Asian Network of Major Cities 21

Administrative Management Workshop 2008

Sep.10th, 2008

Tokyo Metropolitan Government

Mega-Cities in Asia and Global Sustainability

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Vice-Rector, United Nations University

A Brief Overview of My Academic Background

1970-1974	Department of Geography, Faculty of Science, The University of Tokyo
1974-1977	Master's and Doctoral Courses, Graduate School of Agriculture, The University of Tokyo (Landscape Ecology and Planning)
1976	Visiting Researcher, Federal Research Center for Nature Conservation and Landscape Ecology in Bonn/Germany
1980	Received Dr. Agr. from the University of Tokyo
1977-1985	Lecturer, Department of Geography, Faculty of Science, Tokyo Metropolitan University
1985-1995	Associate Professor, Department of Agrobiology, Faculty of Agriculture, The University of Tokyo
1995-1997	Professor, Asian Natural Environmental Science Center, The University of Tokyo
1997-	Professor, Department of Ecosystem Studies, Graduate School of Agricultural and Life Sciences, The University of Tokyo
2005-	Deputy Executive Director, Integrated Research System for Sustainability Science(IR3S), The University of Tokyo
2008-	Vice-Rector, United Nations University

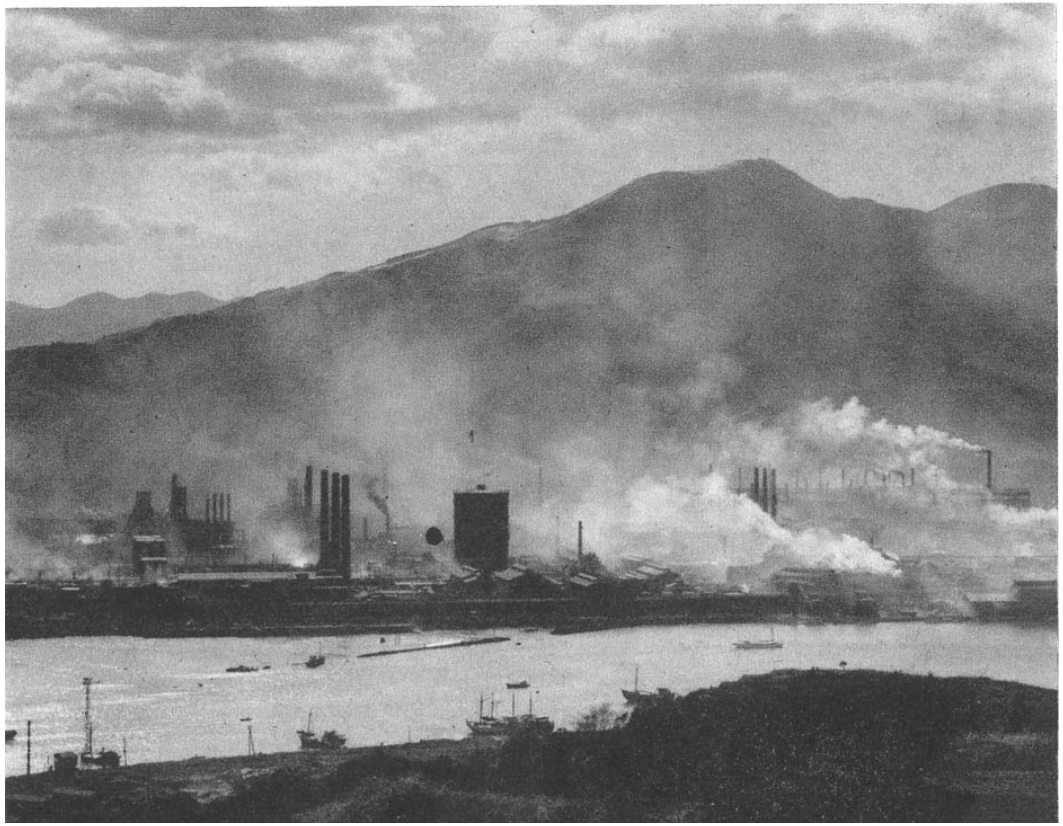
A Brief Overview of My Research Background

- Land degradation and desertification in Okinawa, Australia, Africa, China and Mongolia
- Agro-ecosystems and sustainable land use systems in Thailand and Indonesia
- Natural environment in mega-cities, such as Tokyo, Seoul, Tianjin, Metro-Manila, Bangkok and Jakarta
- "*Satoyama*" -Traditional rural landscapes of Japan
- Building a new academic discipline "Sustainability Science"

Industrialization was the Driving Force for Economic Growth in Japan

The roaring steel mills and never-stopping blazing furnaces keeping the sky red, everything here in Yahata City looks so lively and vigorous.
Yahata is called " City of Steel"

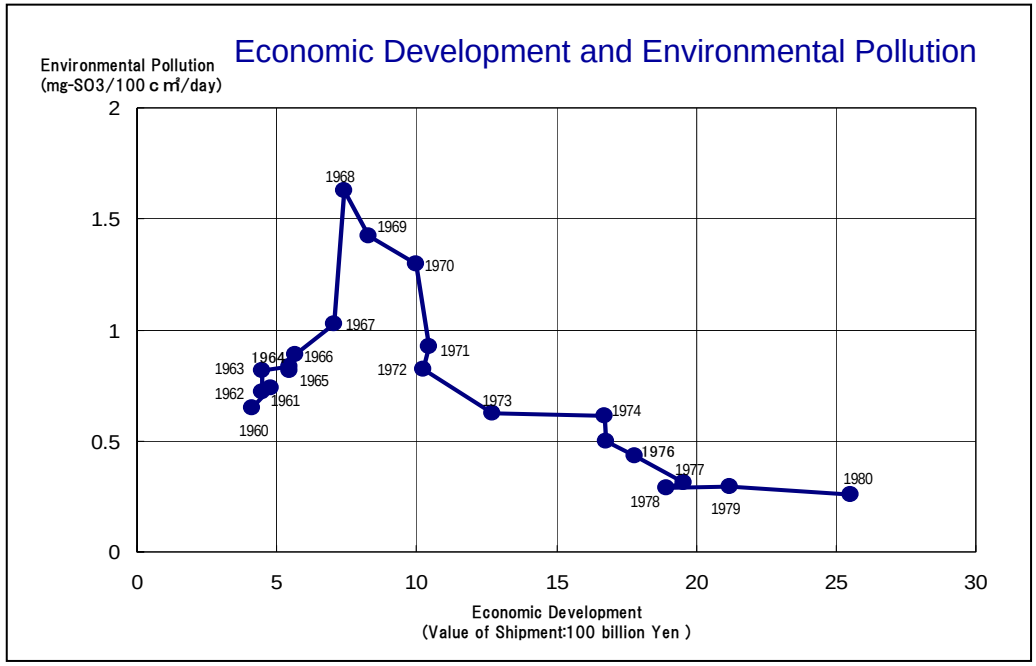
けむりにつつまれた八幡(やはた)の町



Social Studies Textbook for 4th grade

Fighting Against Environmental Pollution: Kitakyushu

- Local Women's Society started "We Want Blue Sky" movement
- Public opinion influenced government and further companies responsible
- Cleaner environment than before the pollution achieved
- Fostering new industries by attracting recycling facilities
- Embarked on international environmental cooperation as municipality

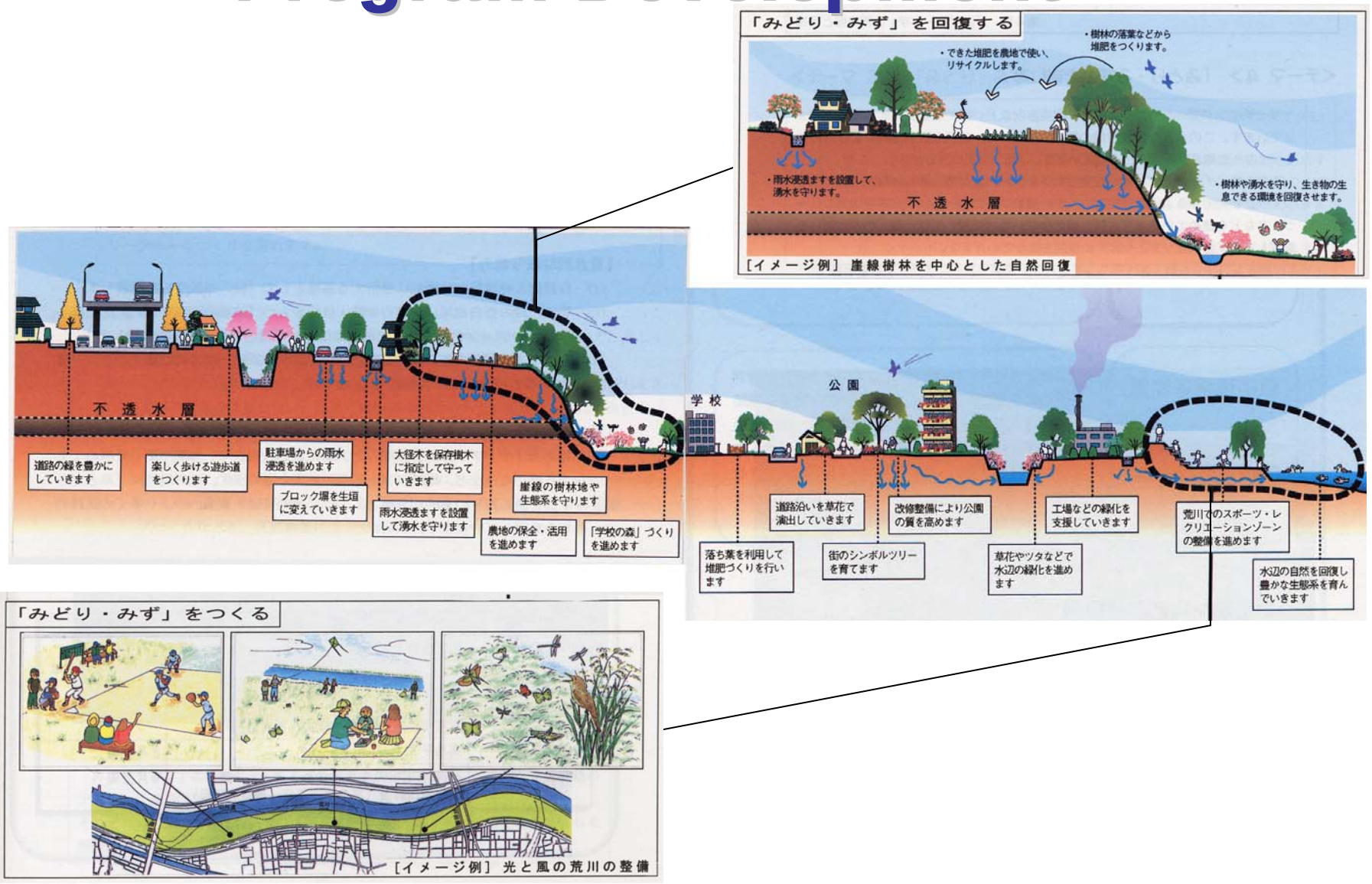


SOx Concentration Shift in Kitakyushu（PbO_2Method）

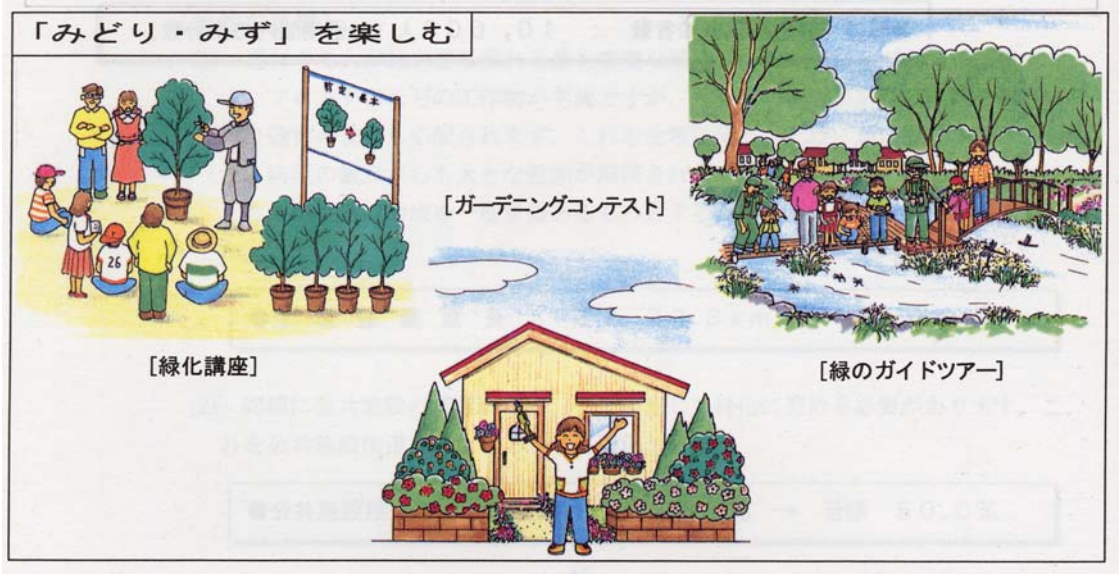
(Kitakyushu Environmental Pollution Control Agency 1981）

