**21st Asia-Pacific Seminar on Climate Change**
Technology Development and Transfer of Environmentally Sound Technologies in the Asia-Pacific Region
26-27 July, 2012 Tokyo, Japan

# JICA's Experience of Technology Transfer

July 26, 2012

**Mihoko Kawamura**
**Office for Climate Change,**
**Japan International Cooperation Agency (JICA)**

# Today's Topic

**1. Introduction:**
**Japan's Role for Climate Change and Development**

**2. Case Study:**
**Capacity Development in Energy Conservation Sector**

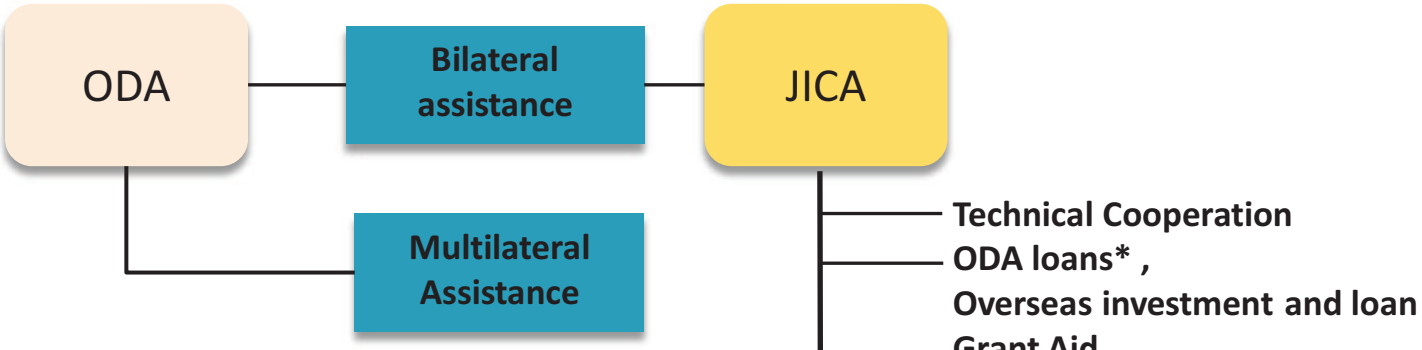
**3. Good Practice in JICA's Assistance**

# 1. Introduction:
# Japan's Role for Climate Change and Development

# Japan's Role for Climate Change and Development

## ◆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 Corporation 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 .

