Integration of Mitigation and Adaptation Policy Frameworks into the UNFCCC process

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Feb19-20 2006, AIM Workshop

Outline of my presentation

- How adaptation policies had been dealt with in political and policy context
- Possible adaptation institutions
  - Financing system for climate adaptation
- Four important issues

- Contribution of scenario analysis to solve these issues

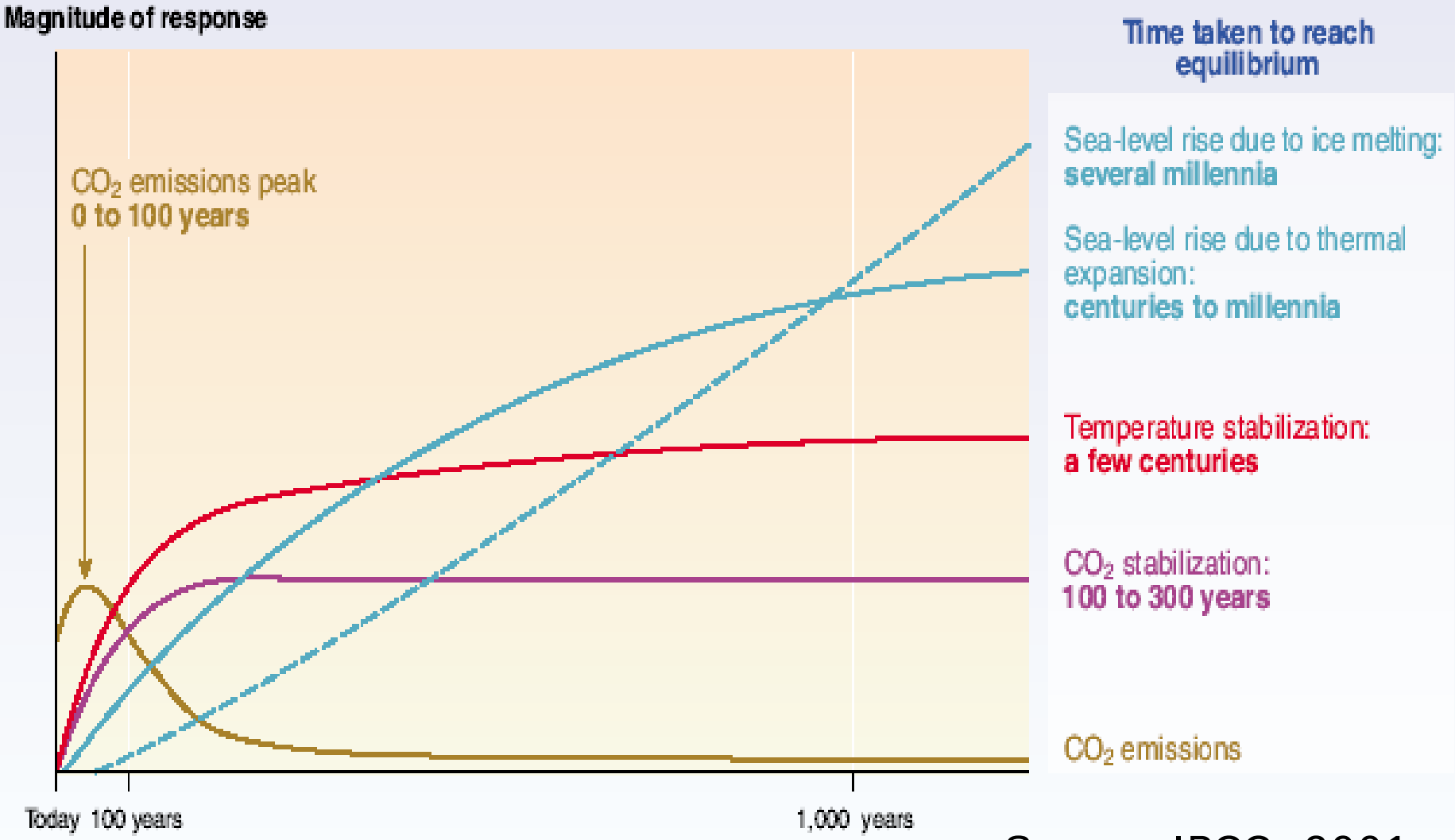
- Mitigation
  - An anthropogenic intervention to reduce the sources or enhance the sinks of greenhouse gases
  - E.g. Efficient use of energy, Energy saving, CO_2 recovery/storage
- Adaptation
  - Adjustment in natural or human systems in response to actual or expected climatic stimuli or their effects, which moderates harm or exploits beneficial opportunities
  - E.g. Dikes and piers, Promote the efficiency of water use, Improvement of soil nutrition, Prediction of Infectious diseases, Private/ Public insurance

Source: IPCC, 2001

Importance of climate adaptation (1)

- Impact of climate change is already evident (IPCC, 2001)
  - Impact to ecosystem, agriculture, society, infrastructure, human health....
- It is impossible to reverse the process of climate change

CO_2 concentration, temperature, and sea level continue to rise long after emissions are reduced

