate finance*
- *Join the CCA initiative!*

Thank you!

United Nations Framework Convention on Climate Change

Climate Neutral Now - online platform for voluntary cancellation of CERs

3rd CITC Regional Conference on Climate Change and Sustainable Development: "How to Accelerate Climate Actions in Asia through Capacity Building and Climate Finance"

Bangkok, 31 March 2016

Benita Gurung, Team Lead, UNFCCC-Regional Collaboration Center-Bangkok

Outline

- What?
- Why?
  - Climate Neutral
  - Offset
- How?
- Voluntary Cancellation Platform-
  - Why CERs?
  - Updates on the Voluntary Cancellation Platform
- Next steps

#ClimateNeutralNow

What ?

-Climate neutrality is achieved by balancing the amount of emissions your day-to-day activities or business operations generate, with the same amount being reduced (offset) elsewhere in the world.

-Climate neutrality is not about zero emissions.

-It is about reducing current emissions to the point where we reach the ultimate balance between emissions and the absorptive capacity of the Earth.

Climate Neutral Now
Climate change affects us all.
Be part of the solution.

Why climate neutral now?

- *To avoid the worst effects of climate change, we must limit global temperature rise to less than 2 degrees Celsius.*
- *To keep our communities healthy and safe we need a climate neutral world. This is achievable but will require action from ALL of us.*
- *Even with our best efforts to reduce, our daily activities and business operations will result in unavoidable emissions. This is why offsetting, after measuring and reducing, is key for achieving a climate neutral world.*
- *Offsetting benefits the whole planet, not just the country in which the emissions are reduced.*

Why offset?

- *To achieve climate neutrality, we must measure what we emit and then reduce our emissions. Even with our best efforts to reduce, daily activities and business operations will result in unavoidable emissions. This is why offsetting, only after measuring and reducing, is key for climate neutrality.*
- *Offsetting is not a way to avoid taking action. Where emissions cannot be entirely eliminated, offsetting demonstrates a commitment to greenhouse gas management while society works toward climate neutrality in the second half of the 21st century.*

How can you be involved?

Voluntary cancellation platform

CLIMATE NEUTRAL

MEASURE REDUCE OFFSET NOW

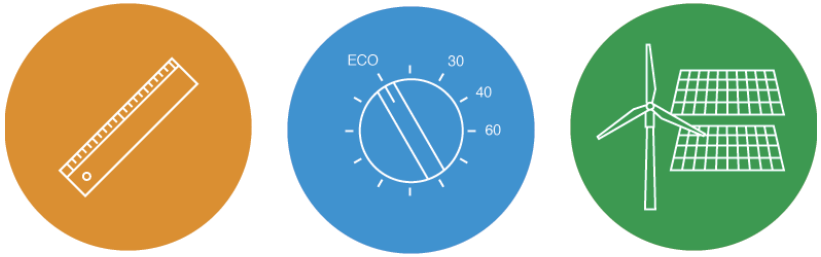
Voluntary cancellation platform

- An online platform to allow the general public to voluntarily cancel CERs.
- Supports CDM project developers
- Encourages voluntary use of CERs to offset the climate footprint of individuals and organizations;
- Allows the public to support mitigation action (and sustainable development) in a voluntary manner.
- Contains a simple process to pay for the VC of those CERs;
- For each purchase a certificate will be issued to the buyer;
- No brokerage fee charged to any user;
- Only CERs located in the CDM registry will be offered (both CP1 and CP2).

General features

- UNFCCC operates the platform;
- PayPal or credit card fees (both methods possible);
- Accessible through the main internet browsers (Chrome, Internet Explorer, Firefox and Safari);
- Accessible from desktop and mobile devices;
- Initial version available in English. Possibility to add other languages later;
- Availability: 24 hours a day, seven days a week;
- Service-desk support during UNFCCC secretariat working hours.

How does the platform work?

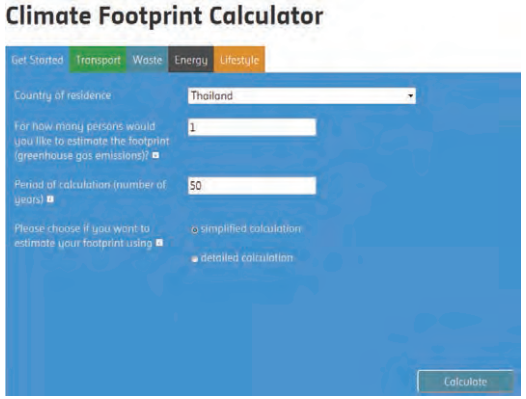


1. **Measure** your organization's or personal climate footprint

2. **Reduce** emissions as much as possible

3. **Offset** what cannot be reduced, totally or partially, with UN offsets (CERs)

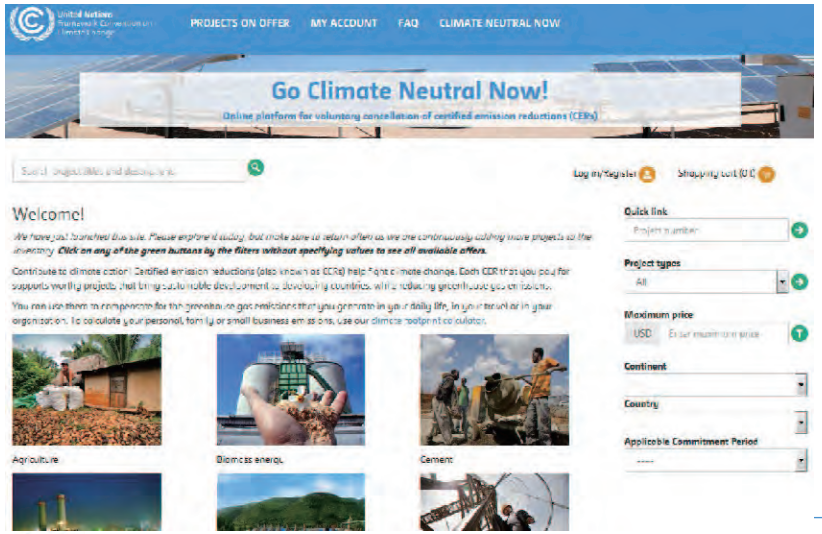
Step 1: Measure



Step 2: Reduce

Step 3: Offset – purchase

(https://store.climateneutralnow.org/)



Why CERs?

- Additional-Issued after a rigorous, multi-stage process, including checks by **accredited third-party auditors**
- Represent **real, permanent, verified, and additional** emission reductions
- One CER corresponds to one tonne CO_2-eqv
- Can come from projects in **almost any economic sector** (only exceptions: nuclear, some LULUCF)
- Provides **co-benefits** to developing countries such as clean technology and investment, helping improve communities, industry and economies with minimal environmental impact.
- The new owner of the CER may use this to compensate for his own emissions that he is unable to reduce at home.
- When a CER is removed from further circulation (i.e. cancelled) it means that the current owner has financed the additional emission reduction that the CER represents.

Why CERs?

Preventing double counting

- All CERs are issued into the CDM registry, administered by the UNFCCC secretariat
- Each CER is assigned a unique serial number
  a) Enables tracing to Party of origin, specific project
  b) Attached to the CER for its lifespan
- CERs may circulate within the Kyoto registry system, comprising the CDM registry and Annex I Party registries
- All transactions are tracked by the International Transaction Log (ITL)
  a) CER has uniquely good conditions to be tracked and identified.
  b) Nevertheless, to avoid double counting, the host country from where the CER originates must still take responsibility to deduct CERs from their mitigation achievements if the CERs are transferred abroad.

Why CERs?

- Offsetting funds existing projects and encourages more emission reductions while spurring additional clean and green development.
- CDM offers a robust portfolio of CERs to choose from. With more than 7500 registered projects in 105 developing countries, and 27 project types, credits are available to help meet a wide variety of sustainability and social responsibility objectives.

Updates

- Latest events that have been/will be neutralized with CERs: COP21, UN Environmental Assembly (UNEA) and High Level Thematic Debate on Achieving the SDGs (http://www.un.org/pga/70/events/sdgs/).
- An estimated 1,800 COP21 participants offsett their travel footprint with the Platform.
- Total amount of CERs cancelled through the Platform: 14,200 at average price of USD 1.88/CER.

Next steps:

- Improve functionalities,
- increasing the number of projects
- Integrate the platform with business partners (businesses could use the platform to offer their clients the possibility to offset their products or services with CERs).

Who are already supporting?

Microsoft

CLIMATE NEUTRAL NOW
MEASURE REDUCE OFFSET

adidas GROUP

SONY

M&S
EST. 1884

International Post Corporation

And others…

www.climateneutralnow.c…

GSMA MOBILE WORLD CONGRESS

Go Climate Neutral Now!

- **To purchase CERs for voluntary cancellation:**
  - ❖ Access the platform!
- https://store.climateneutralnow.org
- **To offer CERs for voluntary cancellation:**
  1. Make sure you hold CERs in the CDM Registry.
  2. Invite your project's Focal Point to send an email indicating your interest to use the platform, and the project reference number(s) to: climatecreditstore@unfccc.int

"Climate neutrality is a vision we want this century. It begins today and needs action from everyone - from governments to individuals. I've pledged to become Climate Neutral Now and invite you to join me to measure, reduce and offset your emissions. Climate change will affect everyone and everyone can effect positive change now."

- Christiana Figueres

Executive Secretary of the UN Climate Change Secretariat

Thank you!

Email address: RCCBangkok@unfccc.int

Skype: RCC.Bangkok

Office address:

IGES Regional Centre

604 SG Tower 6th Floor, 161/1 Soi Mahadlek Luang 3;

Rajdamri Road, Patumwan, Bangkok, 10330, Thailand

Accessing Climate Financing: Green Climate Fund

Juichiro Sahara
Senior Resource Mobilization Specialist
31 March 2016 | Bangkok, Thailand

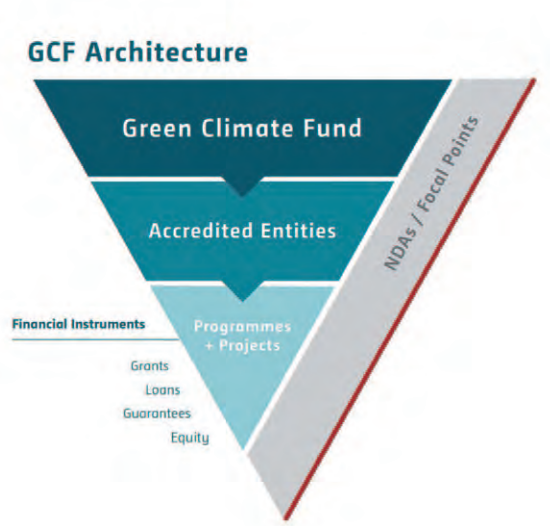
The Green Climate Fund

- <u>Operating entity of the financial mechanism</u> of UNFCCC
- GCF will promote the <u>paradigm shift</u> towards low-emission and climate-resilient development pathways
- GCF is the only stand-alone multilateral financing entity whose sole mandate is to serve the Convention

GCF : Timeline

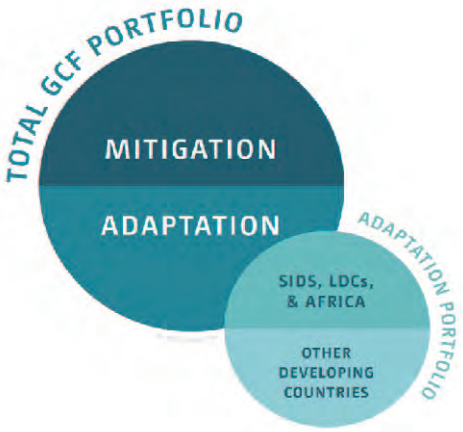
- ✓ 2009 The general concept for GCF proposed at COP15 in Copenhagen
- ✓ 2010 GCF is formally established during COP16 in Cancun
- ✓ 2011 GCF`s Governing Instrument adopted at COP17 in Durban, South Africa
- ✓ 2013 GCF`s Executive Director is appointed, and the headquarter was established in Songdo, Korea
- ✓ **2014 Successful Initial Resource Mobilization of over USD 10 billion equivalent**
- ✓ **2015 Accredited 20 organizations and approved the first funding decisions (8 projects, USD 168 million)**

GCF and its Partners



Allocation Framework

- Geographic balance
- Significant allocation to Private Sector Facility
- Sufficient resources for readiness activities



Added Value of GCF

- Maximize country ownership
- Balanced governance with equal voice for contributors and recipients
- Diversity of financial instruments
- Largest dedicated climate Fund globally

Initial Resource Mobilization

- **Pledges**: By the end of 2015, over USD 10 billion equivalent from 46 state • region • city governments, including 9 developing countries: **NEED to CONTINUE!**
- **Agreements**: Finalized USD 9.9 billion equivalent into agreements. http://www.greenclimate.fund/contributions/pledge-tracker
- **Commitment Authority**

Table 1. Total commitment authority as of 31 December 2015

Millions of United States dollars

	Cash	Promissory Notes (PNs)[a]	Funding Decisions	Total
Commitment Authority	669	1,213	255	1,627

[a] Amount is in United States dollar equivalent based on Interim Trustee`s Green Climate Fund Trust Fund Report as of 31 December 2015.

Engaging with GCF

- Establish and Maintain a national designated authority (NDA) or focal point
- Identify and seek accreditation of entities to access resources from GCF
- Develop projects and programmes to bring forward for funding through accredited entities

NDAs and Focal Points

- Selecting an NDA or focal point
- Mandate and responsibilities of NDAs
  - Provide broad strategic oversight of GCF's activities in their country
  - Convene public, private and civil society stakeholders to identify priority sectors to be financed by the Fund.
  - Communicate nominations / no objection of entities seeking accreditation to GCF under the 'direct access' track.
  - Implement the no-objection procedure on funding proposals submitted to GCF
  - Provide leadership on the deployment of readiness and preparatory support funding in the country.

Scope of Readiness Activities

*** The readiness programme supports countries in identifying strategic investment priorities and preparing or strengthening low-emission development strategies or plans, NAMAs, NAPs, and NAPAs.**

Accredited Entities (AEs)

Morocco · Ministry of Natural Resources of Rwanda · Ethiopia · Kenya · Argentina

33 entities accredited to date

As of March 2016

The Role of Accredited Entities

- Developing and submitting funding proposals for projects and programmes
- Overseeing management and implementation of projects and programmes
- Deploying a range of financial instruments within their respective capacities (grants, concessional loans, equity and guarantees)
- Mobilizing private sector capital

Accreditation Framework – Who can apply for accreditation?

- **All entities**, including international, regional, national and subnational and public and private entities, can apply for accreditation through one of two modes of access:
- **Direct access track**: for regional, national and sub-national entities.
  - NDA nomination required
  - Entities may be eligible to receive readiness and preparatory support on accreditation
- **International access track**: for international entities, including United Nations agencies, multilateral development banks, international financial institutions and regional institutions

Accreditation Process

Accreditation Requirements – Fiduciary Standards and ESS*

Basic Fiduciary Standards

- Key administrative and financial capacities
- Transparency and accountability

Specialized Fiduciary Standards

- Project management
- Grant award and/or funding allocation mechanisms
- On-lending and/or blending

Environmental and Social Safeguards (ESS)

Institutional ESMS policy-level:
✓ **Performance Standard (PS) 1:** Assessment and management of relevant PS1-8 environmental and social risks and impacts through an environmental and social management (ESMS)

Project-level:
- ✓ **PS2**: Labor and working conditions
- ✓ **PS3**: Resource efficiency and pollution prevention
- ✓ **PS4**: Community health, safety & security
- ✓ **PS5**: Land acquisition & involuntary resettlement
- ✓ **PS6**: Biodiversity conservation & sustainable management of living natural resources
- ✓ **PS7**: Indigenous peoples
- ✓ **PS8**: Cultural heritage

* For more details, refer to the initial guiding accreditation framework, fiduciary standards, and ESS.

Size of Project / Activity within a Programme

Total Projected Costs*

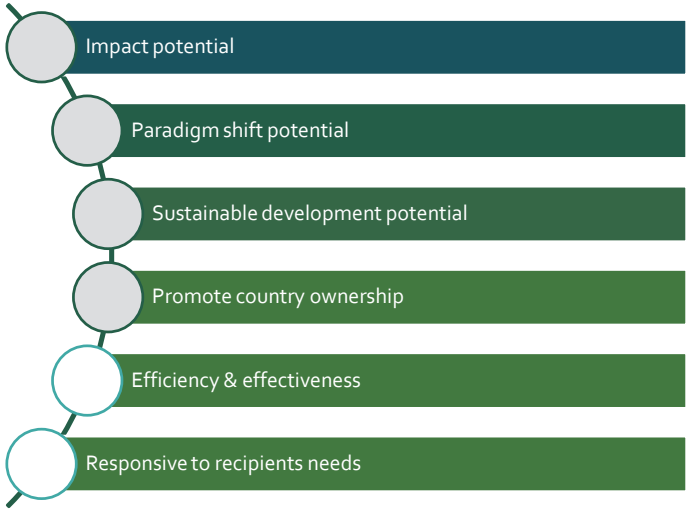
* At the time of application, irrespective of the portion that is funded by the Fund and, if applicable, other sources, for an individual project or activity within a programme.

Funding for Projects / Programmes

- After accreditation, an accredited entity can submit project and programme proposals for funding.
- Funding proposals will be evaluated against the GCF's investment criteria.
- Accredited entities are encouraged to inform NDAs or focal point when they intend to operate in their countries

* Fund also accepts spontaneous proposal submissions received from NDAs, IEs and intermediaries

The Fund's Six High-level Investment Criteria



Projects and Programmes 1

GCF has approved USD 168 million of GCF funding for projects and programmes worth USD 624 million

1. Building Resilience of Wetlands in the Province of Datem del Marañón in Peru: Profananpe (GCF funding: USD 6.2 million)
2. Scaling Up the Use of Modernized Climate Information and Early Warning Systems in Malawi: UNDP (GCF funding: USD 12.3 million)
3. Increasing the Resilience of Ecosystems and Communities through the Restoration of the Productive Bases of Salinized Lands, in Senegal: CSE (GCF funding: USD 7.6 million)
4. Climate Resilient Infrastructure Mainstreaming in Bangladesh: KfW (GCF funding: USD 40 million)

Projects and Programmes 2

5. KawiSafi Ventures Fund in Eastern Africa: Acumen (GCF funding: USD 25 million)
6. Energy Efficiency Green Bond in Latin America and the Caribbean: IDB (GCF allocation: USD 217 million)
7. Supporting Vulnerable Communities to Manage Climate Change Induced Water Shortages in Maldives: UNDP (GCF funding: 23.6 million)
8. Urban Water Supply and Wastewater Management in Fiji: ADB (GCF funding: USD 31 million)

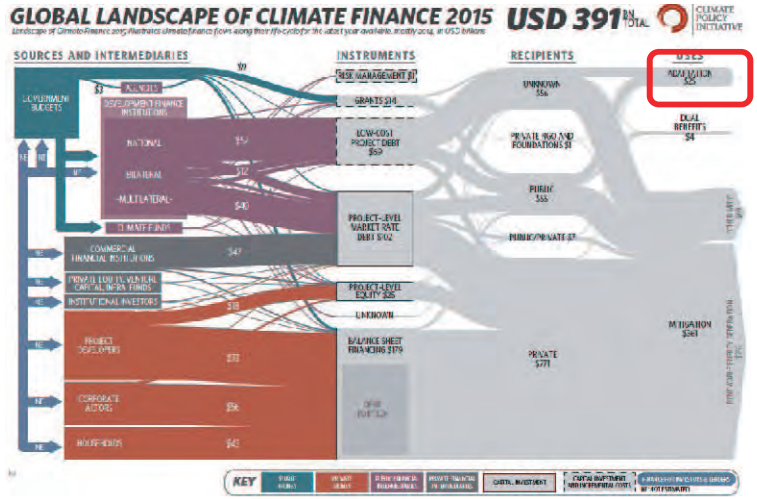

GREEN
CLIMATE
FUND

Climate Finance and Climate Change Adaptation

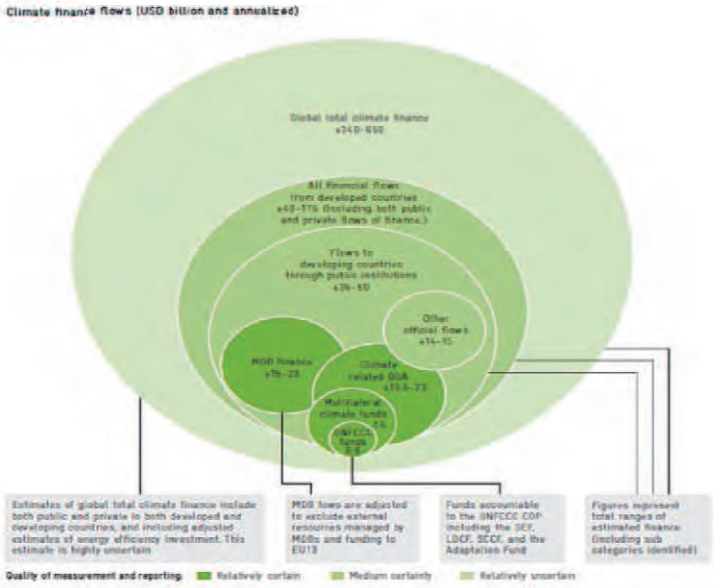
Puja Sawhney
Coordinator of the Regional Hub for Asia Pacific Adaptation Network (APAN),
Institute for Global Environmental Strategies

31st March 2016
Bangkok, Thailand

Making Sense of Global Climate Financing Flows



Visualizing Global Climate Finance

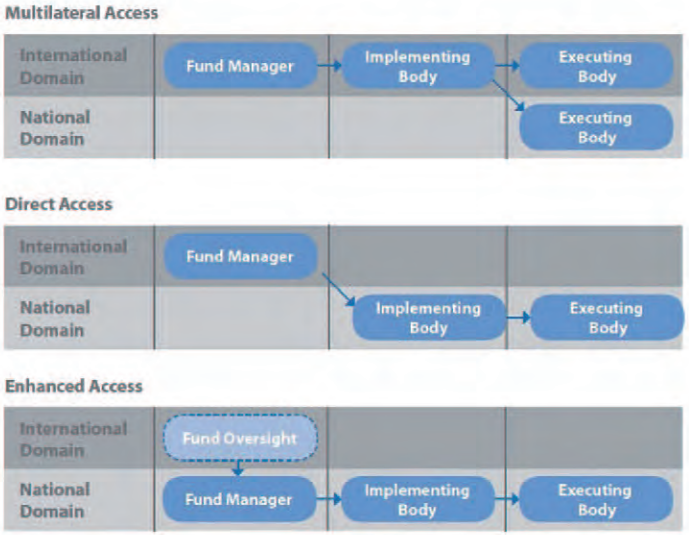


Unmet Climate Financing Needs

- By comparison:
  - CC mitigation and adaptation annual needs = US $5-6 trillion
  - UNFCCC annual target (post-2020) = US $0.1 trillion
  - Initial GCF amounts pledged = US $0.01 trillion or $10.2 billion

Scaling up is a critical and urgent need!!!! But there is a dearth of "bankable" economically viable projects.