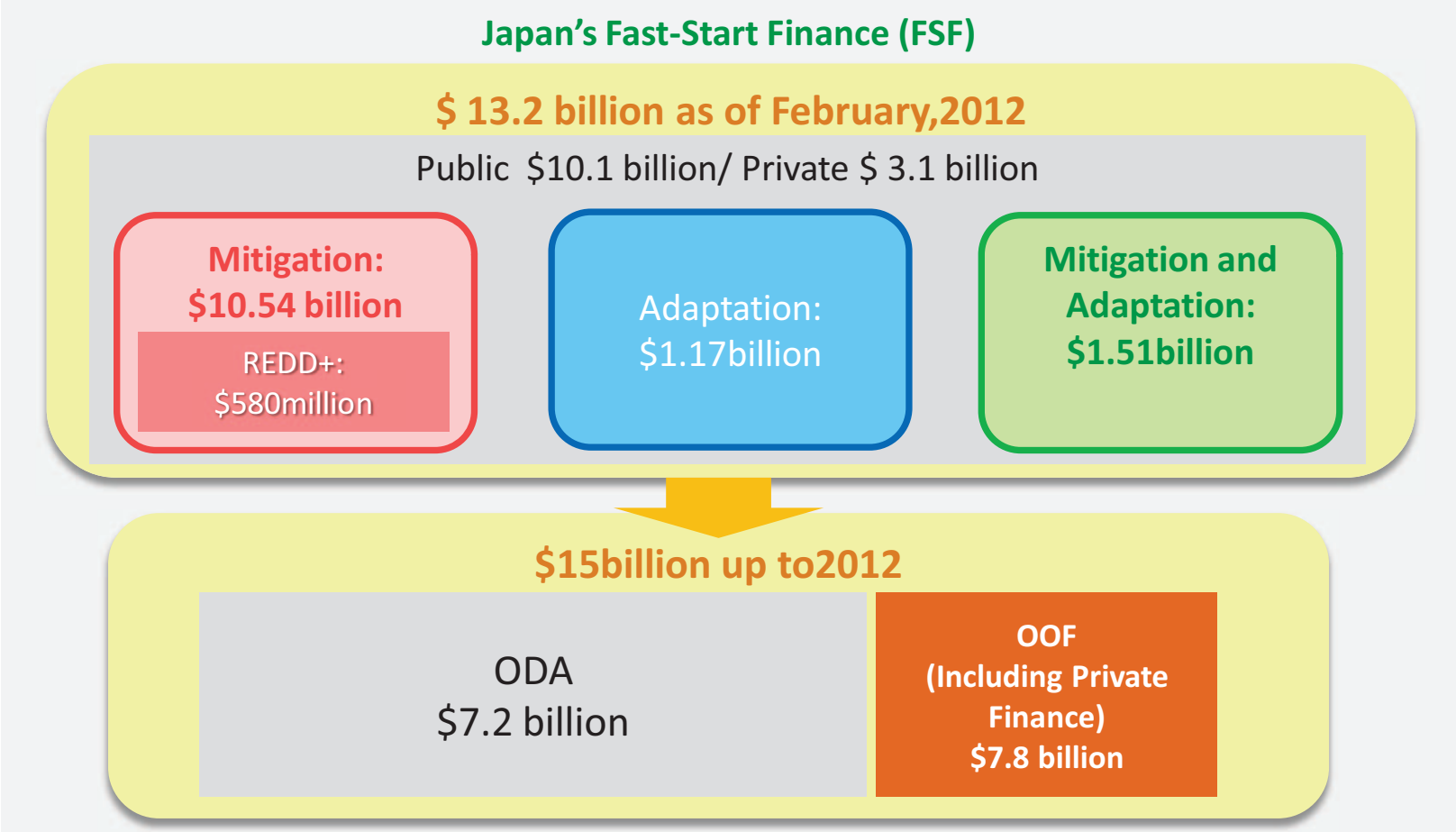



*This excludes Grant Aid which the Ministry of Foreign Affairs will continue to directly implement for the necessity of diplomatic policy.