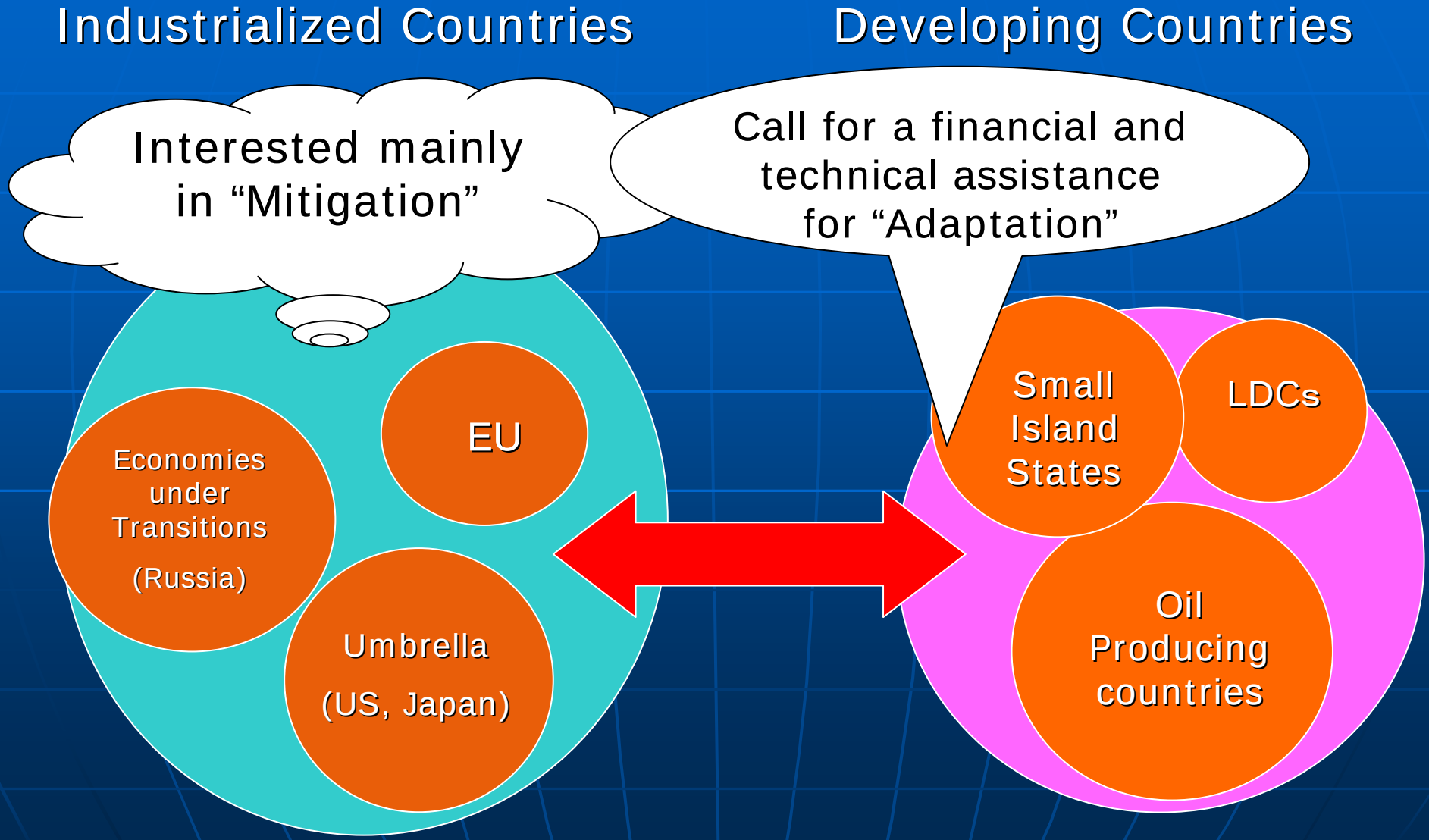


Source: IPCC, 2001

Importance of climate adaptation (2)

- Adaptation is an important issue especially to developing countries and small island states
- Developing countries tend to be more vulnerable to climate change than industrialized countries (IPCC, 2001)
  - Inequity between North and South
    - Conflict between argument of North and South in the international climate negotiation

International Climate Negotiation



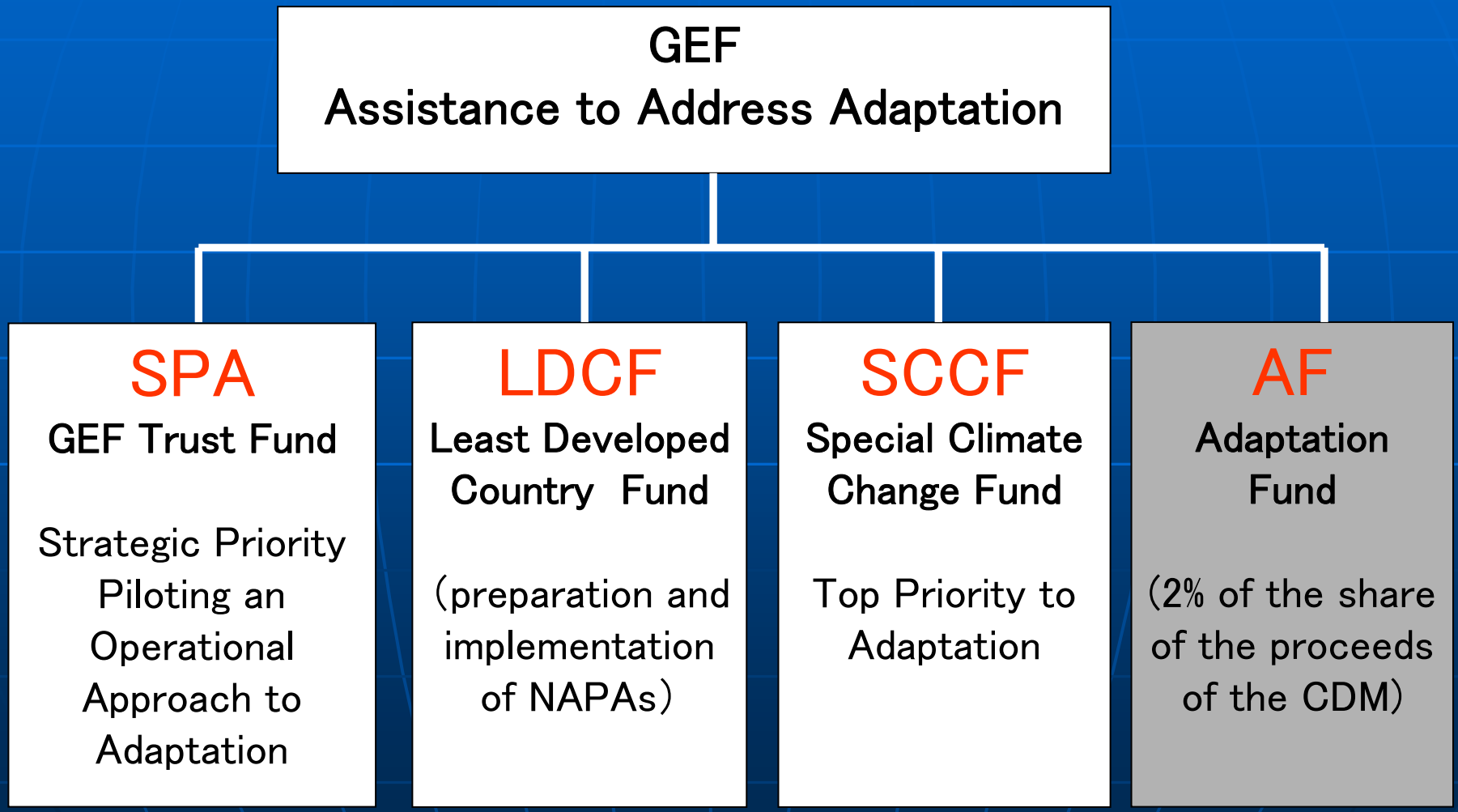
Climate adaptation discussions on climate negotiation

