

# **'Perspectives for Adaptation and Mitigation Co-Benefits -JICA's Cooperation for Resilient and Low- Carbon Development'**

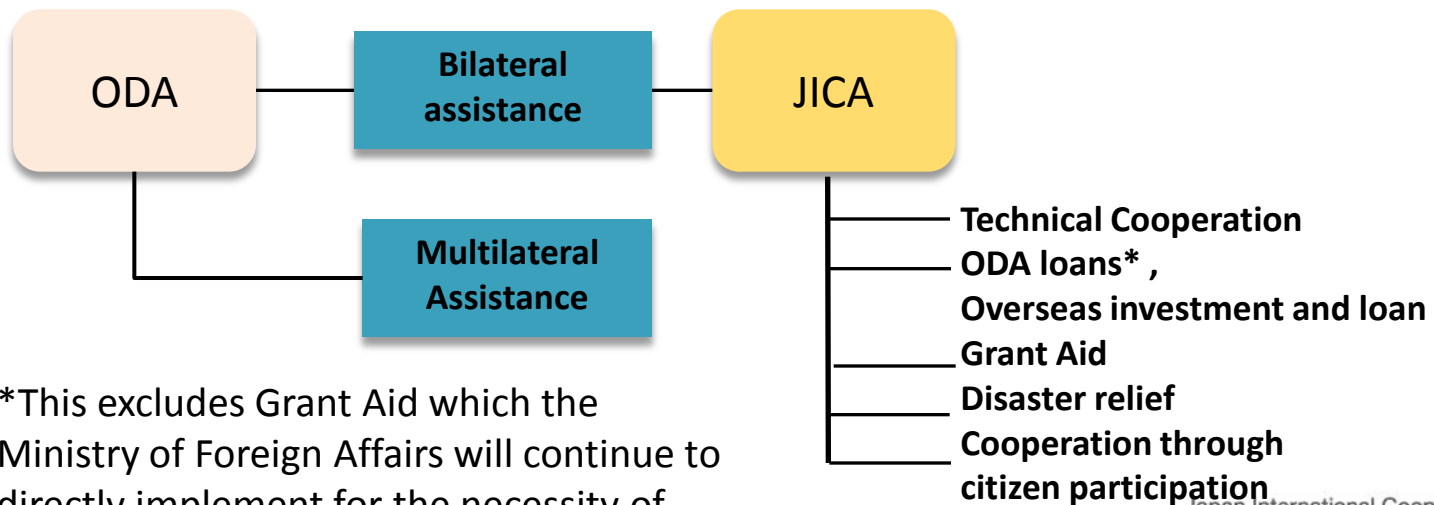
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# Contents

- JICA's Cooperation for Climate Change
- Toward Resilient Development
- Perspectives of Mitigation-Adaptation Co-benefits

## ◆ JICA and Japan's ODA

- Since 1954, Japan has been providing financial and technical assistance to developing countries through **ODA (Official Development Assistance)**. **JICA (Japan International Cooperation Agency)** is in charge of administering all ODA except contributions to international organizations.
- JICA, taking advantage of accumulated experiences, the results of assisting of developing countries and Japan's technology, conducts **multi-benefit assistance**, which contributes to sustainable developments in developing countries and simultaneously contributes to resolve various development subjects. JICA assists by mixing organically financial and technical assistance for **mitigation measures**, which contribute to reduce greenhouse gas (GHG) emission and for **adaptation measures** to the negative effects caused by climate change in various sectors .



# JICA's Approach: Development Cooperation for Low-carbon and Climate Resilient Development

**Comprehensive Assistance**

**Climate Change, A Global Agenda**

**Climate Compatible Sustainable Development**

## <Mitigation: Low-carbon Society>

- Strategic Mitigation Actions (NAMA, MRV, REDD+, etc.)\*
- Low-carbon Technologies (Renewables, Energy Efficiency, etc.)
- Efficient Use of Resources, etc. (Mass Transit, Smart-grid, etc.)

