APN Workshop
Climate Change, DRR and Loss+Damage

Adaptation Governance - Japan's Experience

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Four Topics

1. Recent trends of extreme events and disaster risk reduction in Japan

2. National approach for developing adaptation strategy

3. Scientific data and information for adaptation

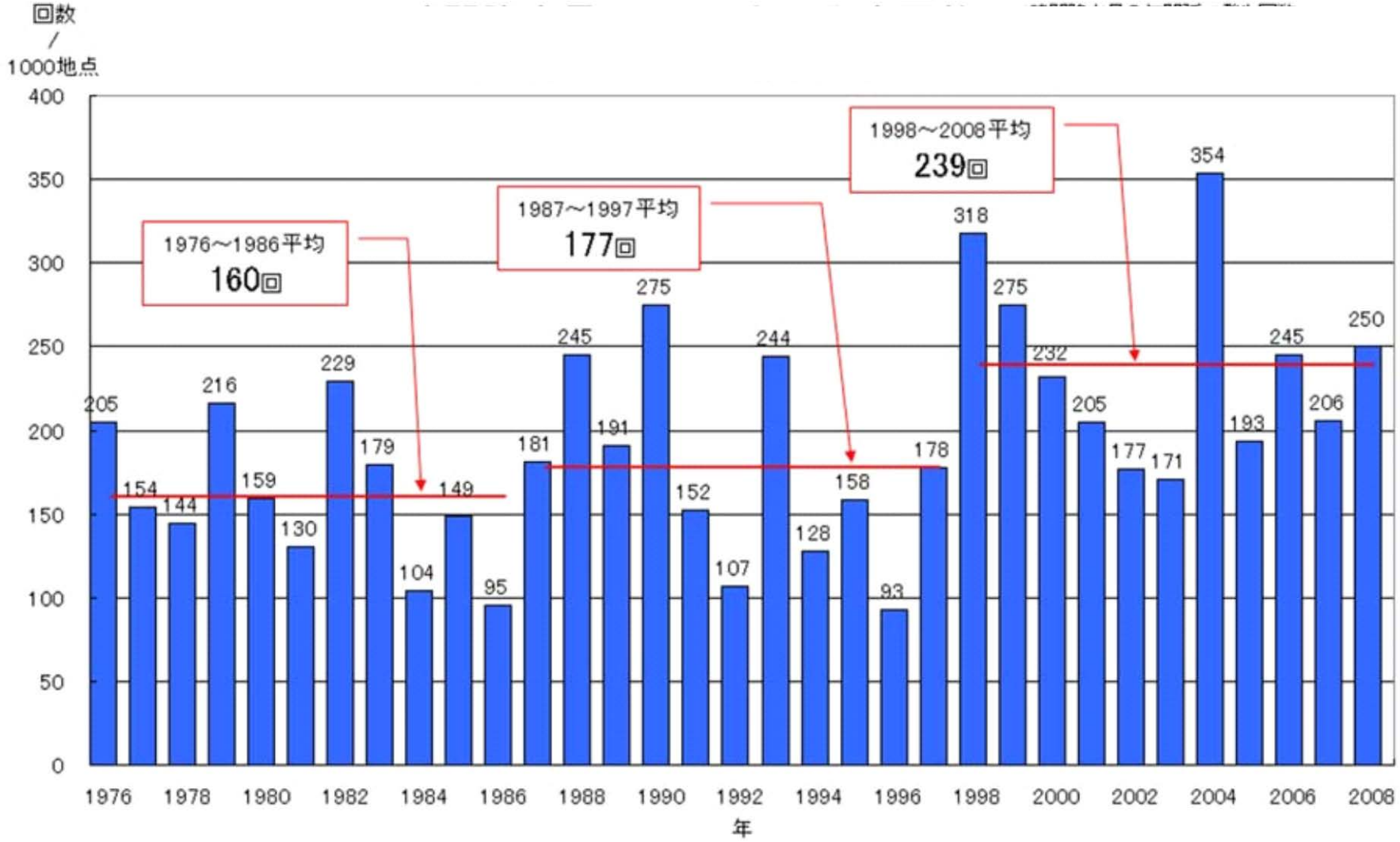
4. Local and private sector initiatives

1. Recent trends of extreme events and disaster risk reduction in Japan

- Japan has record-breaking very hot summer recent years. We also suffer from unprecedented heavy rains and resultant land sides, e.g., over 2000mm rainfall for four days in 2011. The number of casualties by natural disasters began to increase after entering the 21st Century.