Access Modalities



Roles of Implementing Entities and "Intermediaries"

- IEs can be international, regional, national, or sub-national entities
- Local communities can only access CF Funds through accredited IEs or Intermediaries, usually through a Ministry
- All IEs must be accredited by CF Funds in accordance with their own guidelines and policies
- Once accredited, their roles are to help identify and prepare proposals, transfer resources, and manage and oversee implementation, including adherence to all MRV, FM, gender, and ESS policy requirements

Roles of Implementing Entities and "Intermediaries"

From Institutional access:

- Multilateral international entities are responsible for facilitating project development, design, submitting approvals, monitoring and reporting functions on behalf of countries

***To Direct access*:**

- The project development, design and oversight responsibilities normally played by multilateral international entities are taken on by a national or regional entity

Role of NDAs on CCA Project Proposals

- National Designated Authorities (NDAs) work with governments to propose initial project "concept notes"
- Review and recommend proposals to CF Funds
- Ensure proposals are harmonized with national CCAR strategies, plans, and priorities
- Possess "no objection" authority over which proposals are submitted to CF Funds
- Government's role is to proactively facilitate the flow of information and project development

National Level Government Roles & Responsibilities

- Coordinating national climate change policy (NAPAs, NAPs and other strategy documents)
- Coordinating regional collaboration and avoiding duplication of effort at lower scales of government
- Facilitating and supporting capacity building at lower scales
- Gathering and analyzing meteorological and climatological data and providing useful products at the provincial or local level
- Working with the international community to get support and guidance where it is needed – at the local level
- Insist on QUALITY in all aspects of project development. Be proactive, informed and supportive of all stakeholders

ADB Commitment to Climate Increasing

World Bank Group

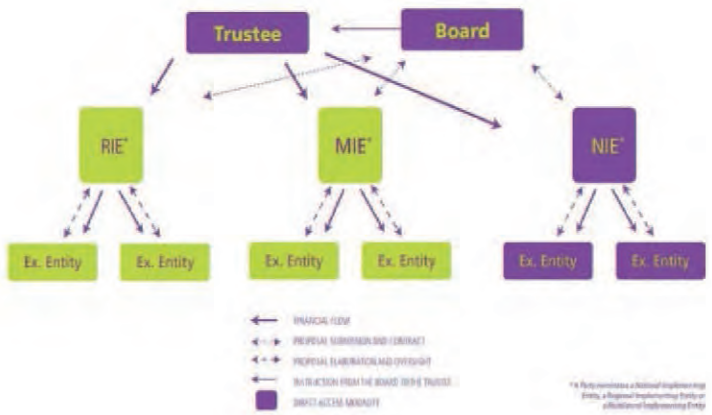
- The World Bank Group will increase climate financing to $29 billion annually, through direct financing and co-financing.
- Currently, 21% of WBG funding is climate related. Could rise to 28% in 2020, a one-third increase. WBG now provides an average of $10.3 billion a year in direct financing for climate action. If current financing levels were maintained, this would increase to $16 billion in 2020
- The WBG also plans to continue current levels of leveraging co-financing; that could mean another $13 billion a year in 2020

Adaptation Fund

- The Adaptation Fund originated from the Kyoto Protocol
- Essentially for funding CDM
- Beneficiaries: SIDS and other vulnerable developing countries
- Project size: US$0.5 million- US$10 million
- Equitable balance and direct access

ADAPTATION FUND

Adaptation Fund Modalities



Examples of Adaptation Fund Projects

- Disaster Risk Reduction: Cook Islands
- Rural Development: Cambodia
- Water Management: Mongolia
- Coastal Management: India
- Food Security: India
- Agriculture: Turkmenistan
- Multisector: Kenya

Green Climate Fund (GCF)

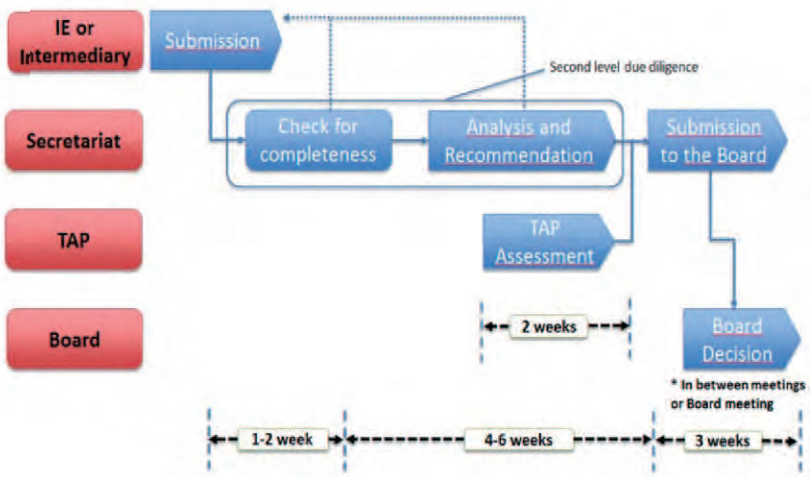
- Purpose: to transfer "new and additional" money and technical expertise to developing countries to address CC impacts. > US$10 billion pledged with eventual goal of mobilizing a large part of the UNFCCC US$100 billion by 2020
- Project Preparation Process to ensure that assistance is country driven and involves all relevant stakeholders

GREEN CLIMATE FUND

GCF

- Proposal Approval Process – streamlined programming/approval processes and "simplified processes for small scale activities"
- First 8 projects approved in November 2015 for $168 million
- GCF: Procedural Issues
  - Multiple channels of access
  - Access through accredited NIE, RIE, IE
  - Accreditation requires a fee – and there are different levels of accreditation
  - Only NABARD has been accredited as a NIE in Asia-Pacific, so far
  - Submit initial concept note for feedback
  - Prepare full proposals for TAP & Board approval

GCF Submission & Review Process



GCF: Example Projects

- Wetlands protection through land use planning & management (Peru)
- Climate information & Early Warning (Malawi)
- Ecosystem restoration (Senegal)
- Climate Resilient Infrastructure Mainstreaming (Bangladesh)
- Investment fund establishment for renewables (Rwanda & Kenya)
- Energy efficient green bonds (Latin America & Caribbean)
- Improved water supply for vulnerable communities (Maldives)

Global Environment Facility (GEF): Overview

- Serves as financial mechanism for several organizations
- Seeks integrated approaches to climate change
- Funds: Currently $3 billion for climate finance
- Manages Special Climate Change Funds (SCCF) & The Least Developed Countries Fund (LDCF)

SCCF and LDCF

- SCCF – Established in 2001, open to all developing country parties, supports adaptation and technology transfer, cumulative pledges US $348 million, meets less than 30% of demand for priority projects, funded 57 CCA projects (US $241 million), mostly in agriculture and water resources management, World Bank is main GEF agency
- LDCF – most commonly used program by UNDP (49%), cumulative pledges of US $915 million, demand exceeds funds available, also supports NAPA preparation, 158 projects (US $864 million), mostly for natural resource management and agriculture (only 5% for infrastructure)

Examples of SCCF and LDCF Approved Urban Projects

- SCCF
  - Vietnam – Promoting climate resilient infrastructure in Northern Mountain provinces
  - India – Climate resilient coastal protection and mgmt
  - Regional - Building climate resilience of urban systems through EbA in LAC
- LDCF
  - Maldives – Increasing CC resilience of Maldives through adaptation in the tourism sector
  - Samoa – Enhancing the resilience of tourism-reliant communities to CC risks
  - Regional – Building climate resilience of urban systems through EbA in Asia-Pacific

Regional Institutions Supporting Adaptation

- There are numerous regional organizations supporting CCA in Asia-Pacific, such as:
- Bilateral donors – e.g. Australia, DfID, BMU/GIZ, JICA, USAID/RDMA
- CDIA
- ICLEI
- Rockefeller Foundation – 100 Resilient Cities

How do you pick you Fund

- Climate finance is a special case of development finance
- Big project or little project? Scale matters
- Grants or loans? Economic viability
- Financing selection same as BAU, so understand procedures of your own country in terms of how MoF/NESDB/MoP/MPI approaches/accesses different financial resources
- Exhaust local/national financial sources first
- For scaling up from pilot projects, consider program modality or multi-tranche funding
- Link with national ministry or ministries responsible for contact with multilateral and bilateral financing sources

Take home messages

- Global availability of resources is not the issue, it is how these are allocated to solving the world's problems, including climate change
- Most CCA activities will need to be funded by sources within the country—external sources will help, but will never be sufficient
- Local governments have access to a wide range of financial sources, such as municipal bonds, land taxes, fees and charges which can be used for CCA projects
- Direct access to external funds by national governments in Asia Pacific is still problematic and relatively unproven, e.g. the Adaptation Fund, Green Climate Fund

Conclusion

- Exhaust domestic fund options before trying to access external funds
- Governments have argued for direct access to external funds, but accreditation is neither easy nor quick; stick to existing routes in the short term
- Funds are available for "readiness" assessments and capacity building, but don't rely on the direct access modality in the next few years
- Scaling up from pilot projects and programmes is critical but not easy.

Thank you for your attention!

3rd CITC Regional Conference on Climate Change and Sustainable Development:
"How to Accelerate Climate Actions in Asia through Capacity Building and Climate Finance"

Pullman King Power, Bangkok
31 March 2016

THAILAND NDE
NATIONAL DESIGNATED ENTITY

Making Flow of Climate Finance and How to Access through the UNFCCC Technology Mechanism

Dr.Surachai Sathitkunarat

Director
Department of Energy and Environment
National Science Technology and Innovation Policy Office (STI)
Ministry of Science and Technology

Outline

- National Science Technology and Innovation Policy Office (STI)
- Technology Development and Transfer under UNFCCC
- UNFCCC Technology Mechanism: Climate Technology Centre and Network (CTCN) and National Designated Entity (NDE)
- TNA & TAP Implementation Pilot Project under COP Mandate from Parties to the TEC @ COP20 (Lima)

National Science Technology and Innovation Policy Office (STI)

Ministry of Science and Technology

Agencies under Ministry of Science and Technology

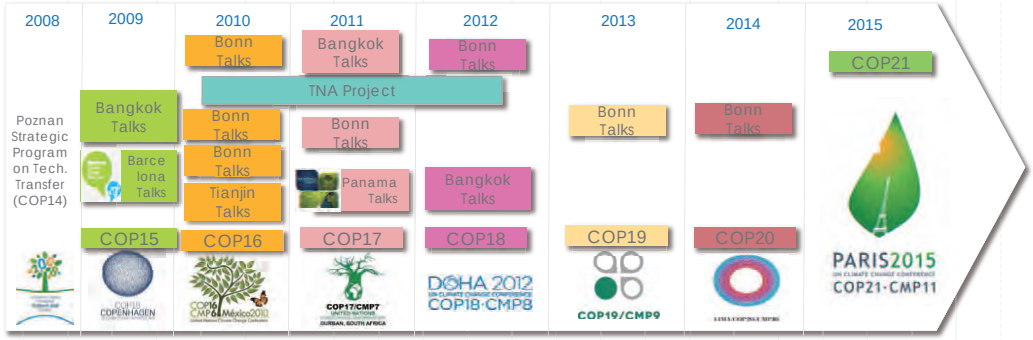
Policy	STI Infrastructure	Research & Development	Services and Support
Office of the Permanent Secretary	National Astronomical Research Institute of Thailand (NARIT)	National Science and Technology Development Agency (NSTDA)	Department of Science Service (DSS)
National Science Technology and Innovation Policy Office (STI)	Geo-Informatics and Space Technology Development Agency (GISTDA)	Thailand Institute of Scientific and Technological Research (TISTR)	Office of Atoms for Peace (OAP)
	National Institute Of Metrology Thailand (NIMT)	National Synchrotron Research Center (NSRC)	Hydro and Agro Informatics Institute (HAII)
	National Science Museum (NSM)	Thailand Institute of Nuclear Technology (TINT)	Thailand Center of Excellence for Life Sciences (TCELS)
			National Innovation Agency (NIA)

Office of the Minister

STI's Major Responsibilities

1. To formulate the national STI policies and plans
2. To develop standard measurements, indicators, database, and conduct policy research on STI
3. To provide support and advice to other government agencies in formulating their own STI implementation plans
4. To coordinate and monitor the development of national S&T manpower
5. To monitor, evaluate and report the national STI implementation to the Committee and the Cabinet

STI and UNFCCC – Technology Transfer



Technology Development and Transfer under the United Nations Framework Convention on Climate Change (UNFCCC)

Countries: to achieve UNFCCC objective, climate technologies have key role to play

- Enshrined in Convention:
- "All Parties ... shall promote and cooperate in the development, application and diffusion, including transfer, of technologies, practices and processes that control, reduce or prevent anthropogenic emissions of greenhouse gases..." Article 4.1(c)
- "The developed country Parties ... shall take all practicable steps to promote, facilitate and finance, as appropriate, the transfer of, or access to, environmentally sound technologies and know-how to other Parties, particularly developing country Parties, to enable them to implement the provisions of the Convention." Article 4.5

Since 1995, Parties have considered how to enhance climate technology development and transfer => To support enhanced action on climate change

Source: Wanna Tanunchaiwatana (2015)

UNFCCC - Major milestones on technology

2001 – Technology Transfer Framework

- Five elements: (i) technology needs assessments, (ii) technology information, (iii) enabling environments, (iv) capacity building, (v) mechanisms for technology transfer

2007 – Bali, COP 13

- Recommendations for enhancing Technology Transfer Framework
- Four mechanisms for technology transfer: (1) innovative financing, (2) international cooperation, (3) endogenous technology development, (4) collaborative research and development

2008 – Poznan Strategic Programme

- GEF programme to promote investment in technology transfer
- Help developing countries address their climate technology needs
- Regional centres

Source: Wanna Tanunchaiwatana (2015)

UNFCCC - Major milestones on technology

2010 – UNFCCC Technology Mechanism: Mechanism to enhance action on technology development and transfer

Technology Executive Committee (TEC)

- Policy arm
- 20 member expert committee

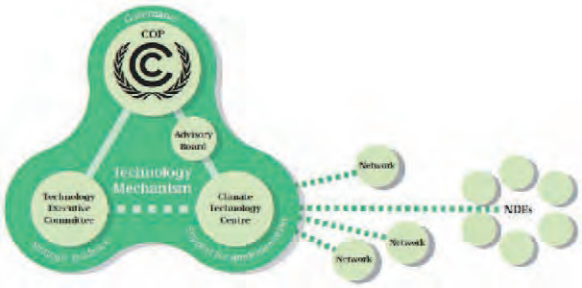
Climate Technology Centre and Network (CTCN)

- Implementation arm
- Centre hosted by UNEP
- Network of +20 regional organizations

Source: Wanna Tanunchaiwatana (2015)

UNFCCC Technology Mechanism: Climate Technology Centre and Network (CTCN) and National Designated Entity (NDE)

CTCN Structure



Conference of Parties (COP) and CTCN Advisory Board guide the work of the CTCN

CTCN operations are conducted through:

- **The CTCN Secretariat hosted by UNEP and UNIDO**
- **CTCN Consortium: 11 independent, regional and global organizations with expertise in a variety of climate technology sectors**
- **An international network of academic, multilateral, NGO and private sector institutions**
- **National Designated Entities (NDEs): national CTCN focal points selected by each country to coordinate and submit technical assistance requests to the CTCN**

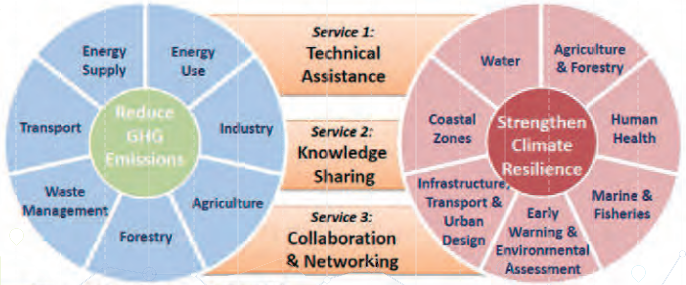
Source: Jukka Uosukainen (2015)

CTCN Mandate, Services and Structure

The CTCN's mission is

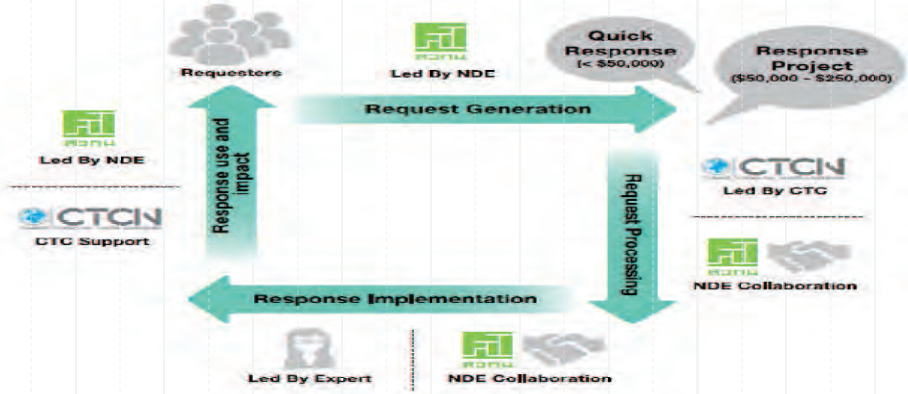
"Stimulating technology cooperation and enhance the development and transfer of technologies to developing country Parties at their request"

Services



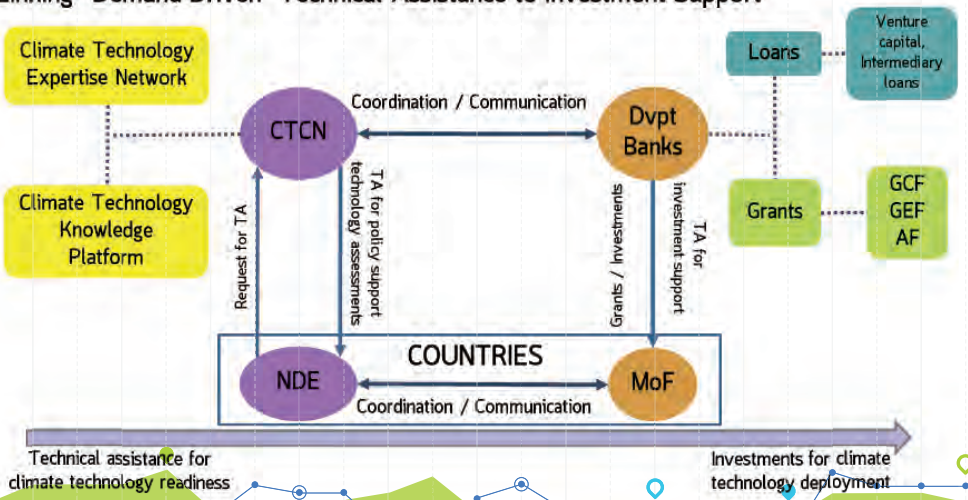
Source: Jukka Uosukainen, CTCN (2015)

Technical Assistance Cycle



Adapted from: CTCN

Linking "Demand-Driven" Technical Assistance to Investment Support



Source: Jukka Uosukainen , CTCN (2015)

Criteria of CTCN

Eligibility Criteria

1. National priority
   A) Benefit to mitigating or adapting to climate change.
   B) The request is in line with national strategies and plans
2. Enhances endogenous capacities.
3. Processes in place in requesting country to monitor and evaluate.

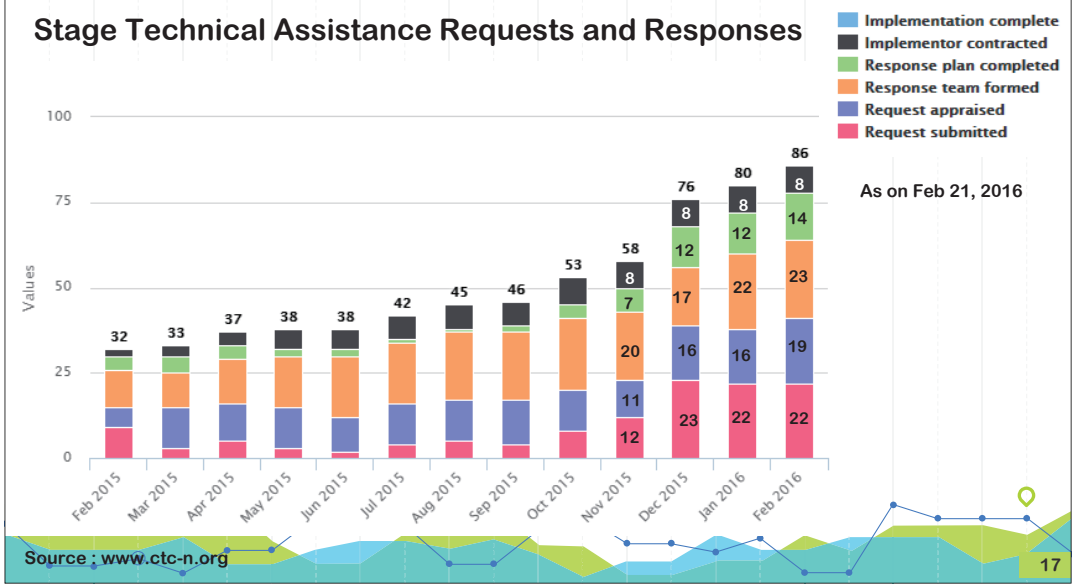
Prioritization Criteria

1. Promoted endogenous and appropriate technologies and processes.
2. "Project readiness" and potential for replication or scaling up.
3. Collaboration amongst stakeholders.
4. Social and economic benefits.
5. Gender equality and empowerment of vulnerable groups.

Balancing Criteria

1. Inter and intra-regional equity
2. Balance adaptation and mitigation
3. Balance spanning the technology cycle

Stage Technical Assistance Requests and Responses



Source : www.ctc-n.org

NATIONAL DESIGNATED ENTITIES (NDEs)

Good NDEs ARE essential for a well functioning CTCN!

NDE Roles and Responsibilities

The NDEs facilitate the support to their countries from the CTCN by:

- Serving as National Focal Point on CTCN activities.
- Supporting the articulation and prioritization of requests and proposals.
- Managing the national submission process of technical assistance requests to the CTCN.