COP1(1995)~ COP6(2000)	Discussions were focused on mitigation
COP7(2001)	Establishment of adaptation related funds Special Climate Change Fund (SCCF), Least Developed Country Fund (LDCF), Adaptation Fund (AF)
COP8(2002)	Adoption of "Delhi Declaration on Climate Change and Sustainable Development"
COP9(2003)	Detailed decisions of adaptation related funds were made
COP10(2004)	Establishment of "Buenos Aires Programme of work on Adaptation and Response measures" was decided
COP11 COP/MOP1(2005)	"Five-year work programme on adaptation to climate change impacts" was established

The reasons why adaptation has received increased attention

- Growing recognition of the idea that mitigation cannot solve climate impact thoroughly
  (from interview with Dr. Burton and Dr. Huq)
- Concerns of developing countries and financing issues
  (from Interview with Mr. Tirpak)
- Discussions over mitigation has calmed down after COP6

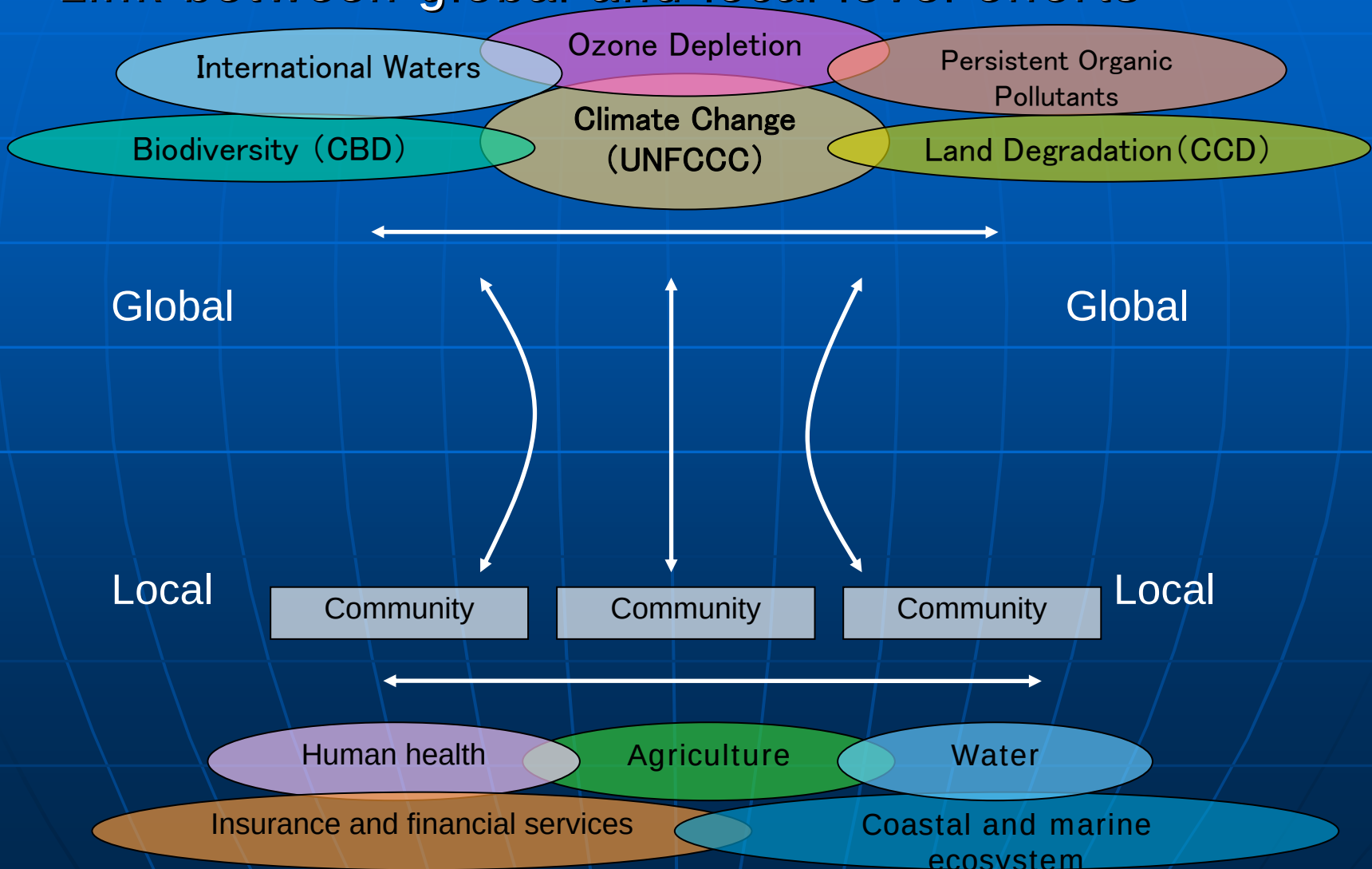
Assistance to Address Adaptation



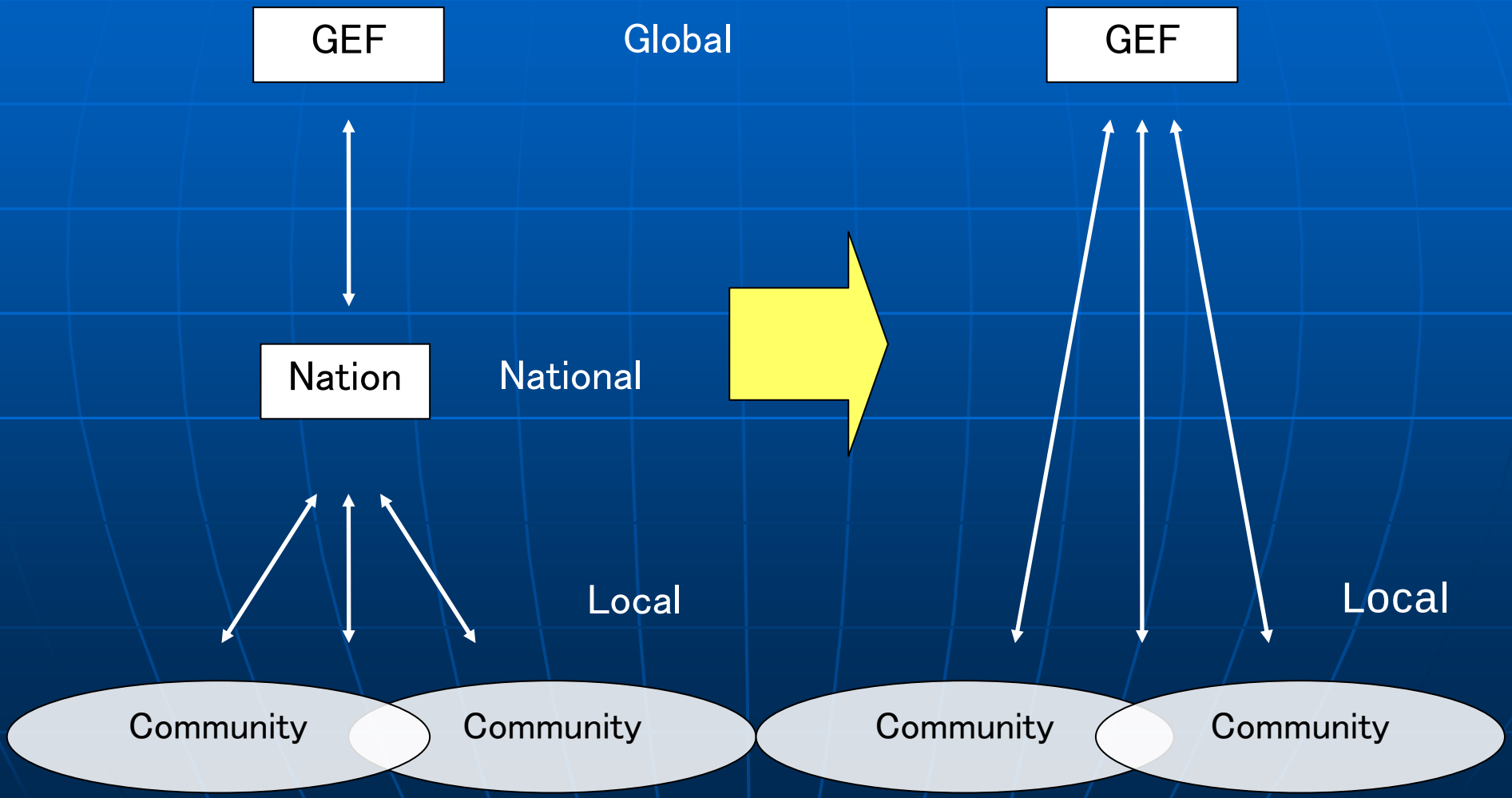
Source：GEF, 2005

Key points in designing adaptation financing system

- Linkage among various issue areas
- Link between global and local level efforts