- After the 2011 Great Earthquake and Tsunami, the social interest in disaster risk management increased significantly, resulting in a very high priority on the DRM for safe and resilient society.

Increased Frequency of Heavy Rainfall
（over 50mm/h）

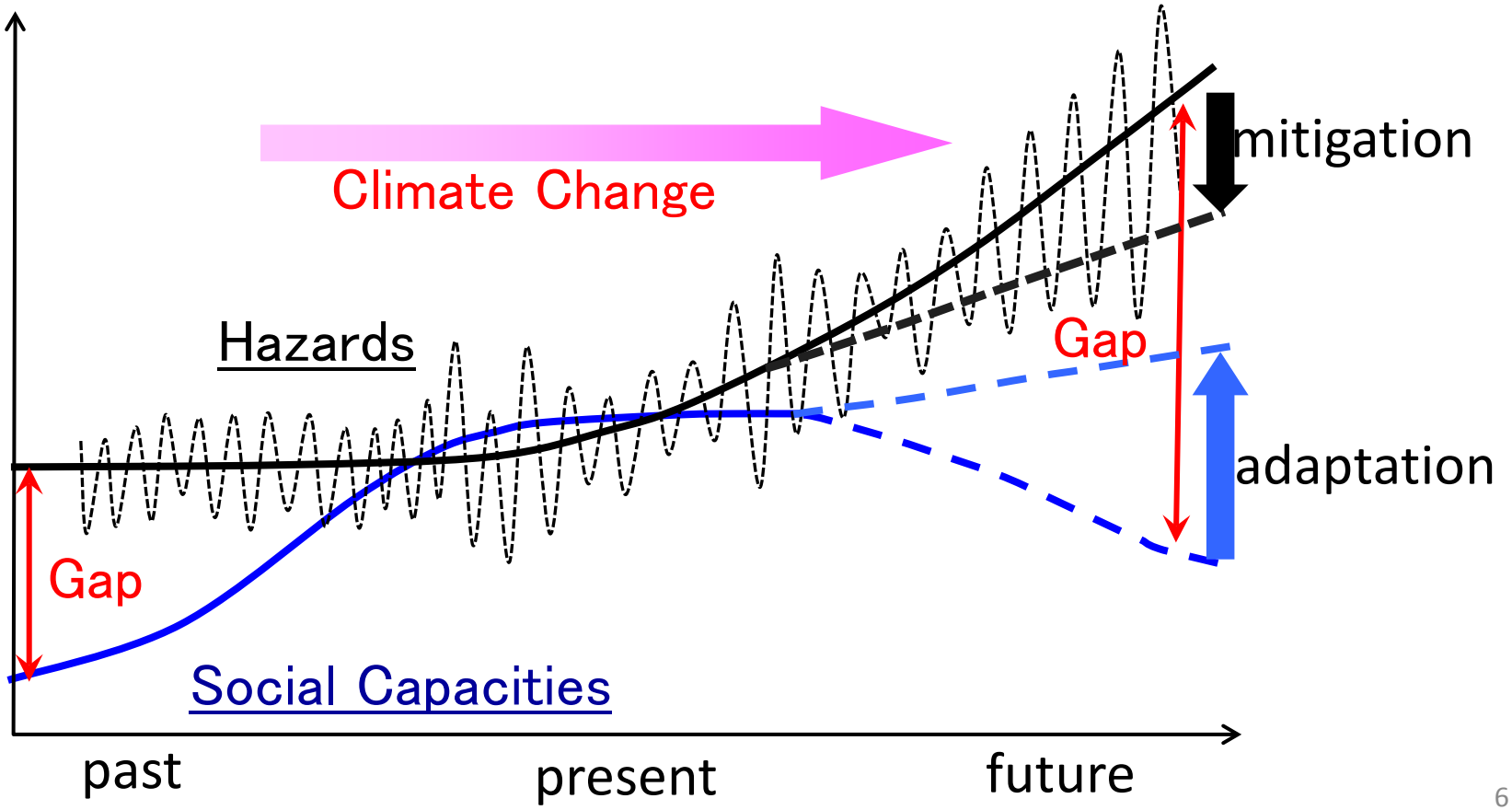


（JMA：気候変動監視レポート2009）

Heavy Rain Disasters in 2010 to 2013

Mainichi News Paper Web, 2010；
地盤工学会等合同調査団,2011)