Tobata Women's Society measuring dust pollution. Picture from Kitakyushu City

Itabashi Green Master Plan: Program Development

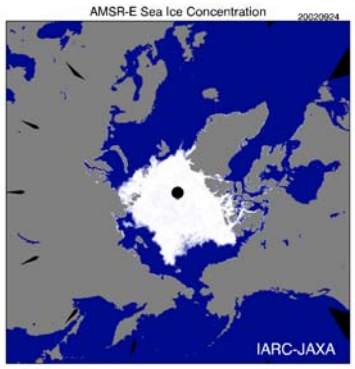


Itabashi Green Master Plan: Program Development

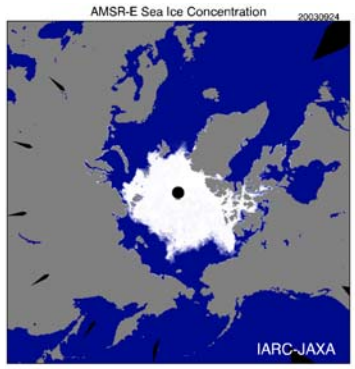


Creeping Environmental Crisis

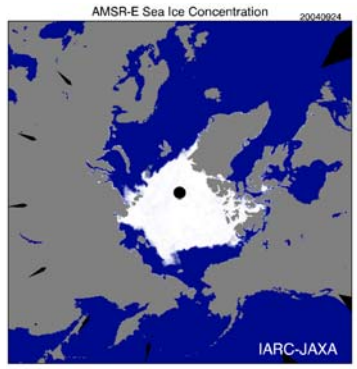
2002/09/24



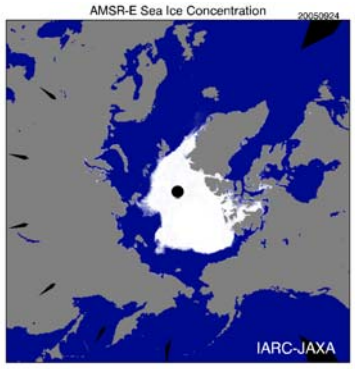
2003/09/24



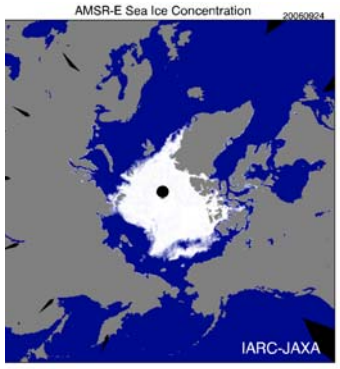
2004/09/24



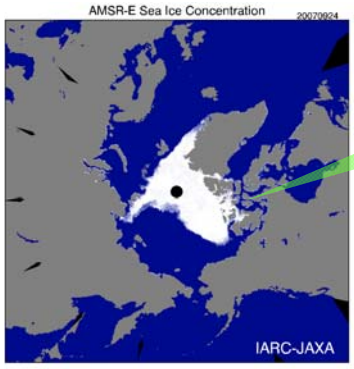
2005/09/24



2006/09/24



2007/09/24

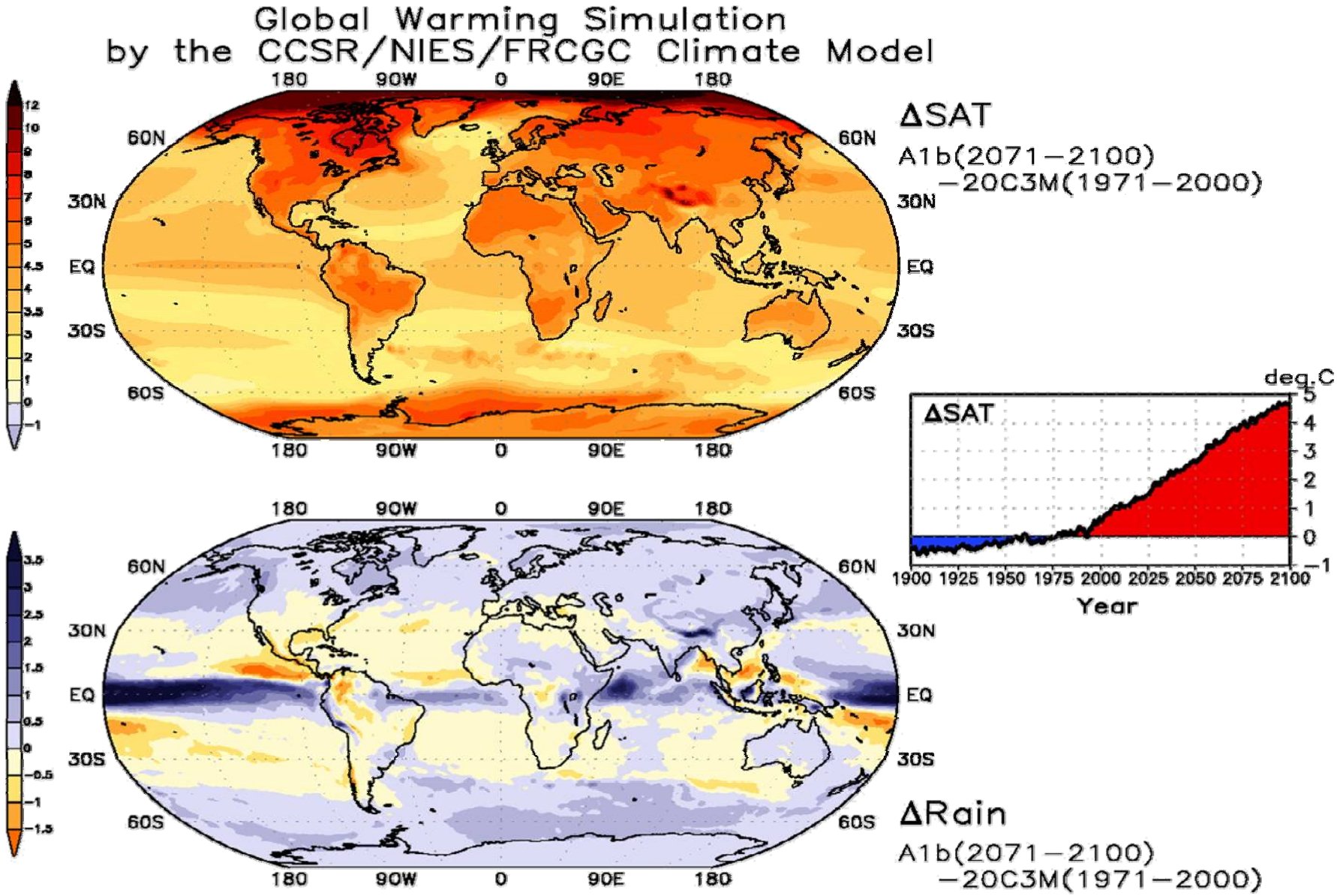


Total area of sea ice in Arctic Ocean smallest since observations started

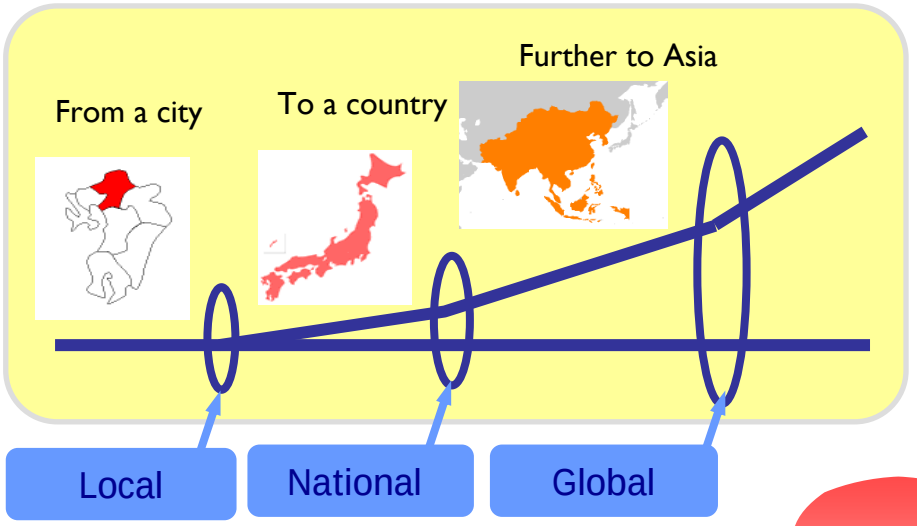
These findings as a result of analyses of observation data acquired by the Advanced Microwave Scanning Radiometer (AMSR-E).The AMSR-E acquires observation data and visible images of sea ice density.

http://www.ijis.iarc.uaf.edu/cgi-bin/seaice-monitor.cgi?lang=j

Global Warming in the 21st Century



Pollution Issues to Global Environmental Issues



Pursuit of sustainability that maintains a good balance between economy and environment

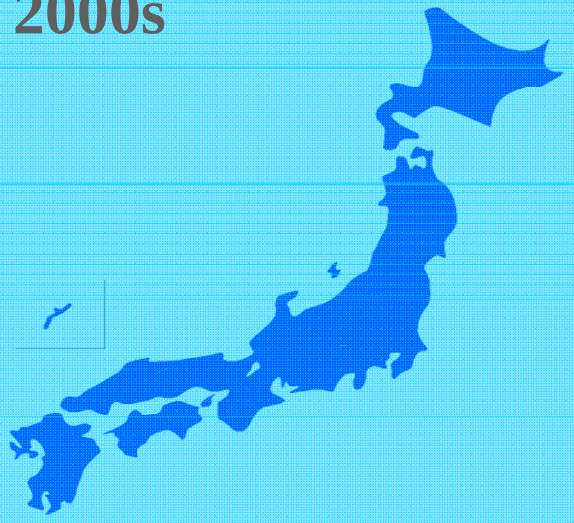
1960s
Worsening Environmental Pollution Issues

1970s
Solving Environmental Pollution Issues

1980s
Creating Environment with Full of Amenity

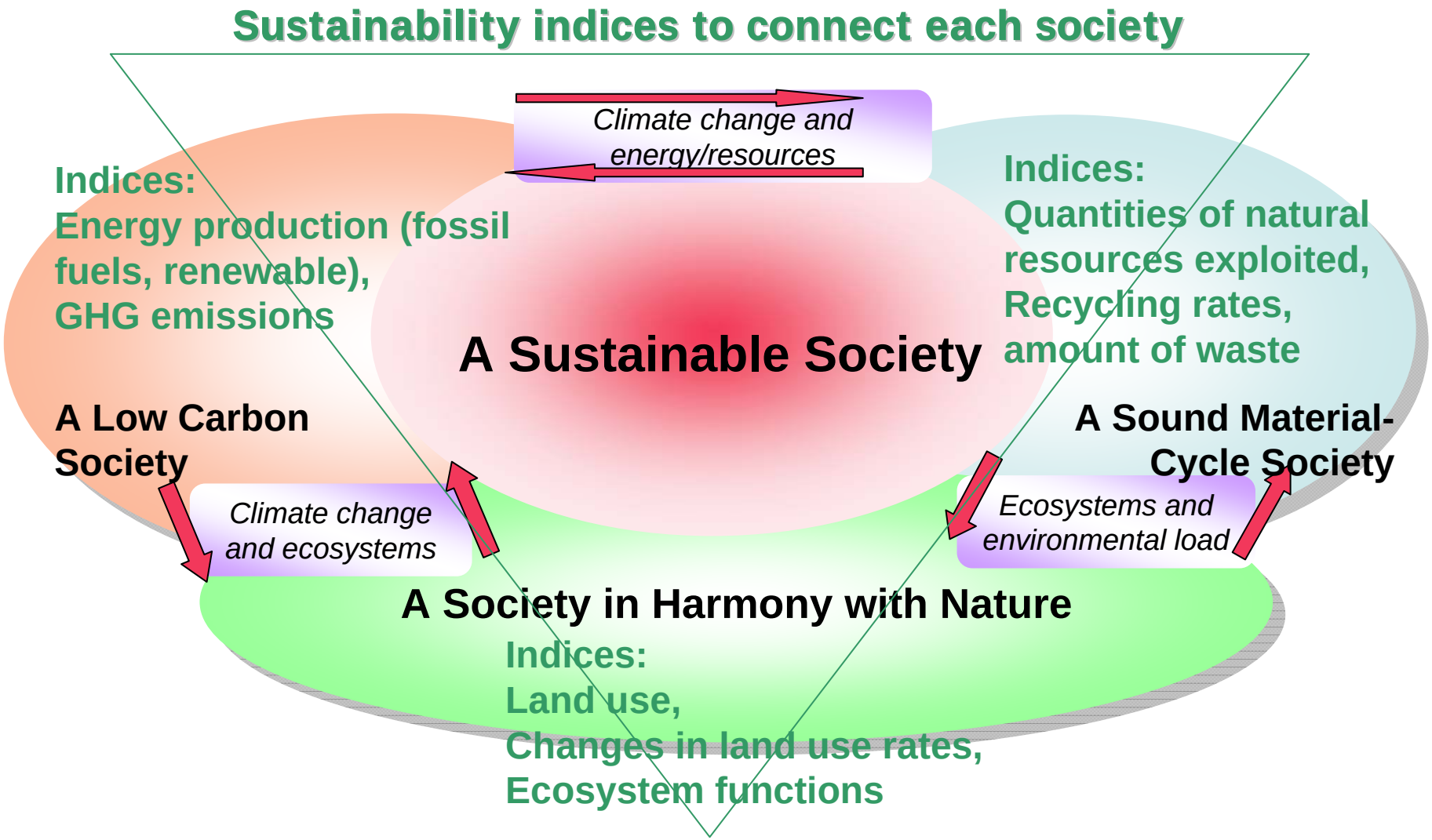
1990s
Worsening Global Environmental Issues