# Japan's Fast-Start Finance (FSF)

**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)

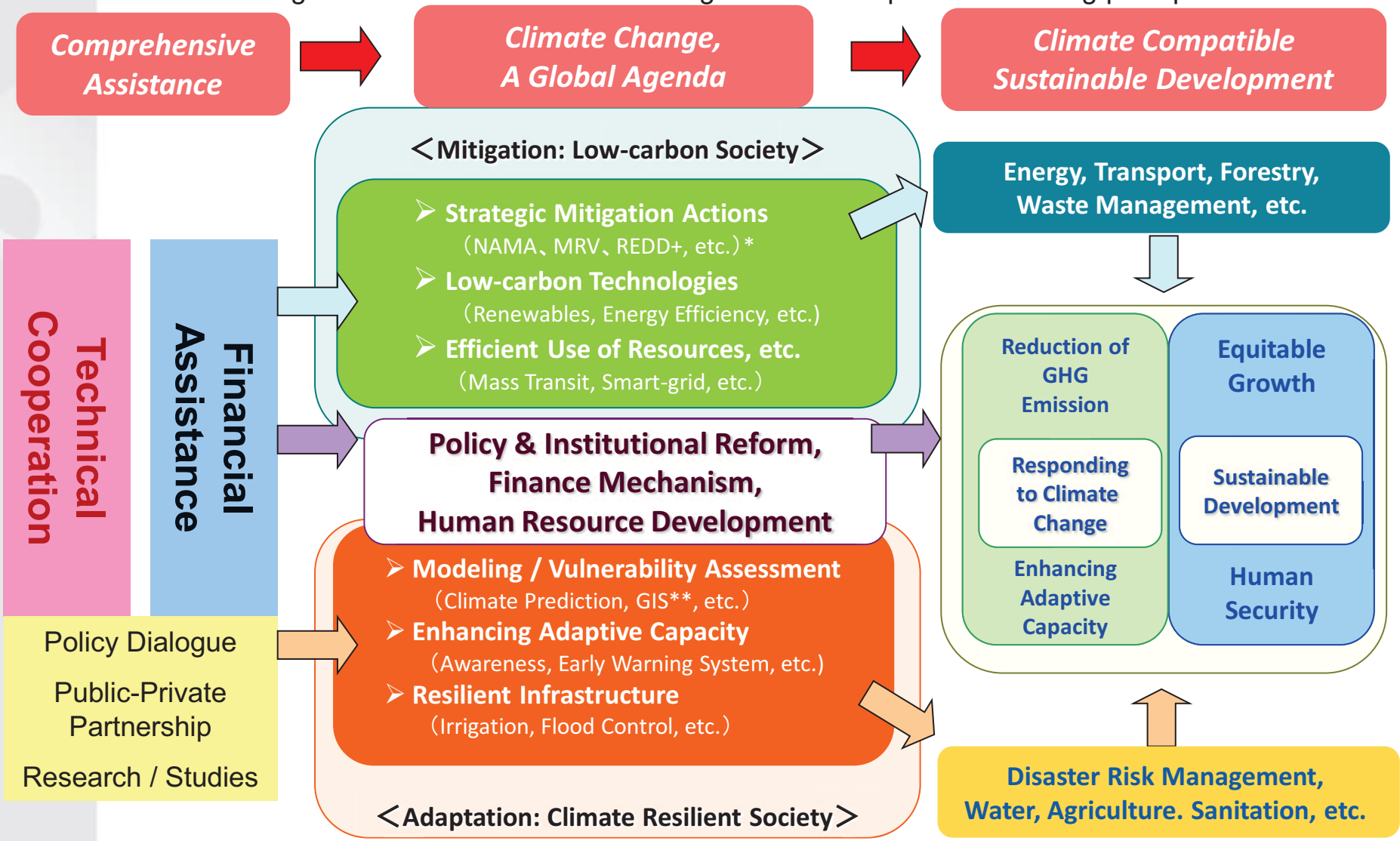
**assist developing countries**
- Mitigation(reduce GHG emissions) /Adaptation (vulnerability to climate change)



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

## ◆Direction of JICA Operation Addressing Climate Change

JICA's taking actions to combat climate change are based upon the following principles.




PDCA Cycle: Four-step (Plan, Do ,Check and Action) management cycle ,which continuously improves the processes

**MRV (measurable, reportable and Verifiable) : Approach which enables to measure , report and certificate the amount of GHG reduction due to mitigation projects

# Introducing
# JICA Climate Finance Impact Tool "JICA Climate-FIT"

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.

http://www.jica.go.jp/english/operations/climate_change/index.html

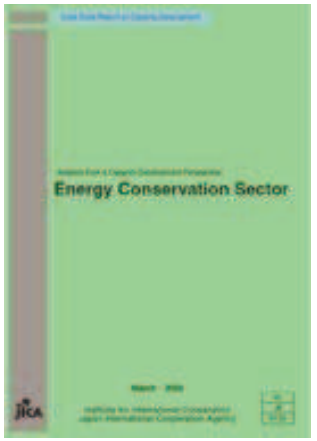
# 2. Case Study:
# Capacity Development in Energy Conservation Sector

# Energy Conservation Projects and Capacity Development (CD)

- This case study is a brief introduction of  a JICA study report “Analysis from a Capacity Development Perspective: Energy Conservation Sector” (March 2008)