Japan has developed countermeasures against natural disasters over time using infrastructure and soft measures. **However, the external force of hazards induced by CC would exceed the current level of countermeasures.** We need to invent an innovative way to reduce the damages of natural disasters, while keeping people's well-being in the coming aged society. This is a big challenge not only for Japan but also many countries.



3. Scientific data and information for adaptation

- Scientific data and information is an important part of capacity for adaptation planning and implementation, because adaptation policy is a decision-making under uncertainty. Japan has developed scientific bases such as down-scaled climate projections, impact assessment, and assessment of the effectiveness of adaptation options through national projects. A data center is also being development.

- National strategy uses a top-down science-driven approach. Tools developed in this approach is also useful for local governments to identify local impacts. Local governments also use bottom-up approach, because their areas already have emerging CC impacts and other pressing needs.

- It is a challenge how to integrate the scientific knowledge dealing with long-term risks with today's needs on the ground.

How to Deal with Uncertainty?

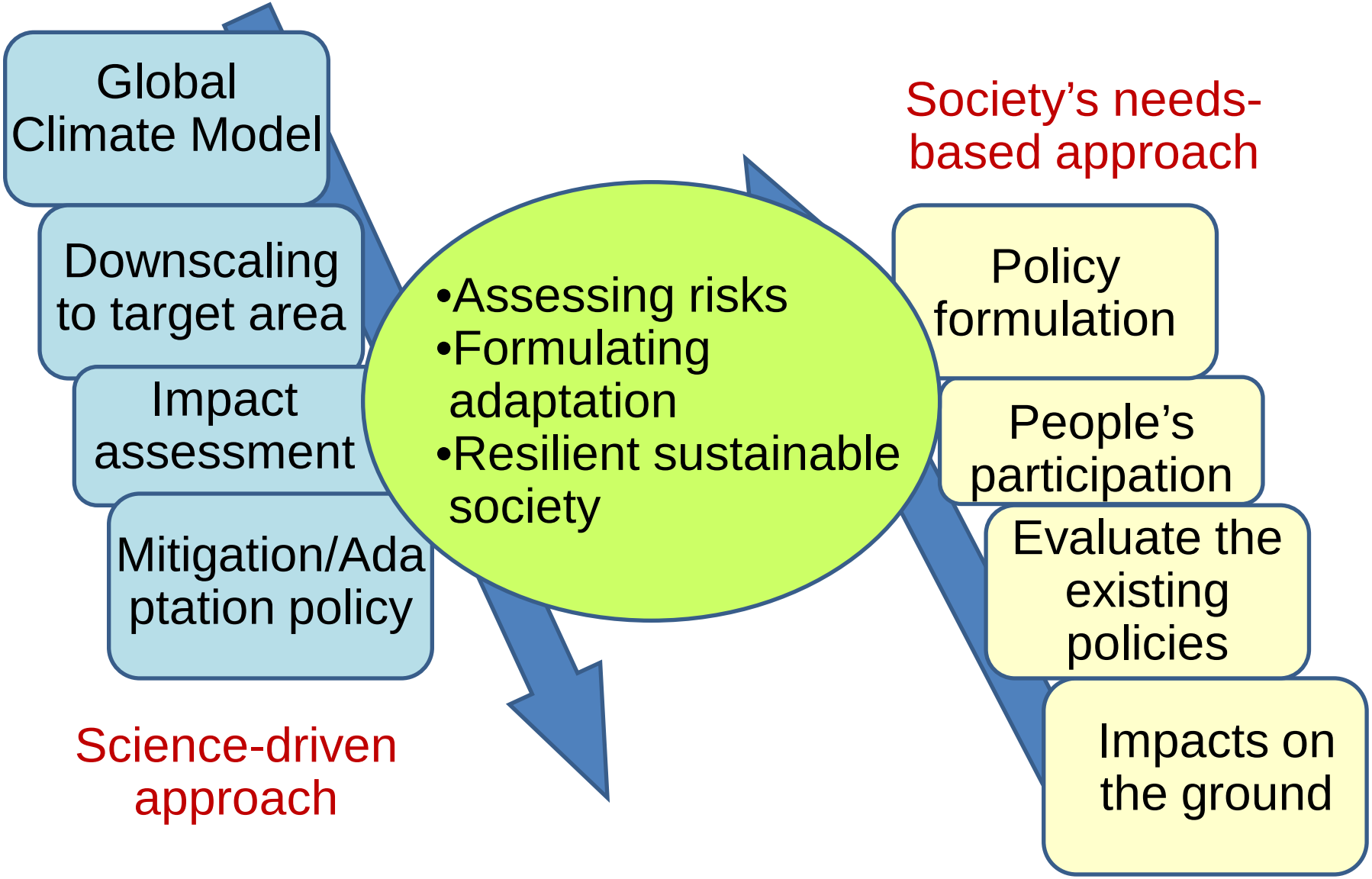
- Origins of uncertainty in CC impacts
  - Climate model (climate scenarios)
  - Down scaling
  - Impact models
  - Social conditions (social scenarios)
  - Interaction with other stresses