2000s
Need for Global Environmental Policies



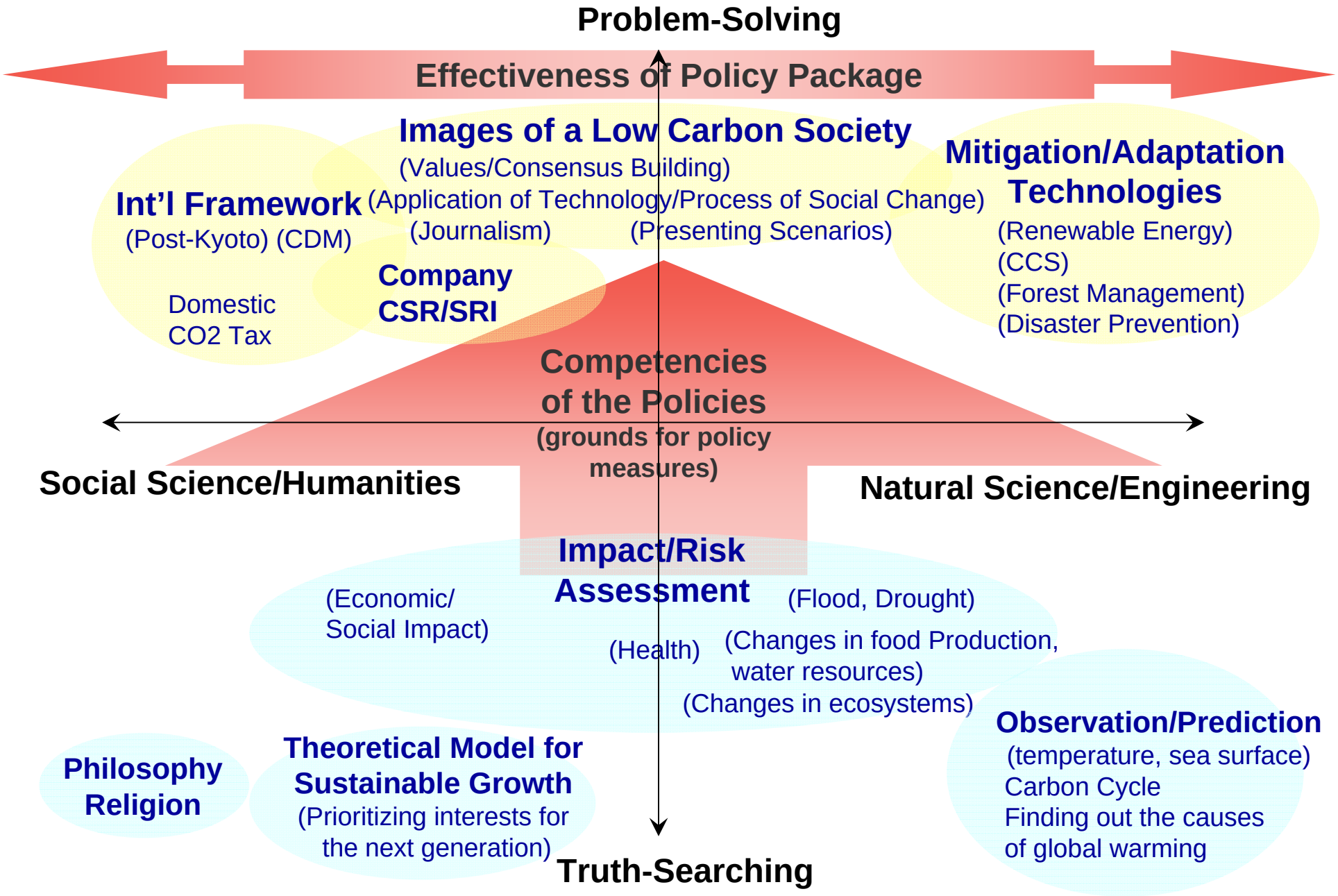
Moving Up to More Comprehensive & Global Environmental Policies