- This report analyses 4 energy conservation projects in Turkey, Thailand, Bulgaria, Argentina from the viewpoint of Capacity Development (CD)

- Today’s presentation
  - introduction of Turkey case (most successful)
  - success factor/ obstructive factor
  - from the viewpoint of CD




Full report :
http://jica-ri.jica.go.jp/IFIC_and_JBICI-Studies/english/publications/reports/study/capacity/200805/index.html

# Case Study: Energy Conservation Project in Turkey

## Background

- **Energy shortage**
- Energy efficiency regulation exists (1995)
- The National Energy Conservation Center (NECC) (counterpart: C/P) launched **energy administrator scheme**
  - Big factories have to assign energy administrator
  - 500 factories, 2,000TOE energy consumption
- C/P offers **energy conservation assessment**, PR

→ **Don't work well** ☹

## Project objective

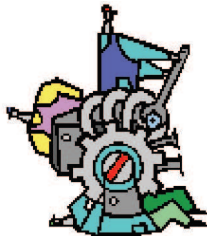
The capacity of C/P in training, energy conservation assessment, policymaking, public relations and propagation will be developed.

## Expected Outputs

(i) C/P establishes **operation and management structure** for energy conservation.
(ii) C/P can use **training materials and measuring instruments**
(iii) C/P trainers acquire the skills for **energy administrator training**
(iv) C/P acquires the skills for **energy conservation assessment** of factories
(v) C/P can offer **information/ PR** and prepare **policy suggestions**.

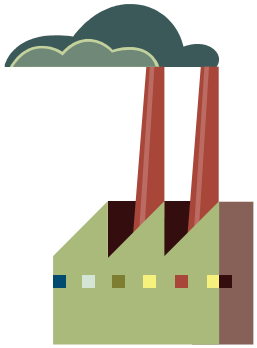
# Position of JICA Cooperation from the CD Perspective (1)

Case of Turkey: Individual level

| Problem in Turkey | JICA's approach |
|---|---|
| - NECC had **no mini-plant for training purposes**  | - JICA **provided mini-plant**<br>→ NECC personnel **learned how to perform assessment**<br>→ NECC personnel **utilized the obtained skill** to hands-on training and energy conservation assessment |
| - NECC personnel **lack practical experience** in energy conservation assessment<br>→ **Unable to be confident to provide hands-on training** in "energy administrator training" and "energy conservation assessment" for factories | - JICA's domestic assistance committee **offered detailed technical information**.<br>- **Technology transfer monitoring sheet** was created to check the skill level of NECC personnel<br>- **Short-term experts** were dispatched for **special assessment techniques** (steelmaking, ceramic, food, textile and paper and pulp industries) |

# Position of JICA Cooperation from the CD Perspective (2)

## Case of Turkey: Organization level

| Problem in Turkey | JICA's approach |
|---|---|
| - **Poor energy conservation assessment system** and technical capabilities<br>→ **Factories do not take** energy conservation measures<br>→ **Low energy conservation level**<br>  | - The C/Ps had a **strong ownership**. JICA merely acted as a facilitator.<br>- Introduction of various policies in Japan to strengthen **PR activities** (The NECC is also responsible for policy making.)<br>- Improvement of the **existing organization**, mechanism and technologies in Turkey, instead of the start from nothing.<br>- **Mutual sharing** of skills and know-how by shuffling C/P personnel |

Interview to trainees at the ex-post evaluation interview

Lamps were changed to energy efficient fluorescent lamps

Before assessment

After assessment: ceiling was re-covered to improve the light efficiency

**5% of energy conservation (estimation)**

Pictures: http://www2.jica.go.jp/ja/evaluation/pdf/2008_0604267_4_f.pdf

# Difference between Success and Challenge (1)

Activities of JICA Projects and Impacts of External Conditions from the Perspective of CD (individuals/organizations) : (1) Case of Turkey