- Physical/ social science approaches

Reduce uncertainty by improving climate models and methods for down scaling and impact assessment.

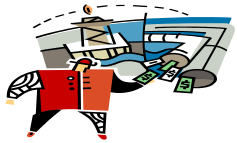
  - Climate model (climate scenarios): CMIP5 program
  - Down scaling: local projections are more uncertain
  - Impact models:
    process-based models and statistical models
    probabilistic evaluation of impacts
  - Social conditions:
    long-term scenarios for population, land use, etc

Approaches in Two Directions

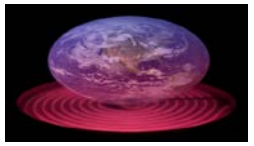


S-8 Comprehensive Assessment Project

Socioeconomic scenarios



Climate scenarios



【Theme 1】Research on highly reliable quantitative assessment of climate change impacts throughout Japan

Climate scenario downscaling

Economic assessment

Integrated assessment model

Simplified assessment method

Regional projection method

Feedback of actual conditions from local governments

Feedback of actual conditions from developing countries

【Theme 2】

Research on impact assessment and comprehensive adaptation policies at local government level

Local government consortium

【Theme 3】

Research on indexes for assessment of vulnerability and adaptation effects in the Asia-Pacific region

Various impact and adaptation studies in the Asia-Pacific region

Provision of scientific findings to policy decision-making organs in Japan and other countries

Water Resource/Disasters

1. Floods

Precipitation of 1/50years becomes 1/30 years to increase flood risk.

2. Slope failure

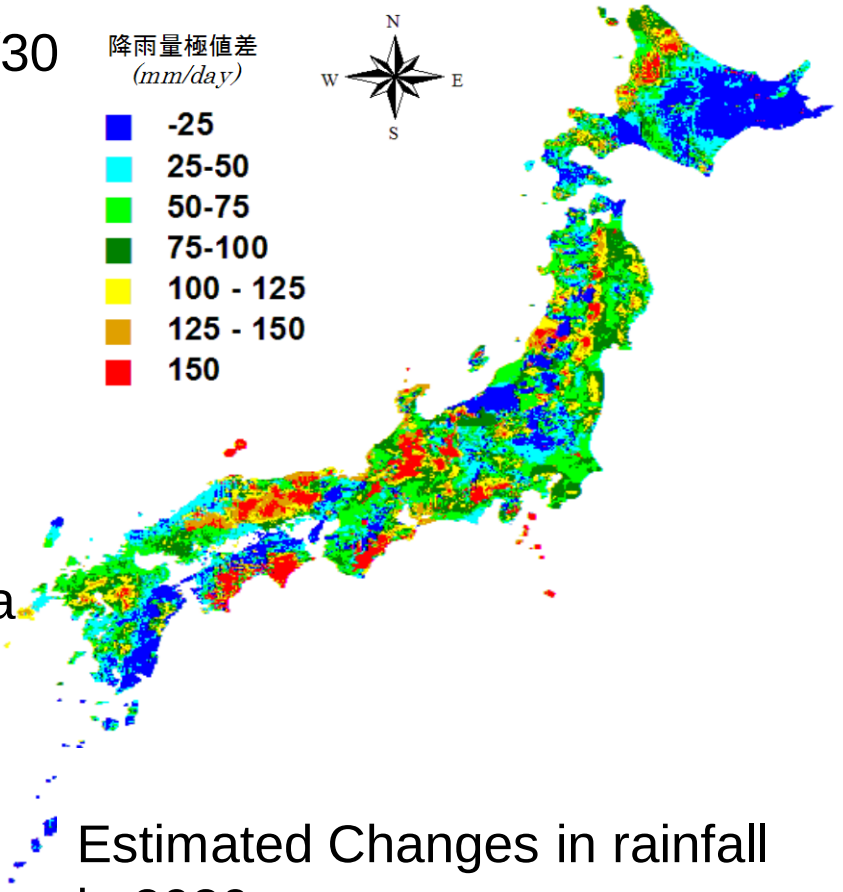
Areas at slope failure risk will expand.