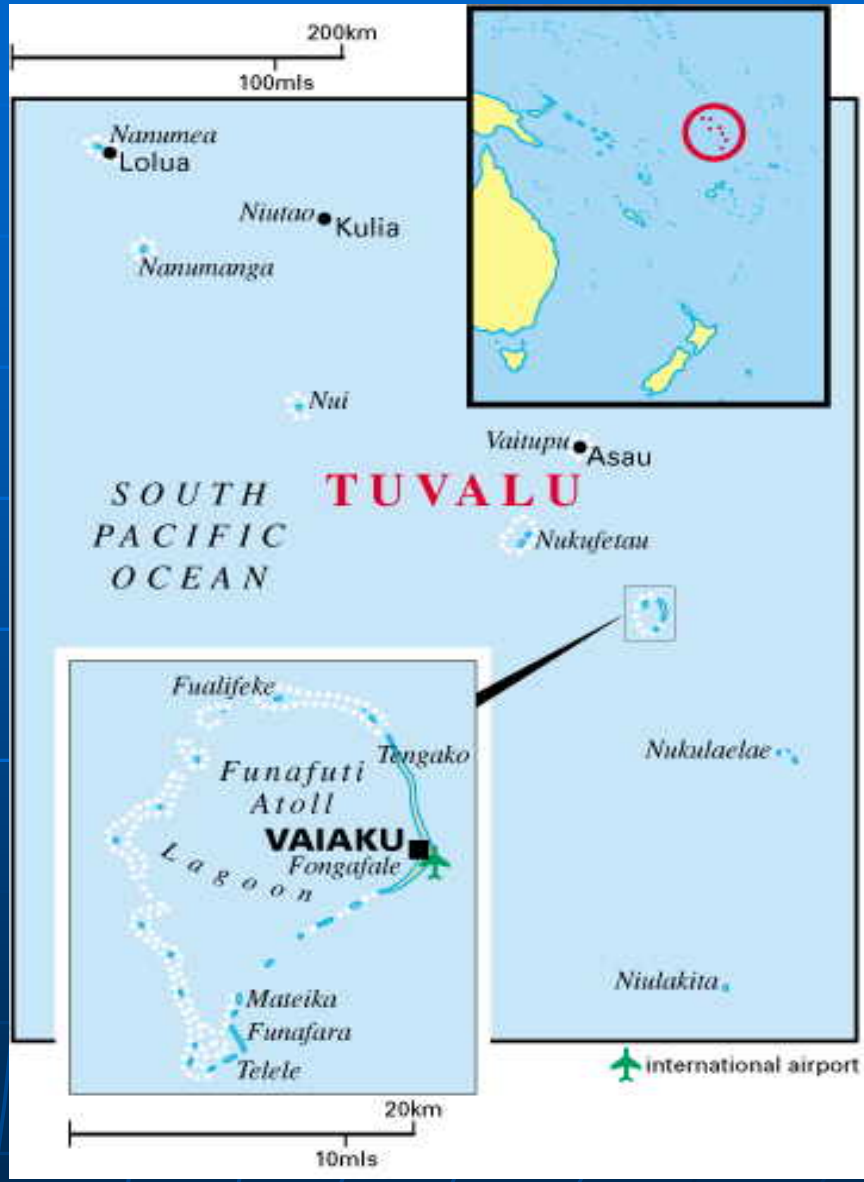


Linkage between Global efforts and Local Communities



Overview of Tuvalu

- Land area：About 26㎢
- Population：11463（2004）
- Economy：Least Developed Country （LDCs）
  - GDP: 27.5 million Australian dollar （2002）
- Revenue
  - Fishing fee, Allocation of Tuvalu Trust Fund, dotTV and telecommunication license fees



Source：UNDAF, 2002

Climate Change

Temperature rise, Sea level rise, Change of precipitation; Frequency of high water, cyclone, flood, drought

Costal erosion

Damage to agriculture

Decrease in production of main food crops such as taro, caused by soil salinization

Change in ecosystem

Coral breaching

Damage to fishing industry

Decrease in fishery yield

Damage to human health

Health damage caused by sewage

Shortage of daily life water

Shortage of freshwater from underwater

Examples of adaptation options in Tuvalu

Sector	Examples of adaptation options
Costal zone and marine ecosystem	• Costal protection including engineered structures, bio-engineered systems and traditional indigenous approaches • Research into appropriate assessment, monitoring and protection systems
Human health	• Improve epidemic preparedness and response • Improve water supply and sanitation to reduce diarrhoeal disease
Agriculture and food security	• Promotion of crop diversity and traditional practices • Crop development
Water resources	• Flood control and reduction of flood damage potential in settlements on flood plains • Reduce water leakage in supply systems
Climate disaster reduction	• Build wind resistant dwellings and other structures • Maintain crop diversity and reducing the recent and growing dependence on crops such as cassava that are highly vulnerable to high winds

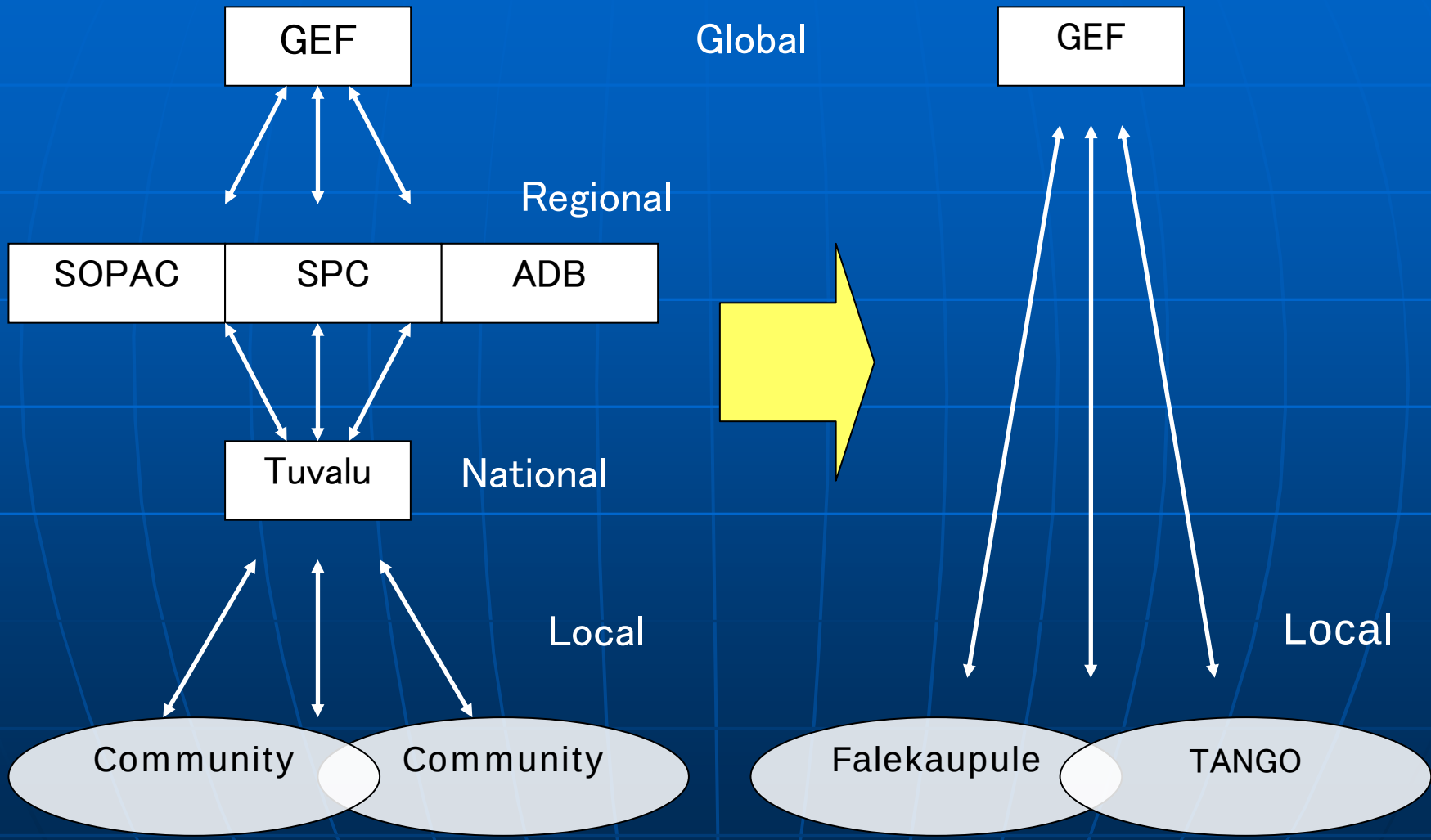
Source : Hay et al., 2005

Findings from case study of Tuvalu

- It is important to take climate adaptation measures with each community
- High needs of bilateral aid in Tuvalu
  - Tuvalu receive small amount of money from multilateral aid
  - However bilateral aid cannot finance constantly