| Situation before the Project | Project approaches | Risk factors and unexpected changes | Circumstances after the project |
|---|---|---|---|
| ☺ **Strong ownership**<br>☺ **Strong leader**<br>☹ No practical assessment experience<br>☹ Inadequate sharing of knowledge and expertise<br>☺ **Revenues earned from training and assessment** | • Respect ownership<br>• Packaged support including provision of a mini-plant<br>• Monitoring sheet<br>• Personnel transfer within the workplace<br>• Technical information provided from JICA's domestic assistance committee<br>• Dispatch of short term experts | None | ☺ **Strong ownership**<br>☺ **Boosted trust in JICA**<br>☺ **Strong incentives for operations**<br>☺ **Increased confidence in its assessment skills** |

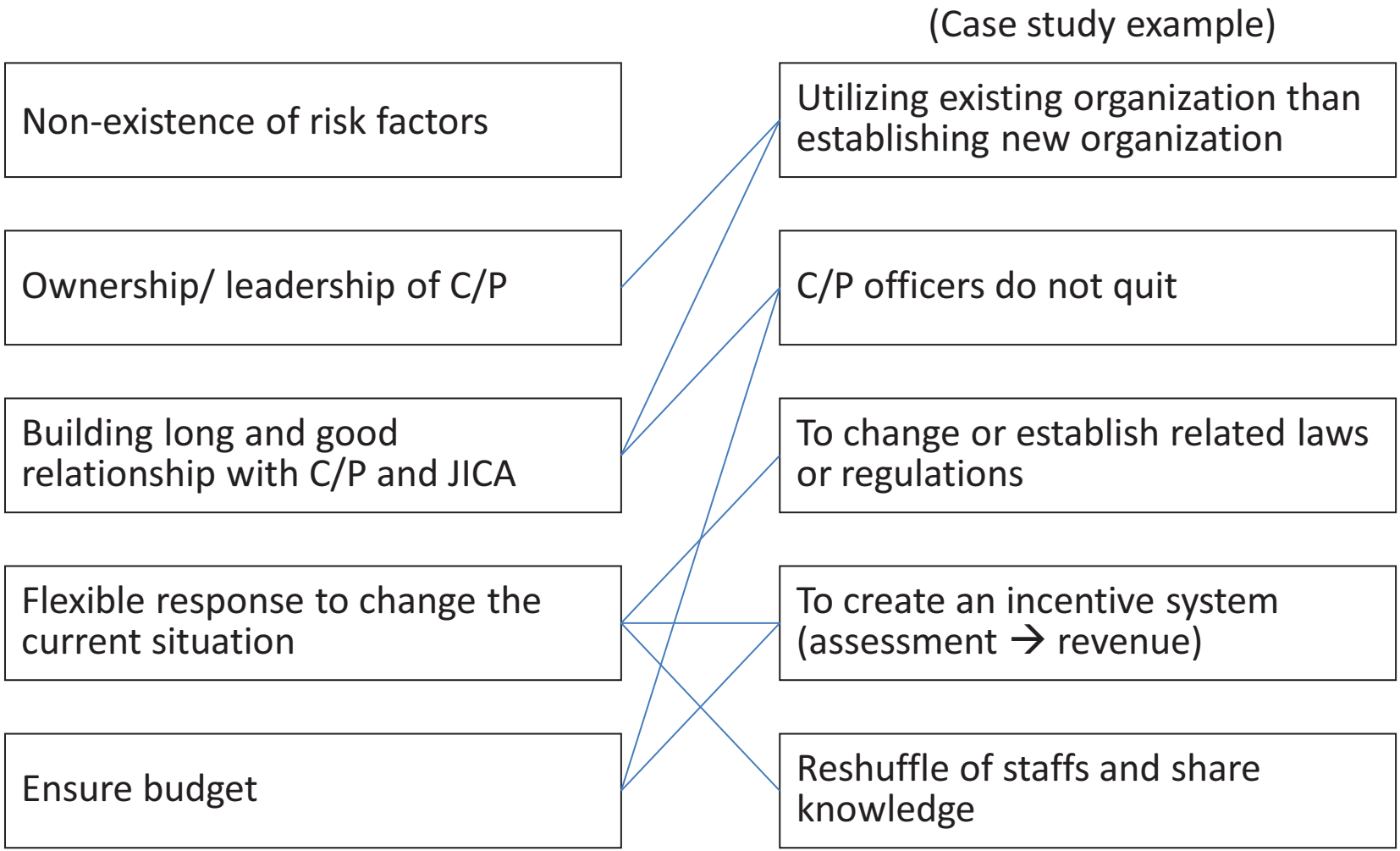
# Difference between Success and Challenge (2)