Sustainable Society that integrates the Three Societies

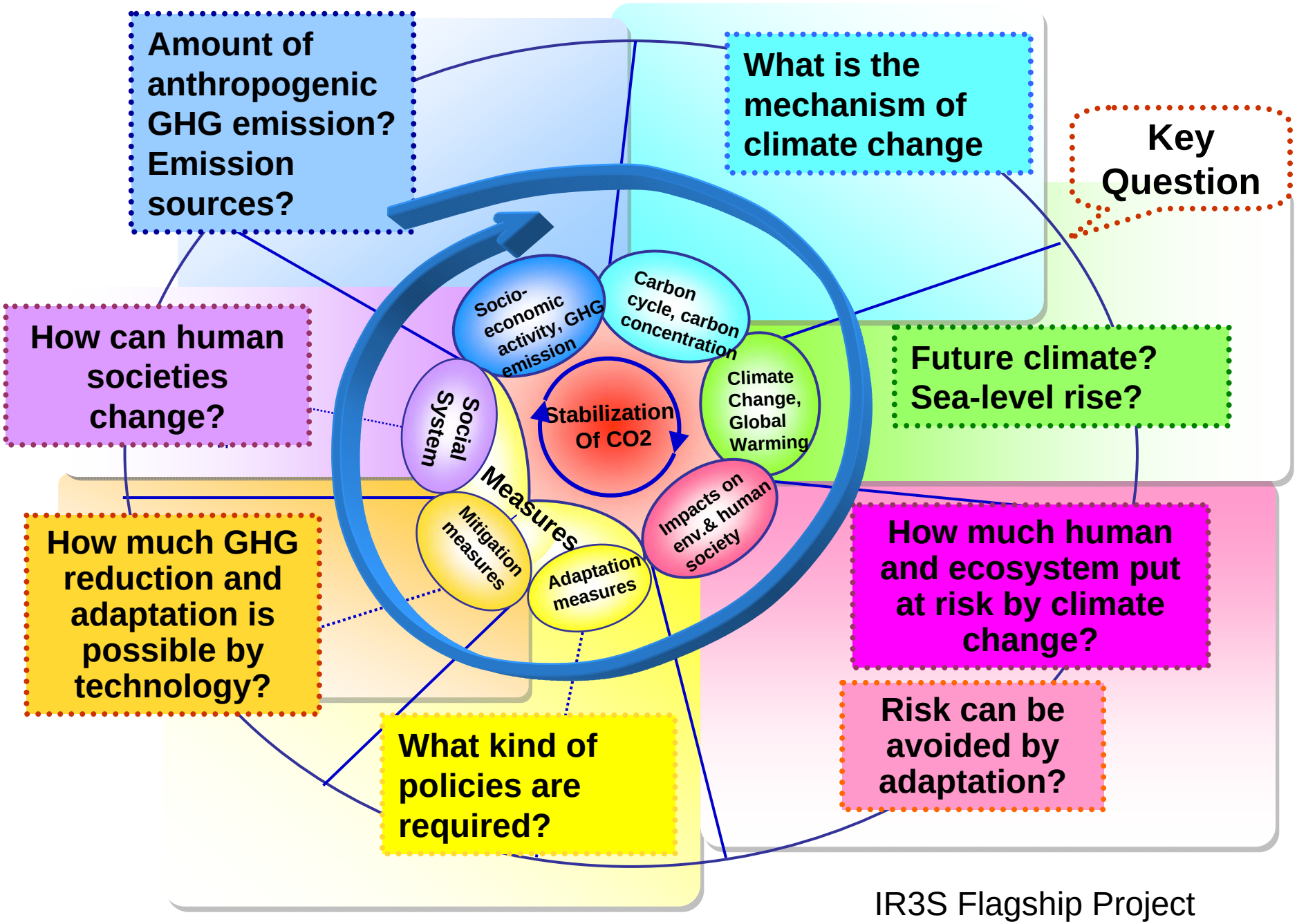


http://www.env.go.jp/en/focus/070606.html

Mapping Science and Policies on Climate Change and SD

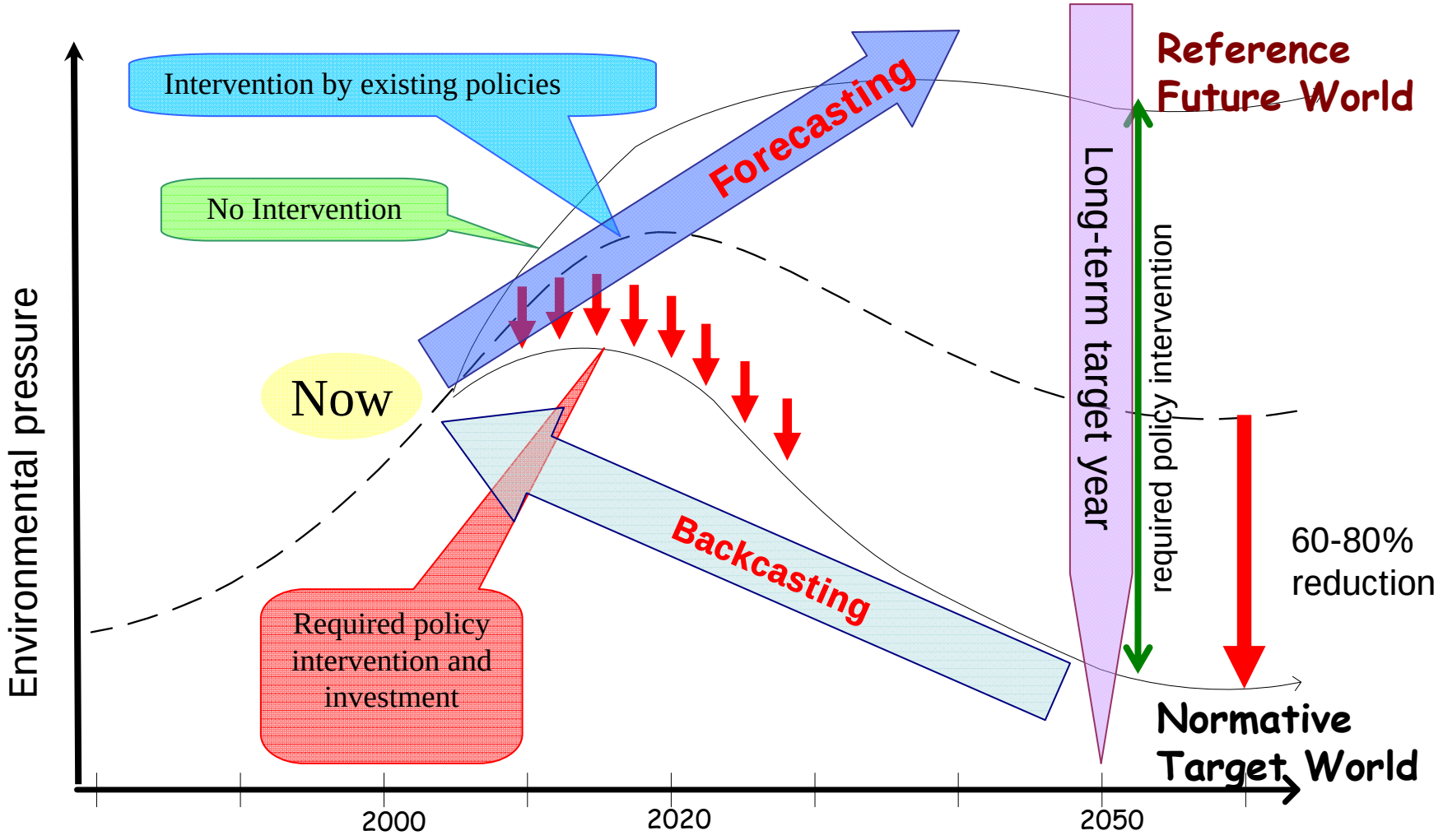


Key Questions for Mitigation and Adaptation



IR3S Flagship Project

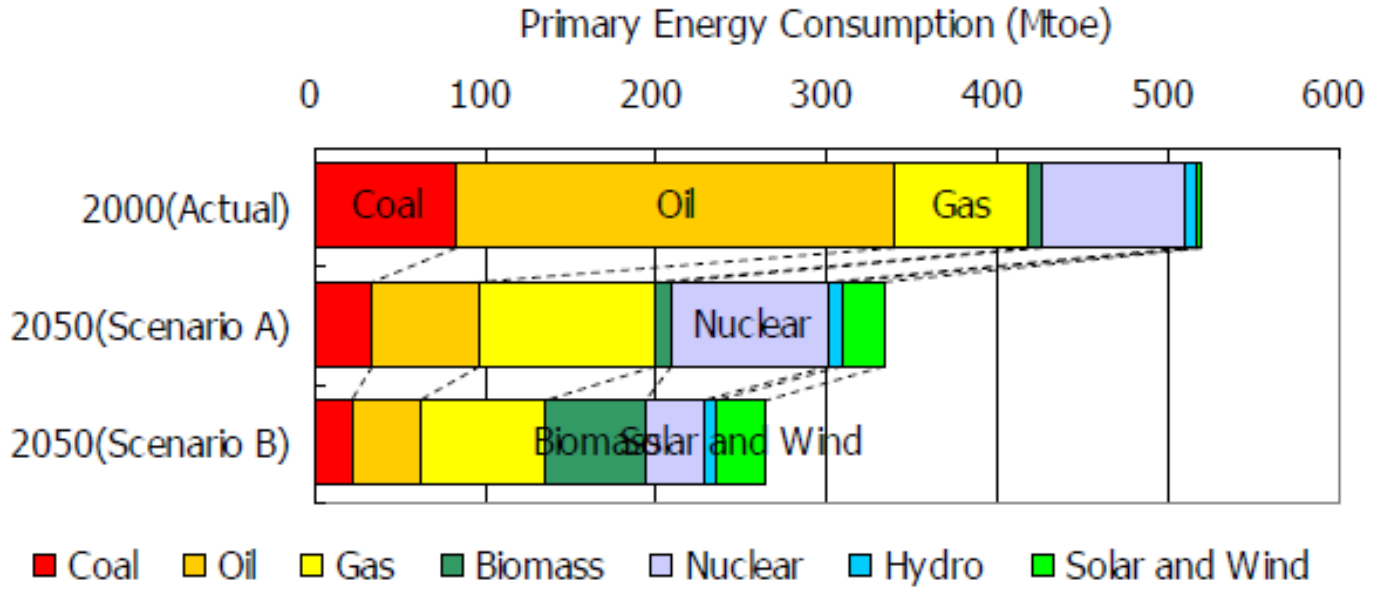
Back-Casting from Future Target World



2050低炭素社会研究シナリオチームの研究成果に基づき改変

Breakdown of Primary Energy Supply

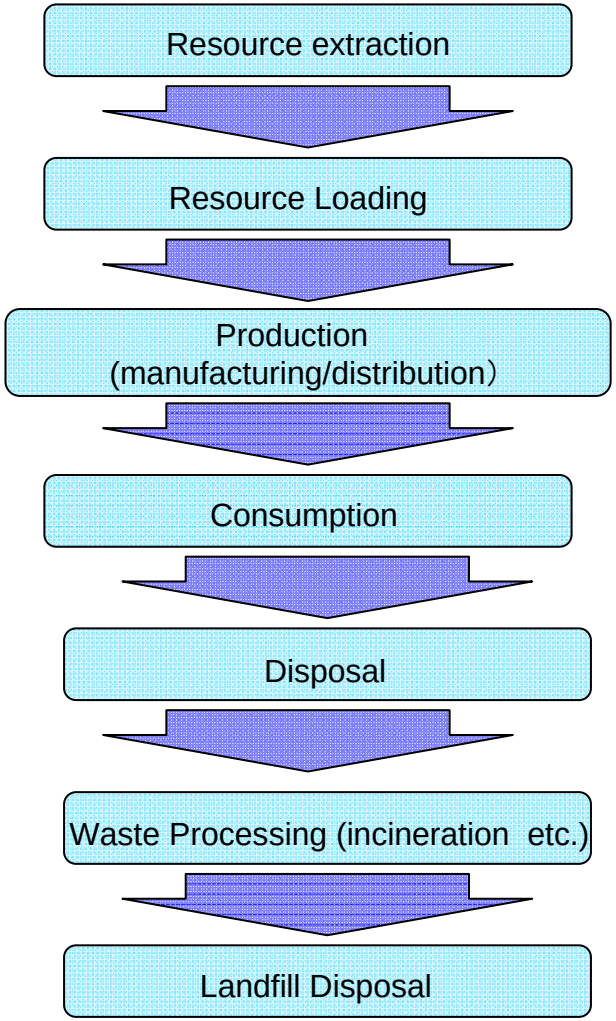
Primary energy supply



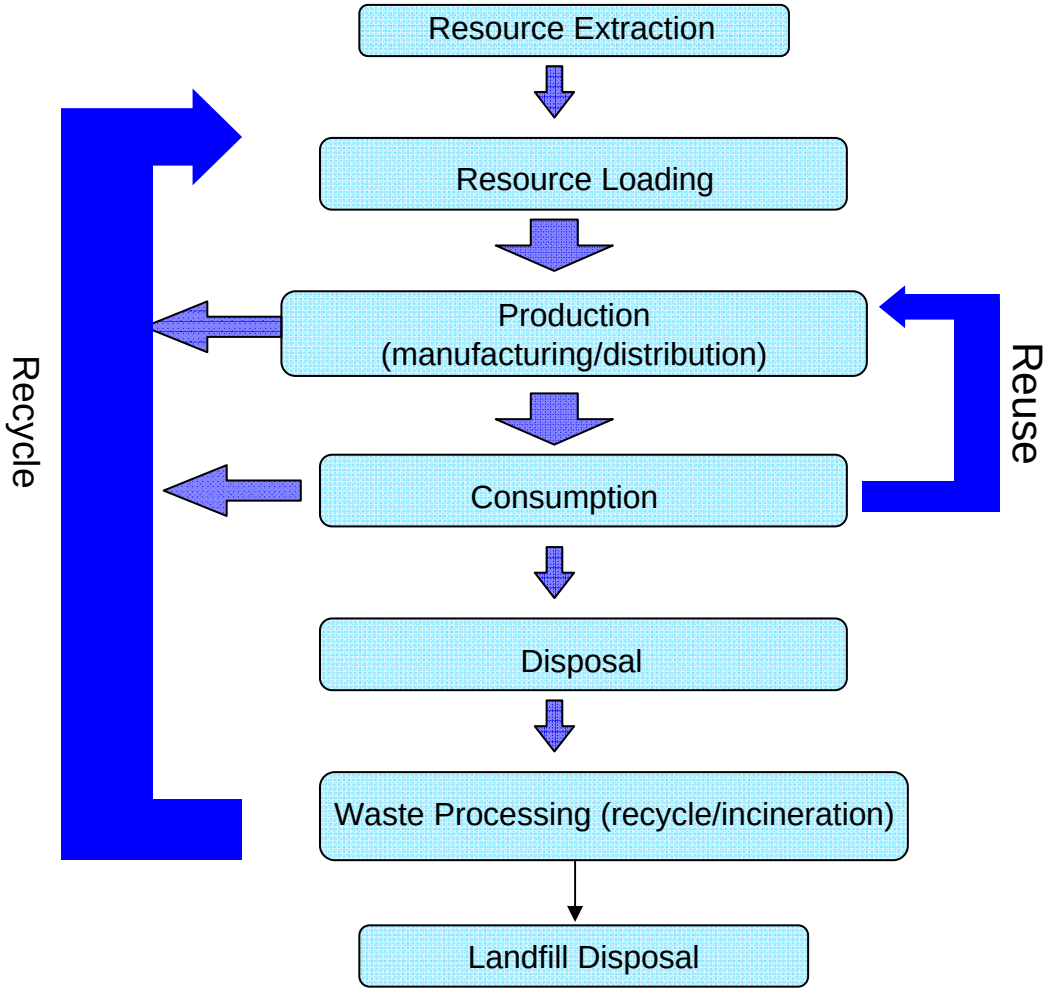
From "*Low carbon society* scenarios towards 2050" project

A Sound Material-Cycle Society

In a One-way based Society of mass production, mass consumption and mass disposal



In a Sound Material-Cycle Society
Promotion of 3R



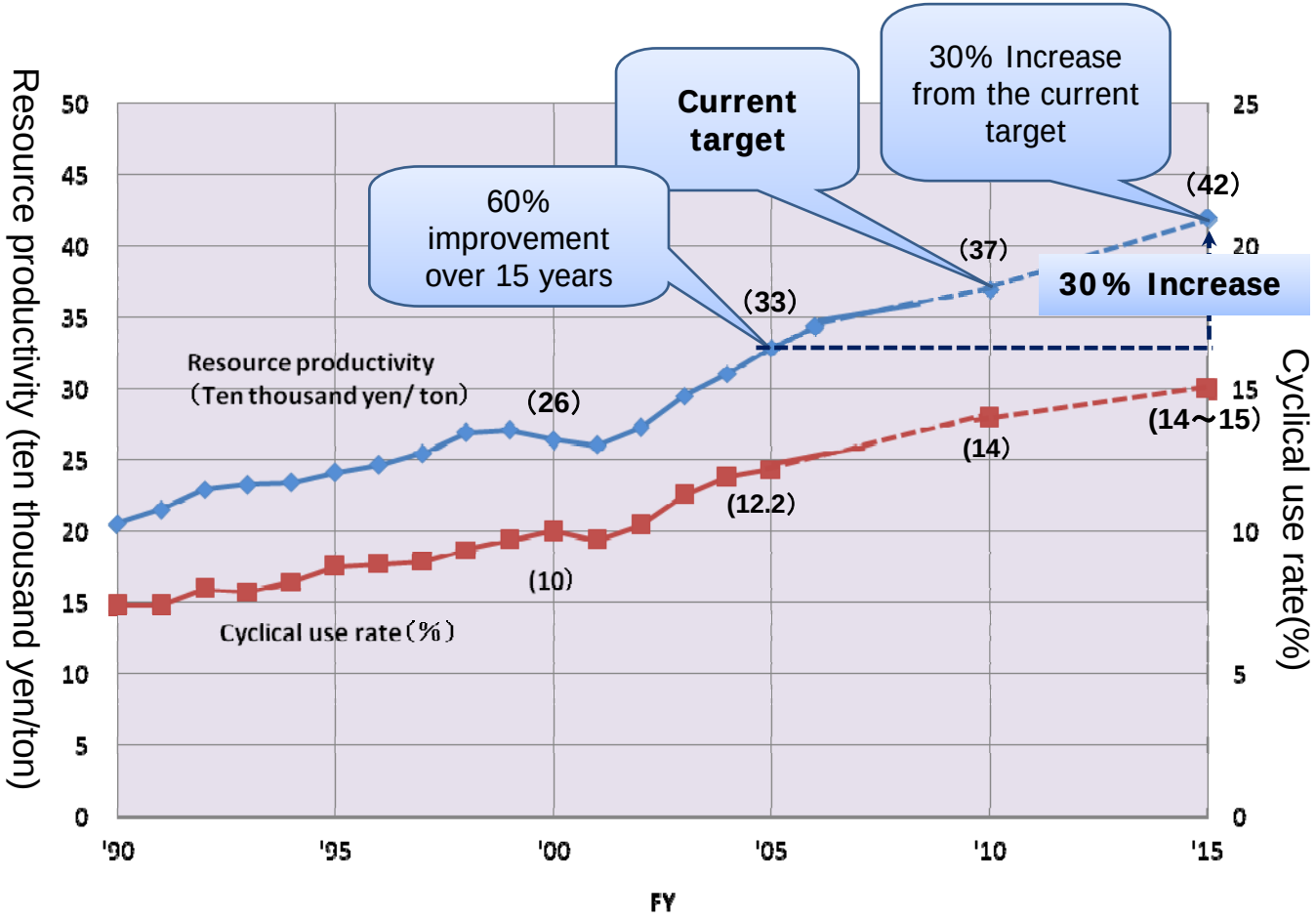
Material Flow-based Indicators
-Indicators with target setting-

The 2nd Plan

2000→2015
•Resource Productivity
260 thousand yen/ton
→ 420 thousand yen/ton
（60% increase）

•Cyclical use Rate
10%→ about 14-15%
（40-50% increase）

•Final Disposal Amount
57 million tons→ about 23 million tons
（about 60% reduction）



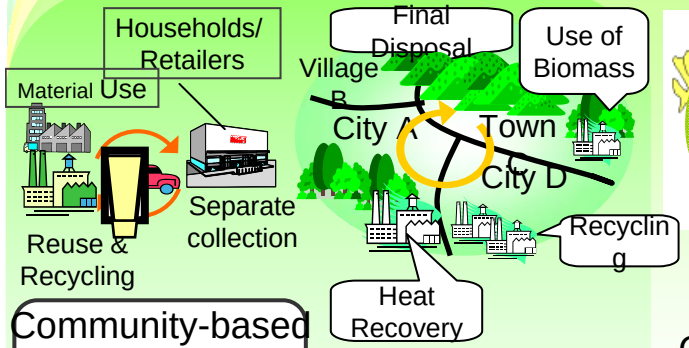
Spheres of Sound Material Cycle

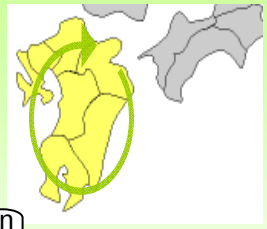
International Material Cycle

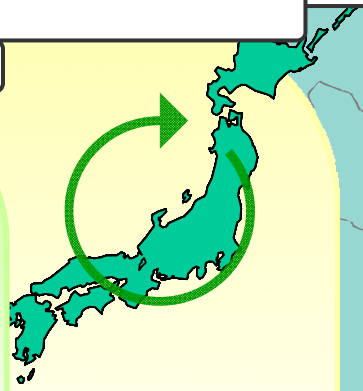
Domestic Material Cycle

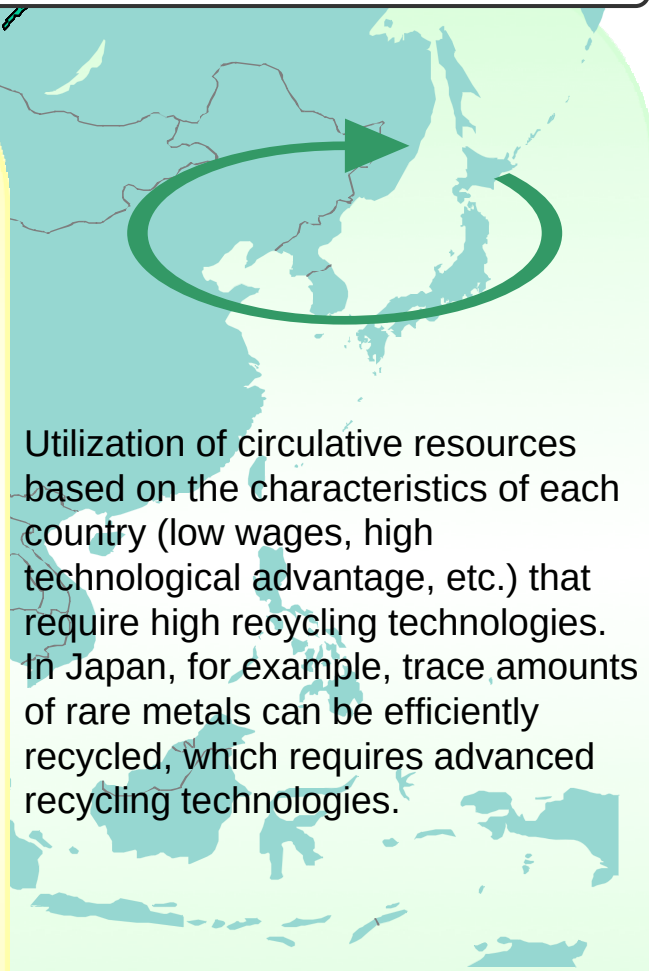
Regional Material Cycle

Local Material Cycle









Community-based Sound Material Cycle

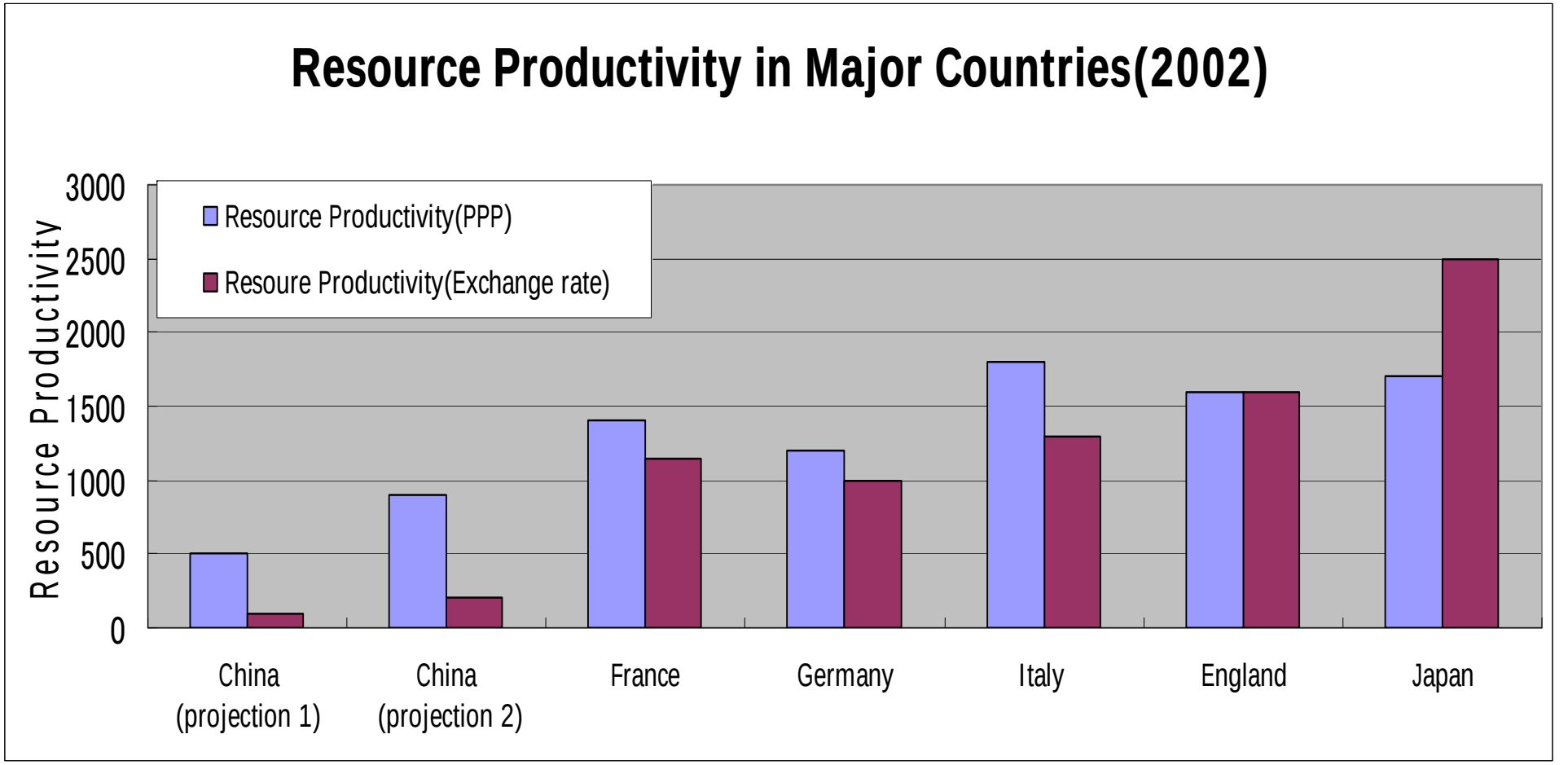
Reusing/ Repairing of materials/ devices, diversion of used cooking oil, etc.