Focal point for CTCN activities at the national level

- ❑ Ensuring requests are based on national circumstances and priorities
- ❑ Coordinating with relevant ministries, focal points for other UNFCCC mechanisms, and the private sector, civil society, and academia to ensure CTCN services provide the best value to the country

"NDEs will act as CTCN focal point in the countries and manage the submission of requests for technical assistance"

Thailand National Designated Entity (NDE)

◉3 July 2014 Office of Natural Resources and Environmental Policy and Plan (ONEP) as Focal point under UNFCCC nominated STI as an "Interim NDE" in order to enabling activities and interacting with CTCN.

◉20 November 2014 National Climate Change Committee adopted STI as "Thailand NDE"

◉25 November 2014 The Cabinet approved STI as "Thailand NDE"

◉3 December 2014 ONEP nominated STI as an "Thailand NDE".

World map of NDEs

146 Countries as of 30 March 2016

Source: UNFCCC TT:Clear

Thailand - Technical Assistant Requests

Adaptation

No.	Title	Org.	Sector	Status	Expert team
1.	Capacity Building on Technology Development for Efficient Use of Resources in Agriculture Sector	National Science and Technology Development Agency (NSTDA)	Agriculture	• Kickoff meeting : 5 Feb 2016 • 2nd meeting : 10 Mar 2016	AIT
2.	High resolution regional climate model projections for Thailand	Department of Geography, Faculty of Social Sciences, Chiang Mai University	Early warning and Env. assessment	• Kickoff meeting : 1 Feb 2016 • 2nd meeting : 20-21 Mar 2016	TERI and ICRAF
3.	Urban Flood – Early Warning System	Department of Drainage and Sewerage Bangkok Metropolitan Administration (BMA)	Early warning	• Kickoff meeting : 24 Feb 2016	DHI Denmark

requests submitted to CTCN on 30 Nov 2015

Thailand - Technical Assistant Requests

Mitigation

No.	Title	Org.	Status	Note
1	Fostering Green Buildings in Thailand Towards Low Carbon Society	ONEP or DEDE or KMUTT	Currently undergoing screening	Need more clarification
2	Benchmarking Energy & GHGs Intensity in Metal Industry of Thailand	Iron and Steel Institute of Thailand (ISIT)	Currently undergoing screening	Need more clarification
3	Assessment of energy efficient street lighting technologies and financing models for Thai municipalities	Provincial Electricity Authority of Thailand (PEA)	Currently undergoing screening	-

requests submitted to CTCN on 30 Nov 2015

South-South Collaboration
Bhutan NDE and Thailand NDE

Reducing GHG Emissions from Transport by Improving Public Transport Systems through Capacity Building and Use of Technology

Activity 1 - Training and Field Visits in Bangkok and Chiang Mai (10 person)

Module 1:
Low carbon mobility planning
A training will show an overview of low carbon mobility concept and its important role for climate change mitigation. The training will focus on the key technology in transport sector, especially intelligent transport system (ITS) technology. A good experience from various cities to identify technologies and policies for achieving greenhouse gas mitigation and sustainable transport development will be shared to participants.

Module 2:
Thai experience with Intelligent Transport
This activity will provide the participants with an overview of the Thai experience, both in Bangkok and Chiang Mai, with intelligent transport management systems by Thai intelligent transport system (ITS) experts. Through practical examples and case studies this module will seek to enhance the participants' knowledge on relevant technologies. Participants will also be taken for field visits to observe the application of Thailand's intelligent transport management systems, where they will get an opportunity to interact with the public and private sector officials and engineers.

15-19 Feb 2016

28,500 USD

Activity 2 – NAMA training and proposal development (By UNEP DTU) @Bangkok (20-21 Feb 2016) [~21,500 USD]
Activity 3 – Capacity building at Thimpu [Contingent to funding from Incubator program]

TNA & TAP Implementation pilot project under COP mandate from parties to the TEC @ COP20 (Lima)

Participating countries

* TAP Implementation pilot project

TNA Phase I countries

TNA Phase I supported 36 countries between 2009 and 2013. TNA reports were submitted by 11 countries in Africa and Middle East, 13 countries in Asia and Eastern Europe, and 8 in Latin America and Caribbean. These countries were:

Africa & Middle East:
Coted'Ivoire, Ghana, Kenya, Lebanon*, Mali, Mauritius*, Morocco*, Rwanda, Senegal, Sudan, Zambia, Ethiopia

Asia & CIS:
Azerbaijan, Bangladesh, Bhutan*, Cambodia, Georgia, I ndonesia, Kazakhstan, Laos, Moldova, Mongolia, Nepal, Sri Lanka, THAILAND*, Vietnam

Latin America & Caribbean:
Argentina*, Bolivia, Colombia, Costa Rica, Cuba, Dominican Republic, Ecuador, El Salvador, Guatemala, Peru

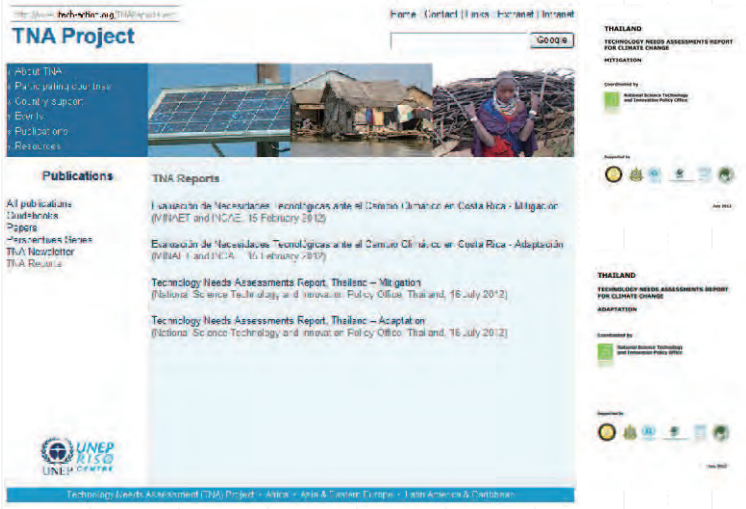
TNA Phase II countries

TNA Phase II was launched in November 2014 and will facilitate the preparation of TNAs in 26 countries. Two additional countries that participated in TNA Phase I will be supported in concluding their TAP reports.

TNA and TAP Implementation

TNA Prioritized Technologies

www.tech-action.org/TNAReports.asp



Agricultural Sector

TNA

- Crop improvement
- Precision farming
- Forecasting & Early warning system

TAP

Plan for Building tech capability

- R&D and HR development
- Infrastructure development
  - ✓ Seedbank / HTPS / micro climate station
- R&D management mechanism development

Plan for Tech transfer

- KM to increase farmers accessibility to technology
- Increase smart farmers and new generation farmers
- Establishing/strengthening community technology centres

- Financial support for social entrepreneurs or start-ups in precision farming business *
- Financial support for farmers applying the technologies *

Within FY 2016

Policy Recommendation *Present to*

National Climate Change Committee

Chaired by the Prime Minister

* STI initiatives, need more studies

Energy Sector

TNA

(a) Energy supply
Smart grid
(b) Renewable energy technology
- Waste to power (power generation)
- Second generation biofuels

(c) Energy efficiency improvement
Fuel Combustion in industry sector
(d) Energy related Climate Change technology
Carbon Capture & Storage (CCS)

TAP

- Biogas
- Advanced biofuel
- Fuel combustion in industry

Policy Recommendation *Present to*

National Climate Change Committee

Chaired by the Prime Minister

TNA & TAP Implementation pilot project under COP mandate from parties to the TEC @ COP20 (Lima)

I. Project ideas which were already implemented and could be further promoted,
II. Identification of "easy to implement" mitigation and adaptation projects, of which feasibility study should be completed within September 2016.

2015

6 countries selected

- Argentina
- Lebanon
- Mauritius
- Morocco
- Bhutan
- Thailand

2016

Feasibility study 80,000 USD

BIOTEC

- Leverage Thailand seed bank capability*

NECTEC

- Replication of precision farming project *

COP22 (2016) Marrakesh

- Organizing a side event or an exhibition to promote the project
- Writing proposal and approaching donators for financial support

2017

GREEN CLIMATE FUND

Managing the project expected to receive financial support from international fund **

* Ongoing discussion with stakeholders and implementers
** Need confirmation

Thailand NDE
National Science Technology and Innovation Policy Office (STI)

319 Chamchuri Square Building,
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For more information,

please contact

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Dr. Surachai Sathitkunarat
Director
Department of Energy and Environment
E-mail : surachai@sti.or.th

MAKING FLOW OF CLIMATE FINANCE AND HOW TO ACCESS

The 3rd CITC Regional Conference on Climate Change and Sustainable Development

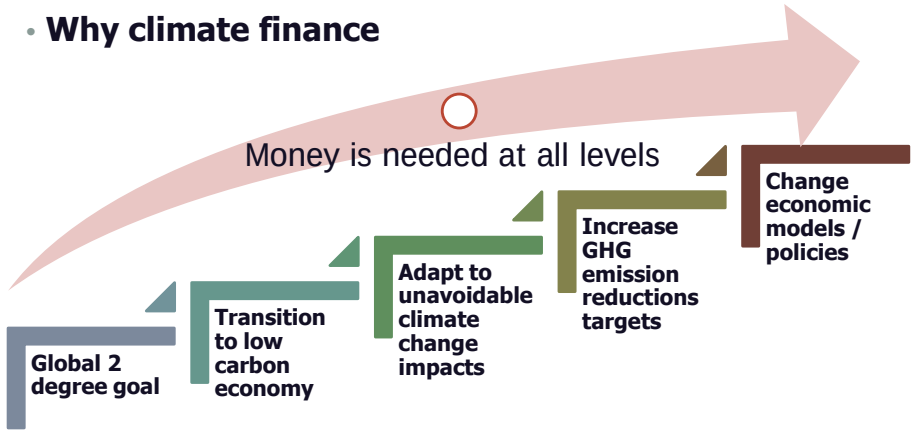
Dr Luong Quang Huy
Department of Meteorology, Hydrology and Climate Change
Ministry of Natural Resources and Environment

Outline

- Climate finance and sustainable development
- Flow of climate finance
- Accessing climate finance
- Vietnam's experience
- Lesson learnt

Climate finance and sustainable development

- **Why climate finance**



Climate finance and sustainable development

Making use of climate finance for sustainable development goals

- Three main questions remains
  - How can public-private partnerships help catalyse and deliver finance for inclusive low carbon resilience development?
  - How can the poor benefit by advancing climate finance at the local level?
  - To what extent is climate resilient development achieving development impacts?

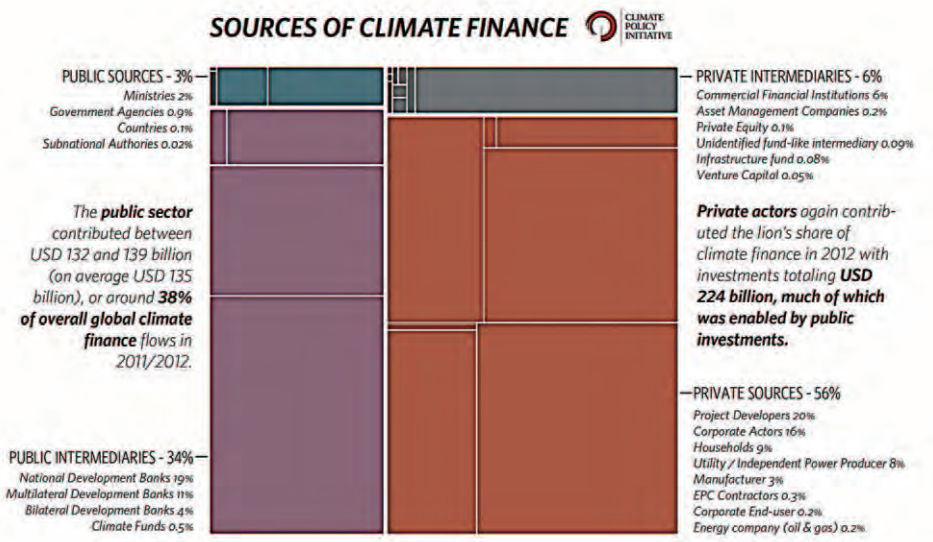
Climate finance and sustainable development

Making use of climate finance for sustainable development goals

Key areas to make climate finance flow

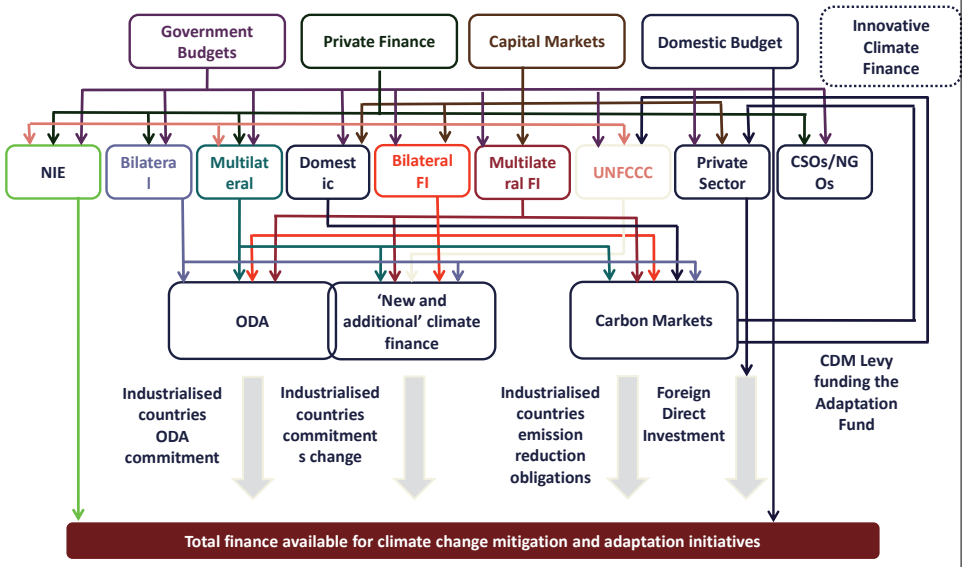
- Strengthen the "country-enabling" environment
- Reduce the financing costs of sustainable development goals
- Finance adaptation to climate change impacts

Flow of climate finance



Source: Climate Policy Initiatives

Flow of climate finance



Source: Adapted from SEI 2009

Catalyzing Environmental Finance

	$ Amounts available in developing countries (2010-2014)
Global Environment Trust Funds • GEF Trust Fund •Montreal Protocol Multilateral Fund •SCCF, LDCF, Adaptation Fund	$6 - 8 billion
Multi/bi lateral funds •WB: CIF, FCPF, CPF •Japan CEP, Norway CFI, Germany ICI, Australia IFCI	$15 billion
UN/UNDP E&E Trust Funds (TF) •MDG Spanish Fund, E&E TF	$200-500 million
Foundations/Private Coorperation • UNF, Packard, Gates, Rockefeller	$4 billion
New UNFCC Related Funds •REDD fund (s) •Fast Start Funds (s) •COP green climate fund (M/A , REDD, TT, CD) •Technology mechanisms	$80 billion
Market based & Innovative Sources of Financing •Carbon Finance (CDM/JI, VC, sectoral credit + financing) •Insurance + other risk financing •Innovative mechanisms (e.g. IFIs, air levies etc...)	$75-150 billion
Institutional & Corporate Finance • Private equity funds •Green bonds	$400 billion

Source: UNDP, 2010

Accessing climate finance

- Direct access to climate finance
  - The facilitation function normally played by multilateral, international and bilateral entities in accessing international public finance is taken on by a national entity
  - Reflects a wide transfer of scaled-up financial resources for developing countries while also transferring capacities and building national systems to access, manage and be accountable for those resources.

Accessing climate finance

- **Paragraph 29, Decision 1/CMP.3, UNFCCC, 2007.**
  - *'Eligible parties shall be able to submit their project proposals **directly** to the Adaptation Fund Board and implementing or executing entities chosen by governments that are able to implement the projects funded by the Adaptation Fund may also approach the Adaptation Fund Board **directly**'*
- **Appendix III, Decision 1/CP.16, UNFCCC, 2010.**'
  - *The Transitional Committee (of the GCF) shall recommend to the Conference of the Parties for its approval at its seventeenth session and shall develop operational documents that address, inter alia:'... '(c) Methods to manage the large scale of financial resources from a number of sources and deliver through a variety of financial instruments, funding windows and access modalities, **including direct access**, with the objective of achieving balanced allocation between adaptation and mitigation;'*

Accessing climate finance

Architecture for direct access to climate finance

FUND MANAGER FUNCTIONS (SOME FUNCTIONS CARRIED OUT BY FUND SECRETARIAT)	IMPLEMENTING BODY FUNCTIONS	EXECUTING BODY FUNCTIONS
• Develops strategies, policies and guidelines of Fund • Reviews proposals submitted to Fund • Decides who receives funding • Instructs trustee to transfer funds to eligible implementing bodies • Monitors implementation progress • Accountable to donors on fund expenditures	• Identification of projects • Preparation of Project concepts • Appraisal of Project concepts • Preparation of project documents • Approvals and start-ups of projects • Supervision of projects • Evaluation of projects • Accountable to Fund on use of funds	• Management and administration of day-to-day project activities • Undertakes procurement and contracting of goods and services • Accountable to implementing body for use of funds

Accessing climate finance

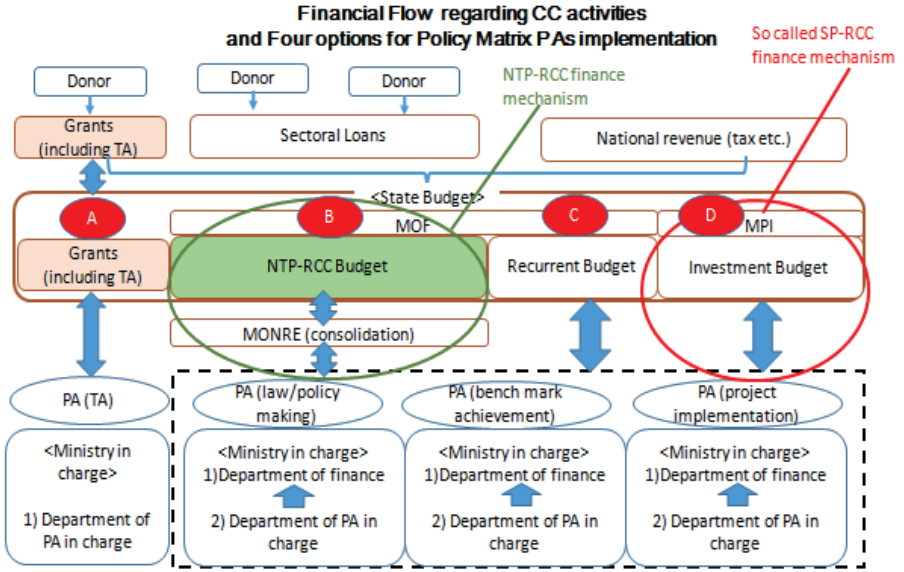
Requirements of MFI to access directly to climate finance

- A solid track record of implementing the type of projects or programs that the institution will oversee as an NIE.
- The scope of work and its relevance to climate change adaptation and mitigation
- Experience managing international aid and development or climate finance.
- Effective and documented processes and policies to reduce fiduciary, environmental, and social risk.