Activities of JICA Projects and Impacts of External Conditions from the Perspective of CD (individuals/organizations) : (1) Case of other countries

| Situation before the Project | Project approaches | Risk factors and unexpected changes | Circumstances after the project |
|---|---|---|---|
| ☹ Poor capacity to provide practical training/ assessment<br>☹ Newly established partner body | • Packaged support including provision of a mini-plant<br>• Advice on improvement of organizational operation at the time of visiting Guidance | • Difference in stance towards revision to the energy efficiency Act<br>• Fiscal austerity (external condition)<br>• New Organization<br>• Delay in plant installation<br>• Inadequacy in placing the right human resources in the right positions | • Continuation of the current system of providing training<br>☹ Decline in motivation of C/P personnel<br>• Ownership boosted after turning into an independent Institution |

# Observation of Case Study

Key factors for successful technology transfer (individuals/organizations)




* Please see the report for “society and institutions level”

# Good Practice in JICA's Assistance

# Adaptation

## Bangladesh :
## Khulna Water Supply Project

**Loan (Climate Change)**

- In Bangladesh, the safe and stable supply of water has not been fully achieved. Although Khulna City is the third largest city in Bangladesh, no large-scale improvement of the water supply and sewage facilities has been carried out there. This project will expand reliable access to potable water in the city by expanding the water supply system from intake, treatment plant to water transmission and distribution networks.

The facilities will contribute to adaptation to climate change by responding to the growing impact of salinity intrusion cased by the elevation of the sea level in the future.

Press release: http://www.jica.go.jp/english/news/press/2011/110518.html#a02

# Adaptation

## Cambodia: the West Tonle Sap Irrigation and Drainage Rehabilitation and Improvement Project

**Loan**

Purpose:
Rehabilitation and maintenance of existing irrigation facilities for stable water supply

Project site:
six agricultural areas in three provinces in the west of the Tonle Sap Lake (Battambang, Pursat and Kampong Chhnang Provinces)

Activities:
- Rehabilitation and maintenance of irrigation facilities in the west Tonle Sap
- Establishment and empowerment of irrigation association
- Agriculture training

Signing ceremony

Press release:
http://www.jica.go.jp/english/news/press/2011/110823.html

# Mitigation and Adaptation

REDD+

## Cambodia: Project for Facilitating the Implementation of REDD+ Strategy and Policy

Technical Cooperation

Period: 2011-2016
Project site: Cambodia
Purpose: Capacity strengthening for the efficient implementation of REDD+ strategy and policy
Activities:

- Establishment of the system of the preparation of REDD+ at the national level
- Development of national level REDD+ strategy and implementation of on-site activities
- Acquisition of knowledge by government officials for the establishment of MRV (Measurable, Reportable, Verifiable) system and RELs (Reference Emission Levels)
- Research and development about REDD+

Driving a stake indicating the forest boundary (in Kampong Thom)

国際協力機構

Project information (JICA REED+ pamphlet):
http://www.jica.go.jp/publication/pamph/pdf/redd.pdf

# Adaptation

## Fiji and Solomon: The Project for Strengthening Capacity of Community Disaster Risk Management in the Pacific Region

Technical Cooperation

### JICA's Cooperation with Regional Entities

- Period: 2010-2013
- Cooperation with NDMO (National Disaster Management Office) in Fiji and Solomon
- Capacity development at institutional/community levels for the development of EWS (Early Warning Systems) and community responses
- Promotion of sharing of experiences among states and donors


Outline of activities: http://www.jica.go.jp/fiji/english/activities/technical04.html

# Mitigation

## Indonesia：Lumut Balai Geothermal Power Plant Project

**Loan (Climate Change)**

- Under this Climate Change ODA Loan project, a geothermal power plant will be constructed in South Sumatra Province and connected to the Sumatra power grid. This will improve the stability of power supply and the lives of residents, contributing to the promotion of economic development and the use of renewable energy in the Sumatra region.