3. Snow water resource

Snow water resource in the Japan sea side and Tohoku will decrease to cause insufficient water supply to agriculture.

4. Water supply

Southern parts of Japan may face more draughts



Estimated Changes in rainfall in 2030

（温暖化影響総合予測プロジェクト報告書, 2008）

Agriculture

1. Rice yield in Japan

Rice yield shifts northward.

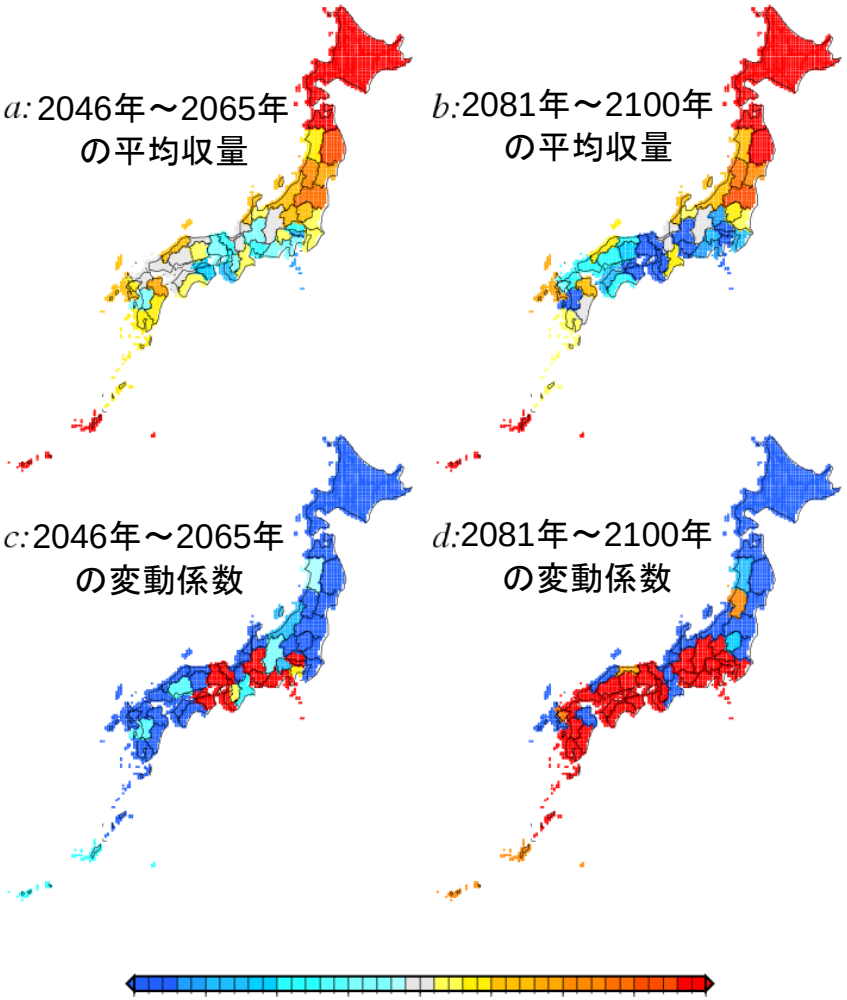
In 2050,

Hokkaido & Tohoku +26% &13%,

Kinki & Shikoku -5%

2. Global food supply

Climate change, population growth and increased demand for bio-fuel may jointly cause serious problem in food supply, which can also affect Japan.