Financing from GEF

(Vertical governance and actor linkage)

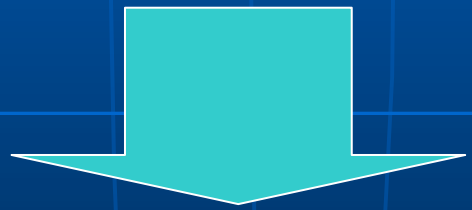


Important issues on designing climate adaptation institution

- Definition of adaptation
  - Develop common understanding of adaptation
- Evaluation of climate impacts and costs
  - Balance between adaptation and mitigation
  - Set out a vision for the future from evaluation of impacts and costs
- Equity
  - Concept of equity for burden-sharing
- Institutional interplay
  - Linkage of institutions and actors over various issue areas and levels

Contribution of scenario analysis to adaptation studies

- Evaluation of climate impacts and costs
  - Balance between adaptation and mitigation
  - Set out a vision for the future from evaluation of impacts and costs
- Equity
  - Concept of equity for burden-sharing



- Develop indicators
  - Combine index of mitigative and adaptive capacities

Methodology

- Quantitative analysis
  - Emissions Scenario
    - IPCC Scenario Database
  - Analysis of quantitative indicators
    - Mitigation potential
    - Adaptive capacities

IPCC Scenario Database

- Emissions Scenarios
  - Based on a variety of narrative storylines (describing future development of population, economies and energy sources)
  - Collected from more than 200 different literature sources and from other scenario-evaluation sources
- Contents
  - Organization name, the name of researchers, model categories, region, data items, and other related information