Circulative resources considered as economically efficient and environmentally preferable with smaller impact.

Circulative resources which are most efficiently processed in the area where environmental business is well-developed and active (i.e., metal, soil and stone resources, and any material that requires extra treatment processes and/or care before disposal, etc.)

Utilization of circulative resources based on the characteristics of each country (low wages, high technological advantage, etc.) that require high recycling technologies. In Japan, for example, trace amounts of rare metals can be efficiently recycled, which requires advanced recycling technologies.

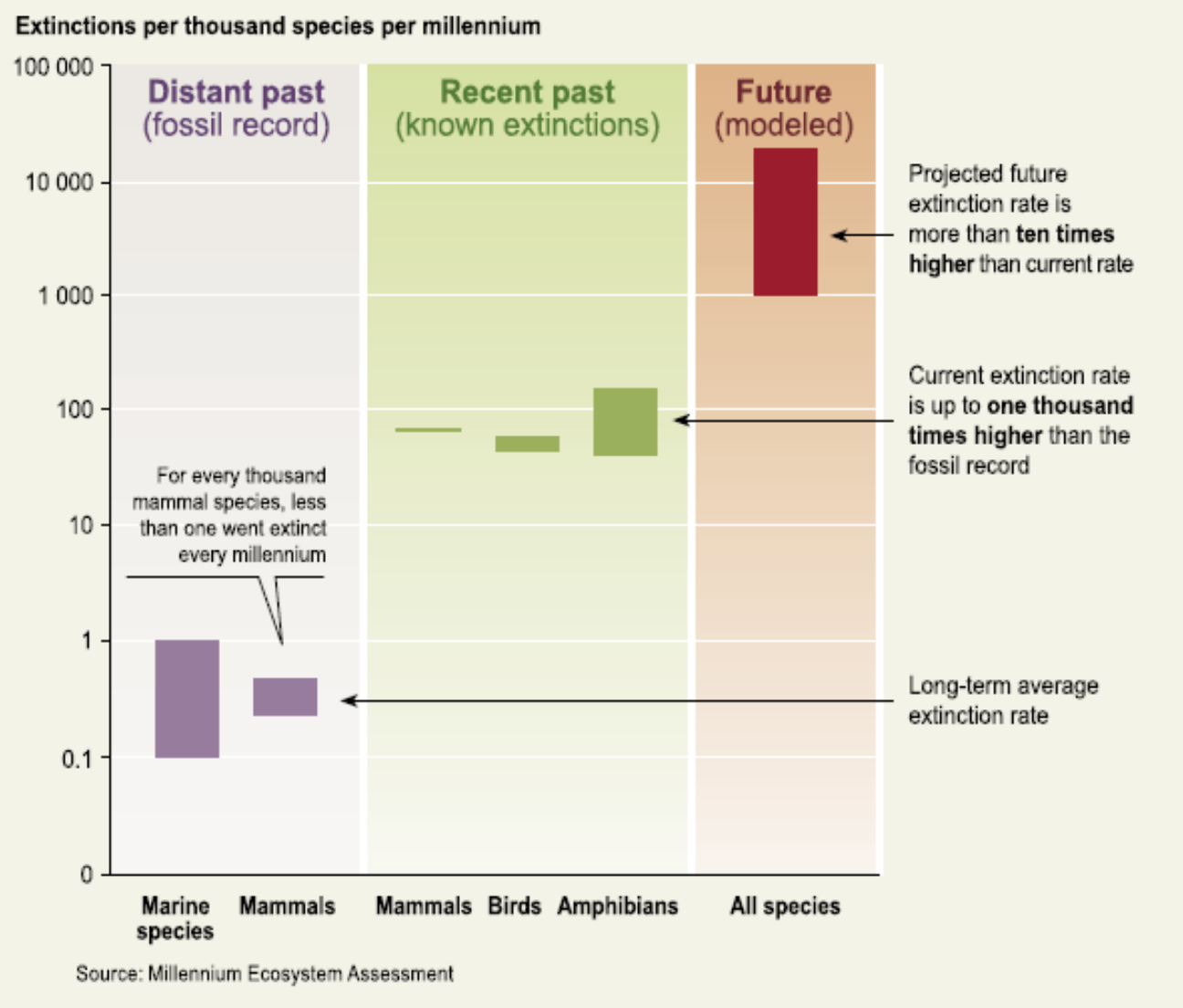
Resource Productivity in Major Countries



Comparison of resource productivity in major countries (2002)
For such cross-country comparison like this, which common currency used to convert the GDPs (gross domestic product) has great impact. It is pointed out that common GDP conversion in market exchange rates can give a very misleading picture of the size of a country's economy. This is particularly true for such country like China; therefore, here GDP adjusted for PPP (purchasing power parity) is used for the estimation to ensure more accurate comparison.

Estimation by Yuichi Moriguchi at the National Institute for Environmental Studies of Japan based on data from Liu Bin, Xu Ming, EUROSTAT, Ministry of the Environment of Japan, International Monetary Fund and others.

Crisis in Ecological System and Biodiversity



From *Report of the Millennium Ecosystem Assessment: Ecosystems and Human Well-being , Biodiversity Synthesis*

National Strategy for the Conservation and Sustainable Use of Biological Diversity

Highlights of the New National Biodiversity Strategy of Japan

Crisis 1 :Species and habitat degradation due to excessive human activities

Crisis 2 :Degradation of *satochi-satoyama** due to insufficient level of management

Crisis 3 :Ecosystem disturbances caused by the introduced alien species and chemical contaminations

3 Policy Directions

1. Reinforce Conservation Efforts
2. Restore Nature
3. Work Towards Sustainable Use

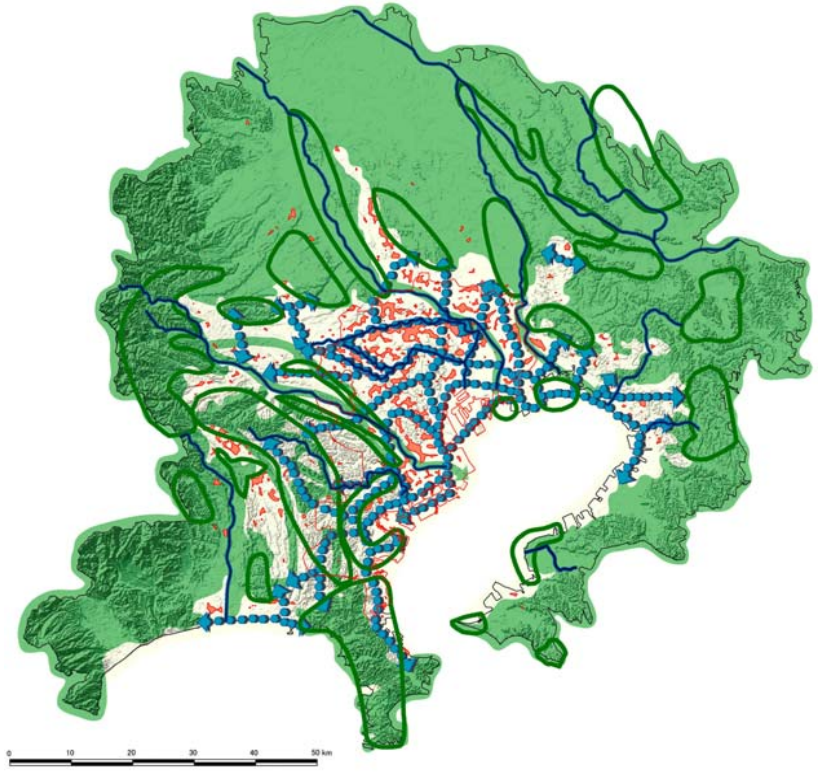
7 Priorities

1. **Conservation of Priority Areas and Formation of "Ecological Network (s)"**
2. **Conservation and Use of *Satoyama***
3. **Conservation of Wetlands**
4. **Restoration of Nature**
5. **Conservation and Management of Wildlife** (Reinforcing Countermeasures against Extinction of Species and Countermeasures against Alien Species)
6. **Development of Natural Environmental Data** (Monitoring Sites 1,000)
7. **Effective Conservation Methods and Others** (Improvement of Environmental Assessments and International Cooperation)

(From Ministry of Environment)

Creating Ecological Networks Connecting Urban and Rural Areas

- Watershed area connects forest in upstream, farmlands in midstream, and build-up areas in downstream
- Such watershed management including water resource and land use control is very important
- Creating an ecological network that connects mountains, hills, rivers, lakes, and seashore
- Creating such network can contribute to CO2 reduction, mitigating urban climate, and prevention of natural disaster
- Aiming at creating ecological networks that encompasses urban agglomeration



Green Network of Metropolitan Tokyo

Fusing Global and Regional Issues

Climate Change

Population

Food Security

Environmental Protection

Poverty

Energy Security

And more...

Heat Island Effect

De-population/

Aging

Rural/Urban Discrepancies

Traffic problem

City Landscape

Regional Revitalization

And more...

Solution of Universal Problem by Distinctive Answer

global problems

- A population explosion in urban areas = most important cause of problem in global environment
- From the perspective of global sustainability = the creation of SUSTAINABLE CITY

local problems

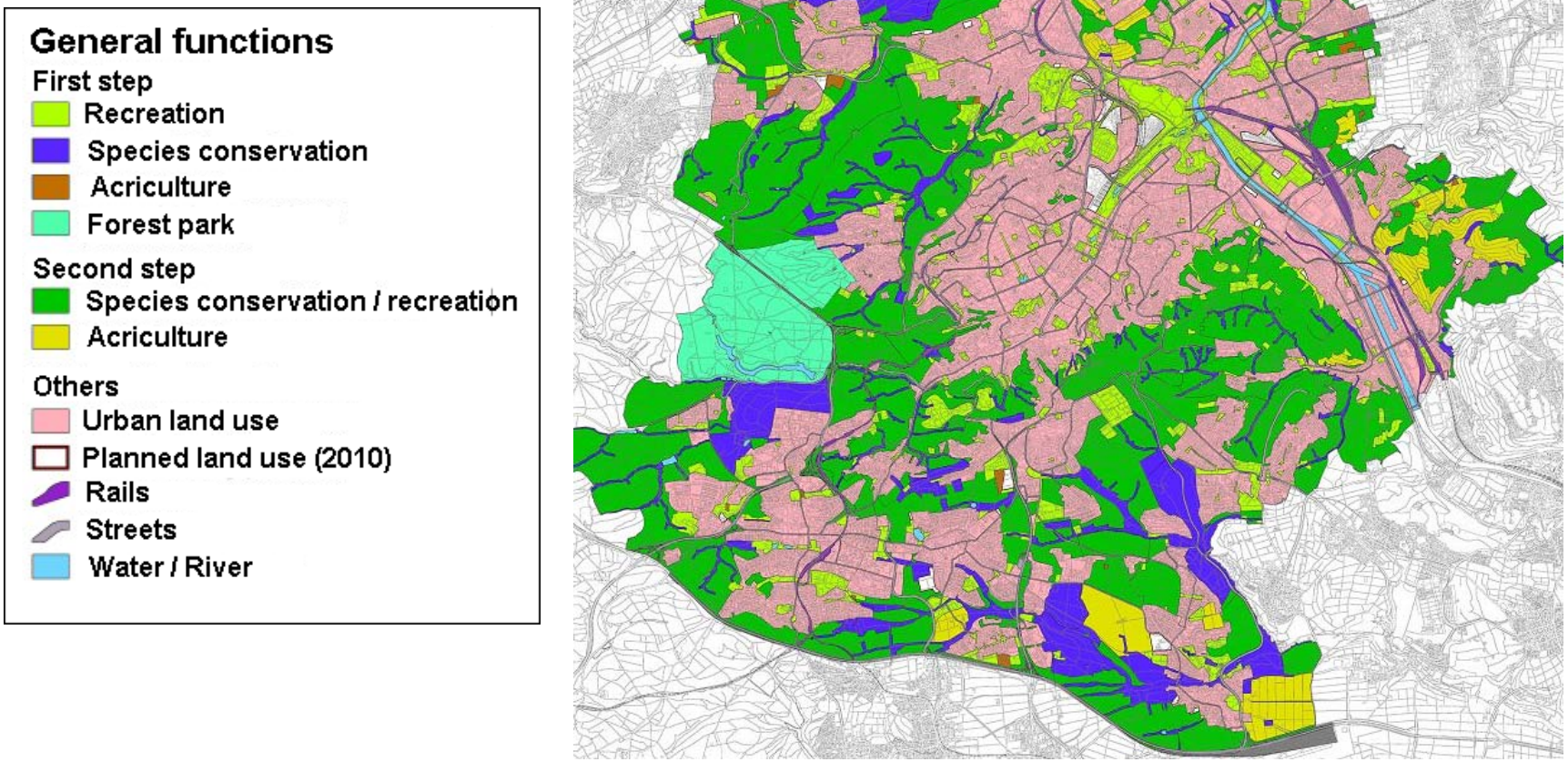
- Globalization of the world economy brings urban unindividuation and local identity crisis
- Necessary of urban planning based on regional specific culture and nature = realize an upgrade the attractiveness of city