Changes in Rice Yield

（Report of the Project, 2008）

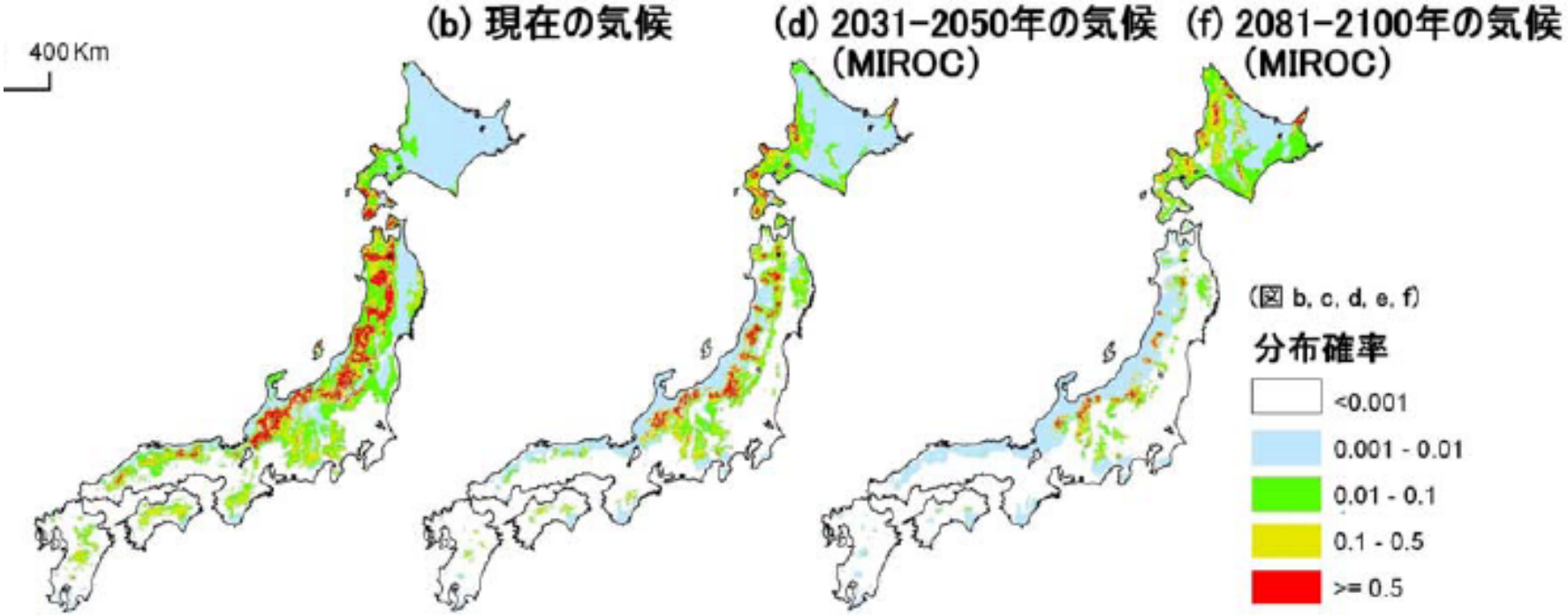
Forests

1. Suitable areas for Japanese Beech

・The areas decrease to 65～44% in 2031-2050, and 31～7% in 2081-2100.