**Energy, Transport, Forestry, Waste Management, etc.**

**Policy & Institutional Reform, Finance Mechanism, Human Resource Development**

**Reduction of GHG Emission**

**Responding to Climate Change**

**Enhancing Adaptive Capacity**

**Equitable Growth**

**Sustainable Development**

**Human Security**

- Modeling / Vulnerability Assessment (Climate Prediction, GIS\*\*, etc.)
- Enhancing Adaptive Capacity (Awareness, Early Warning System, etc.)
- Resilient Infrastructure (Irrigation, Flood Control, etc.)

## <Adaptation: Climate Resilient Society>

**Disaster Risk Management, Water, Agriculture. Sanitation, etc.**

• NAMA (Nationally Appropriate Mitigation Actions)  
MRV (measurable, reportable, verifiable)  
REDD+ (Reduction of Emission from Deforestation and Degradation)  
\*\*GIS (Geographic Information System)

# Japan's Fast-Start Finance (FSF)

## **Commitment Budget: 15 billion dollars (~ 2012)**

- a half of global commitments under the Cancun Agreements
- ODA (around \$7.2 billion) and other official flows (OOF) (around \$7.8 billion)

## **assist developing countries**

- Mitigation(reduce GHG emissions) /Adaptation (vulnerability to climate change)

### Japan's Fast-Start Finance (FSF)

**\$ 17.3 billion as of end of October,2012**

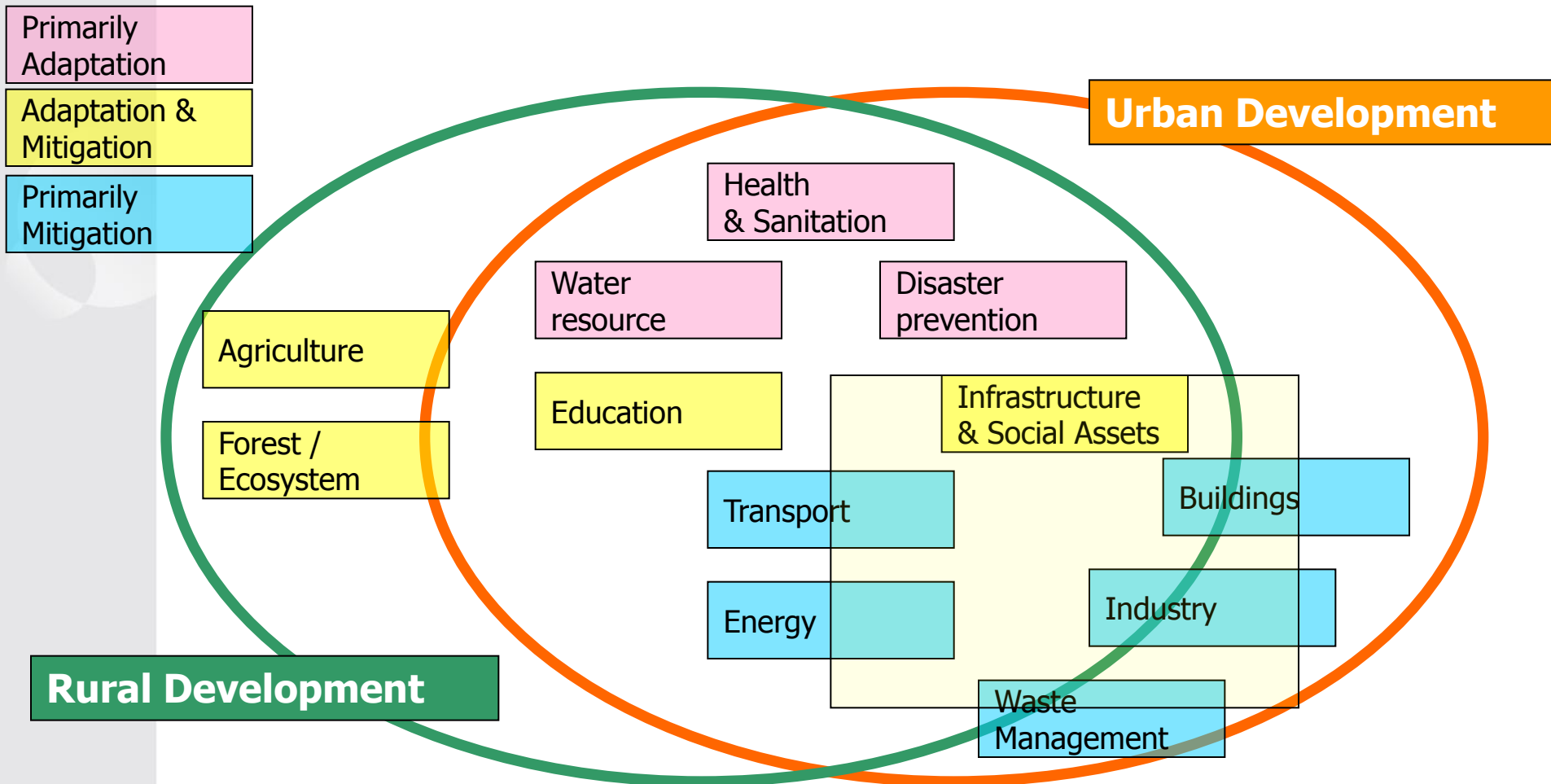
Public \$13.7billion/ Private \$ 3.6 billion