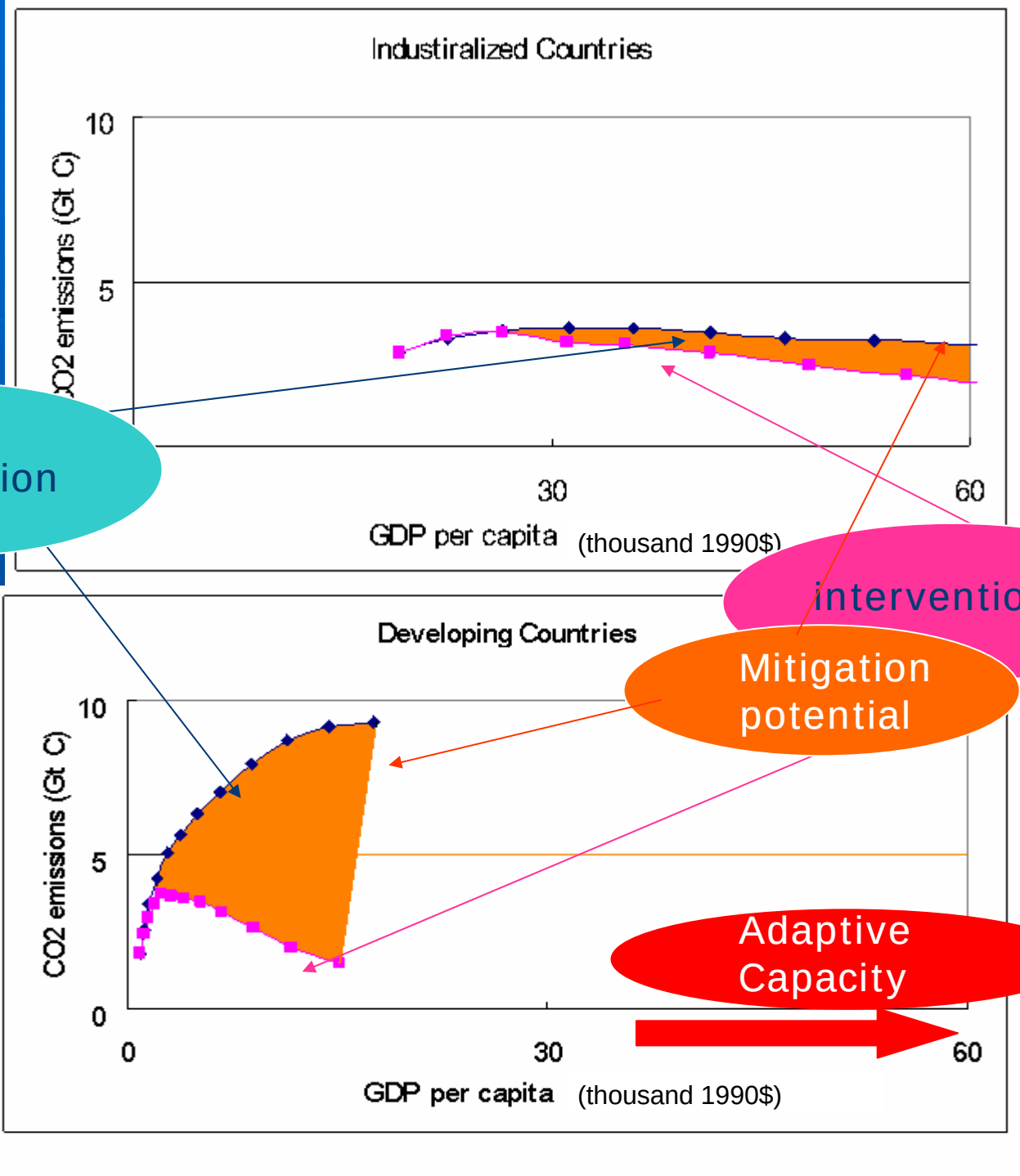
Source: http://www-cger.nies.go.jp/

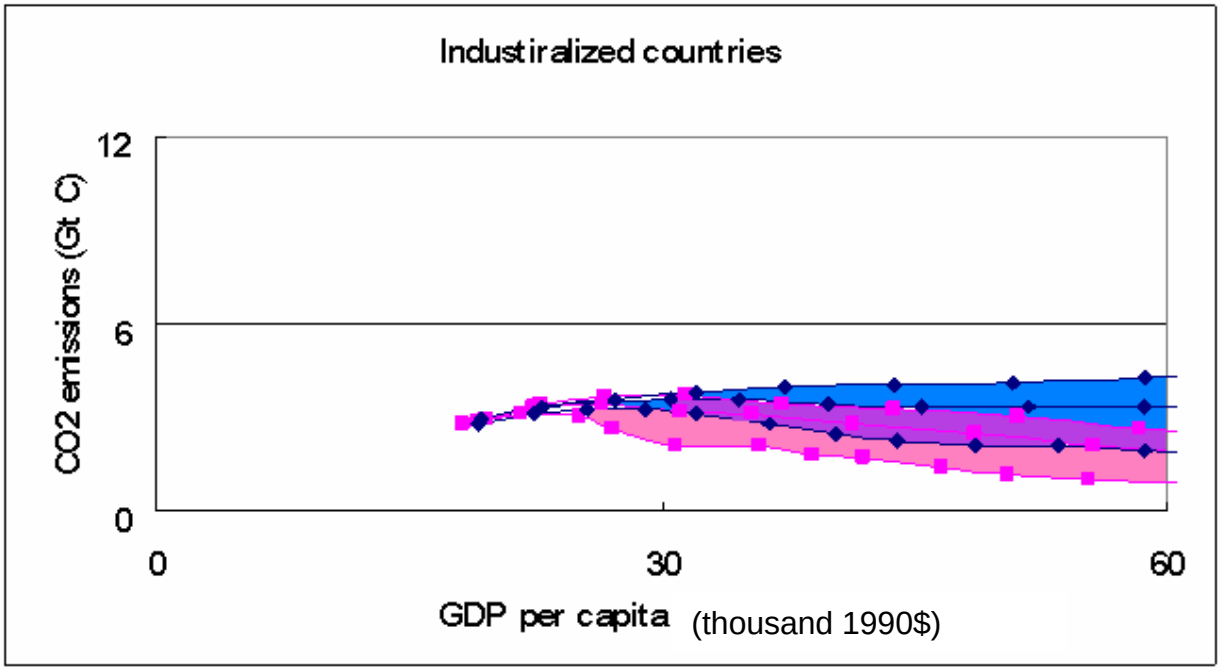
The data is collected by NIES (Hanaoka et.al)

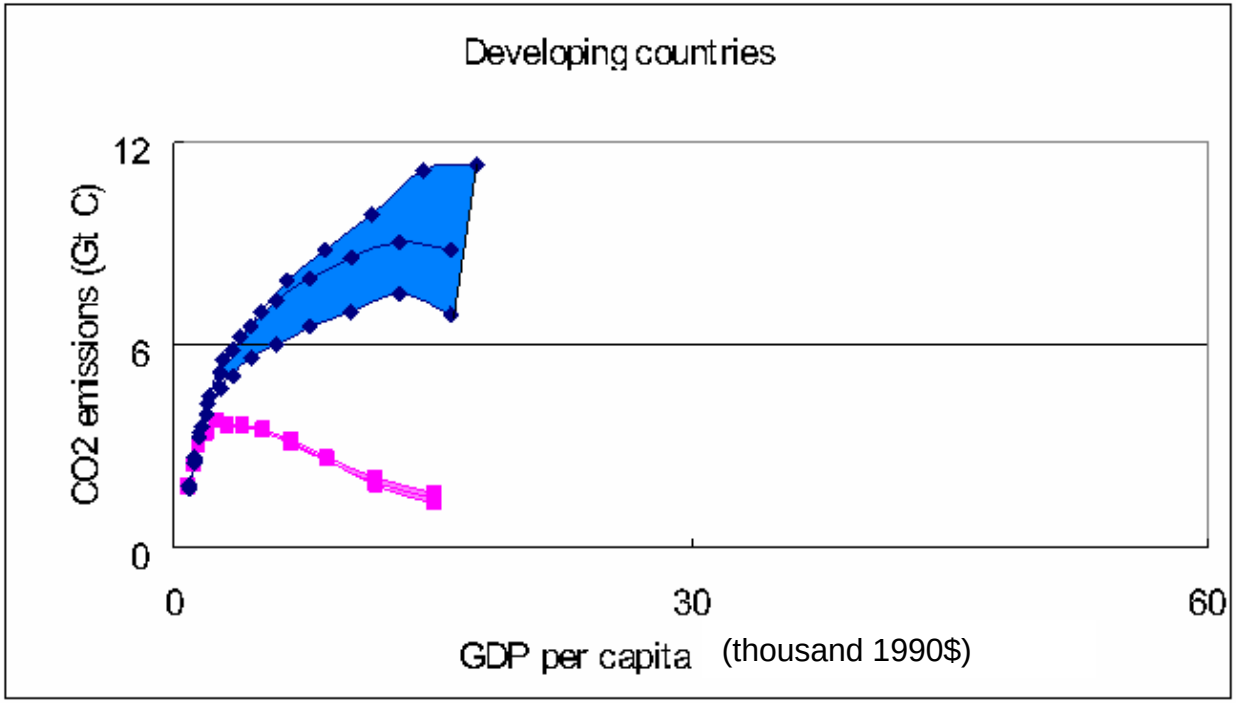
Indicators

- Mitigation potential
  - CO_2 emissions
    (the gap between non- intervention case and intervention case)
  - CO_2 emissions per GDP
  - CO_2 emissions per capita
  - Emissions growth rate
- Adaptive capacity
  - GDP per capita
  - GDP

