11th Disaster Risk Management Seminar
"Risk and Reward: Leveraging Disaster Risk Management for Sustainable Development“

Toward Resilient Society under Climate Change

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Topics of Presentation

1. Risks of Climate Change
2. Shape of Climate-Resilient Society
3. Approaches in Two Directions
4. Climate-Resilient Society as a Part of Sustainable World
1. Risks of Climate Change

Impacts of climate change have been widespread including weather and water disasters.
Global Average Temperature Change to 2100
- IPCC 5th Assessment Report -

(IPCC AR5 Synthesis Report, 2014)
Average Surface Temperature (1986–2005 to 2081–2100)

Average Precipitation

(IPCC AR5 Synthesis Report, 2014)
Climate Change and Variability

• Future society will face two risks:
  ✓ long-term climatic conditions
  ✓ extreme weather events
A climate-resilient society is not only based on adaptation, but also heavily rely on mitigation to avoid “limits of adaptation.”
2. Shape of a Climate-Resilient Society

A society which can minimize the impacts from climate change and increasing extreme weather events.
Factors Related to Resilience

- **Social/ Institutional**
  - People’s awareness
  - Decision-making
  - DRM
  - Planning
  - Insurance/ Financial
  - Technology dev./transfer

- **Vulnerability reduction**
  - Human dev.
  - Poverty
  - Livelihood Security

- **Extremes**
  - Forecast
  - Observation
  - Monitoring
  - Warning

- **Long-term**
  - Land-use
  - City planning
  - Adaptation

- **Infrastructure**
  - Ecosystem
  - Structure e.g. dyke

- **Physical**

- **Information**
  - Forecast
  - Observation
  - Monitoring
  - Warning

- **Forecast**
  - Observation
  - Monitoring
  - Warning
3. Approaches in Two Directions

- Assessing risks
- Formulating adaptation
- Resilient sustainable society

- Global Climate Model
- Downscaling to target area
- Impact assessment
- Mitigation/Adaptation policy

- <Science-driven approach>
- <Society-based approach>

- Policy formulation
- People’s participation
- Evaluate the existing policies
- Impacts on the ground

Science-driven approach
Society-based approach
Science-driven Approach

GCMs (Climate Models)

Downscaling
1) Dynamic downscaling
2) Statistical downscaling
3) Direct calculation

Impact models
1) Models for physical impacts
2) Measures for economic impacts
3) How to incorporate the changes in society
4) Effects of adaption

Assessment of the risk of impacts
Adaptation planning
Human Capacity Development
- Vietnam Japan University -

• Vietnam Japan University was established this year under the agreement of the governments of both courtiers.
• Graduate School of Sustainability Science
  • Public Policy (Tsukuba U.)
  • Nanotechnology (Osaka U.)
  • Area Studies (U. Tokyo)
  • Infrastructure Eng. (U. Tokyo)
  • Business Administration (Yokohama Nat. U.)
  • Environmental Eng. (U. Tokyo, Ritsumeikan U.)
  • Climate Change (Ibaraki U.)
Coastal Inundation by Local HWL + SLR 59cm + 100yr Storm Surge

Asia
362 million people (10.2% of 2000 pop.)
Erosion of Hai Hau Coast, North Vietnam
Climate-Resilient Society as a Part of Sustainable World

• Key to build a climate-resilient society is how to enhance the society’s resilience.

• Role-sharing among a range of measures is essential to make the society resilient.

• Informed decision-making based on the weather and climate Information is a part of climate-resilient society.

• Greater rates and magnitude of climate change increase the risk of exceeding adaptation limits. A climate-resilient society is not only based on adaptation, but also heavily rely on mitigation.

• A climate-resilient society is an important part of a sustainable world.
Thank you for your attention!
Appendix

IPCC 5th Assessment Report (2014)

WG I
Physical Science Basis

WG II
Impacts, Adaptation and Vulnerability

WG III
Mitigation

Synthesis Report
Wise Adaptation

“ How to plan adaptation under uncertainties? “

Wise Adaptation
1) Short-term adaptation
   - respond to occurring climatic extremes e.g. DRM
   - monitoring/early warning, evacuation, rehabilitation
   - low-regret policy
→ “real time adaptation”

2) Long-term adaptation
   - flexible adjustment of future planning
   - incorporate the latest scientific information
   - iteration of risk assessment and adaptation planning
     as indicated in the Paris Agreement
→ “adaptive adaptation”
Current Scientific Projects to Support Japan’s Climate Change Policy

Low Carbon Society
Stabilization of GHG concentrations

1. Socio-economic activity, GHG emission
2. Carbon cycle, carbon concentration
3. Climate Change, Global Warming
4. Impacts on Ecosystem & human
5. Adaptation
6. Mitigation
7. Social system

Socioeconomic System
Regional Planning
Life Style
Sense of value

Technical measures
Policies
Many related areas
Adaptive capacity

Observation /Monitoring
Understanding of processes

Impacts Assess
Vulnerability Assess
Many related areas

Modeling

Counter-measures