**Mitigation:**  
**\$13.69 billion**

REDD+:  
\$710million

Adaptation:  
\$1.29billion

**Mitigation and  
Adaptation:**  
**\$2.41billion**



Sectors in need of adaptation and with potential of mitigation are critical components of sustainable development

- climate actions in developing countries **must** be implemented in the context of sustainable development



Japan International Cooperation Agency (JICA)  
Climate Finance Impact Tool  
for Mitigation and Adaptation (Summary)

## **JICA Climate-FIT (Summary)**

Draft Ver. 1.0

June 2011

Office for Climate Change  
JICA Global Environment Department

Final Report for Study on Mainstreaming Climate Change Considerations into JICA Operation (Summary) by NIPPON KOEI CO., LTD.

A reference document for assisting climate change related measures

### **Mitigation:**

- Methodologies for implementing measurement, reporting and verification (MRV)
- Simplified estimation of GHG reduction using excel sheets
- 25 sub-sectors: forestry, transport, energy, waste, etc.

### **Adaptation:**

- Concepts and guidelines for mainstreaming adaptation considerations
- 15 sub-sectors: water resources, irrigation, forest preservation, infrastructure, etc.

# Framework of Mitigation Report



## Chapter 1 Introduction

### Chapter 3 Basic Concept and Guidelines for the Quantitative Evaluation of GHG Emission Reduction (Sequestration)

- Basic Concept
  - ① Quantitative Evaluation
  - ② Basic Concept
- Outline of Methodology Sheet and Calculation Sheet
  - ① Aim and Application
  - ② Outline of Methodology Sheet
  - ③ Outline of Calculation Sheet

### Chapter 2 Selection of Target Sub-sectors and Review of Existing Methodologies

- Selection of Target Subsectors
  - ① Past JICA ODA Loan Projects  
(Classification of yen loan projects from 1995 to 2010)
  - ② Trend of Other Donors
- Methodologies of Other Certification Organizations, etc.
  - ① Reviewed Methodologies
  - ② Existing Methodologies for Targeted Sub-sectors

### Chapter 4 Methodology Sheets and Calculation Sheets

#### Identification of Mitigation Projects

#### Outline of Methodology and Calculation Sheets for Each Sub-sector

##### Methodology Sheet

1. Typical project outline
2. Applicability
3. Methodology on emission reduction
  - (1) Baseline emission
  - (2) Project emission
4. Data required for estimation and monitoring
  - <Timing of calculation>
  - <Data acquisition methods>
  - <Priority among options>
5. Others
  - (1) Project boundary
  - (2) Leakage
  - (3) Reviewed methodologies and major differences