Accessing climate finance

- Make a plan based on national strategies
  - high-quality and ambitious funding proposals
  - cross-sector collaboration and strategic thinking
- Build strong institutions
  - capable of overseeing high-impact initiatives
  - effectively deploy money and oversee implementation of financed initiatives
  - one or more institutions become accredited to the relevant fund as so-called **implementing entities**
- Ensure coordination and stakeholder engagement
  - requires solutions cutting across multiple sectors with the buy-in of affected stakeholders

Vietnam's experience



Lessons learnt

- Targeting low-carbon and climate-resilient development with explicit climate change mitigation or adaptation objectives .
- Enabling conditions ('readiness') must be in place to catalyze public and private investment
- Strong recipient government leadership is integral to success
- Price distortions and incentives must be considered to make finance effective
- Risk mitigation is important to increase the attractiveness for private sector investment
- New and expanded use of financial instruments is critical to climate finance mobilization
- Public sources are indispensable to climate finance
- Robust reporting and tracking systems
- **Meeting development goals is to achieve the objectives of climate finance, and vice versa.**

Norwegian Ministry
of Climate and Environment

The Norwegian Carbon Credit Procurement Program

Deputy Director General Sigurd Klakeg

Bangkok, 31 March 2016

Norwegian Carbon Credit Procurements

- **Norway** has for more than two decades supported the development of carbon markets
- **Kyoto 1** (2008-2012)
  - Credits purchased for over-fulfilment of pledge
    - 23 million credits purchased
- **Kyoto 2** (2013-2020)
  - Ambitious pledge - 2020 30 per cent lower than 1990 emissions
  - Measures at home, and procurement of offsets (CER)
- **New Agreement, post 2020 - Norway's INDC**
  - Pledged "at least" 40 per cent reduction compared to 1990. Use of flexible mechanisms and/or joint implementation with EU is assumed
- **Carbon Neutral by 2050**

Kyoto 2 Procurement Program

- **"Make a difference"**
  - Projects in need of carbon revenues to keep going or to start/restart ("vulnerable projects")
  - No purchases of already generated CERs
- **Procurement alternatives**
  - CERs from vulnerable projects
  - CERs from new projects (not commissioned)
- **Eligibility**
  - All CDM project types are eligible, except HFC 23, N_2O adipic acid and coal fired power plants without CCS
  - All regions eligible. Special focus on regions underrepresented in our portfolio

Norway – currently the largest active buyer of CDM credits

Vulnerable projects

- **Target**: Registered and commissioned CDM projects
- **Objective**: Prevent reversal of emission reduction activities
  - Procure credits from existing projects whose survival or continued emissions reduction activity depend on a higher carbon price than achievable under current market conditions
  - Projects must present proof that they face an imminent threat of closure in absence of carbon finance – or that they may already have shut down for same reason
- **Eligible:** Registered CDM-projects with no revenue-generating Emissions Reduction Purchase Agreement (ERPA)
- **Vintage:** CERs from emissions reductions from 2016 through 2020

Vulnerable projects (continued)

Programs:

- **Direct procurement** by the Norwegian Ministry of Climate and Environment
  - 20 million CERs still to be procured
  - Invitation at **www.carbonneutralnorway.no**

- **Completed program**
  - Norwegian Carbon Procurement Facility **(NorCap)**
    - Managed by the Nordic Environment Finance Corporation (NEFCO) on behalf of the Ministry of Climate and Environment. Volume: 30 million CERs

New projects

- **Target**: New, and not yet commissioned CDM projects
- **Vintage**: CERs from emissions reductions generated through 2020
- **Programs**:
  - **Direct purchases** by the Ministry of Climate and Environment
  - **Purchases through funds**
    - **Carbon Partnership Facility** (World Bank)
      Norway a major investor
    - **NEFCO** – traditional CDM projects including PoAs
  - **Piloting** scaled up crediting mechanisms – the Transformative Carbon Asset Facility – **TCAF** (World Bank)

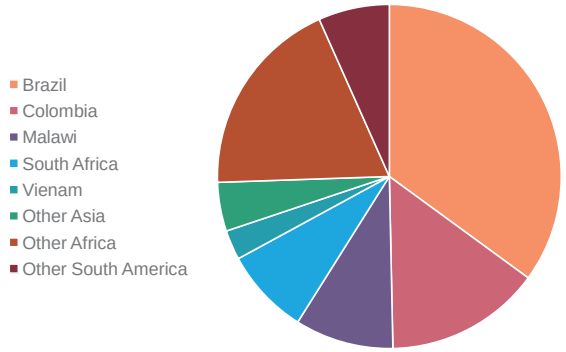
Two Calls for Proposals completed in 2014 and 2015

Very successful

- 402 complete proposals
- 318 million CERs offered
- 47 projects from PoAs
- 40 host countries
- Price range: 0.75-20 euro per CER (3.5 euro average)
- Second call included a separate LDC tranche
  - Price cap of 4 euro
- Total contracted volume (August 2015)
  - about 27 million CERs
- Average price: approx. € 2/CER

Portfolio by host country

Contracted volume: approx. 40 m CERs (to date)



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AN OVERVIEW OF MITIGATION CONTRIBUTIONS IN NDCS OF ASIA

3rd CTC Regional Conference on Climate Change and Sustainable Development
30th March-1st April, 2016
At Pullman King Power, Bangkok, Thailand

Shobhakar Dhakal
Associate professor
Asian Institute of Technology
shobhakar@ait.ac.th

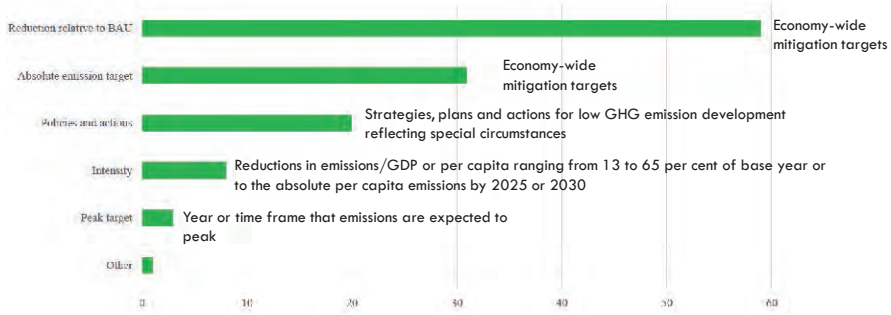
CONTENTS

- Global state of NDCs, overview of NDCs of key emitters
- Key points of differences across NDCs
- Climate impacts of NDCs- gaps for 2□ World
- Anatomy of ASEAN NDCs
- Key bottlenecks to bridge

GLOBAL STATE OF NDCS

- NDCs indicate large number of countries taking climate action
- NDCs contain country-pledges including
  - nature of pledge
  - quantified target of emissions and base years
  - time frame and period of implementation (2020-2025? 2020-30?)
  - scope and coverage (economic wide, sectoral, by GHGs etc.)
  - other details such as only mitigation or plus adaptation, finance, land use, planning process, and others
- As of Nov 1 2015, 156 parties submitted NDCs
- By March 2016, almost all countries (189 parties, 7 remaining) have submitted - Latest was Nepal (Feb 2016) – 99.1% global emissions covered

NATURE OF MITIGATION TARGETS ACROSS NDCS



- Some NDCs went to sectoral or sub-sectoral level quantified emission targets
- Most included emission and removals from LULUCF
- Most cover CO_2; many cover CH_4 and N_2O; some cover SF_6, HFCs, PFCs and NF_3; few cover SLCFs
- Timeframe till 2030, few went up to 2050

Based on 147 Parties representing almost 86% of global GHG: UNFCCC (2015)

CONDITIONAL AND UNCONDITIONAL PLEDGES IN NDCS

Many countries mentioned conditions for the full implementation of their NDCs; major conditions:

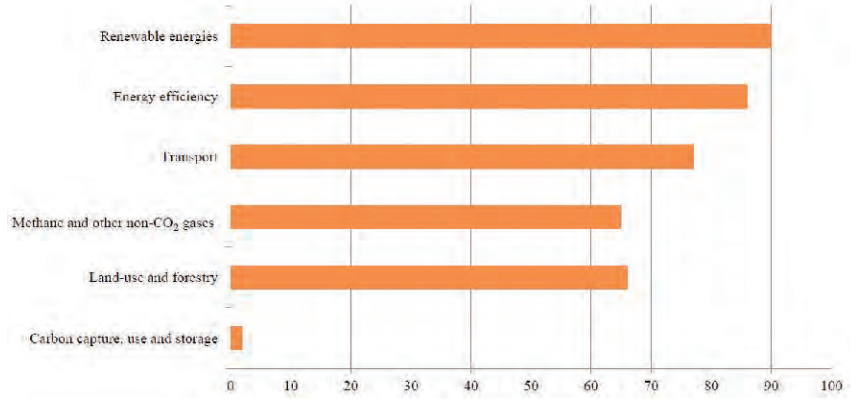
- ✓ Level of effort undertaken by other countries
- ✓ Availability of market-based mechanisms
- ✓ Access to enhanced financial resources, technology transfer and technical cooperation
- ✓ Enhanced capacity-building support

Some include unconditional mitigation target alongside an enhanced conditional one

Based on 147 Parties representing almost 86% of global GHG: UNFCCC (2015)

KEY PRIORITY MITIGATION AREAS IN NDCS

Renewable energy; Energy efficiency; Sustainable transport; Carbon capture and storage; Conservation and sustainable management of forests; Reducing non-CO2 gases



Based on 147 Parties representing almost 86% of global GHG: UNFCCC (2015)

NDC TARGETS OF TOP EMITTERS

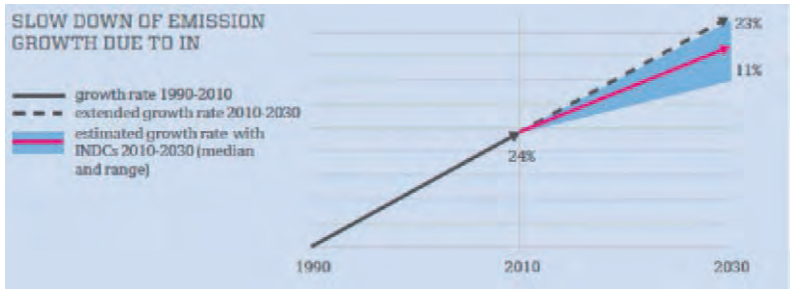
Country, % of global GHG emissions, 2012	GHG emissions reduction target	Target year	Reference year	Period for implementation	
USA 12.1%	26-28%	2025	2005	2020-2025	
China 23.75%	30-45% per unit of GDP	2030	2007	- 2030	• 60% to 65% by 2030 below 2005 levels • Increase the share of non-fossil primary energy to 20% • Emission peak by 2030 or earlier
EU 8.97%	≥40%	2030	1990	2021-2030	
India 5.73%	33-35% per unit of GDP	2030	2005	2021-2030	Non-fossil power generation capacity to 40% of installed capacity by 2030
Russia 5.35%	25-30%	2030	1990	2020-30	
Japan 2.82%	26%	2030	2013	2020-30	18% below 1990 levels
South Korea 1.28%	37%	2030	BAU	2020-30	

Top 5 emitters

See all INDCs here: http://climateobserver.org/open-and-shut/indc/

CLIMATE IMPACTS OF NDCS- GAPS FOR 2□C WORLD

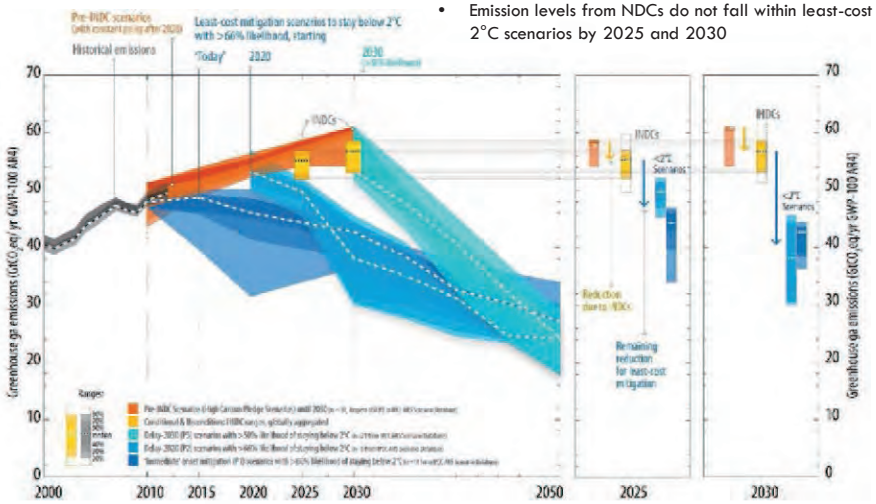
- ❑ Under NDCs, aggregate global emission will increase 37- 52% in 2030 from 1990 level
- ❑ Global emissions will grow until 2030 but the growth will slow down. Compared 1990-2010 growth of 24%, growth in 2010-2030 will be between 11-23%. The relative rate of growth in 2010–2030 will be 10–57% lower
- ❑ Compared to 2□C emission pathways, NDC will result about 15% higher emission in 2030



Source: http://climateobserver.org/unfccc-indcs-to-slow-down-emissions-growth-but-more-action-needed/
UNFCCC (2015)

CLIMATE IMPACTS OF NDCS- GAPS FOR 2□C WORLD

- Emissions under NDCs likely to be 3.6 $GtCO_2eq$ (median) lower than pre-NDC trajectories in 2030
- Emission levels from NDCs do not fall within least-cost 2°C scenarios by 2025 and 2030



Based on 147 Parties representing almost 86% of global GHG: UNFCCC (2015)

CLIMATE IMPACTS OF NDCS- GAPS FOR 2□C WORLD

- By 2025 and 2030, respectively, 54% and 75% of remaining cumulative carbon budget (2010-2050: 1000 $GtCO_2$) by 2050 to stay under 2□C (>66% likelihood- likely probability) will be consumed
- If countries did not enhance mitigation action until 2030 from NDCs, the possibility to stay below 2°C still remains BUT IPCC AR5 indicate that this would substantially raise cost, limit options and substantially raise emission annual reduction rates for 2030-50 (double compared to 2010/2020 peaking, 3.3 vs 1.6%)

Based on 147 Parties representing almost 86% of global GHG: UNFCCC (2015)

ASEAN NDCS

Country	Target type	GHG emissions reduction target	Target year	Reference year	Conditions for implementation
Lao	Actions and activities	Share of renewable energy to 30% of energy consumption by 2025; forest cover to 70% by 2020	2025	N/A	Requires technical and financial support as low interest loans to deliver the mitigation and adaptation actions
Cambodia	Some targets but actions and activities	0 - 27%	2030	BAU	The target is "conditional upon the availability of support from the international community… in the form of financing, capacity building, and technology transfer" (estimated to USD 1,27 billions)
Indonesia	Reductions from BAU	29-41%	2030	BAU	A further emission reduction of 12% (from 29%) is conditional on international assistance, especially through "bilateral cooperation covering technology development and transfer, capacity building, payment for performance mechanisms, technical cooperation and access to financial resources".
Myanmar	Actions and activities	Significant reductions in GHG emissions, but further analysis needed for quantification	2030	N/A	Support for capacity-building, technology development and transfer, and financial resources from the international community
Philippines	Reductions from BAU	0- 70%	2030	BAU	Conditional on the extent of financial resources, including technology development and transfer, and capacity building

Compiled from country submissions to UNFCCC
@Shobhakar Dhakal

ASEAN NDCS

Country	Target type	GHG emissions reduction target	Target year	Reference year	Conditions for implementation
Singapore	Emission intensity of GDP	36% GHG emissions per unit of GDP	2030	2005	N/A
Thailand	Reductions from BAU	20-25%	2030	BAU	The upper end target is "subject to adequate and enhanced access to technology development and transfer, financial resources and capacity building support through a balanced and ambitious global agreement under UNFCCC"
Viet Nam	Reductions from BAU	8-25%	2030	BAU	The upper bound requires "bilateral and multilateral cooperation, and implementation of new mechanisms under the Global Climate Agreement"
Malaysia	Emission intensity of GDP	35-45%	2030	2005	Upon receipt of climate finance, technology transfer and capacity building from developed countries
Brunei	Actions and activities	63% energy consumption reduction from BAU by 2035; 10% renewable in power generation mix by 2035; specific measures in transport and forestry sectors	2035	N/A	

Compiled from country submissions to UNFCCC
@Shobhakar Dhakal

OPPORTUNITIES FOR RAISING LEVEL OF NDCS AMBITION IN ASEAN

- Individual countries raising ambitions
- Regional cooperation under AEC as a vehicle for raising collective level of mitigation ambitions

The APAEC* 2016-2025 : Aspirational Targets**

- ✓ To reduce energy intensity by 20% in 2020 based on the 2005 level
- ✓ Aspirational target to reach aspirational target of renewable energy to 23% of ASEAN energy mix by 2025

Seven programme areas of APAEC

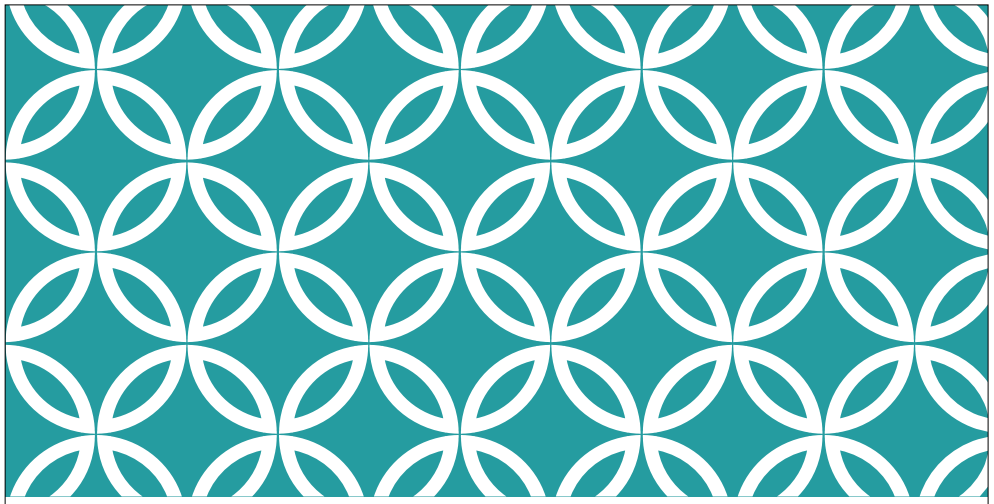
1. ASEAN Power Grid (APG)
2. Trans-ASEAN Gas Pipeline (TAGP)
3. Coal and Clean Coal Technology (CCT)
4. Energy Efficiency and Conservation (EE&C)
5. Renewable Energy (RE)
6. Regional Energy Policy and Planning (REPP)
7. Civilian Nuclear Energy (CNE)

** Endorsed by the 33rd AMEM in Kuala Lumpur, Malaysia on 7 October 2015

* ASEAN Plan of Action for Energy Cooperation

BOTTLENECKS TO BRIDGE

- Operationalization of NDCs
  - ✓ Supporting national capacity buildings for delivering NDCs
  - ✓ Devising appropriate national policies and programs to meet NDCs
  - ✓ Generating meaningful external support (access to technology, financing etc.)
- Oversight mechanisms
- Are NDCs relaxed or ambitious? Perhaps conservative; more is possible
- Developing new ways for raising level of ambitions in five year review cycle



THANK YOU

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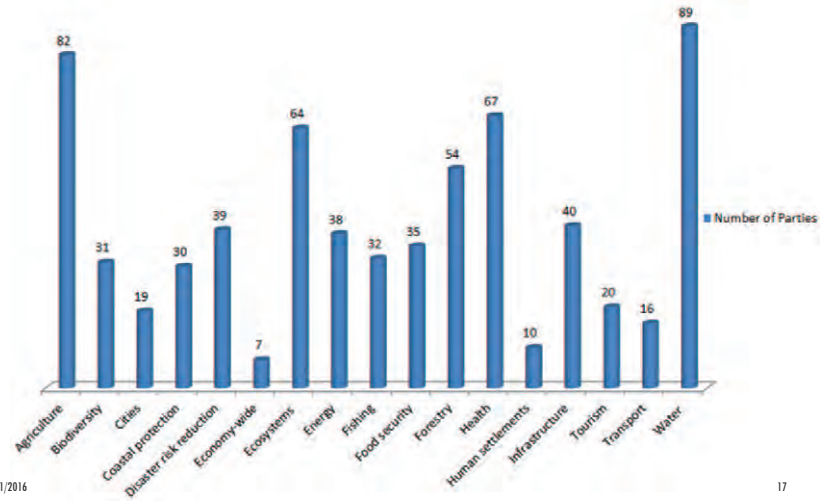
KEY POINTS OF ADAPTATION COVERAGE ACROSS NDCS

Over 100 countries included adaptation in their NDCs

- National circumstances
- Long-term goals and/or visions guiding the adaptation
- Impacts and vulnerability assessments
- Legal and regulatory frameworks, strategies, programmes and plans necessary for informed adaptation actions
- Measures/actions in in specific areas
- Loss and damage associated past and project climate change
- Means of implementation- finance, technology and capacity-building
- Monitoring and evaluation of adaptation
- Synergies between mitigation and adaptation

PRIORITY AREAS AND SECTORS FOR ADAPTATION ACTIONS



Integrating market mechanisms to the implementation of INDCs/NDCs

3rd CITC Regional Conference on Climate Change and Sustainable Development: "How to Accelerate Climate Actions in Asia through Capacity Building and Climate Finance"

Bangkok, Thailand, 30th March – 1st April, 2016

Anil K. Raut, Technical Officer
UNFCCC - Regional Collaboration Center, Bangkok

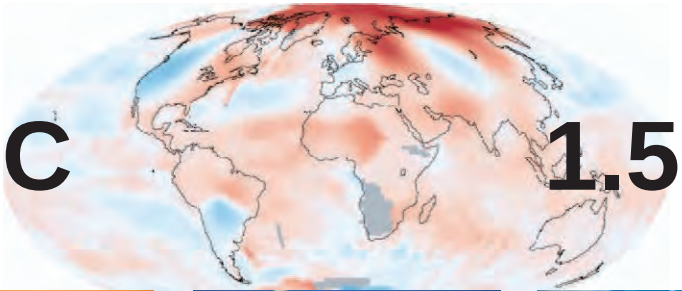
Outline

- Paris agreement - overview
- Article 6
  - Cooperative approaches
  - Sustainable development mechanism
  - Non-market approaches
- NDCs and market mechanism in selected Asia countries
- Workshop results

THE PARIS AGREEMENT – Overall overview

Increased ambition of the long term goal

2°C **1.5°C**



THE PARIS AGREEMENT – Overall overview

NDCs

- 189/196 countries
- Increasing ambitions, no backsliding possibility
- Actions updated every 5 years
- Tracking progress
- Support, no sanctions

- Grounded in allowing higher ambition
- Means to allow Parties to cooperate (in accordance with key principles)
- Means to allow authorized entities to directly engage
- Means to connect and integrate the range of mechanisms
- A framework to allow for holistic integration of differing aspects of action and support

Cooperative approaches

- What the Agreement says
  - Voluntary
  - Shall promote sustainable development and environmental integrity
  - Shall apply robust accounting to avoid double counting

Mechanism for sustainable development

- Mitigation by private and public entities
- Deliver net mitigation and sustainable development
- Not restricted to project level

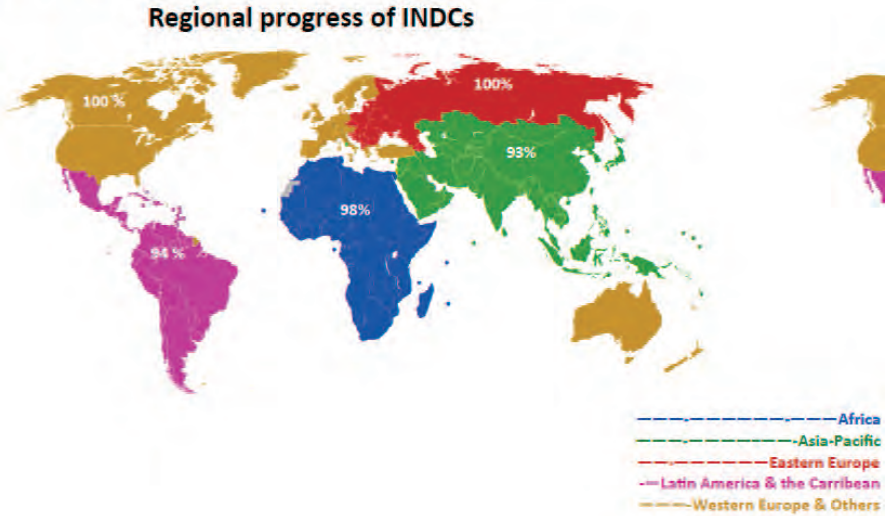
- Supervisory body
- Share of proceeds & adaptation SOP
- M & P (SBSTA ⇨ CMA)
  - Voluntary; real, measureable & long term benefit, additional, V & C by DOEs and lessons from existing mechanisms and approaches

Non-market framework

- What the Agreement says
  - Promote ambition (mitigation and adaptation)
  - Facilitate participation in NDC implementation
  - Enhance coordination across instruments
- SBSTA to develop work programme

NDCs and market mechanism in selected countries in Asia Pacific (key summary of a discussion paper)

Latest status



- More than two-third (11 out of 15) of the selected Parties that communicated an INDC made reference to market mechanisms.
- References were made to: market mechanisms in general, international, regional, bilateral, voluntary schemes as well as CDM.
- 3 INDCs referred to CDM, 3 INDCs referred to regional market mechanism, 3 INDCs referred to bilateral mechanisms, 5 INDCs referred to international mechanisms, 6 INDCs referred to market mechanisms in general and 1 INDC to the voluntary market schemes.