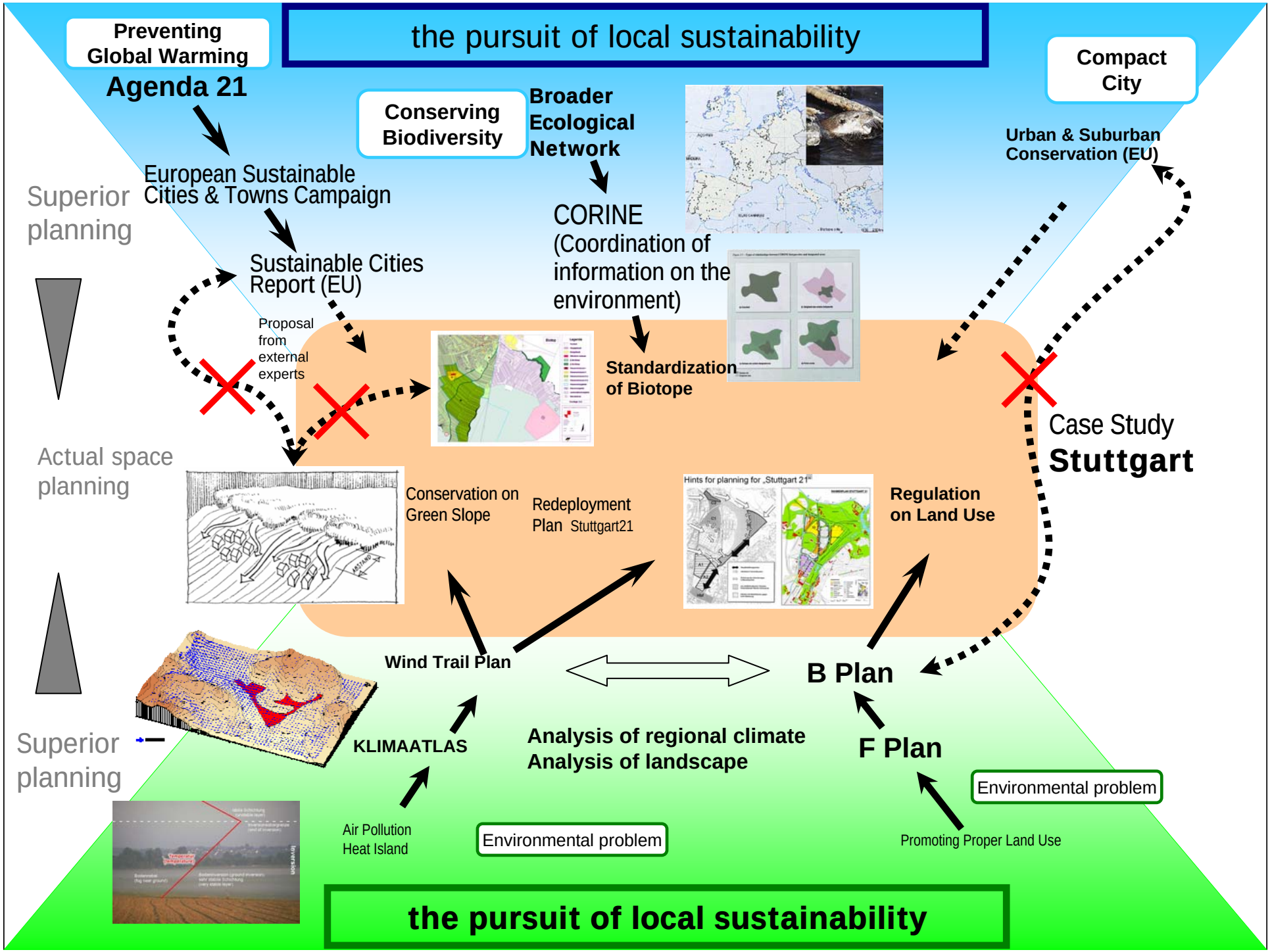
be in harmony ···

- Coexistence without contradiction to global view and local perspective is indispensable
- Vision for integrated urban and landscape planning

City Planning in Stuttgart, Germany

Landscape plan 2010
Stuttgart - general function -




Preventing Global Warming
Agenda 21
the pursuit of local sustainability
Compact City
Conserving Biodiversity
Broader Ecological Network
Urban & Suburban Conservation (EU)
Superior planning
European Sustainable Cities & Towns Campaign
Sustainable Cities Report (EU)
CORINE (Coordination of information on the environment)
Proposal from external experts
Standardization of Biotope
Case Study Stuttgart
Actual space planning
Conservation on Green Slope
Redeployment Plan Stuttgart21
Regulation on Land Use
Wind Trail Plan
B Plan
Superior planning
KLIMAATLAS
Analysis of regional climate
Analysis of landscape
F Plan
Environmental problem
Air Pollution
Heat Island
Environmental problem
Promoting Proper Land Use
the pursuit of local sustainability

Building Cities Capitalizing on their Regionality

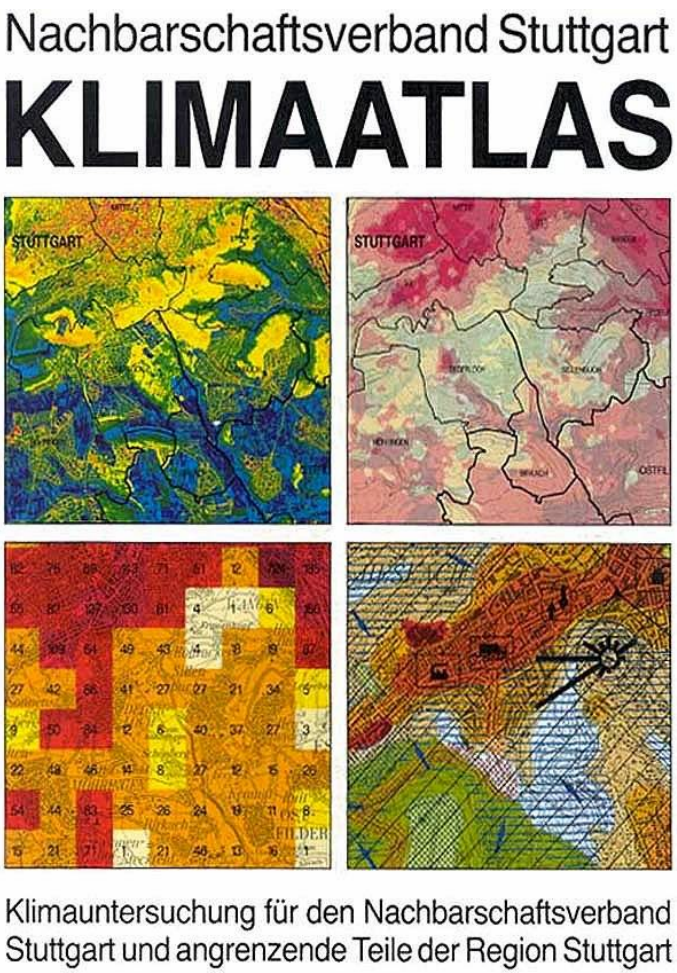
■Fusing Local Issues and Global Issues

- Heat island & Measures against global warming
- Urban cities/rural villages coexistence & Building resource circulating society/compact city
- Conserving urban green districts & Preserving biodiversity

■Participatory Urban Development and Importance of Reviewing Planning System

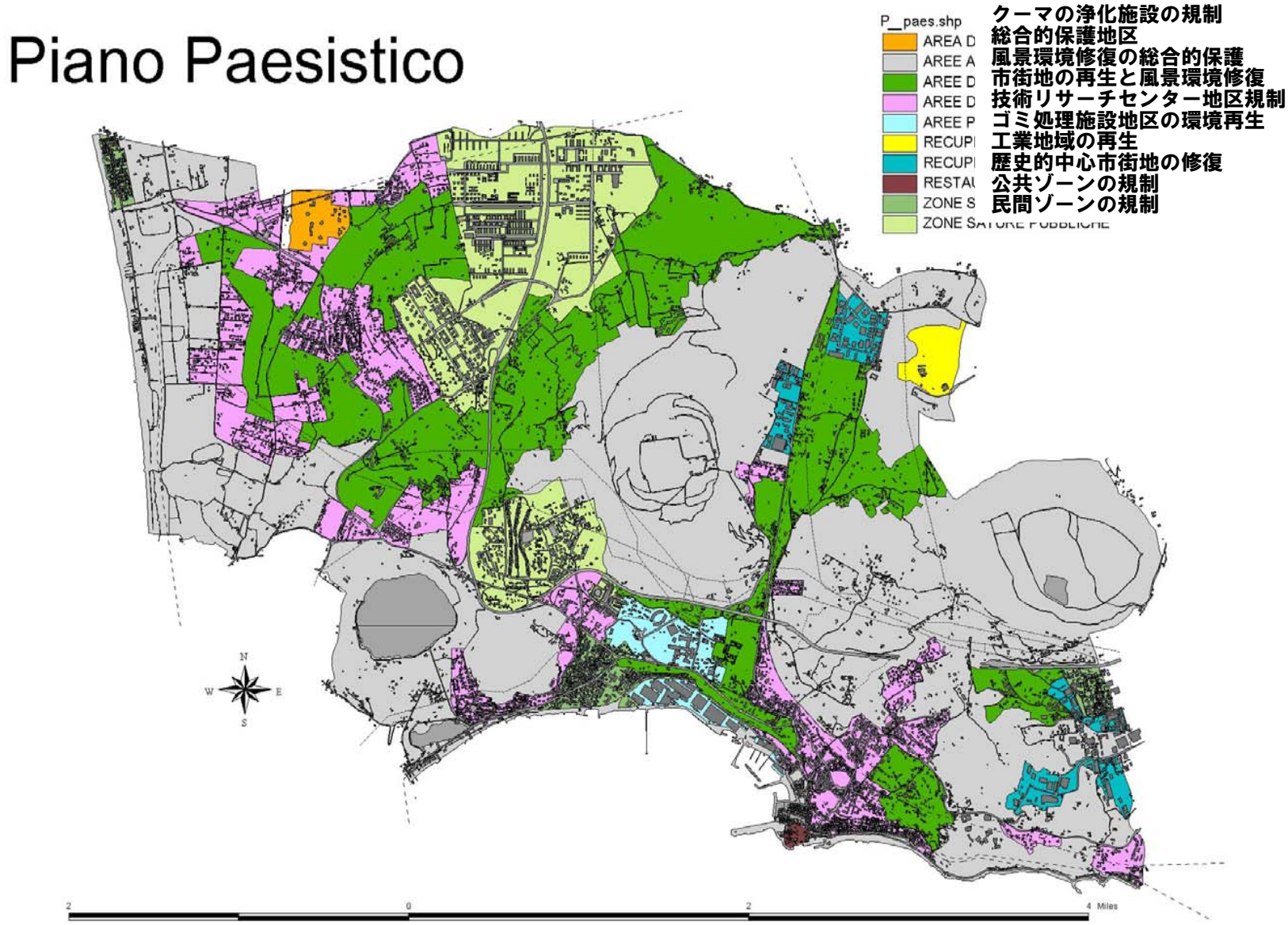
- Participatory urban development by citizens highly-conscious of the issues
- Promoting education for building sustainable city
- Building long-term visions for urban sustainability that fuses other relevant plans