##### Calculation Sheet

- (1) Input Sheet
- (2) Result Sheet

#### Target Sub-sectors

- |                                                                                                                                                                                                                                                                                                                                        |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Forest and natural resources conservation<br>1. Afforestation 2. Forest conservation                                                                                                                                                                                                                                                   |
| Traffic and transportation<br>3. Freight / passenger transportation improvement 4. MRT 5. Mono-rail 6. Bus                                                                                                                                                                                                                             |
| Energy conservation (Industry)<br>7. Energy efficiency improvement<br>8. Cogeneration (electricity and heat supply)<br>9. Fuel switching                                                                                                                                                                                               |
| Energy<br>10. Energy plant with fuel switching<br>11. Thermal power cogeneration (electricity and heat supply)<br>12. Thermal power with fuel switching<br>13. Thermal power with higher efficiency<br>14. Power transmission with improved efficiency<br>15. Power distribution with improved efficiency<br>16. Rural electrification |
| Renewable energy<br>17. Hydro power 18. Wind power<br>19. Photovoltaic power / solar heat 20. Geothermal<br>21. Biomass                                                                                                                                                                                                                |
| Sewerage, urban sanitation<br>22. Landfill disposal of waste<br>23. Intermediate treatment of waste<br>24. Drainage treatment 25. Sewerage                                                                                                                                                                                             |

# Framework of Adaptation Report

## Chapter 1 Introduction Chapter 2 Review of Existing Resources

### Chapter 3 Definitions and Steps in Adaptation Planning

- The Basic Concept
- Vulnerability Assessment
- Adaptation Project and Business-as-Usual (BAU) Development with Adaptation Options
- Maladaptation
- Evaluation and Monitoring
- Required Data

### Chapter 4 Selection of Target Sub-sectors

- Categorization of Typical Adaptation Measures
- Past JICA ODA Loan Projects  
(Classification of yen loan projects from 1995 to 2010)
- Integration of Detailed Classifications into Target Sub-sectors
- Trends of Projects by Other Donors
- Selection of Target Sub-sectors

### Chapter 5 Basic Concept and Guidelines for Adaptation Measures

#### Identification of Adaptation Projects

#### Structure of Sub-sector Profiles

- |                                                                                                                                                                                                                                                                                                          |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1) Basic Concept<br>i) General concept ii) Vulnerability<br>iii) Adaptation iv) Maladaptation                                                                                                                                                                                                            |
| 2) "Adaptation Project" Guideline<br>i) General concept<br>ii) Vulnerability assessment<br>iii) Project evaluation of adaptation measures<br>iv) Necessary consideration for planning of adaptation measures<br>v) Required data                                                                         |
| 3) "BAU Development with Adaptation Options" Guideline<br>i) General concept<br>ii) Vulnerability assessment (risk and change)<br>iii) Planning adaptation options<br>iv) Project evaluation of adaptation options<br>v) Necessary consideration for planning of adaptation options<br>vi) Required data |

#### Target Sub-sectors

- |                                                                                                                                   |
|-----------------------------------------------------------------------------------------------------------------------------------|
| Water Resources<br>1. Water resources                                                                                             |
| Agriculture<br>2. Irrigation and drainage<br>3. Enhancement of farm management                                                    |
| Forestry and natural resources conservation<br>4. Forest preservation, afforestation<br>5. Ecosystem integrity                    |
| Disaster Management<br>6. Flood control 7. Coastal protection<br>8. Sediment-related disaster prevention<br>9. Information system |
| Urban-regional Development<br>10. Rural/urban development                                                                         |
| Transportation<br>11. Bridge, road and railway<br>12. Port and airport                                                            |
| Sanitary Improvement<br>13. Water supply<br>14. Sewerage and drainage<br>15. Medical healthcare                                   |

Understanding future climate change



## Reducing Vulnerabilities

- Measures to mitigate vulnerabilities: present-day environmental and social stresses

*Close relationship with existent development programs and priorities such as:*

- ◆ Water supply and management
- ◆ Agricultural diversification
- ◆ Livelihood diversification
- ◆ Other basic development needs such as MDGs



## Enhancing Adaptive Capacity and Disaster Preparedness

- Need to adapt to multiple climate risks such as flood, drought, storm, etc.