"Integrating market mechanisms to the implementation of INDCs/NDCs"

15 February 2016
Bangkok, Thailand

The presentations from the workshop are available on RCC Bangkok webpage:
https://cdm.unfccc.int/stakeholder/rcc/index.html

Background

- ***Asia Pacific Regional Workshop on Integrating Market Mechanisms to the Implementation of INDCs/NDCs,*** organised by the UNFCCC Regional Collaboration Centre (RCC) for Asia-Pacific Region, hosted in partnership with by the Institute for Global Environmental Strategies (IGES) with funding support from the German Ministry of Environment on 15 February 2016 in Bangkok.
- Participants > 40: UNFCCC national focal points/ representatives of focal points, International and regional development organizations; Private sector

The workshop provided a platform for the participants to analyze the outcome from Paris particularly in the context of market mechanism and discuss the way further.

Objectives of the workshop

- Share experiences in developing the INDCs/NDCs and understand expectation for market mechanisms;
- Understand the role of market mechanism in the Paris agreement;
- Identify opportunities/sectors suitable to be supported through the CDM and/or other emerging international crediting mechanisms under the UNFCCC;
- Identify opportunities and challenges to implement the INDCs/NDCs

Topics discussed during the workshop

The sessions during the day focused on:

1) the role of market mechanisms in the Paris agreement and a summary of market mechanisms in submitted INDCs
2) sharing experiences from participating countries in developing INDCs and discuss expectations for market mechanisms
3) the opportunities for market mechanisms and support provided by the international development partners in the region
4) linking the existing infrastructure from the CDM and other market mechanisms to the new mechanism outlined in the Paris agreement and INDCs
5) breakout sessions to discuss:
   a) opportunities/sectors suitable to be supported through market mechanisms
   b) challenges of integrating market mechanisms in INDCs
   c) challenges in establishing business as usual/baseline scenario's
   d) capacity building needs on INDCs implementation that RCC and other partner agencies can provide

Key discussion points (1) – breakout sessions

A. Opportunity/sectors suitable for market
   - Sectors vary for each country
   - Depends on emissions, cost and how organized the sector is
   - With established MRV/baseline/identifiable emission source

B. Challenges of integrating market mechanisms
   - NDCs are pipeline of mitigation actions
   - Wait and see stage
   - Need to less complex mechanism

Key discussion points (2) – breakout sessions

C. Challenges in establishing BAU
- o difficulty in data collection/reliable data
- o lack of capacity/resources to collect quality data
- o integrating data from different sectors into the BAU

D. Capacity building needs
- o Technical and methodological support on data
- o Developing NDC implementation roadmap
- o Support for linking with donor for implementation of the NDCs

United Nations Framework Convention on Climate Change

Thank you!

Email address: RCCBangkok@unfccc.int
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Office address:
IGES Regional Centre
604 SG Tower 6th Floor, 161/1 Soi Mahadlek Luang 3;
Rajdamri Road, Patumwan, Bangkok, 10330, Thailand

Anil K. Raut, Technical Officer
UNFCCC - Regional Collaboration Center, Bangkok

NDC and local climate change action planning and implementation in Asia

Drawn by Mr. Hajime Sakai

藤野純一

Junichi FUJINO

3rd CITC Regional Conference
Climate Change and Sustainable Development

31st March 2016, Bangkok

19:27pm Dec 11th 2015 in Le Bourget, Paris
日本時間　2015年12月12日午前3時27分半ごろ

COP21 official side event on 7th Dec 2015
"East Asia Low Carbon Growth Dialogue"

http://www.iisd.ca/climate/cop21/enbots/7dec.html#event-7

http://www.iisd.ca/climate/cop21/enbots/7dec.html#event-7

Paris Agreement to me

2 degree/1.5 degree
-> zero/minus emissions by 2100

INDC -> NDC + 5yr interval CCAP submission and review process

Role of Non-State Actors
(Business + Local Governments)

Let's learn "History of CC"

- 2015 COP21/Paris Agreement
  2degree/1.5 degree, INDC->NDC
- 2009 COP15/Copenhagen Accord
  voluntary target
- 1997 COP3/Kyoto Protocol
- 1995 COP1/Berlin Mandate
- 1992 Rio Summit
- 1988 Toronto Conference

How Japan respond to CC

1988 Toronto Conference: 20% GHG emission reductions by 2005 in Developed Countries
-> 1990 Action Program to Arrest Global Warming/ stabilize per capita GHG emission by 2000

1992 Rio Summit, 1995 COP1/Berlin Mandate, 1997 COP3/Kyoto Protocol: -6% for Japan
-> 1998 "Outline for Promotion Effects to Prevent Global Warming" and "Act on Promotion of Global Warming Countermeasures"

Article 20-2 (National Government Action Plan)
Article 21 (Action plans of local governments)

http://www.cas.go.jp/jp/seisaku/hourei/data/APGWC_2.pdf

Act on Promotion of Global Warming Countermeasures (1998)

Article 20-2 (National Government Action Plan)

(1) The national government shall implement a plan (referred to hereinafter in this article as the "National Government Action Plan") for measures to reduce greenhouse gas emissions and to maintain and improve greenhouse gas absorption with regard to its own administration and undertakings, in line with the Kyoto Protocol Target Achievement Plan.

(2) The National Government Action Plan shall prescribe the following matters.

(i) Plan period

(ii) Goals of the National Government Action Plan

(iii) Content of measures to be implemented

(iv) Other matters needed for implementation of the National Government Action Plan

http://www.cas.go.jp/jp/seisaku/hourei/data/APGWC_2.pdf

Act on Promotion of Global Warming Countermeasures (1998)

Article 20-2 (National Government Action Plan)

(3) The Minister of the Environment shall prepare a draft of the National Government Action Plan and seek a Cabinet decision.

(4) Before preparing a draft of the National Government Action Plan, the Minister of the Environment shall consult in advance with the heads of related administrative bodies.

(5) Upon the Cabinet decision prescribed by Paragraph (3), the Minister of the Environment shall announce the National Government Action Plan without delay.

(6) The provisions of Article 3 shall apply mutatis mutandis regarding changes in the National Government Action Plan.

(7) Once each year, the national government shall announce the situation of implementation of measures based on the National Government Action Plan, including total greenhouse gas emissions.

http://www.cas.go.jp/jp/seisaku/hourei/data/APGWC_2.pdf

Act on Promotion of Global Warming Countermeasures (1998)

Article 21 (Action plans of local governments)

(1) Prefectural and municipal governments shall formulate plans (referred to hereinafter in this article as "action plans of local governments") for measures to reduce greenhouse gas emissions and to maintain and improve greenhouse gas absorption with regard to their own administration and undertakings, in line with the Kyoto Protocol Target Achievement Plan.

(2) The action plans of local governments shall prescribe the following matters.

(i) Plan period

(ii) Goals of the action plans of local governments

(iii) Content of measures to be implemented

(iv) Other matters needed for implementation of the action plans of local governments

http://www.cas.go.jp/jp/seisaku/hourei/data/APGWC_2.pdf

Act on Promotion of Global Warming Countermeasures (1998)

Article 21 (Action plans of local governments)

(3) Upon formulating or changing action plans of local governments, the respective prefectural and municipal governments shall announce those plans without delay.

(4) Once each year, the respective prefectural and municipal governments shall announce the situation of implementation of measures based on the action plans of local governments, including total greenhouse gas emissions.

CCAP (Climate Change Action Plan) in Japan

1998 Outline for Promotion Effects to Prevent Global Warming

2005 Kyoto Protocol Target Achievement Plan
https://www.env.go.jp/en/earth/cc/kptap.pdf

2009 Mid-Term (2020) reduction target for COP15

2014 INDC for COP21

History of CCAP in Hyogo Prefecture

兵庫県地球温暖化防止地域推進計画

Hyogo Prefecture Regional Plan to Prevent Global Warming

1996 (1st plan): stabilize citizen per capita emission by 2000 at 1990 level

2000 (2nd plan)

2010 -> 2013 (3rd plan): promote renewable energy and energy efficiency improvement/energy saving

What happens to your national government/local government?

INDC -> NDC

Local Government Action Plans

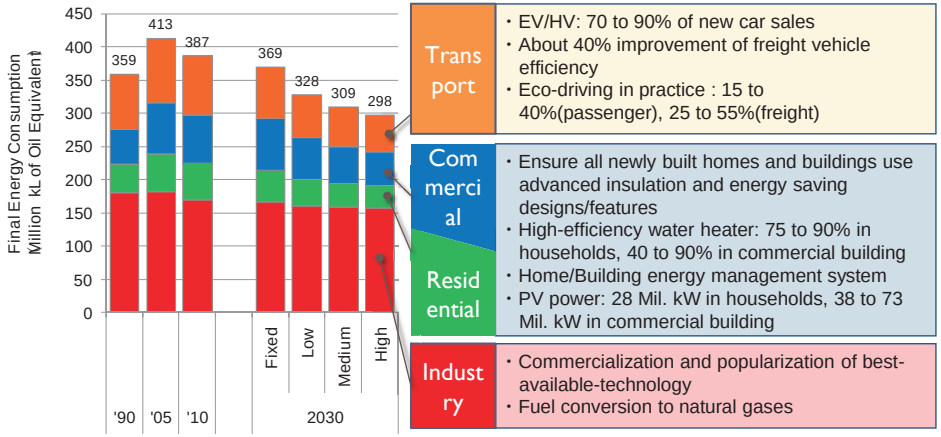
AIM (Asia-Pacific Integrated Model) Chronology and Japanese CC Policy

	AIM mitigation scenarios	Japanese PM's Decision
1989	AIM start	
1997	15% cut in 2010	6% cut in 2010 by PM Hashimoto
2007	70% cut in 2050	Cool Earth 50 by PM Abe
2008	12 actions towards LCS	60-80% cut in 2050 by PM Fukuda
2009	7/15/25 % cut in 2020	8% cut in 2020 by PM Aso 25% cut in 2020 by PM Hatoyama
2011	East Japan Earthquake and Fukushima Accident	
Now	INDCs, 2030 target	26% cut in 2030 by PM Abe

AIM members support IPCC as CLAs, LAs, and REs since the FAR.
AIM provides RCPs (Representative Concentration Pathways).

Analysis by AIM/Enduse in Japan

Final energy consumption in 2030 (low growth case)



AIM: Asia-Pacific Integrated Model

AIM is Simulation Model

- Technology Bottom-up model including more than 400 options
- Economic Top-down model to evaluate economic impact
- Detailed sector-wise model for population, residential, transport, Industry, energy supply, etc

AIM is Human Network

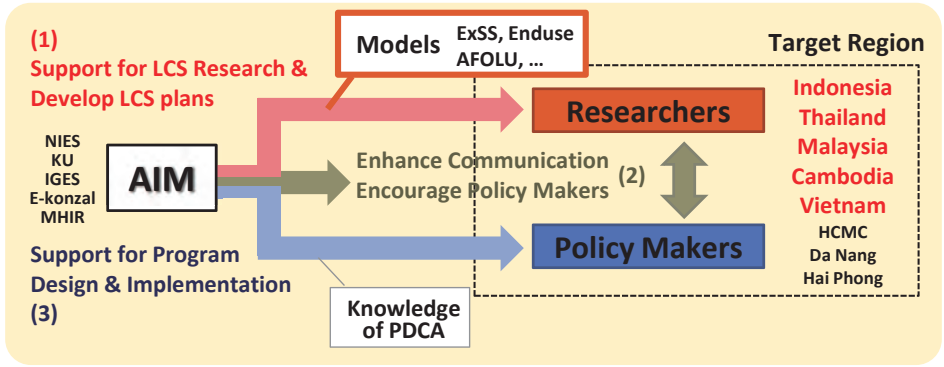
- Start international collaboration since 1994 and we have the 21st annual int.ws in Nov 2015, Tsukuba
- Researchers and policy-makers in China, India, Korea, Thailand, Indonesia, Malaysia, Vietnam, Nepal, Cambodia, Bangladesh, Taiwan, Australia, NZ, USA, EU, Japan, and etc.

The 21st AIM International WS Nov 13-15, 2015, Tsukuba

The 20th AIM International WS January 23-24,

Low Carbon Society Research

- AIM team has collaborated with researchers to develop national/city-level LCS plans and roadmaps (1), and communicated policy makers to make actual policy (2).
- AIM team collaborates researchers and policy makers to design practical programs and implementation arrangement (3).



Supported by MoEJ, JICA, etc

LCS Scenarios and Plans in Asian Countries (1/2)

- Quantitative scenario approach with AIM has been applied to more than 20 regions in Asia, and LCS plans and roadmaps are developed for each region.
- In FY 2015 (Apr. 2015 – Mar. 2016), main target regions for development of LCS plans are Thailand, Indonesia and cities in Vietnam (Ho Chi Minh, Hai Phong and Da Nang).

LCS Scenarios and Plans in Asian Countries (2/2)

- The following table shows the outcome of the LCSR project in each country so far and its contribution on climate change policy.

Target Region	Description
Indonesia	• C/P researchers : **Prof. Rizaldi (IPB), Dr. Ucok and Dr. Retno (ITB)** • **National scale LCS policy** including not only energy sector but also agriculture, land use change, etc. has developed. **They are evaluating existing climate change action plans, i.e. RAN GRK and INDC by AIM**.
Thailand	• C/P researchers : **Prof. Bundit (SIIT-TU) and Prof. Shrestha (AITM)** • The team developed LC Roadmap towards 2050 and performed intensive dialogues with policy makers**. The outcomes of their LCS study contribute to the process for investigation of Thailand NAMAs and INDC**.
Vietnam	• C/P researchers : **Dr. Lam (ISPONRE)** • LCS scenario towards 2030 including sectors of waste, agriculture and land use as well as energy was developed.
Nepal	• C/P researchers : **Prof. Ram Shrestha (AITM)** • LCS study towards 2050 including agricultural sector as well as energy sector.
Cambodia	• C/P researchers : **Dr. Mao (MoEC)** • LCS study towards 2050 was completed and published.
Malaysia	• C/P researchers : **Prof. Ho (UTM)** • Main focus of current activity is implementation of LCS policy.

LCS Scenario in Thailand (1/3)

- Thailand team is involved in the development process of Thailand official NAMA and INDC.
- Analysis though AIM contributes very much for their investigation process.

COP20 Lima, 9 December 2014

Minister of MONRE pledged Thailand's NAMA in Lima COP20

"…… Thailand will lower CO_2 emissions in the range of 7-20% in 2020 when compared to the BAU"

UN NY, 30 Sept 2015

PM applauds 2030 Agenda, pledges work towards a sustainable Thailand including INDC 2030

"…. On Thailand's part, we reaffirm our commitment under the **Intended Nationally Determined Contributions (INDCs)** to reduce our GHG emissions between **20 and 25% by 2030**"…

LCS Scenario in Thailand (2/3)

- The following figure shows the preconditions for developing Thailand's INDC (by utilizing AIM).

Development of BAU in Thailand's INDC

INDC UFI is used to develop Thailand's INDC

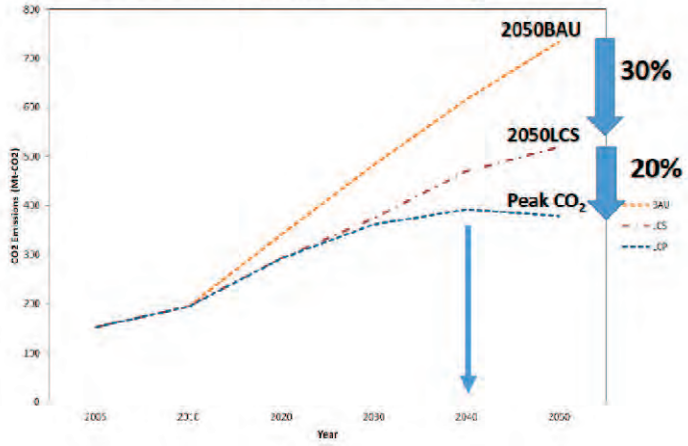
Base year	2005
Target year	2030
Sector	Power, transportation, buildings, residential, manufacturing industries, wastes, agriculture, industrial processes
Gases	Carbon dioxide (CO_2), Methane (CH_4), Nitrous oxide (N_2O), Hydrofluorocarbons (HFCs), Perfluorocarbons (PFCs), Sulphur hexafluoride (SF_6)
Global Warming Potential	IPCC Fourth Assessment (AR4)
Modeling tool	Asia-Pacific Integrated Model (AIM/Enduse)
Modeling Approach	Bottom-up/End-use approach (by technologies and CO_2 countermeasures)
GDP growth	3.94% p.a. (revised by TH Govt in 2015)
Population growth	0.03% p.a. (revised by TH Govt in 2015)
Energy prices	Oil prices (International Energy Agency, 2015)

LCS Scenario in Thailand (3/3)

- The following figure shows the example of the analysis for post 2020 LCS analysis by Thai team.

Thailand's Post2020 Scenarios

Low Emission Pathway and Peak CO_2 Scenarios



LCS Scenario in Indonesia (1/3)

- Indonesia energy team is involved in the development of ExSS, Enduse and CGE models.
- The team is evaluating existing national climate change action plans, i.e. RAN GRK and INDC by those models.

INDONESIA
INDC

The 29% GHG emissions reduction target are planned to be achieved with three different focus-sectors. The following figures are represented in "Dokumen Pendukung Penyusunan INDC Indonesia (Draft 11.08.15)
"

Actions	*Emission Reduction Target 2020-2030*		
	Ambitious	Optimistic	Fair
Land-use based policies scenario	750 MtonCO2 in 2030	627 MtonCO2 in 2030	596 MtonCO2 in 2030
Energy sector policies scenario	393 MtonCO2 in 2030	258 MtonCO2 in 2030	222 MtonCO2 in 2030
Waste sector policies scenario	45 MtonCO2 in 2030	36 MtonCO2 in 2030	30 MtonCO2 in 2030

*the reduction targets are then adjusted into the model, since the model base data are not re-calibrated with Indonesia current conditions and development plans.

LCS Scenario in Indonesia (2/3)

- The following figure shows the example of the analysis, which is extracted from the brochure.

Figure 9 shows the primary energy supply mix and the associated GHG emissions projections for the year 2030 and 2050, which are derived from ExSS model results that are then used for reference in end-use model analysis. Figure 10 shows the transportation demand projections in freight and passenger transportations, based on mode of transports for the year 2030 and 2050. Figure 11 shows the final energy demand projections by fuel and sector view for the year 2030 and 2050. These information are then used as reference for the end-use model as a basis of estimating the energy service demand allocations in end-use input database.

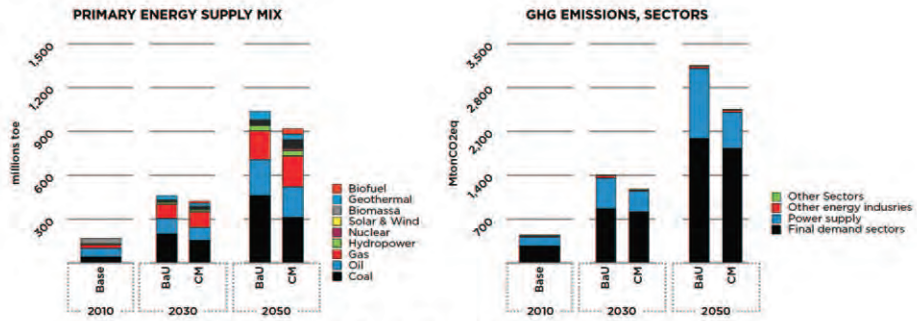


Figure 9 Primary Energy Mix and GHG emissions projections (2030 and 2050) ExSS

LCS Scenario in Indonesia (3/3)

- The following figure shows the example of the analysis, which is extracted from the brochure (case in power sector).

Key Technology to Realize Indonesia LCD Conditions

1. Increase in Gas Powered electricity generation–replacing stock Oil powered plants. While significant reduction in Coal Powered electricity generation due to end-users energy efficiency and conservancy measures.
2. New Gas Combine Cycle Power Plant introduced in additional Power Generation required from Gas Powered electricity.
3. Introduction of Nuclear Power in 2030 CM scenario
4. Higher rate of Hydro Power electricity generation in 2030 CM scenario
5. Higher use of Biomass in CM using Existing Steam Turbine and Combined Cycle Biomass Plants due to limitation in other renewable introduction

* note that there are changes in power grid emission factor

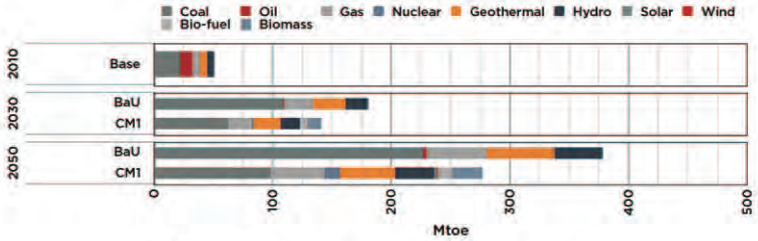
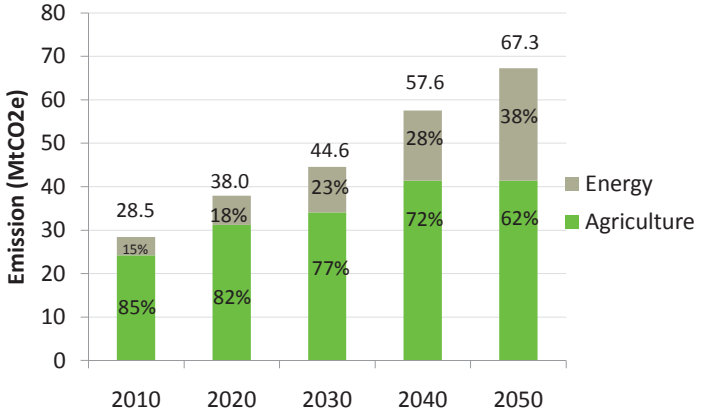


Figure 15 Power Generation energy demand projection (2030 and 2050) End-Use, by type of fuel

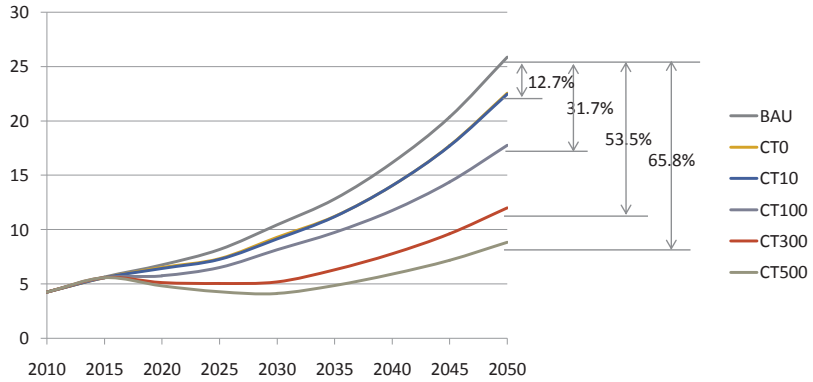
LCS Scenario in Nepal (1/3)

- Nepal team is trying to develop Nepal LCS scenario towards 2050 by utilizing models of AFOLU and Enduse.
- One BaU and several scenarios (one no-regret and four types of emission tax imposing cases) are developed.
- The following figure shows the GHG emission from from Agriculture and Energy using Sectors in BAU.