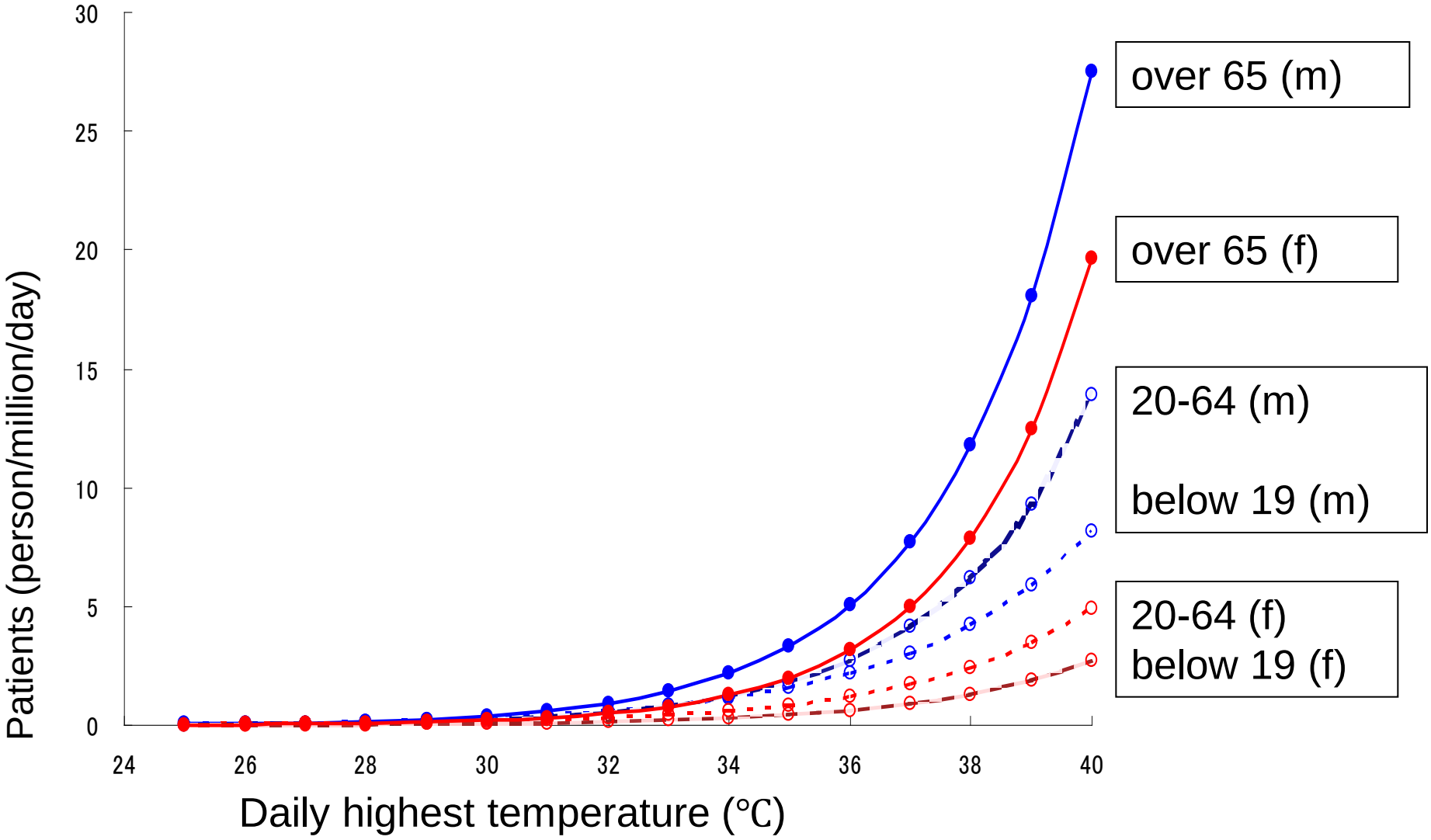
・Shirakami-sanchi, the World Nature Heritage, may face serious decrease in Japanese beech: 44～3% and 3～0% at the end of this century.

2. Death of pines will expand northward



（Report of the Project, 2008）

Effect of Heat Disorder (Tokyo)



（Report of the Project, 2008）

4. Local and private sector initiatives

- **The number of prefectures and cities which start adaptation planning is increasing**. They first try to apply existing policies and countermeasures in each sector, such as:
  - ✓ Agriculture: changes in planting time and cultivars, water and fertilizer control.
  - ✓ Water resources: supply and demand side control
  - ✓ DRR: monitoring and early warning system
  - ✓ Heat waves: early warning and proper use of air-conditioners
- **Some local governments seek a way to integrate mitigation and adaptation into a comprehensive CC plan.** In many case, horizontal coordination within the government is a barrier, because each sector has an inertia to keep their policies.

- S-8 project established "**Regional Network for Adaptation" consisting of local governments, scientists and private sectors**. This kind of boundary organization may be useful to promote CC adaptation.

Thank you very much.