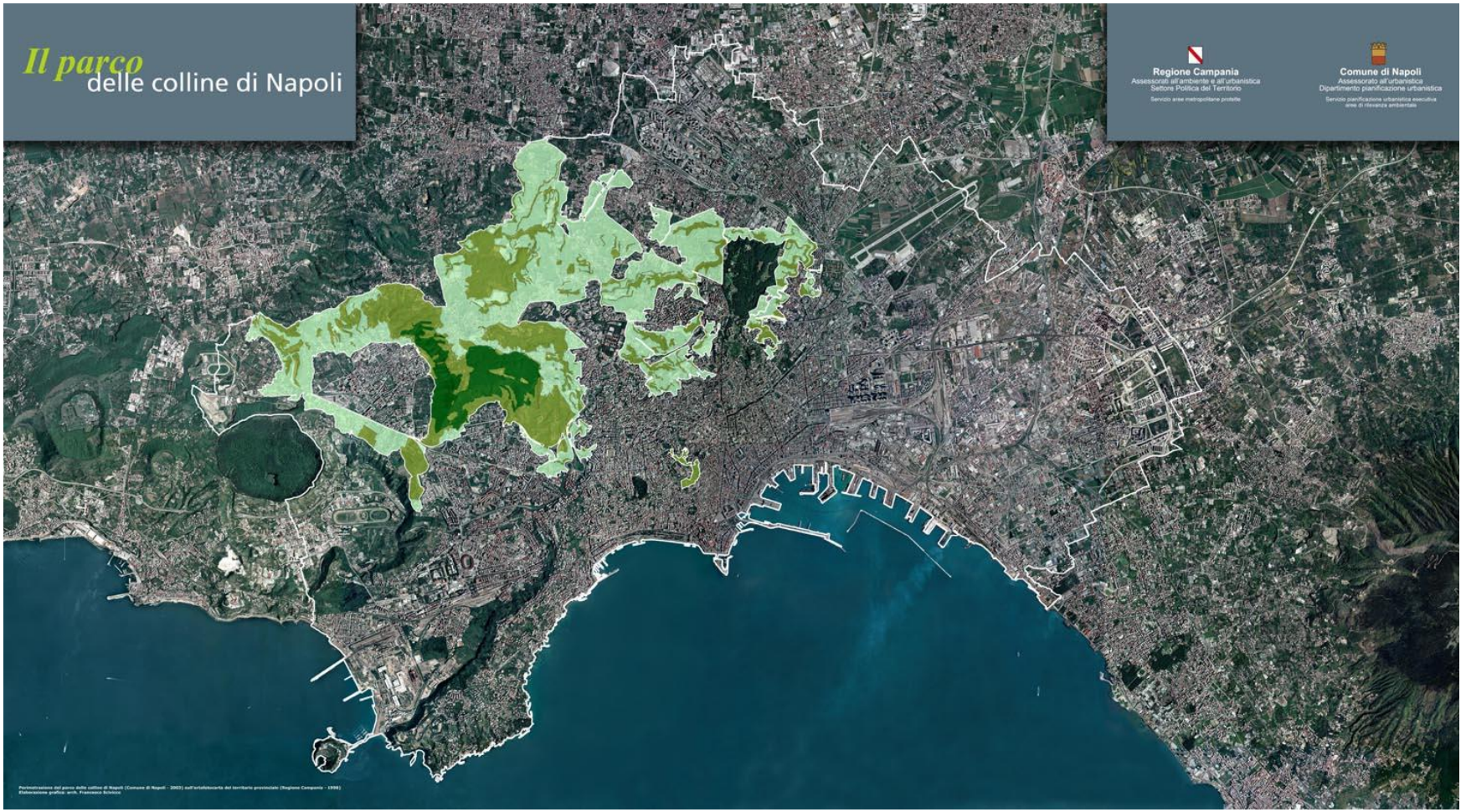
Wind Trail Plan in Stuttgart



Rooftop greening

Landscape Planning in Naples, Italy





Zoning of state parks in Naples metropolitan area

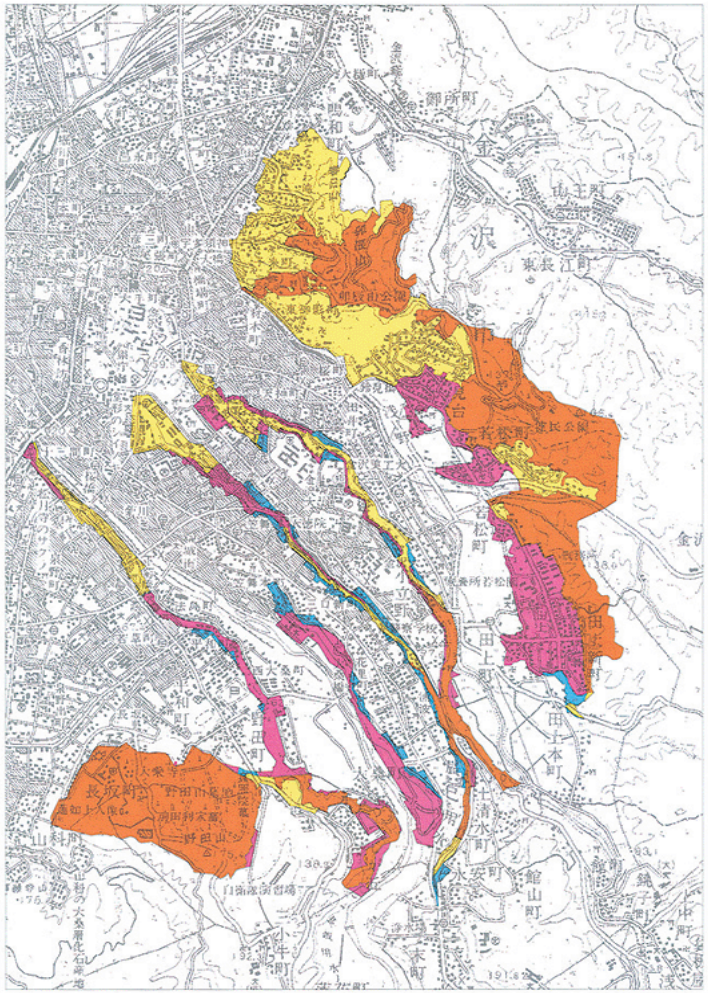
Protection zone

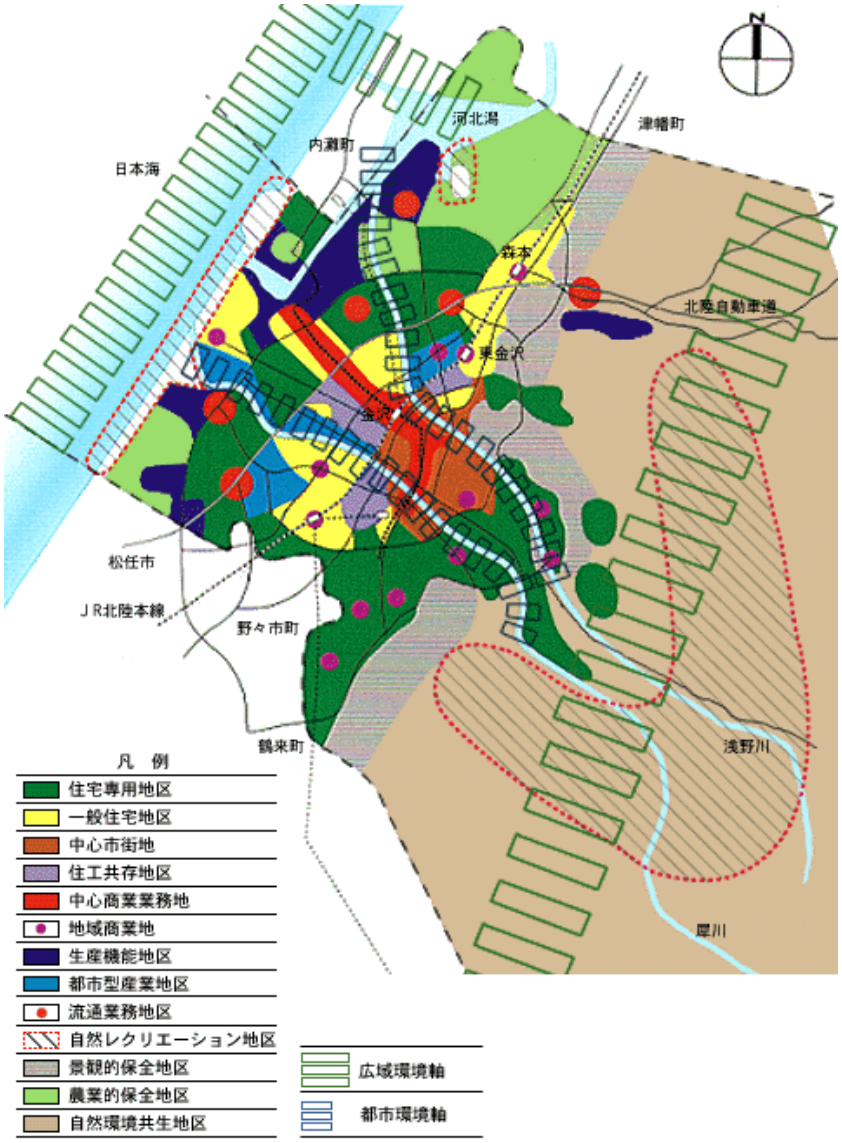
Buffer zone

Conservation zone

The agricultural landscape with country houses called "Casali"

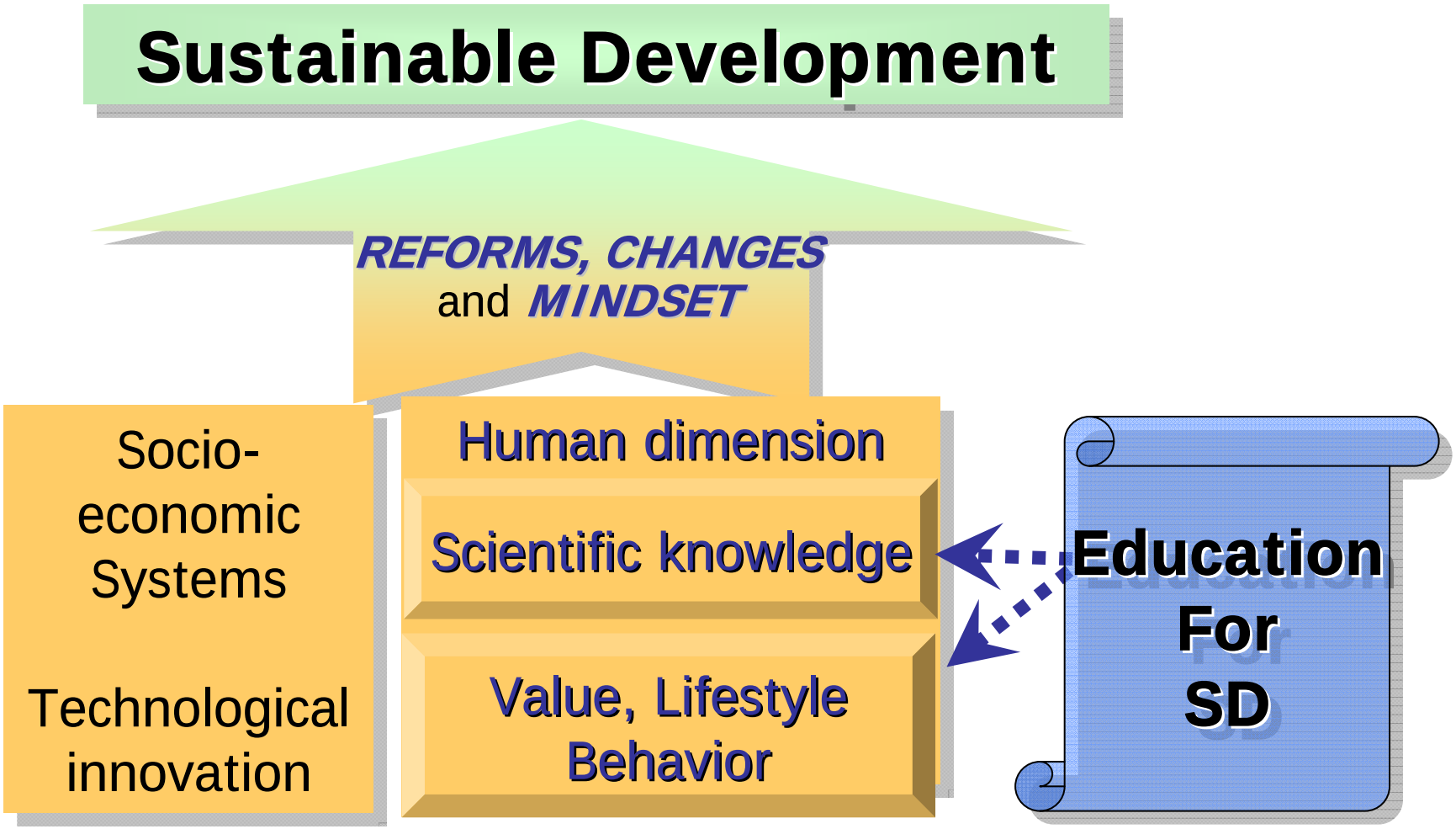
City Planning in Kanazawa





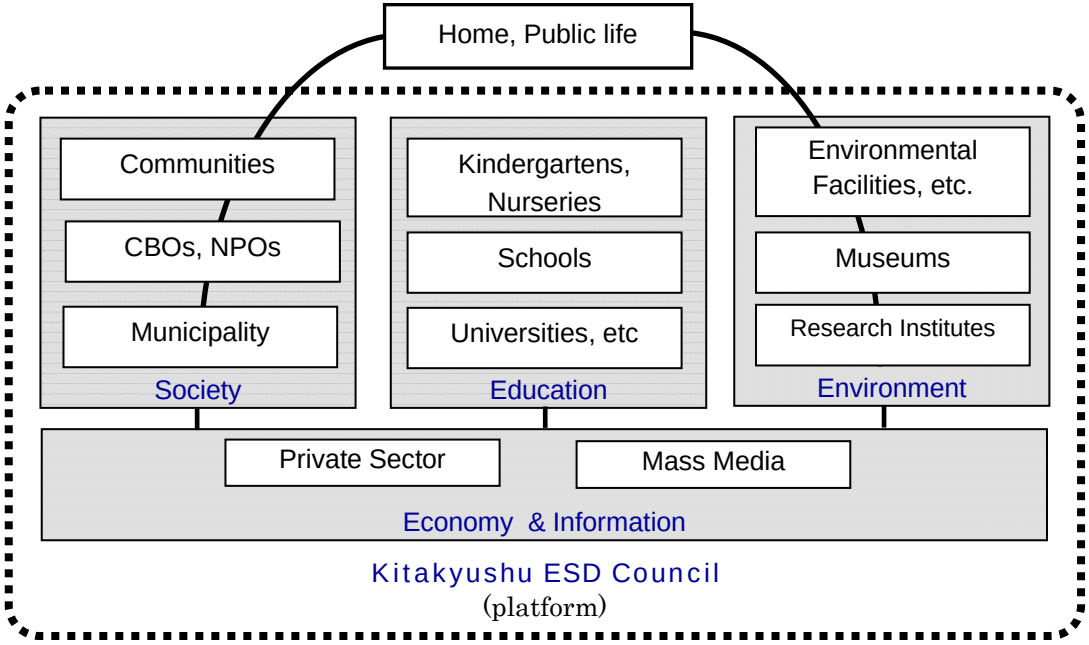
Slope Green and Hill Zone in Kanazawa City

Education for Sustainable Development (ESD)



Regional Partnership in ESD: Regional Centres of Expertise (RCE)

- **"Decade of Education for Sustainable Development"** has contributed greatly to educating people about sustainable development
- For further going, connect RCEs into networks t from **regional coalitions for the "Education for SD"**
- Kitakyushu City has been designated as an RCE in Japan
  - A famous model city for overcoming pollution and building a resource-circulating society
  - Training centers that support development of environmental technology in developing countries
  - Best suited for UNU **on-site training centre**