LCS Scenario in Nepal (2/3)

- The following figure shows the GHG emission from agriculture during 2010-2050 in BAU case.



- **Emission increases from 4.3 MtCO2e in 2010 to 25.9 MtCO2e in 2050 in the BAU case.**
- **Cumulative GHG reduction during 2010-2050 in CT0, CT10 would be 10.8%, 11.1%, respectively**
- **At CT100, CT300 and CT500 it would be 23.3%, 44.1% and 53.9% respectively**
- **➔ low emission tax elasticity of GHG reduction.**

LCS Scenario in Nepal (3/3)

- Mitigation options in each sector are also evaluated case by case. The following figure shows the example in building sector.

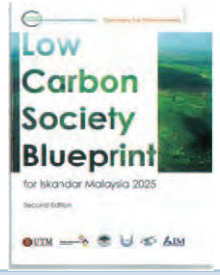
Cost-effective mitigation options in residential and commercial sectors

	Emission tax ($/tCO$_2$e)				
	CT0	CT10	CT100	CT300	CT500
Cost-effective options	Biogas cooking				
	Electric cooker				
	EE LPG stove				
	Solar water heater				
	Energy efficient bulbs (CFL & LED)				

Collaboration with Local Governments

Setting Quantitative Goals using Simulation Model: AIM

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	

Projected Greenhouse Gas Emission Reduction in Iskandar Malaysia

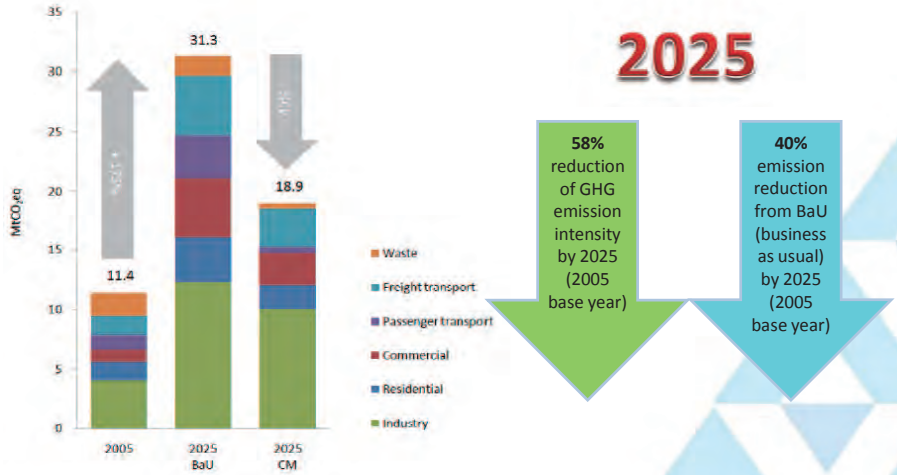


Figure 1: GHG emissions by sectors

Low Carbon Society Scenarios for Iskandar Malaysia

LCS Blueprints for 5 Local Authorities – First Cuts

Johor Bahru	Johor Bahru Tengah	Pasir Gudang	Kulai Jaya	Pontian
'The Vibrant Heart of Southern Region'	*'Livable Community City'*	*'Green Manufacturing Hub'*	*'Smart Logistic Hub'*	*'Agrobiodiversity Hub'*

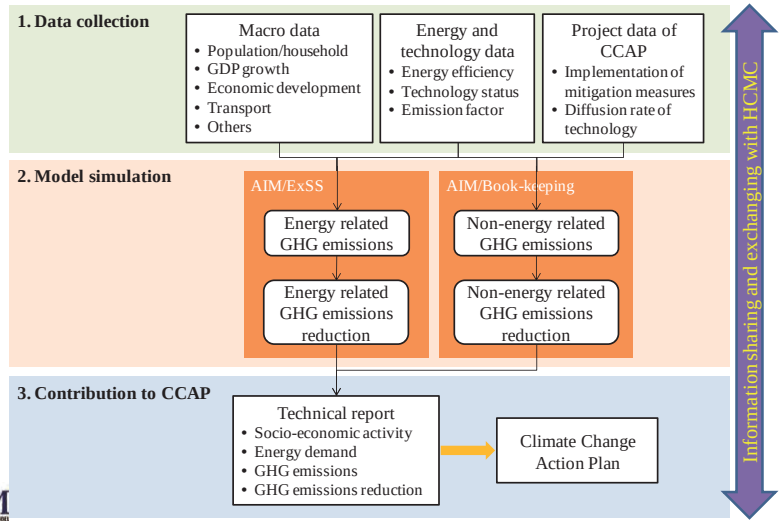
Press conference on 7th Dec 2015, University Technology Malaysia (UTM)

http://unfccc6.meta-fusion.com/cop21/events/2015-12-07-14-00-university-of-technology-malaysia-utm

Five Local Councils Commit to Low-Carbon Plan
by Chief Minister of Johor State/ Prime Minister Najib/ CE of IRDA
on 15th Dec 2015

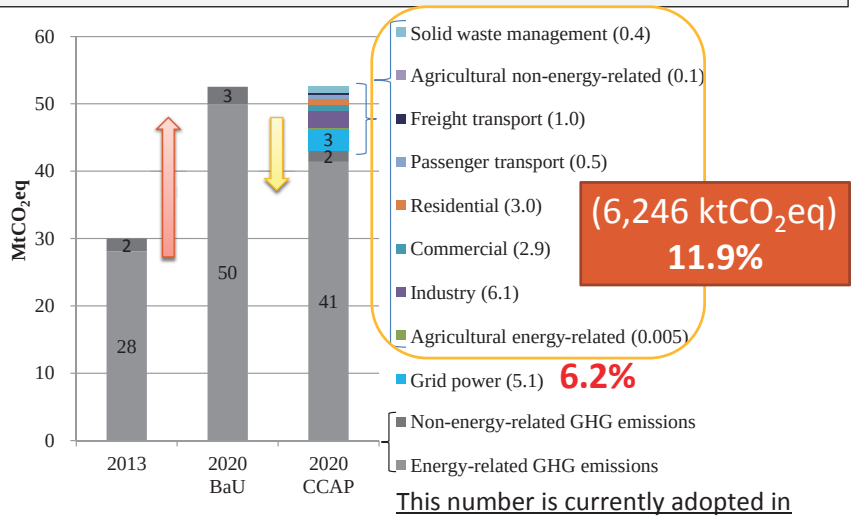
Assistance for Making CCAP in HCMC

- Ho Chi Minh City LCS scenario towards 2020 is developed with AIM and it is utilized in the process of making Climate Change Action Plan for HCMC.
- Our activity is expanding to other cities such as Da Nang and Hai Phong.

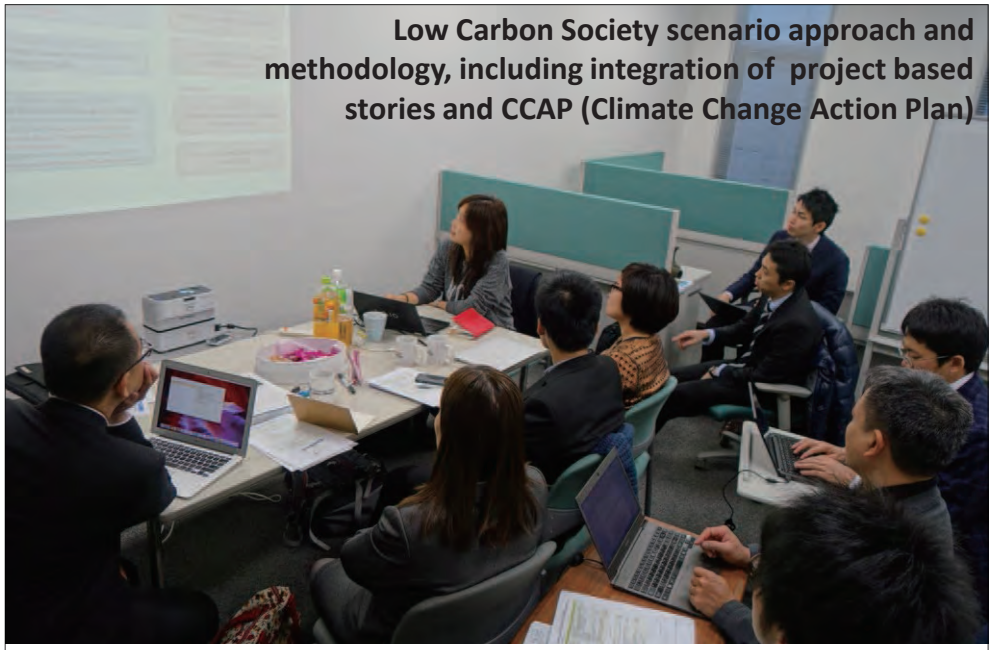


HCMC LCS Scenario towards 2020

- By the 2020 CCAP scenario, the GHG emission reduction is 19.1% of total emission of Business as Usual (2020BaU) (including 6.2% reduction is expected from the mitigation of grid power)



This number is currently adopted in
HCMC Climate Change Action Plan 2016-2020 toward 2030



Training program for Da Nang and Hai Phong cities on 8th & 9th Dec 2015 in Kyoto University

Implementation Design with local governments, experts and AIM team

LCS planning and implementation in cities

- AIM supports to develop LCS planning using our quantitative GHG mitigation simulation methodology first.
- Then Putrajaya and Iskandar Malaysia are trying to design administrative implementation program to realize green cities in their jurisdictions.

LCS Planning
through quantitative approach
- GHG Emission & Reduction
- LCS Policies & Actions

Putrajaya

Iskandar

Next Stage

Implementation
through **practical program design**
- Monitoring
- Evaluation & Modification of the Policy

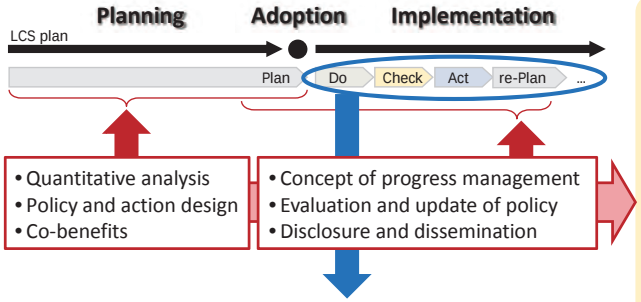

Putrajaya

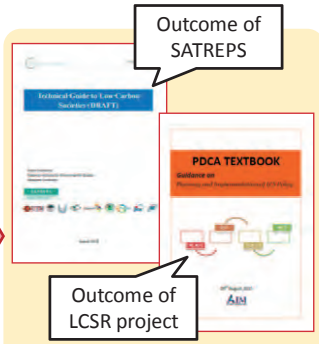

Iskandar

AIM
ASIA-PACIFIC INTEGRATED MODEL

PDCA process of LCS policy

- AIM team is making documents which explains PDCA process of LCS policy. Expected user is policy makers and researchers in Asian region.
- Those documents include processes of monitoring, evaluating and reviewing of LCS policy as well as methodology for planning.





Assistance for designing practical program and arrangements for implementation

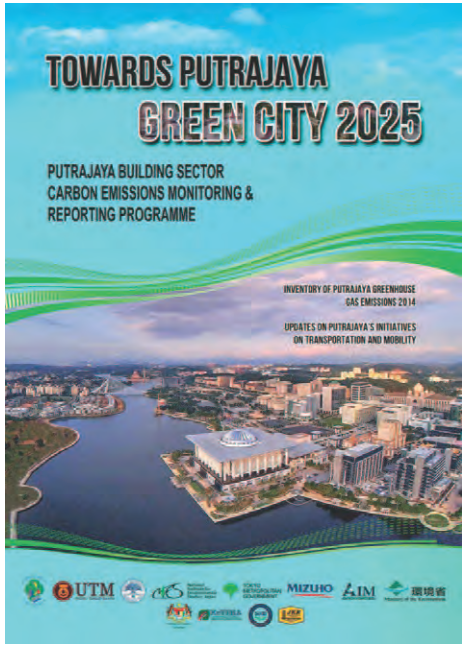
Utilized as textbooks of training sessions

AIM

Press conference on 7th Dec 2015, University Technology Malaysia (UTM)

http://unfccc6.meta-fusion.com/cop21/events/2015-12-07-14-00-university-of-technology-malaysia-utm

Proposal on Monitoring & Reporting Program in Malaysia

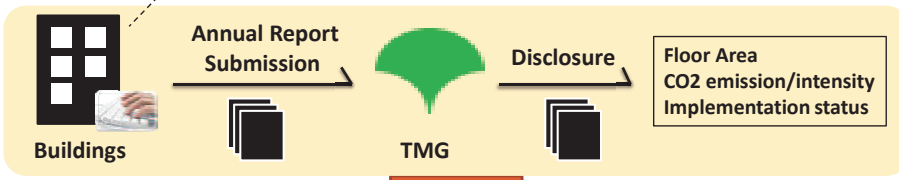


Best Practice in Tokyo

- Tokyo Metropolitan Government (TMG) has operated Carbon Reduction Reporting Program for mid-small scale buildings, which aims to enhance mitigation actions.
- The program asks buildings to monitor and report their CO2 emission as well as mitigation actions taken by owners and/or tenants.

1. Energy Consumption and CO2 Emission in Previous FY
- Calculate CO2 emissions from previous FY's fuel, energy, electricity, water and sewerage use

2. Mitigation Actions Taken in Previous FY
- Choose measures taken from 255 option menu which has been categorized by TMG



Continuous Efforts on the Global Warming Measures
- Realize continuous understanding/management of energy consumption
- Continuous efforts and improvement on the global warming measures

CO2 Emission Reduction (10% reduction has achieved)

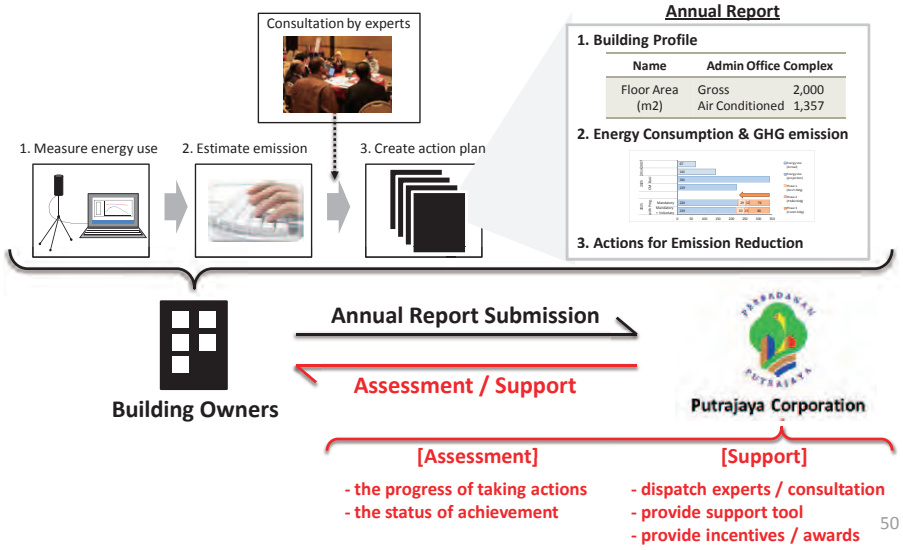
LCS implementation: Transfer Knowledge from Tokyo to Malaysia

- Collaborative team comprised by UTM (University Technology Malaysia)/TMG (Tokyo Metropolitan Government)/AIM transfers the building monitoring and reporting program which initiated by TMG.
- We works together with Putrajaya Corporation (PJC) and Iskandar Region Development Authority (IRDA).
- Trainings, workshops and intensive discussions many times among both cities' staffs, TMG's staffs and experts have been conducted so far.

Proposed Scheme (1/2)

Putrajaya

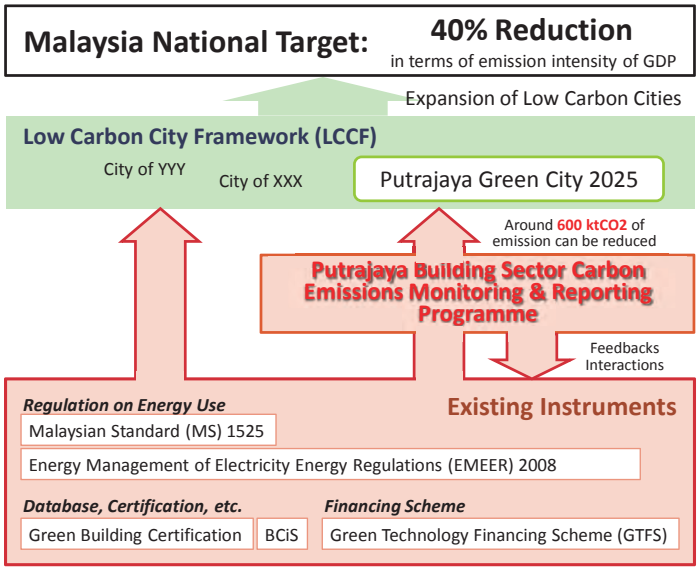
- Buildings are required to submit report including energy consumption, GHG emission and action plan for reducing their emission.
- The participating entities can receive feedbacks and support from the authority.



Proposed Scheme (2/2)

Putrajaya

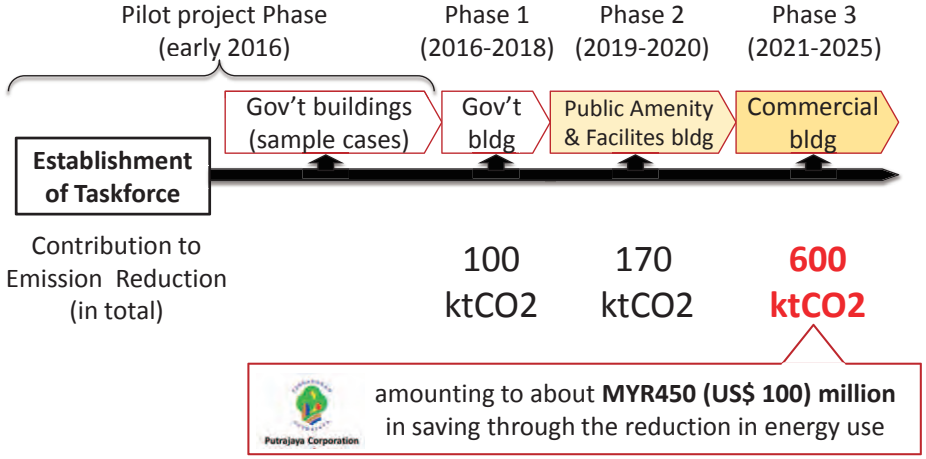
- The proposed scheme is an additional instrument to enhance the function of existing instruments for enhancing low carbon cities in Malaysia.



Expected Impacts of the Programme

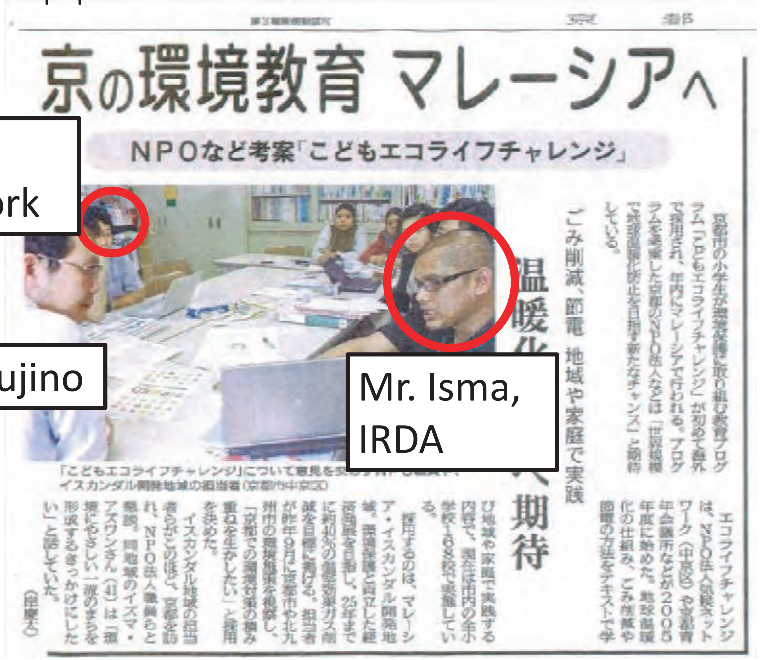
Putrajaya

- In order to introduce the programme smoothly, the target buildings shall be expanded gradually.
- Expected impacts are estimated according to Putrajaya Green City 2025. (abt 600 ktCO2 emission reduction at maximum; amounting to abt MYR 450 (US$ 100) million in saving through the reduction in energy use.)



Kyoto ELC transfers to Malaysia

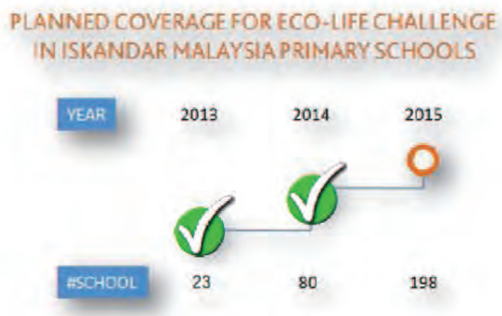
Kyoto local newspaper
May 2013



11th Nov, 2014, Malaysian New Strait Times

Quick update :Eco life Challenge Programmes

ISKANDAR REGIONAL DEVELOPMENT AUTHORITY



- 2015 is critical as we move for full coverage of primary schools in the economic region
- Mobilize community-led action through IMkiko and volunteers
- Full implementation of practical modules- i.e Rainwater harvesting and tree planting
- Increase Aspnet schools to 80 and initiate Unesco program
- Managed communications for IMELC

Ecolife Challenge Summit 2015

Reflection on the 10 years of Ecolife Challenge

The environmental education program "Ecolife Challenge" has reached its 10th year since its foundation in 2005 in Kyoto. Now implemented in every elementary school in Kyoto, the Ecolife Challenge is spreading to various regions, like in Okayama, Hyogo, Shimane and Shiga prefectures. Moreover, in 2013, the Ecolife Challenge was also launched in Iskandar Malaysia, and as of today, the program is being implemented in all 223 schools in the Iskandar region.