*Climate change will likely increase the trends of extreme weather events*

### ◆ Structural measures

-Infrastructure and 'hard' engineering options

### ◆ Non-structural measures

-Early warning systems and other 'soft' adjustments such as land use planning

-Promotion of preventive measures by 'risk communication'



# Examples -Structural and Non-Structural Measures against Floods

## Structural measures



(UPPER)  
Multi-purpose evacuation center  
(LOWER)  
Culvert



(UPPER)  
Borehole / Well  
(LOWER)  
Evacuation center

## Non-structural measures



(UPPER)  
Disaster Education at school  
(LOWER)  
Participatory activity for hazard map



## <Case Study>

# ‘Technical Cooperation Project for Strengthening Capacity of Community Disaster Risk Management in the Pacific Region (2010-2013)’

### ➤ Expected Outputs

- (1) A flood warning system is in place and appropriately managed by the agency and the target community residents understood and respond accordingly
- (2) National Disaster Management Office disaster management capacity is developed
- (3) The target community's awareness on disaster preparedness is enhanced

### ➤ Disaster Risk Management at various levels

<b>Public Help (公助)</b>	National Disaster management plan, Improvement of evacuation alerts based on the meteorological monitoring data
<b>Mutual Help (共助)</b>	Flood monitoring at Community levels, structural-measures (Banking up roads, etc)
<b>Self Help (自助)</b>	Evacuation training, Hazard map, non-structural measures (education, etc)



# Increased vulnerability to Flood Risks in Urban Areas

## - Major Adaptation Challenge for Asian Cities

### Increased vulnerability to Flood Risks in Urban Areas

- ◆ Heavy Rainfall Events
- ◆ Rise in Groundwater Level
- ◆ Multiple factors Related to Rapid Urbanization and Deficient Urban Planning
- Decreased Permeability of the Ground
- Habitation in Depressed zones
- Lack in Rainfall Drainage and Sanitary Management ,etc.

### Adaptation measures

- Structural Measures  
Construction of Dikes, Improvement of Rainwater Drainage, etc.
- Non-Structural Measures
  - Risk Mitigation Measures at Household/Community Levels
  - Early Warning and Evacuation System
- Appropriate City Planning
- Environmental Management
  - Sewage System
  - Waste and Sanitary Management



Mitigation  
Co-benefit

Necessity of a 'Long-term Resilient Urban  
Development Plan'

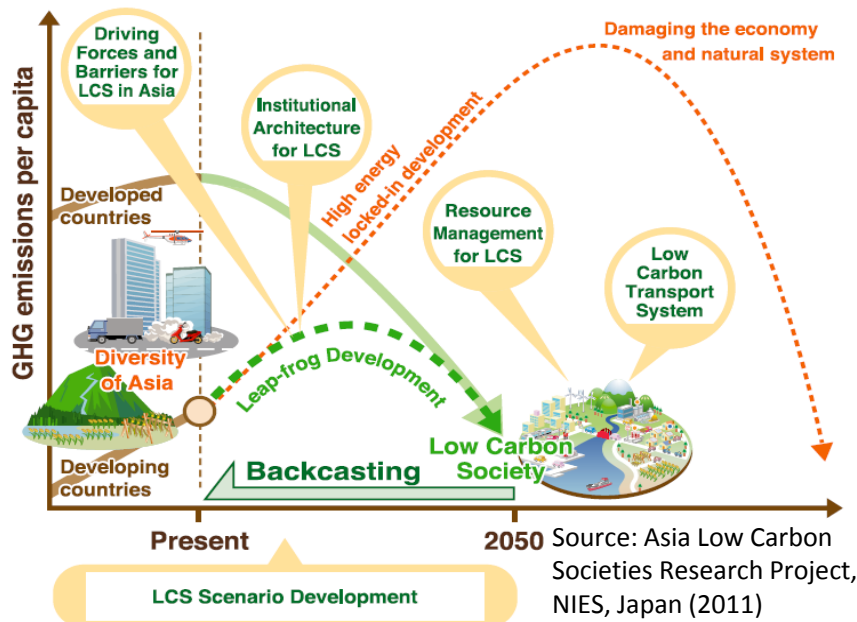
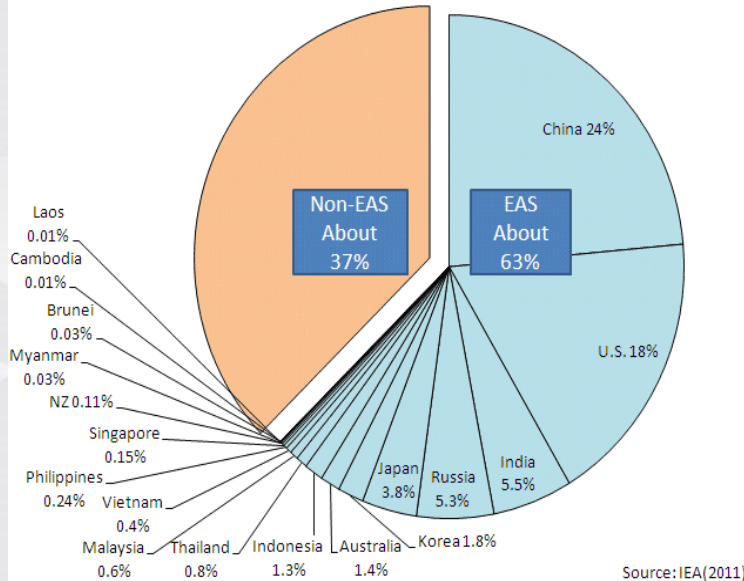
# Challenges for Low-Carbon Development