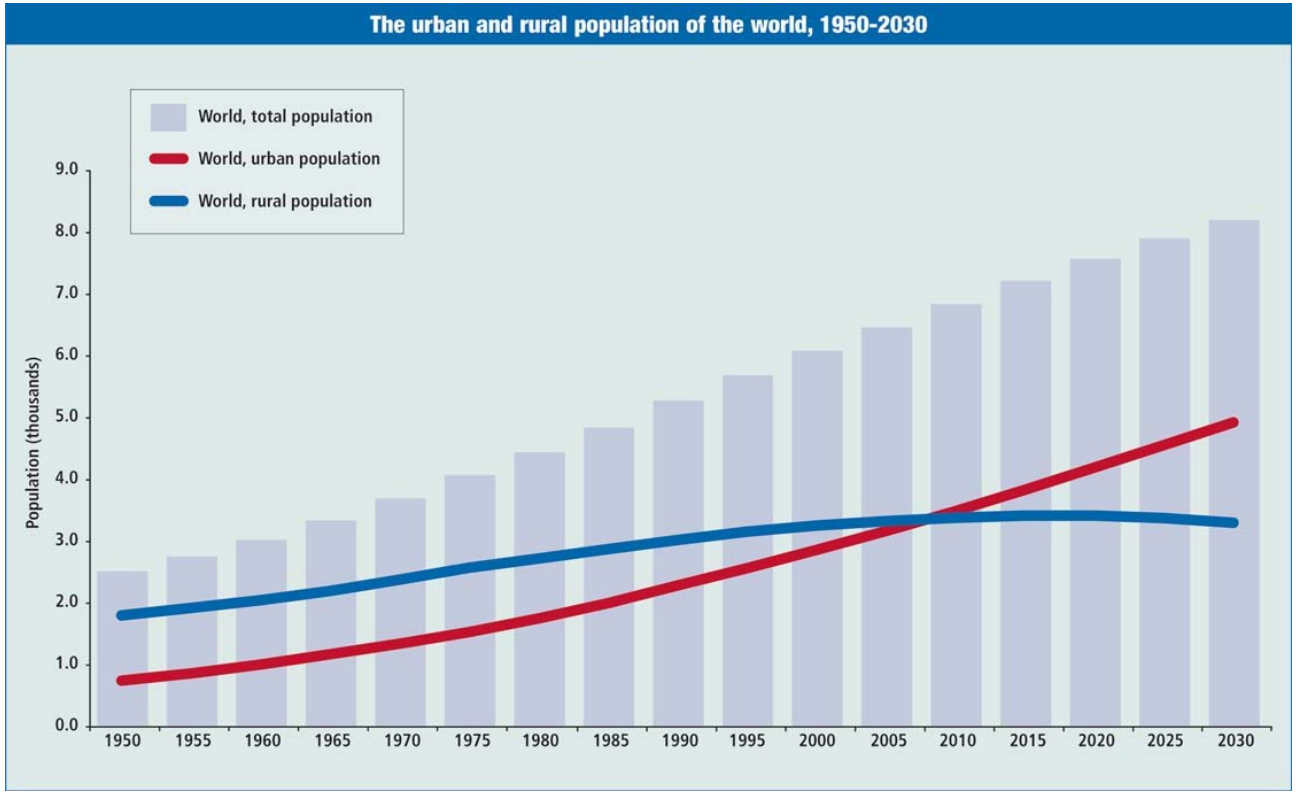


Kitakyushu Eco-Town

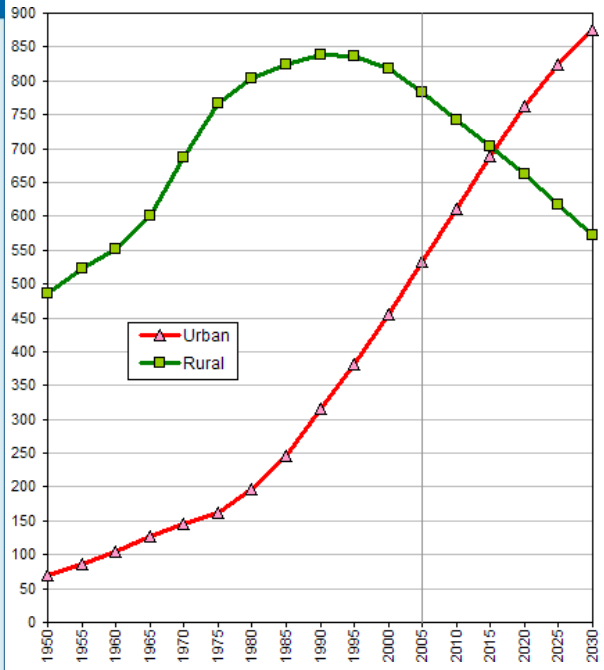
Comprehensive Environmental Industrial Complex, Hibiki Recycling Area

Urban Issues on Sustainability

- Half of the world's population live in the cities
- More "megacities" are emerging particularly in developing countries
- Cities consume massive energy and resources
- Cities are facing threats to the environment and ecosystems



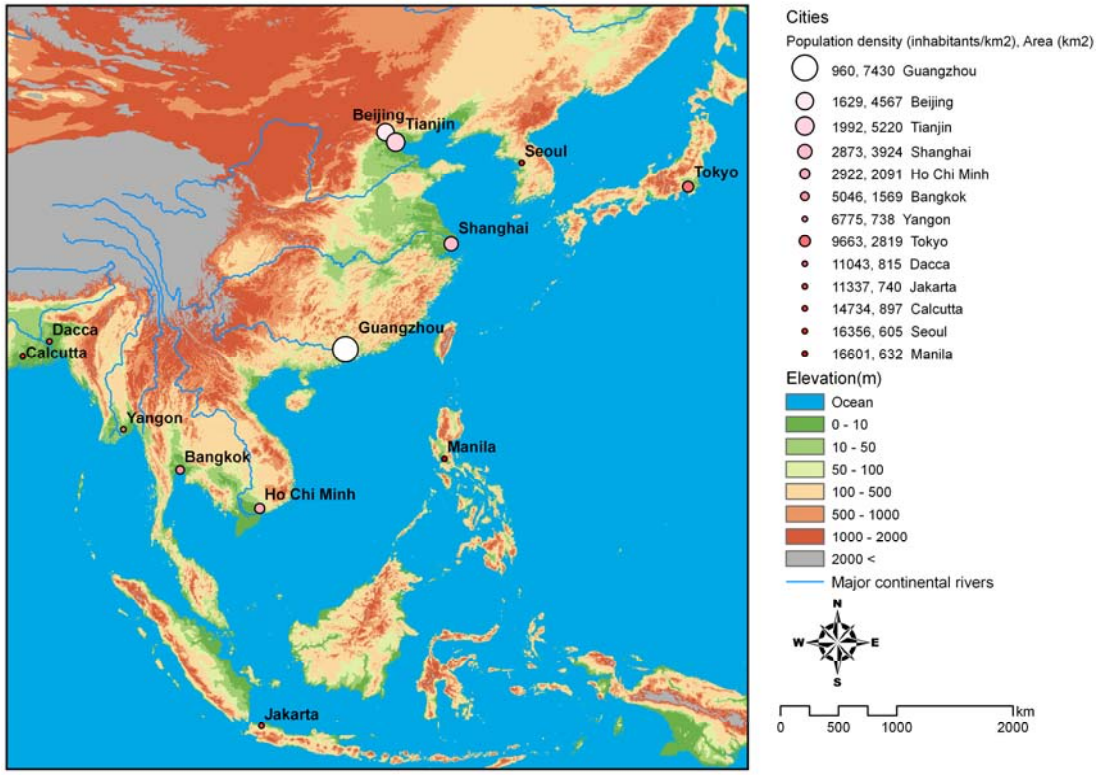
http://www.un.org/esa/population/publications/WUP2005/2005wup.htm



China's Rural and Urban Population 1950-2030 (UN Estimates, 2003)

Urban-Rural Sustainability and Asian Cities

- Many cities in Asia have been developed where once were cultivated areas
- Issues faced by urban and rural areas are inherently two sides of the same coin
- Urbanization will cause various problems that affect both urban and rural
- The key to sustainable cities in Asia lies in coexistence of urban and rural areas

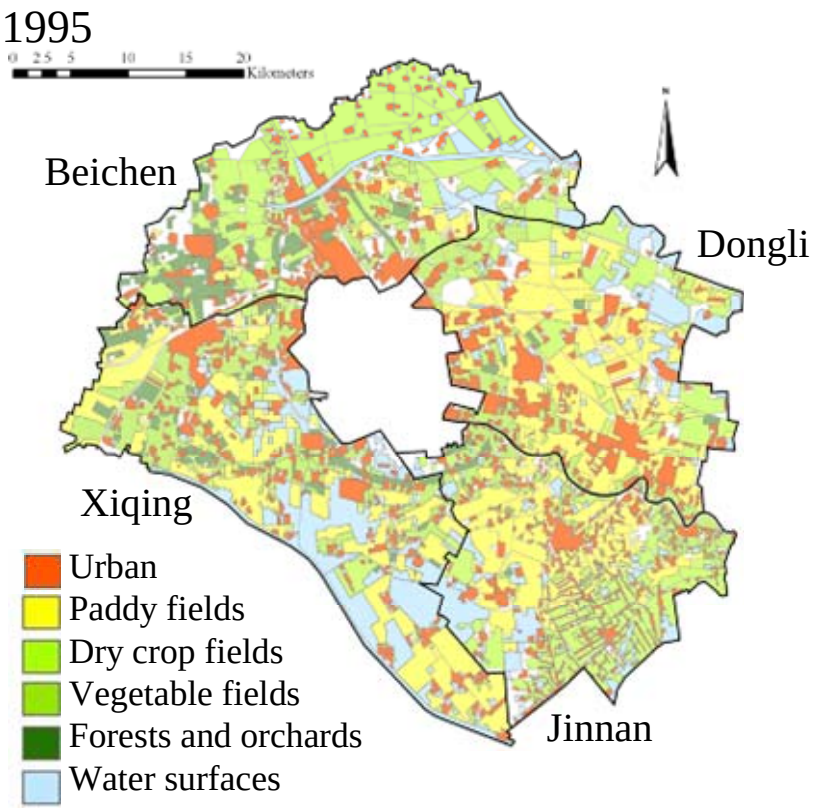


Characteristics of Chinese Megacities and Urban & Rural Societies

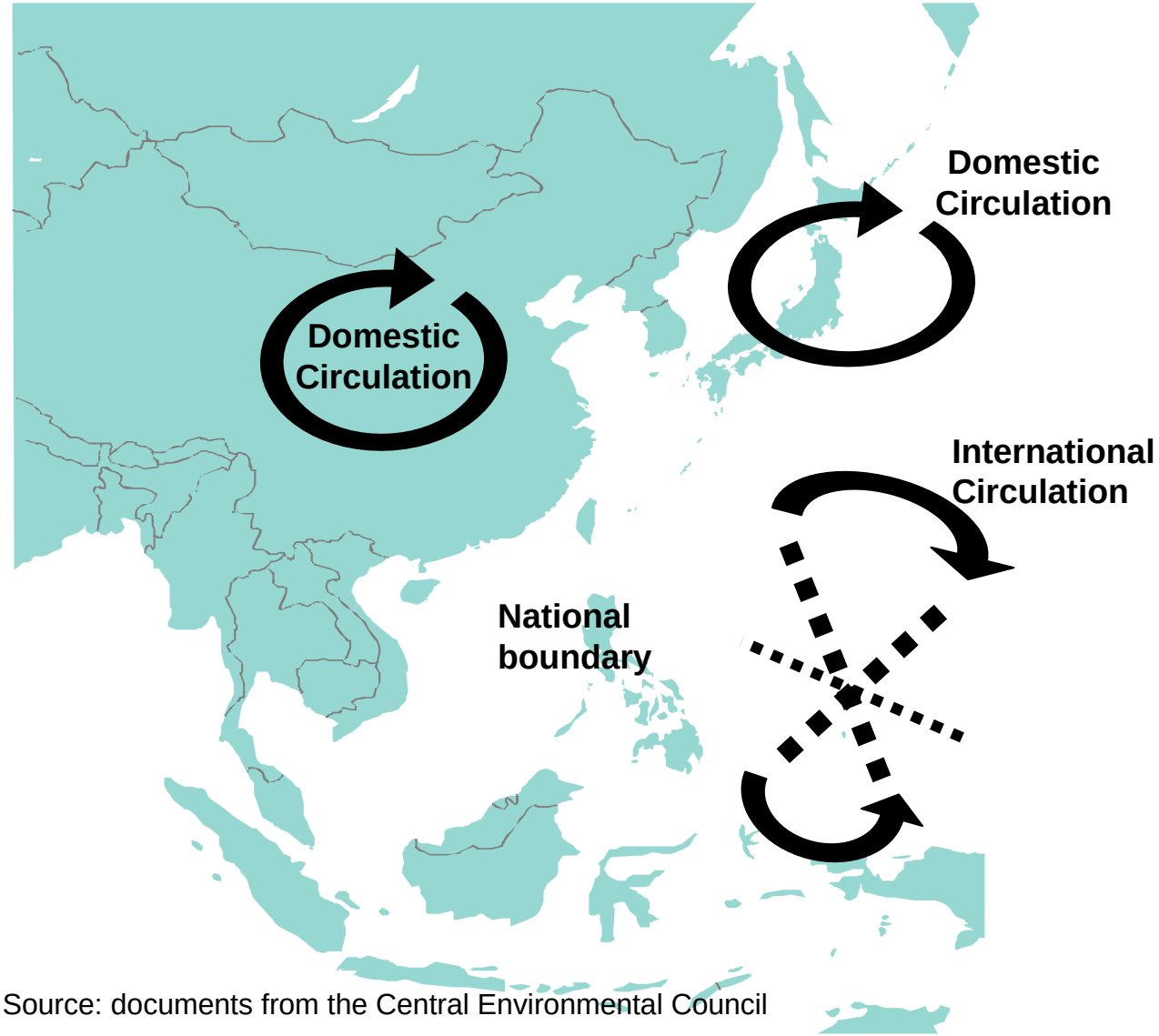
- Urban expansion in China has some similar phases as in postwar Japan (so-called Asian type)
- Reducing disparities between urban and rural is important in sustainable development
- This fusion will propose a vision of "Ideal City" in Asia
- Todai's collaboration with Tianjin City Government in order to promote urban-rural resource circulating society

Urban and Rural Mixture and Fusion in East Asia

- Commonality of monsoon Asia and paddy culture
- Urban expansion toward urban fringe
- Urban-rural mixture in small scale
- Toward establishing sustainable city based on urban and rural planning



Basic Approach toward an International Sound Material-Cycle Society



Source: documents from the Central Environmental Council

(1) Placing **priority on improvement of the domestic 3R capacity**

(2) Simultaneously enhancing and reinforcing activities to prevent illegal import / export of waste

When (1) and (2) are successfully implemented,

(3)Facilitating import / export of CR as complementary to domestic circulation in each country

Edo was once an ideal SMS city…