In order to further promote low carbon education, it is important to establish networks and coordination among different regions. Therefore, on the occasion of the champion school of 2015 Iskandar Malaysia Ecolife Challenge visiting Japan, we will hold the Ecolife Challenge Summit 2015 as an opportunity for exchange and discussion between groups from various regions involved in low carbon education.

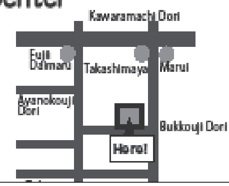
Along with presentations by students from the champion school of 2015 Iskandar Malaysia Ecolife Challenge and Suzaku Daiyon Elementary School, there will be a discussion reflecting the 10 years of Ecolife Challenge. We hope you will be able to attend for this event.

Date 18th of December, 3pm ~ 6pm

Place Kyoto Sougou Kyouiku Center

Nagamatsu Kinen Hall

Admission Free




With Kyoto City Mayor Kadokawa


Group Photo

Paris Agreement to me

2 degree/1.5 degree
-> zero/minus emissions by 2100

INDC -> NDC + 5yr interval CCAP submission and review process

Role of Non-State Actors
(Business + Local Governments)

Let's create Sustainable and Low/Zero Carbon Society thorough actions and design!

藤野　純一
Junichi FUJINO
fuji@nies.go.jp

CTCN: Technology Transfer on Climate Mitigation Technologies

Website: www.ctcn.org
ctcn@unep.org

3rd CITC Regional Conference

Climate Change and Sustainable Development

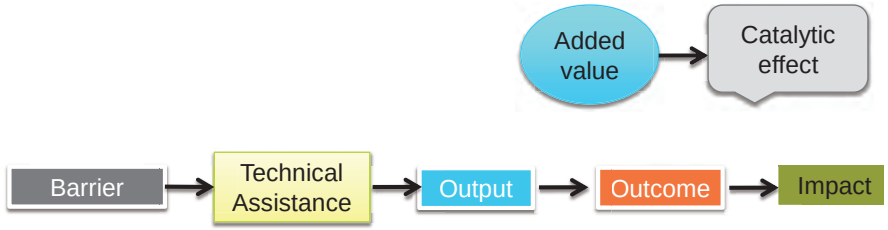
CTCN Approach to Technical Assistance

- **Country-driven**: Commitment and interest of request proponent, stakeholders and beneficiaries, strong political commitment, funding interest/co-financing
- **Barrier remover**: Identification of a specific area of intervention even in complex settings (specific barrier, specific type of technology)
- **Results-based:** Identification of expected results and specific plan to use the deliverables produced
- **Integrated**: Providing a missing component leveraging existing resources and capacity, complementing existing efforts (avoid duplication)
- **Catalyzer for action**– involve stakeholders that have the potential to trigger concrete results and deploy technologies

Main Barriers to Technology Transfer

Technological	Financial	Institutional
• Limited capacity to **assess, adopt, adapt and absorb** technological options • Lack of knowledge of **technology operation and management** • Lack of **skilled personnel/training** facilities • Lack of **standard and codes and certification**	• Lack of **access to Financing** • Potential lack of **commercial viability** • Lack of **financial institutions to support climate technologies** • Lack of **instruments** (incentives, risk mitigation mechanisms…)	• Uncertain governmental **policies** • Lack of **infrastructure** • Lack of **information and awareness** • Lack of **consumer acceptance**

Approaches



CTCN Technical Assistance Process: Request

Formulate need/ request

Request proponent

Prioritize, endorse and submit request

National Designated Entities

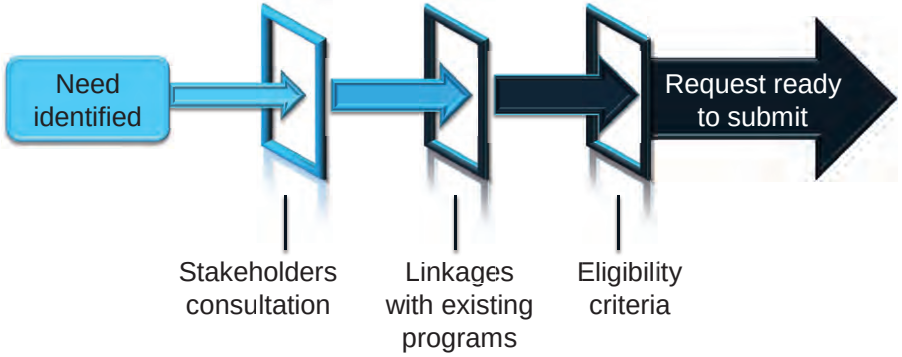
A. Asses eligibility and prioritization of request
B. Design assistance (response plan) with experts, in collaboration with NDE and proponent

CTCN

Deliver assistance through best expertise identified within Consortium and Network

Network

Request Generation



CTCN Eligibility Criteria

1. Contribute to increase resilience and/or mitigate emissions
2. Aligned with national plans
3. Strengthen national capacities
4. Processes are in place in the country to monitor and evaluate any support provided

Eligibility Criteria 1

"The request has a **clear and positive benefit** to the requesting country in mitigating, or adapting to the negative effect of, climate change."

Mitigation:
Reduce the causes of climate change to permanently eliminate its effects.

Adaptation:
Anticipate the effects of climate change to prevent its damages and take advantages of its opportunities.

Eligibility Criteria 2

"The request is in line with national strategies and plans."

Relevant national strategies and plans:

- ✓ National Development Plans
- ✓ Sectoral plans
- ✓ INDC
- ✓ Technology Needs Assessments
- ✓ National Adaptation Plans of Action (NAPAs)
- ✓ National Adaptation Plans (NAPs)
- ✓ Nationally Appropriate Mitigation Actions (NAMAs)
- ✓ Climate Relevant priorities in National Biodiversity Strategies and Action Plans (NBSAPs)

Eligibility Criteria 3

"The support will strengthen endogenous capacities"

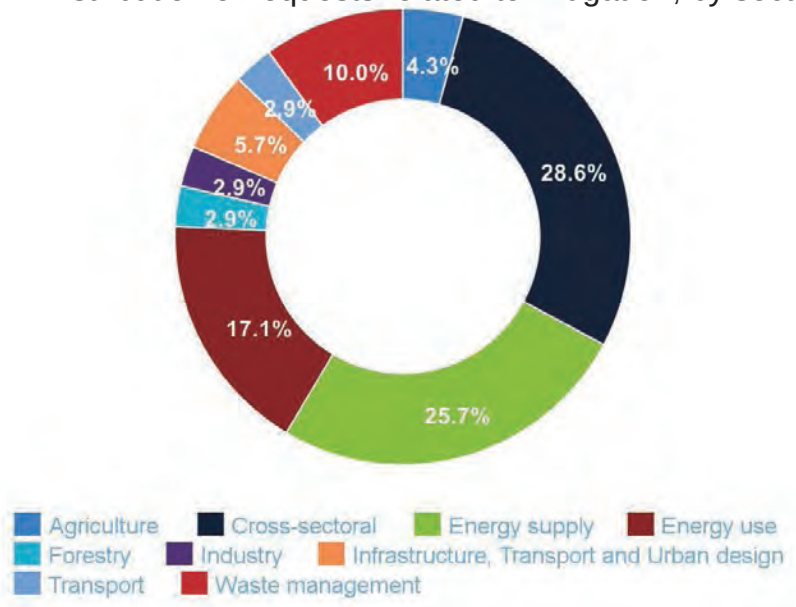
Characteristics:

- ✓ Ensure assistance is adapted to local circumstances
- ✓ Ensure interest, involvement and ownership of local stakeholders
- ✓ Strengthen in-country capacities
- ✓ Ensure efficient use of in-country personal time and financial resources dedicated to the assistance
- ✓ Ensure implementation sustainability

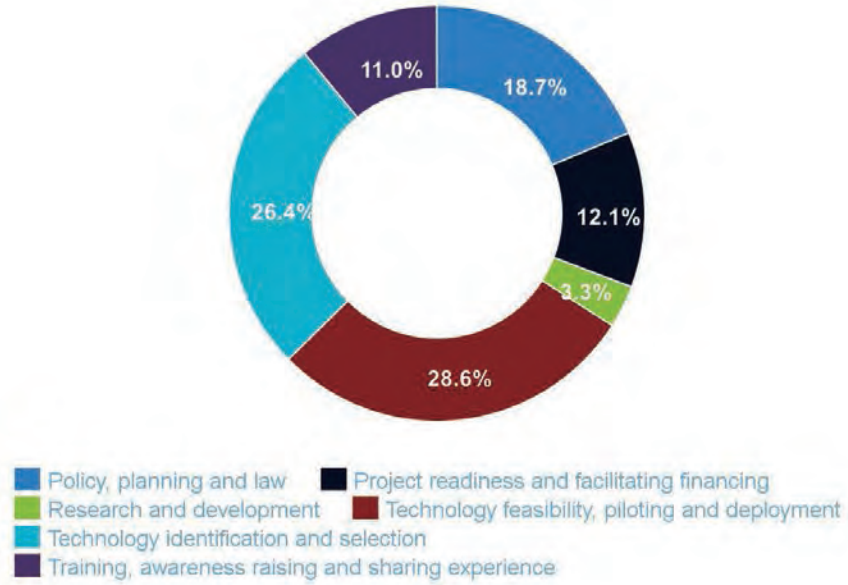
Prioritization criteria

1. Demonstrate "**project readiness**"
2. Demonstrate potential for **replication** or **scaling up** nationally, regionally, and internationally
3. **Leverage** public and/or private **financing**
4. Promote **endogenous** and **most appropriate** technologies and processes
5. Promote and demonstrate **multiple benefits**, as well as social, economic, and environmental sustainability
6. Promote **gender equality**, and empowerment of vulnerable groups, including women and youth.
7. Promote **collaboration among stakeholders**, including between countries, and having elements of South – South, bilateral, or multilateral cooperation
8. Promote **multi-country approaches** and the regional bundling of requests

Distribution of requests related to mitigation, by sector



Distribution of requests by type of assistance



EXAMPLES

Technical Assistance – Iran

CTCN Response

- Identify suppliers with proven CHP and MCHP technologies
- Facilitate communications with technology providers
- Develop a strategy for undertaking CHP capacity building on a national scale

Expected Results

- Identification of technology transfer opportunities will inform and guide the work of the government in the energy sector
- The transfer of appropriate technologies will contribute to a reduction in greenhouse gas emissions through enhanced energy efficiency
- These actions will contribute to more sustainable and low-carbon development of Iran

Technical Assistance – Iran

CTCN Response

- Consulting in field of silicon purification
- Technology of wafering
- Provide technical support for designing cells, developing cell test procedures, and testing modules output

Expected Results

- Report on status survey of global solar PV good industry practice and local PV industry in Iran, as well as the local knowledge and material supply industry in Iran
- Report on recommendations to establish a successful PV industry in Iran and regarding technical details /broad specification of plant and machinery
- Business plan for PV industry in Iran and a PV manufacturing plant in Iran

Technical Assistance – Uganda

CTCN Response

- Conduct background analysis of National Power Development Master Plan, existing policies, laws, and regulations impacting geothermal development
- Develop recommendations for new geothermal policy and improvements to existing regulations, including a stakeholder engagement plan
- Draft proposed Geothermal Energy Law

Expected Results

- Report evaluating existing policies, laws, and regulations that impact geothermal development
- Creation of a stakeholder community, informed by analysis of the private and public sector engagement
- Proposed geothermal policy, law and regulation as well as institutional framework
- An enabling environment for investments in geothermal power generation

Uganda

Formulating Geothermal Energy Policy, Legal and Regulatory Framework

Mitigation
Energy

Technical Assistance – Dominican Republic

CTCN Response

- Establishment of mandatory minimum energy performance standards for efficient lighting products in residential, commercial and industrial applications
- Creation of a monitoring, verification and enforcement mechanism to ensure compliance with national standards
- Development of a large scale LED deployment scheme to facilitate rapid transformation to high efficiency LEDs, and ensure that disposal of non-complying products is done in an environmentally sound manner

- **Expected Results**
- The transition to energy efficient lighting in the residential, commercial and industrial sectors
- More than 730 GWh savings in annual electricity consumption
- Reductions in blackout occurrences across the country
- More than 100 million USD per year savings in electricity bills

Dominican Republic

Developing a NAMA to Leapfrog to Advanced Energy-Efficient Lighting Technologies

Mitigation
Energy

Technical Assistance: Senegal.

Senegal

Green technology deployment in industrial zones

Mitigation
Industry

CTCN Response

- Identification and mapping of companies with high symbiotic potentials
- Outlining of potentials to use local outputs (wastes/ byproducts)
- Proposal of technologies needed
- Report of necessary investment and potential savings
- Capacity building for tenant industries
- Material flow balances in key companies/factories

Results

- Decreased exposure to fluctuating energy prices
- Decreased need for import of materials
- Increased grid independency
- Centralized management and administration in the industrial park
- Reduced greenhouse gas emissions
- Recommendation for central monitoring and evaluation
- Centralized water management and wastewater treatment system
- Centralized solid waste management system
- Separate chemical and hazardous waste management to avoid emission of toxic pollutants
- Regulatory frameworks for comprehensive utilization of wastes from the production
- New business models by treating by-products and selling them

Request Proponent

Enterprises Development Agency (Bureau de Mise à Niveau)

National Designated Entity

Mr. Issakha Youm, Centre for Study and Sesearch on Renewable Energy (CERER)

Technical Assistance – Vietnam

CTCN Response

- Support the selection of appropriate technology options for paddy drying, briquette production and combustion
- Identify a business development strategy for industrial use

Expected Results

- Support for informed decision making and investment in selected enterprises
- Scaling-up of resource efficient and cleaner production improvements
- Strong climate change Mitigation potential

Vietnam

Bio-Waste Minimization and Valorization for Low Carbon Production in Rice Sector

Mitigation
Agriculture

Technical Assistance – Tonga

Development of a Tonga Energy Efficiency Master Plan for Tonga

CTCN Request

- Conduct survey, data collection and baseline study:
- Develop EE and GHG target:
- Conduct need assessment on potential EE activities for Energy Sector (Power, Transport and Building)
- Conduct Capacity Development and Training for Energy Staff:

Expected Benefits

- Development of a more organised and clear pathway to reduce its GHG emissions and increase energy saving from all sectors
- Improve the Energy Efficiency standards
- Banned energy inefficient technologies import to Tonga

Substantial resource has been committed to increasing the renewable energy generation mix in Tonga but there are lacks of energy efficiency development

Thank you

CLIMATE TECHNOLOGY CENTRE & NETWORK

Governments of Switzerland and Germany

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NAMAs: Integrating CCM in Sustainable Development

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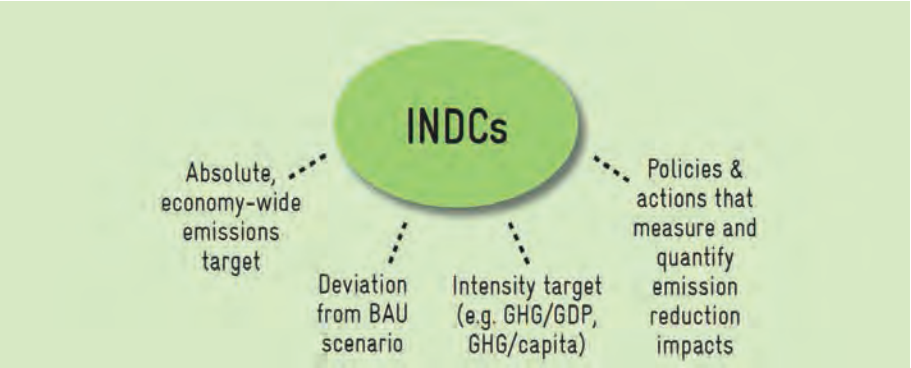
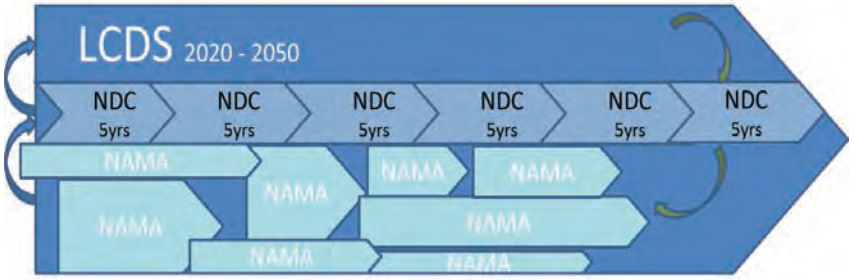
UNEP-Regional Office for Asia & the Pacific, Thailand

INDCs



- INDCs/NDCs - a wide range of targets/goals depending on respective capabilities of countries for period 2020-2025/2030.

LERDS/LCDS, INDCs/NDCs, and NAMAs



- **Low Emissions and Resilient Development Strategy (LERDS) or Low Carbon Development Strategy (LCDS)** is the long term strategy/goal, which help coordinate a synergetic approach to sustainable development and decoupling emissions from development
- **INDCs/NDCs -** ideally linked to LERDs/LCDCs, translate strategy to medium term targets for mitigation in context of sustainable development
- **NAMAs** - implementation instruments to translate medium term goals into specific policies and actions to achieve the goal.

What is a NAMA

NAMAs (Nationally Appropriate Mitigation Actions)refer to any action that

- reduces emissions in developing countries
- prepared under the umbrella of a national governmental initiative
- can be policies directed at transformational change within an economic sector, or actions across sectors for a broader national focus
- are supported and enabled by technology, financing, and capacity-building
- aimed at achieving a reduction in emissions relative to 'business as usual' emissions in 2020.

NAMA & Sustainable Development

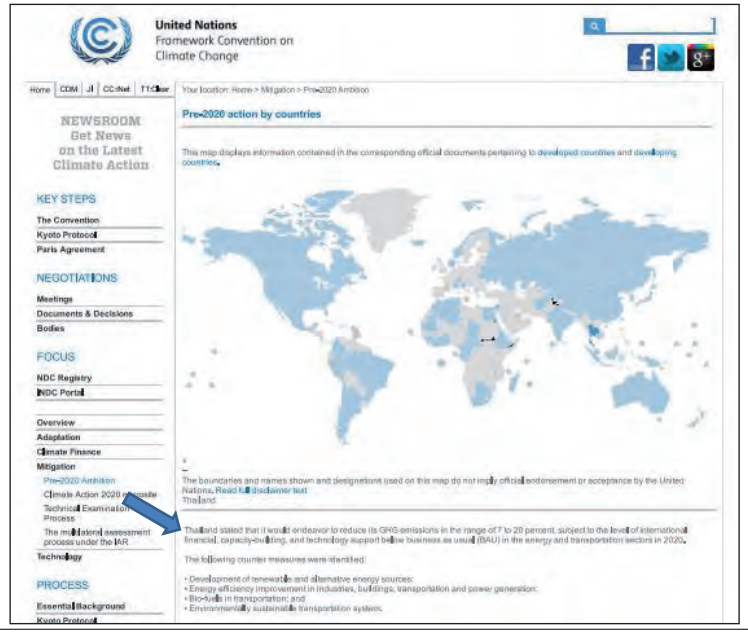
- NAMA – to be developed in context of sustainable development.
- The Convention and the Cancun decisions recognizes that "Reaffirming that social and economic development and poverty eradication are the first and overriding priorities of developing country Parties".
- So developed in context of sustainable development implies: NAMA = Options that, in context of plans to implement social and economic development, deliver the same or higher level of sustainable development benefits with lower (lowest) GHG emissions.

What is a NAMA

NAMAs are defined in two contexts:

- At the National Level as a formal submission by Parties *declaring intent to mitigate greenhouse gas emissions* in a manner commensurate with their capacity and in line with their national development goals;
- At the Individual Action Level as *detailed actions or groups of actions* designed to help a country meet their mitigation objectives within the context of national development goals.

Countries which have communicated National Level NAMAs:
http://unfccc.int/focus/mitigation/pre_2020_ambition/items/8167.php



http://unfccc.int/focus/mitigation/pre_2020_ambition/items/8167.php

Thailand stated that it would endeavor to reduce its GHG emissions in the range of 7 to 20 percent, subject to the level of international financial, capacity-building, and technology support below business as usual (BAU) in the energy and transportation sectors in 2020.

The following counter measures were identified:

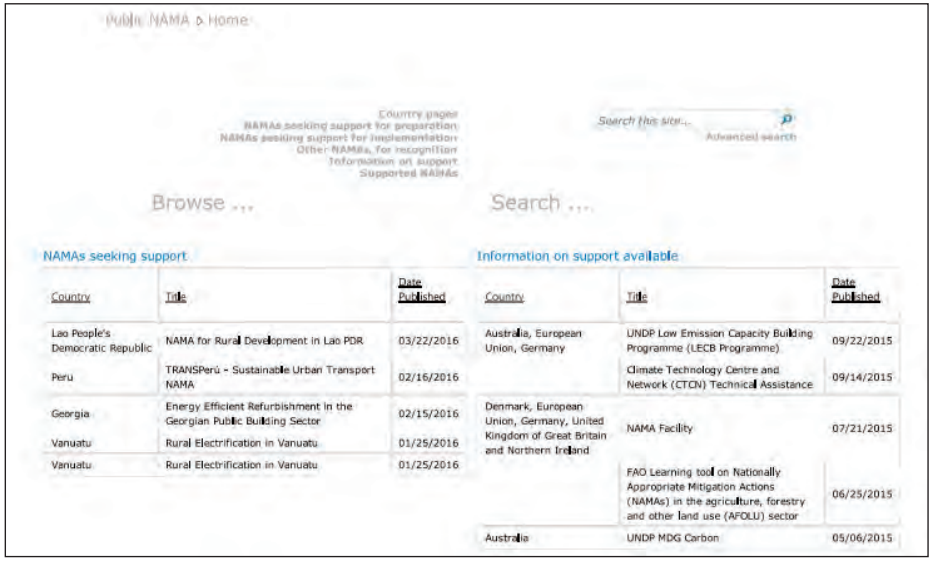
- **Development of renewable and alternative energy sources;**
- **Energy efficiency improvement in industries, buildings, transportation and power generation;**
- **Bio-fuels in transportation; and**
- **Environmentally sustainable transportation system.**

Individual NAMAs

- Contribute towards meeting the objectives of NAMAs at the National Level
- Diverse, ranging from project based mitigation actions to sectoral programmes or policies, and exist in one of the stages below
  - Preparation: is in the conceptual or drafting phase towards a formal proposal that describes the activities, estimates cost, identifies support needs, assesses potential GHG emission reductions, and provides a time frame for the actions.
  - Implementation: has been approved by the national government and is either ready to begin operation or is awaiting the resources to do so.