- GHG Emissions (from Fuel Consumption) in Asian Countries Account for 41.6% of global emission in 2009 (IEA, 2011), and is projected to exceed 50% in 2050.
- Early Shift to 'Low-Carbon Development' is Essential.
- Possible Factors for Low-Carbon Development:

- Improvement of Energy Efficiency and Promotion of Renewable Energy
- Development of Public Transportation Systems
- Improved Environmental Management through Renovating People's Lifestyles and Material Flows

Development **Co-benefit** Mitigation

Necessity of a 'Long-term Low-Carbon Urban Development Visions and Plans'





# <Case Study> Bangkok Master Plan on Climate Change 2013 – 2023 (Project Period: 2013-2015)

## Bangkok Metropolitan Administration (BMA)

### Steering Committee chaired by Deputy-Governor of BMA

Participants: Representatives from the participating departments of BMA, TGO, OTP, PCD, NESDB, ONEP, DEDE, etc.

### Secretariat (Department of Environment, BMA)

#### 5 Working Groups

- ◆ Environmentally Sustainable Transport
- ◆ Energy Efficiency and Alternative Energy
- ◆ Efficient Solid Waste Management and Wastewater Treatment
- ◆ Green Urban Planning
- ◆ **Adaptation Initiatives**

Inter-Organizational Coordination

Yokohama-City ('Future City Initiative')

Experiences of Low-Carbon Policy-Planning and Implementation in JAPAN

Japanese Expert Team

Local Consultants

## <Background>

- ◆ Total GHG emission of Thailand is ranked 23th in the world (IEA, 2009)
- ◆ GHG emission of Bangkok accounts for 24% of total emission in Thailand, and per capita emission is as high as that of NY
- ◆ High potential of GHG reduction, especially in Energy and Transport Sector

**Project Purpose:** The Bangkok Master Plan on Climate Change 2013-2023 is prepared with strengthened capacity for implementation.

### Output 1: Preparation of Bangkok Master Plan on Climate Change

- Assessment of the Bangkok Action Plan on Global Warming Mitigation 2007 – 2012
- Improvement of Data Collection, Methodologies for Estimation and Monitoring of GHG Emission
- Development of Sectoral Strategies
- Public consultation, Workshops and Seminars
- Dissemination of the Master Plan

### Output 2: Strengthened Capacity of BMA officials

- Training Programs for BMA officials
- Seminars/Workshops for Related Stakeholders
- Development of Educational Materials



# Challenges for REDD+

- Land use change including deforestation accounts for 17% of global GHG emission, and a large potential of mitigation in developing countries lies in forest sector (IPCC, AR4, 2007).
- Major driving factors of deforestation are
  - 'Flash and burn' activities for agricultural extension,
  - Construction of infrastructure,
  - Uncontrolled logging,
  - Forest fire, etc.