Photo : West Japan Engineering Consultants, Inc.

JICA also implements study for Indonesia' s policy reform to promote private enterprises to take part in developing abundant geothermal energy.

Press release: http://www.jica.go.jp/english/news/press/2010/110329.html

# Mitigation and Adaptation

## Viet Nam & Indonesia: Strategic and Multi-layered Assistance (Program Loan, Project Loan, Technical Cooperation Project)

**Loan (Climate Change)**

Towards a Low-carbon and Climate-resilient Society

National Development Strategy, Budget Allocation & Finance Plans and Policy Coordination

Mitigation Actions
- NAMA* and MRV of Mitigation Effects
- Energy, Forestry, Transportation, etc.

Adaptation Actions
- Climate prediction & vulnerability assessment
- Disaster prevention, agriculture, fisheries, etc.

| Physical Infrastructure Development | Policy & Institutional Improvement | Capacity Building |
|---|---|---|
| ・Renewable energy<br>・Energy efficiency<br>・Urban transport<br>・Flood management, etc. | ・Geothermal IPP investment regulations<br>・Energy efficiency labeling system, etc | ・Climate change project-ion model analysis<br>・Formulation of NAMA in a MRV manner, etc. |

# Mitigation

REDD+

## Laos: Participatory Land and Forest Management Project for Reducing Deforestation in Lao PDR (PAREDD)

Technical Cooperation

Former project:
"Forest Management and Community Support (FORCOM) project" (2004 - 2009)
- Community Support Programme Tool (CSPT)

Period: 2009-2014 (5 years)
Purpose: The system of reducing deforestation is developed through participatory land and forest management

Project outputs:

1. The system of reducing deforestation is designed through improvement of CSPT
2. The system of reducing deforestation is implemented
3. Changes in forest cover/carbon stock and socio-economic conditions are monitored
4. The system of reducing deforestation is proposed as a mitigation measure for climate change

国際協力機構

Project website: http://www.jica.go.jp/project/english/laos/006/index.html

# Mitigation

SATREPS

## Malaysia: Project for Development of Low Carbon Society Scenarios for Asian Regions

Technical Cooperation

Period: 2011- 2016
Place: Iskandar, Johor
Main Counterparts: Universiti Technologi Malaysia,
Iskandar Regional Development Authority

Objective:
Development of the method to establish low carbon society scenarios and disseminate the achievement to Asian regions
"Science and Technology Research Partnership for Sustainable Development" (SATREPS)

Project booth in COP 17

Output:
- Development of technology manual about establishment of low carbon society scenarios
- Development of low carbon society scenario and reflection to policy
- Quantitative evaluation of co-benefit effect of air pollution and recycle based society through low carbon society measures
- Establishment of training system and network for the development of low carbon society scenarios in Malaysia and Asian region

# Adaptation

## Myanmar: The Project on Rural Water Supply Technology in the Central Dry Zone

**Technical Cooperation**

Period: 2006-2009

Project site: Nyaung-U Township and Kyaukpadaung Township of Mandalay Division, and Chauk Township of Magway Division.