NAMA Registry

http://www4.unfccc.int/sites/nama/SitePages/Home.aspx


Public NAMA > Home

Country pages
NAMAs seeking support for preparation
NAMAs seeking support for implementation
Other NAMAs, for recognition
Information on support
Supported NAMAs

Search this site...
Advanced search

Browse ...

Search ...

NAMAs seeking support

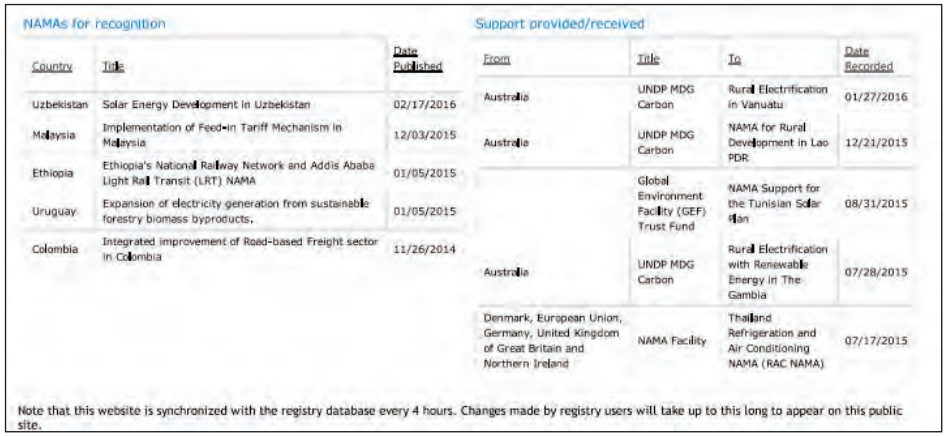
Country	Title	Date Published
Lao People's Democratic Republic	NAMA for Rural Development in Lao PDR	03/22/2016
Peru	TRANSPerú - Sustainable Urban Transport NAMA	02/16/2016
Georgia	Energy Efficient Refurbishment in the Georgian Public Building Sector	02/15/2016
Vanuatu	Rural Electrification in Vanuatu	01/25/2016
Vanuatu	Rural Electrification in Vanuatu	01/25/2016

Information on support available

Country	Title	Date Published
Australia, European Union, Germany	UNDP Low Emission Capacity Building Programme (LECB Programme)	09/22/2015
	Climate Technology Centre and Network (CTCN) Technical Assistance	09/14/2015
Denmark, European Union, Germany, United Kingdom of Great Britain and Northern Ireland	NAMA Facility	07/21/2015
	FAO Learning tool on Nationally Appropriate Mitigation Actions (NAMAs) in the agriculture, forestry and other land use (AFOLU) sector	06/25/2015
Australia	UNDP MDG Carbon	05/06/2015

NAMA Registry

http://www4.unfccc.int/sites/nama/SitePages/Home.aspx


NAMAs for recognition

Country	Title	Date Published
Uzbekistan	Solar Energy Development in Uzbekistan	02/17/2016
Malaysia	Implementation of Feed-in Tariff Mechanism in Malaysia	12/03/2015
Ethiopia	Ethiopia's National Railway Network and Addis Ababa Light Rail Transit (LRT) NAMA	01/05/2015
Uruguay	Expansion of electricity generation from sustainable forestry biomass byproducts.	01/05/2015
Colombia	Integrated improvement of Road-based Freight sector in Colombia	11/26/2014

Support provided/received

From	Title	To	Date Recorded
Australia	UNDP MDG Carbon	Rural Electrification in Vanuatu	01/27/2016
Australia	UNDP MDG Carbon	NAMA for Rural Development in Lao PDR	12/21/2015
	Global Environment Facility (GEF) Trust Fund	NAMA Support for the Tunisian Solar Plan	08/31/2015
Australia	UNDP MDG Carbon	Rural Electrification with Renewable Energy in The Gambia	07/28/2015
Denmark, European Union, Germany, United Kingdom of Great Britain and Northern Ireland	NAMA Facility	Thailand Refrigeration and Air Conditioning NAMA (RAC NAMA)	07/17/2015

Note that this website is synchronized with the registry database every 4 hours. Changes made by registry users will take up to this long to appear on this public site.

Development of large scale program of solar pumping in irrigation water saving projects Morocco

- Overview -

NAMA Context:

- LPG highly subsidized (225% of the tariff)
- Increasing use of LPG for irrigation :
  - 40% of the national consumption
  - About 100,000 ha among the 440,000 ha of individual irrigation
- Social issue: Vulnérability of small farmers to gasoil and electricity prices increase
- High subsidy to farmers to ensure incomes
- High consumption of water
- Agreement ADEREE / Ministry of Agricutture: Pilote phase (2015-2019) for a target of 5000 pumps

NAMA objective and scope:

- Transform sustainably the market of water pumping for irrigation toward PV technology
- Reduce import dependence
- introduce water saving irrigation systems
- Enlarge the program to reach the objective of 30,000 installed pumps by 2030 (implement NDC)
- Emission reduction :
  - 130 kteCO2 by 2030
  - 1.1 MteCO2 (2015-2030)

Main barriers:

- Low profitability of PV pumping system compared to conventional systems
- High investment cost vis a vis to the financing capacity of the target farmers
- Difficulty for the farmers to access to loan with suitable conditions
- Absence of national standards and quality control
- Weak supply side
- Lack of information to farmers

Development of large scale program of solar PV roof connected to LV grid in residential sector

- Technical component -

Objective: create an enabled environment to transform the market of irrigation in Morocco toward more sustainability in term of energy use

- **In K€**

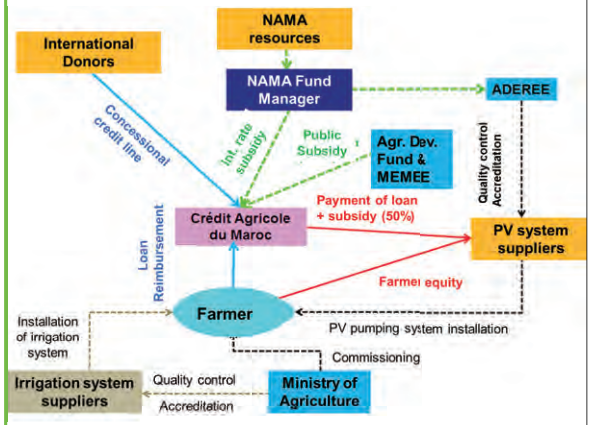
Activities	Total	NAMA	State
Potential assessment and farmer characterization	250	225	25
Development of standards and implementation of testing facilities	350	210	140
Financial mechanism implementation	500	410	90
Training and supplier accreditation	450	365	85
Program of recycling of removed pumps	400	300	100
Capacity building of ADEREE in term of management and quality control of the program	100	90	10
Development of the MRV system	500	400	100
Information, communication and awareness	500	400	100
TOTAL	**3050**	**2400**	**650**

Development of large scale program of solar PV roof connected to LV grid in residential sector

- Financial components -

Financial mechanism:

- **A subsidy of 2.5% of the interest rates**
- **Loans provide by "Credit Agricole" to farmers**
- **Interest subsidy achieved through - low cost loan from international donors, NAMAs climate finance, & funds from Agriculture develop fund**
- **ADERE (Agency for RE) accredits PV system installers to ensure quality of equipment**
- **Ministry of Agriculture to accredit irrigation system suppliers.**
- **Banks pay's the loan amount directly to PV system installer**
- **Farmers pays a part of cost**



Simplified financial mechanism

Development of large scale program of solar PV roof connected to LV grid in residential sector

- Cost and financing -

Activities	Post	Amount	Sources
Public investment subsidy	50% of the PV pumping system	M€ 37.6	ADF + MEMEE
Credit line	Concessional conditions	M€ 34.2	International donors
Farmer contribution	25%	M€ 18	Farmers
Interest rate subsidy	2.5%	M€ 1.4	NAMA
Supporting a activities	Technical Assistance	M€ 2.4 M€ 0.65	NAMA State
Total		**M€ 94.25**	
Seeking financing from NAMA		**M€ 3.8**	

Global Environment Facility

- may provide support for the development of measurement, reporting and verification (MRV) systems within the NAMAs, which could strengthen the basis for innovative financial mechanisms, including carbon finance and voluntary emission trading at the national level.

- may also continue to support Low Emission Development Strategy development and implementation as one of the key vehicles to support mainstreaming of mitigation actions, on which NAMAs could be built.

GEF Funded NAMA Projects

Country	Project Name	Agency	GEF Grant	Cofinancing	Status
Peru	Nationally Appropriate Mitigation Actions in the Energy Generation and End-Use Sectors	UNDP	4,500,000	29,450,000	CEO Endorsed
Kazakhstan	Nationally Appropriate Mitigation Actions for Low-carbon Urban Development	UNDP	5,930,000	60,000,000	CEO Endorsed
Azerbaijan	Nationally Appropriate Mitigation Actions (NAMAs) for Low-carbon End-use Sectors in Azerbaijan	UNDP	3,570,000	34,000,000	CEO Endorsed
Indonesia	Market Transformation through Design and Implementation of Appropriate Mitigation Actions in Energy Sector	UNDP	8,025,000	48,350,000	Council Approved
Sri Lanka	Appropriate Mitigation Actions in the Energy Generation and End-Use Sectors in Sri Lanka	UNDP	1,790,411	13,000,000	CEO Approved
Mauritius	Nationally Appropriate Mitigation Actions for Low Carbon Island Development Strategy for Mauritius	UNEP	1,452,000	20,360,000	PPG Approved
Mongolia	Nationally Appropriate Mitigation Actions in the Construction Sector in Mongolia	UNDP	1,269,863	5,079,452	PPG Approved

Sindicatum
sustainable resources

Climate Change Mitigation Action: A Case Study of a CDM Project Activity

3rd CITC Regional Conference: Climate Change and Sustainable Development

31st March 2016

Sindicatum Sustainable Resources Group

DEVELOPER and OPERATOR of CLEAN ENERGY PROJECTS

Founded in 2005, Headquartered in Singapore

To date: raised >USD 400m in equity for clean energy projects

>120 employees in 8 countries;

ENERGY SOURCES

BIOGAS & WASTE

SUSTAINABLE BIOMASS

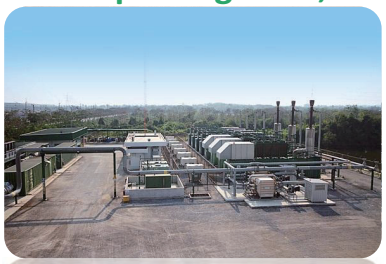
SOLAR

PROJECT ASSETS

300 MW

Developing and operating > 20 projects
Managing a further 11 CDM projects

Landfill Gas to Energy
– Kamphaeng Saen, Nakhonpathom, Thailand



Zenith Green Energy Co., Ltd.

Bangkok Kamphaeng Saen West: Landfill Gas to Electricity Project

Bangkok Green Power Co., Ltd.

Bangkok Kamphaeng Saen East: Landfill Gas to Electricity Project

Project Process Summary

Installation of gas collection pipes

Collected landfill gas transported via carrier pipes to generation compound

Landfill Gas enters pre-treatment plant

Gas not required for generation is send to flared

Electricity generated using GE 320 1063 KW biogas engines

Gas Clean Up System

Synchronize with PEA grid

Projects Status – *Operational*

	Zenith Green Energy Co., Ltd. (West)	Bangkok Greenpower Co., Ltd. (East)
Installed Capacity		
Engine	8 x 1.063 MW	8 x 1.063 MW
Flare	3 x 2,000 m³/hr.	3 x 2,000 m³/hr.
Start Construction	April 2009	April 2009
COD	March 2010	April 2010
Electrical Export Capacity	8.0 MW since May 2011	8.0 MW since July 2012

5

Projects Status – *Emission Reductions*

	Zenith Green Energy Co., Ltd.	Bangkok Greenpower Co., Ltd.
	Bangkok Kamphaeng Saen West: Landfill gas to energy project	*Bangkok Kamphaeng Saen East: Landfill gas to energy project*
CER Generation 1st crediting period (2011-2018)	*CDM Registration No. 3483* Estimated 1.7 millions tCO2e	*CDM Registration No. 3462* Estimated 1.9 millions tCO2e
Issued	1.45m CERs (further 350k verified)	1.35m CERs (further 400k verified)
GS CER Registration (2012-2018)	*GS Project ID: GS 1370* Estimated 1 million tCO2e	*GS Project ID: GS 1371* Estimated 0.7 million tCO2e

The Gold Standard® Premium quality carbon credits

6

Operational Excellence

- **Projects implemented to high standards**
  - ISO 14001 and OHSAS18001
  - IFC Performance Standards
  - Gold Standard & UN CDM registration
- **Robust and efficient technology employed**
  - Proprietary landfill gas collection system adapted to local conditions
  - Pre-treatment system for landfill gas
  - GE Jenbacher engines + Nanjing Carbon flares for surplus gas
- **40+ well-trained Thai staff plus UK Waste to Energy expert leading operations**
  - Carry out all operations including maintenance of engines
  - Operations to date in 2014 have **achieved 92% electrical availability & 96 % Mechanical availability**

IFC Performance Standards on Environmental and Social Sustainability

Effective January 1, 2012

ISO 14001

The Gold Standard® Premium quality carbon credits

Highest electricity (MWh) generating VSPP projects in Thailand

Sustainable Development benefits
– *Health, Safety and Environmental*

- **Reducing Greenhouse Gas emissions and Climate Change by capturing the Landfill Gas**
- **Local air quality improvement**
- **Reduction of the impact of the landfill on its surrounding including odours**
- **Reduction of fossil fuel consumption for power generation sector**
- **Preventing and minimizing of fire and explosion caused by Landfill Gas – improving overall safety**

Sustainable Development benefits
– *Social and Economic*

- Providing of employment for the local community and skill enhancement through training and experience
- New grid line (15km) has indirectly led to new businesses locating in the community –
- Improved network stabilization (>92% availability)
- Response to Thailand Alternative Energy Development Plan (AEDP)
- Technology transfer and awareness raising – over

Thailand and ASEAN Energy Awards 2014

- **Winner**: Renewable Energy Projects – On-grid category

Dr. Narongchai Akrasanee, Minister of Energy, Ms. Ratchaneewan Pulnil and Ms. Chanika Chakarawet, Sindicatum Sustainable Resources (Thailand) Co., Ltd., and Mr. Ariphong Phuchaum, Permanent Secretary of Energy Ministry

Sindicatum
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THANK YOU FOR YOUR ATTENTION

Visit our website : www.sindicatum.com

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MUNICIPAL SOLID WASTE (MSW) MANAGEMENT :- CLIMATE CHANGE MITIGATION

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INDIA'S MUNICIPAL WASTE SCENARIO

- The 70 mtpa of MSW currently generated in urban areas will increase to 165 mtpa by 2031
- 35 mn tCO2e Green House Gases (GHG) generated
- No land available - the present method of open dumping/landfilling will require an additional 165, 000 acres
- Adopting an integrated Waste Management System reduces this requirement by 80% by recycling and re-using waste whilst reclaiming waste lands for green spaces

IL&FS Environment

BEYOND CLIMATE CHANGE ……..

- Health risks (causes over 22 diseases incl. vector borne, gastro-intestinal)
- Odor, wind blown litter
- PM menace – respiratory ailments
- Ground & surface water degradation: *For example*, the Ghazipur dumpsite in national capital Delhi generates 1.39 mn liters of leachate per day during monsoons that flows into the river Yamuna

Scientific Waste Management is critical for the success of the Clean India Mission

IL&FS Environment

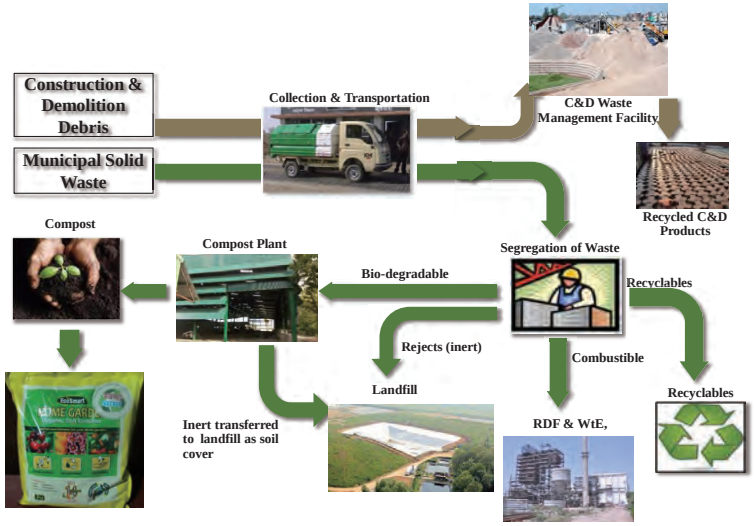
PROCESSING & DISPOSAL: THE WEAKEST LINKS

- 80% of Municipal Waste budgets are on Collection & Transportation
- Processing and scientific disposal are the weakest links, with less than 10% of all waste disposed in a proper scientific manner
- Land for disposal is a challenge given the NIMBY syndrome

Processing can reduce the volume of waste to landfill/dumpsite by 80 % by converting the waste into useful by-products

IL&FS Environment

Integrated Scientific Waste Management – Delhi Model



C&D : Construction & Demolition

WtE : Waste to Energy

IL&FS Environment

C&D WASTE MANAGEMENT, BURARI, DELHI

- Engineered to process Mixed C&D waste which was being dumped into the Yamuna River
- Pioneering wet process technology minimizes dust and noise and maximizing recovery (95%)
- Processed over 2 million tons, saving over 25 acres of land valued at over Rs. 2.5 bn
- Recycled products include – sub-base for roads, Kerb stones, pavement blocks, manufactured sand used by the construction industry
- Showcase projects include :
  - 5 Km road for Delhi using recycled C&D material
  - 1.6 mn bricks for Supreme Court of India building

IL&FS Environment

OKHLA COMPOSTING PROJECT (URN 2470)

- The project was de-functional since 2000 due to commercial viability;
- The project was offered to IEISL in 2007 by Municipal Corporation of Delhi under PPP model;
- IEISL studied the techno-commercial feasibility of the project and concluded that CDM revenue can make project financially workable;
- The project was registered as CDM project activity on 22 June 2009;
- IEISL secured Euro 12 per CER for pre 2012 CERs
- First MSW processing project to receive carbon credits;

IL&FS Environment

OKHLA COMPOSTING PROJECT (URN 2470)

- Over 265,000 tonnes of MSW processed saving 10 acres of land in Delhi NCR;
- Organic, carbon rich Compost, compliant with FCO 2009, improving soil productivity;
- Off-take agreements with reputed fertilizer companies including Tata, Shriram, Kribhco
- Collaboration with Mother Dairy to enhance retail sales
- Off-take agreement for Combustibles with cement companies
- Current carbon market scenario challenging and proving difficult to fill the gap in carbon revenue stream

IL&FS Environment

WASTE TO ENERGY, GHAZIPUR, DELHI

- India's largest waste to energy facility, processing 2000 TPD of waste and generating 700 TPD of RDF & 12 MW of power
- State of the Art plant compliant to Euro emission norms
- Highest levels of transparency (continuous emission monitoring systems & visitors' gallery)
- Mitigate 1.2 million tons of GHG emissions per year
- Project ERR of 34%, based on social cost benefit analysis (including land saved, GHG mitigation, avoided health costs due to mitigation of airborne and water pollution)

IL&FS Environment

SOCIAL INTERVENTIONS: GHAZIPUR WTE PLANT

GULMEHER

Journey of 200 Rag-pickers to Artisans & Entrepreneurship !

IL&FS Environment

POLICY IMPERATIVES ..

- Output based policy to minimize revenue dependence on Municipalities :
  - *Electricity tariff of INR7.04 (levelized) approved by CERC (USD 0.10)*
  - *Government of India has issued a circular to all States to establish environment friendly C&D recycling plant in all cities with more than 1 mn population based on Burari model*
  - *Delhi has mandated use of recycled products up to 10% in all city contracts*
- Govt. of India policy on compost co-marketing with chemical fertilizers to restore soil health and enhance productivity:
  - *Mandatory co-marketing by chemical fertilizer companies*
  - *Compost marketing support of INR 1500 per ton (USD 23) to Fertizer companies*
- RDF as alternate fuel for Cement and Power companies to reduce dependence on fossil fuel and reduce urban pollution:

IL&FS Environment

CARBON FUNDING

- Carbon revenues critical for methane mitigation projects like MSW processing:
  - *All IEISL MSW projects registered under UNFCCC*
  - *The pre-2012 rates helped improve IEISL project sustainability*
- Buyers are looking for quality CERs. Waste Management Projects have more environmental and social benefits than other CER generating projects.
  - *ADB has signed an agreement with IEISL to support one of its projects at USD 5 per CER*
- GCF to invest USD 100 Bn per year by 2020 (climate change projects including MSW)
- Waste Management constitutes a significant part of the Intended Nationally Determined Contributions (INDC) submitted by India to UNFCCC with pledge of reducing emissions intensity by 35% by 2030

IL&FS Environment

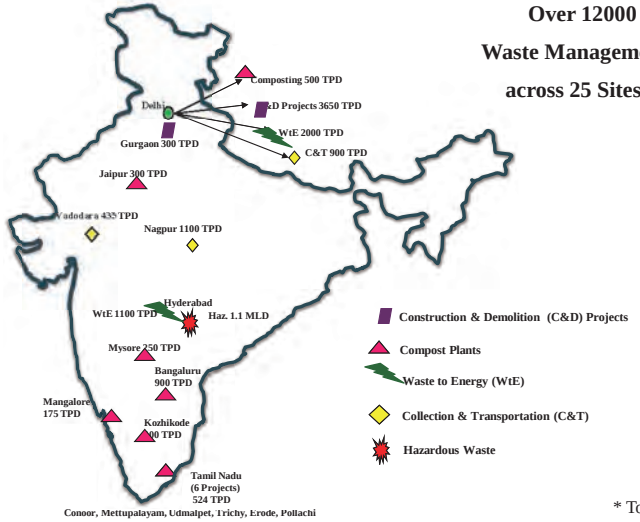
A CASE FOR SUSTAINED SUPPORT FOR MSW PROJECTS

- Potential for huge GHG mitigation:
  - Compost supplementing Chemical fertilizers for soil productivity
  - RDF alternative fuel for Cement industry
  - C&D products could reduce destruction of hills, forest and river beds for construction material
- The impact beyond climate change:
  - Health
  - Socio-economic
  - Environment and Ecology
- A revival of the Carbon Market would help SWM projects and provide an incentive to scale up GHG mitigation in the sector

IL&FS Environment

IL&FS Environment Waste Management Operations

Over 12000 TPD* of Waste Management Mandates across 25 Sites in 9 States



* Tons Per Day

THANK YOU

IL&FS Environment