Source: Adger et.al, 2004


Industiralized Countries
10
5
CO2 emissions (Gt C)
30
60
GDP per capita (thousand 1990$)
Developing Countries
10
5
0
CO2 emissions (Gt C)
0
30
60
GDP per capita (thousand 1990$)
Non-intervention
intervention
Mitigation potential
Adaptive Capacity


Industiralized countries
12
6
0
CO2 emissions (Gt C)
0
30
60
GDP per capita (thousand 1990$)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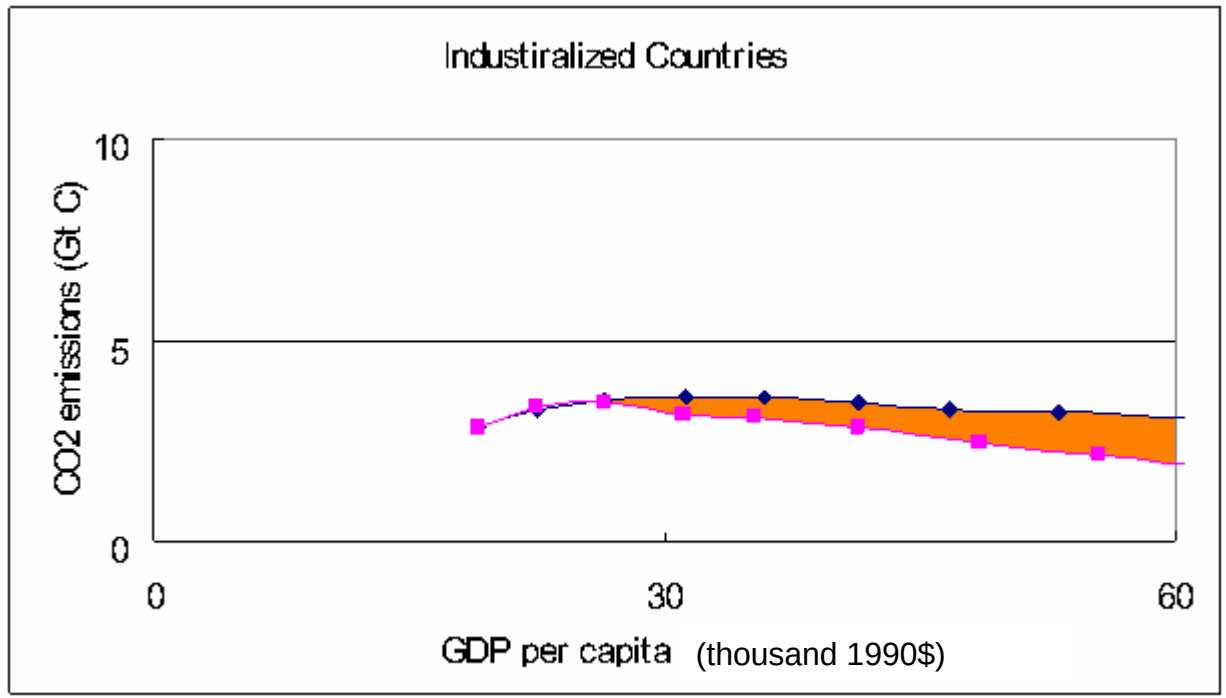
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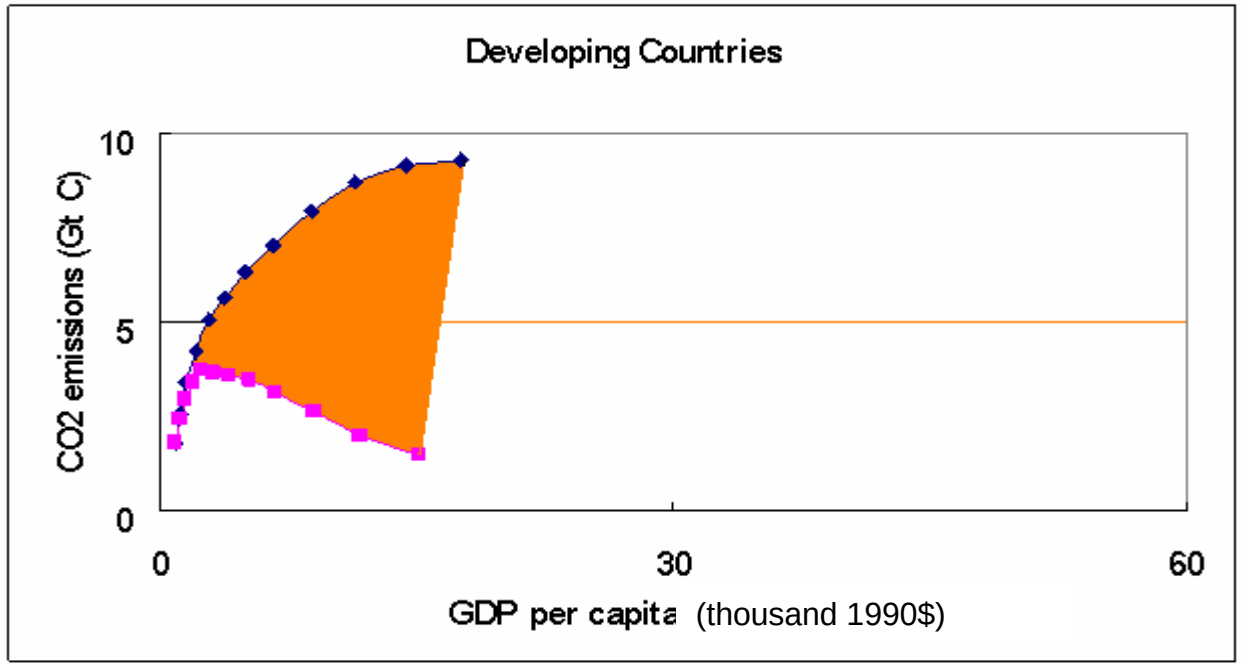
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60
GDP per capita (thousand 1990$)

Future task

- Further studies in adaptive capacities
- Develop indicators

- Set the clear target
- Devise the way of burden-sharing

Thank you for your attention.