Purpose: Rehabilitation of existing irrigation facilities for stable water supply

Activities:

- Construction of new deep wells
- Rehabilitation of existing wells
- Establishment of maintenance system

Pond with lowered water level

View of fetching water

DDA staff checking damaged well

Project outline
http://www.jica.go.jp/project/english/myanmar/0301099E0/01/index.html

国際協力機構

# Mitigation and Adaptation

REDD+

## Philippines：Forest Management Project

Loan (Climate Change)

Forest area in the Philippines continues to decline at the rate of more than 2% a year in recent years, resulting in reduction of the carbon absorption capacity. Furthermore, the devastation of forests causes reduced runoff and water-holding capacity of soil, thereby increasing the risk of natural disasters such as droughts or floods. This project is aimed at strengthening forestland management through implementing community based forest management in

- Luzon and Panay, thereby improving forest conservation, which is expected to reduce greenhouse gas emission, and socio-economic conditions of residents, and contributing to disaster risk mitigation in vulnerable area.

Press release: http://www.jica.go.jp/english/news/press/2011/120330_02.html

# Mitigation

Thailand :
Mass Transit System Project in Bangkok

Loan

In Bangkok, traffic congestion and following air pollution have been serious problems. This project aims to shift traffic from road to railway by providing public rail transit network, easing traffic congestion and cutting greenhouse gas emissions. JICA also supports the capacity building on climate change adaptation and mitigation for implementation in the Bangkok Metropolis.

Press release:
http://www.jica.go.jp/english/news/press/2010/100928.html

国際協力機構

# Mitigation and Adaptation

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

**Technical Cooperation**


**●Background:**

Bangkok with nearly 10million populations contributes up to 43 million tons of greenhouse gases (GHG) in 2007.

Bangkok Metropolitan Administration (BMA) set up the Action Plan 1)Expand the mass transit and improve traffic system; 2) promote the use of renewable energy; 3)Improve building electricity consumption efficiency; 4)Improve solid waste management and wastewater treatment efficiency; and 5)Expand park area. This action plan aims to reduce greenhouse gas emission by at least 15% of the total emission anticipated in the year 2012 under business as usual projection.

Climate change issue is quite new to BMA officials, who encountered difficulties for the implementation of Action Plan on Global Warming Mitigation.

**●Project purpose:**

Capacity of BMA to implement the Action Plan on Global Warming Mitigation is strengthened.

**●Project outputs:**

1)The organization capacity of BMA to tackle the issue of climate change in an integrated manner is increased.

2)The capacity of BMA staffs in implementing each of the five initiative of Action Plan is increased.

**● Organization :**

Department of Environment,
Bangkok Metropolitan Administration (BMA)

Presentation: http://www.kyomecha.org/document/pdf/kyomechaseminar_20100324_02.pdf

# Adaptation

Viet Nam :
Detailed Design Study of Climate Change Disaster by Utilizing Satellite Information

**Loan (Climate Change)**

- Viet Nam is one of the most susceptible countries to natural disaster in the world. The country has experienced many downpours and tropical hurricanes, which may be caused by climate change. This project supplies facilities necessary for development and utilization of the Earth observation satellite, and helps technology transfer for their sustainable management,

thus contributing to technological advances against climate change and establishment of management systems.

# Mitigation

## Loan Aid ("Two-Step" Loan) + Technical Cooperation
## Vietnam: Energy Efficiency and Renewable Energy Promotion

**Loan (Climate Change)**

| Project | Loan Agreement | Loan Amount (Million Yen) | Interest rate | Amortization / grace period |
|---|---|---|---|---|
| Providing medium- and long-term loans through the Vietnam Development Bank (VDB) (called two-step loan) required to promote the use of energy-saving devices and renewable energy by companies in energy-intensive industries (iron & steel, cement, food processing, etc.) | **Preferential condition (Climate Change Japanese ODA Loan)** | | | |
| | November 2009 | 4,682 | 0.25% (0.01% for consulting services) | 40/10 Year |

- Assistance to VDB will be provided for
  1) capacity building of evaluating energy-related finance based on Japan's experiences
  2) creating and managing energy-saving and renewable energy device lists

Photo: from recent training course for Vietnam power engineers
国際協力機構

Press release
http://www.jica.go.jp/english/news/press/2009/091110_ref2.html