- Sustainable Forest Management (SFM) would be realized through:
  - Cross-sectoral approach
  - Poverty reduction and livelihood diversification
  - Improvement of agricultural productivity
  - Appropriate land-use planning

## REDD+ and Mitigation-Adaptation Co-benefits

Mitigation

Carbon sequestration

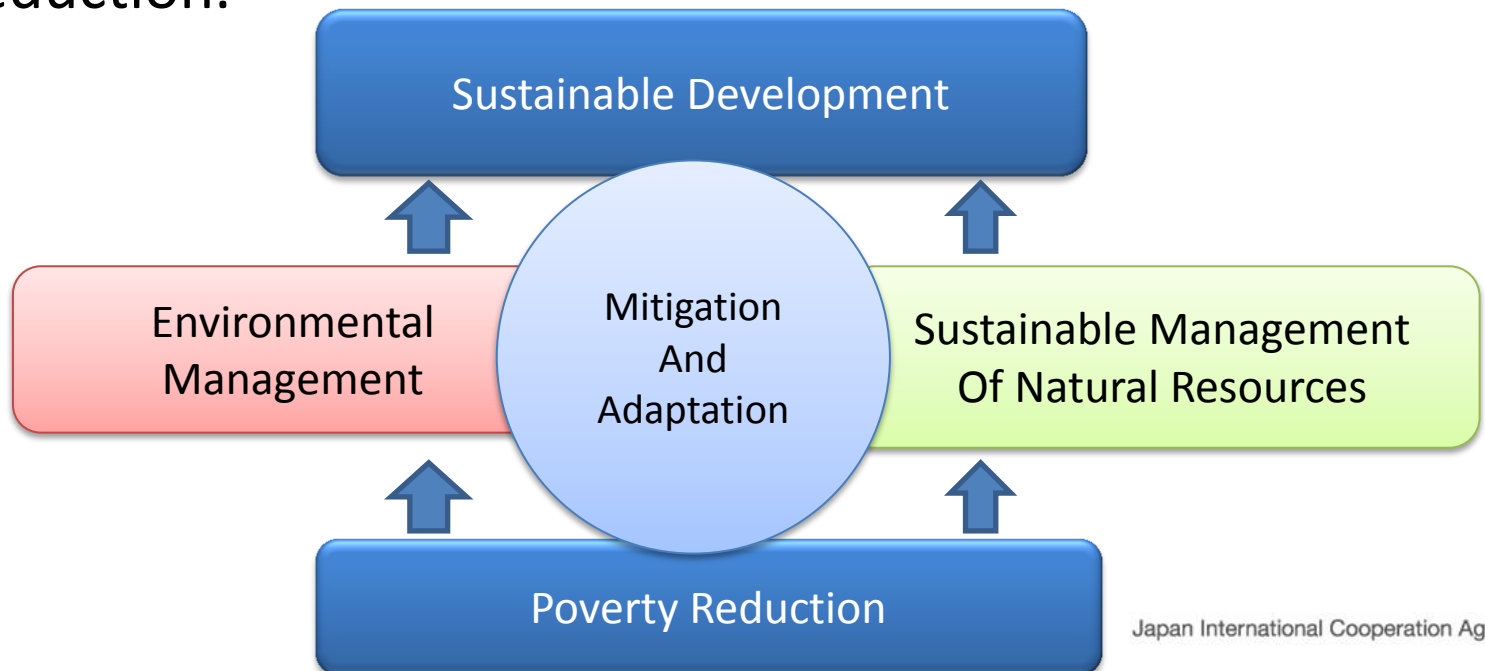
Adaptation

Conservation of forest ecosystem services such as climate regulation, stable water supplies, flood prevention, and biodiversity conservation.



# Argument

- ◆ It would be effective to pursue adaptation-mitigation co-benefits, with a view to mainstreaming both mitigation and adaptation in development policies and programs.
- ◆ Efficient climate change measures could be realized with co-benefits in wider perspectives of sustainable development, including environmental management and sustainable management of natural resources, on the basis of poverty reduction.





Thank you for your attention!

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