



Establishing a Sound Material Cycle Society in Asia

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Outline

1. Introduction

- The concept of a sound material cycle –

2. Importance of the 3Rs in Asia

3. Key actors to promote 3Rs

4. Japan's Efforts towards a Sound Material-Cycle Society

5. Disseminating 3Rs to Asia and the World



1. Introduction

- The concept of a sound material cycle -

循環



Massive flow of materials

Consumer products



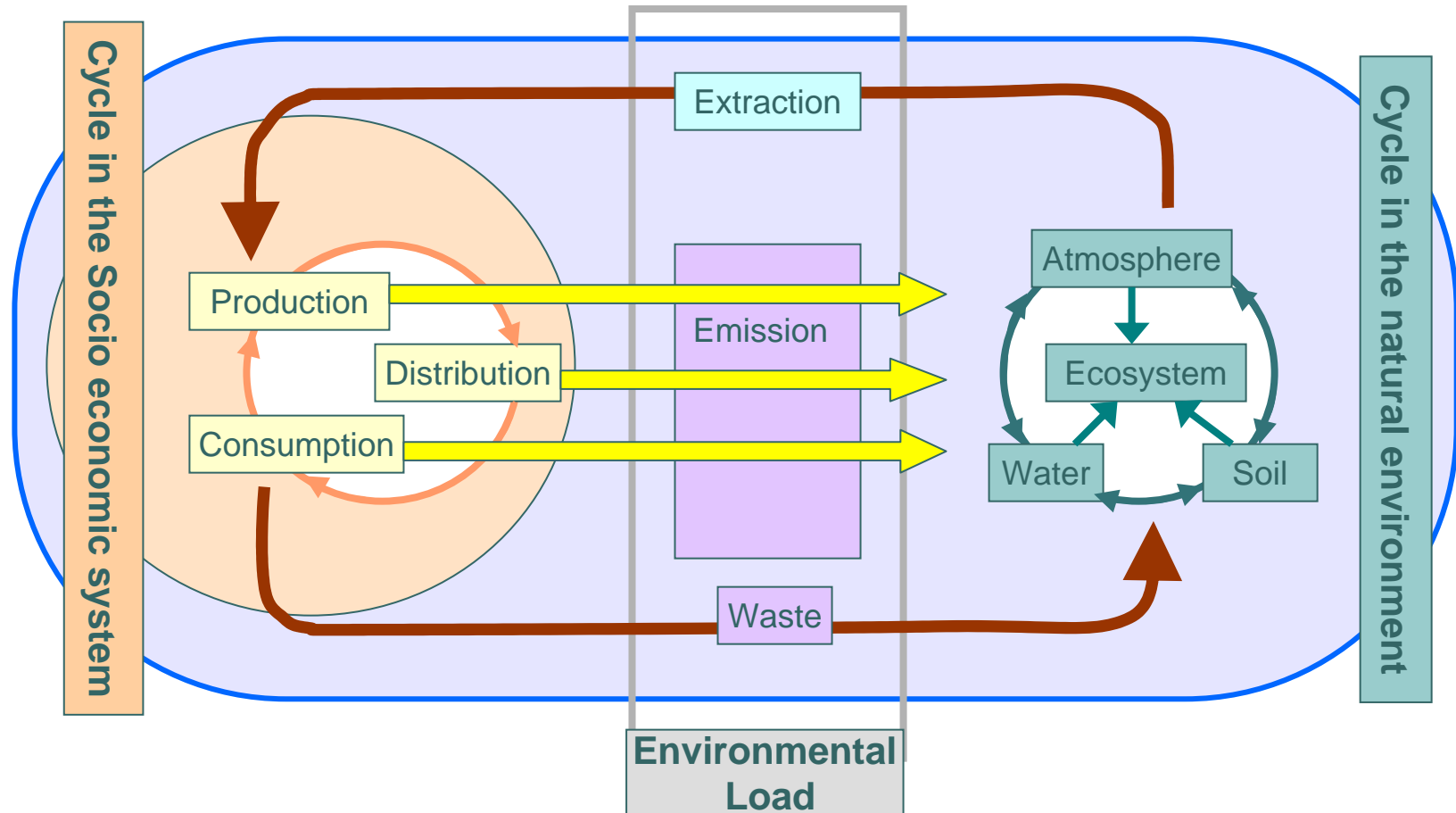
as source of
resources

The environment is finite

as sink of
residuals



Cycle in the Socio-Economic System and Cycle in the Natural Environment

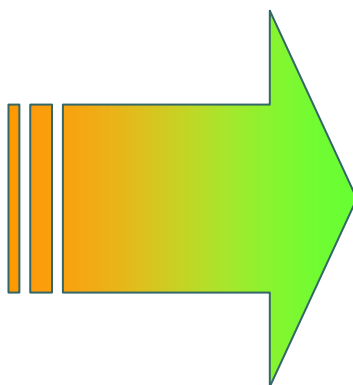




Transition of socio-economic structure

Mass-production,
mass-consumption,
mass-disposal society

Sound material
cycle society (SMS)



Recycling-based
Cycle-oriented
Sound material-cycle

Saving
resources

Reducing
burdens

大量生産・大量消費・
大量廃棄型社会

循環型社会
“Junkan”



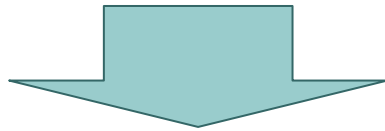
2. Importance of the 3Rs in Asia



Key trends in Asia

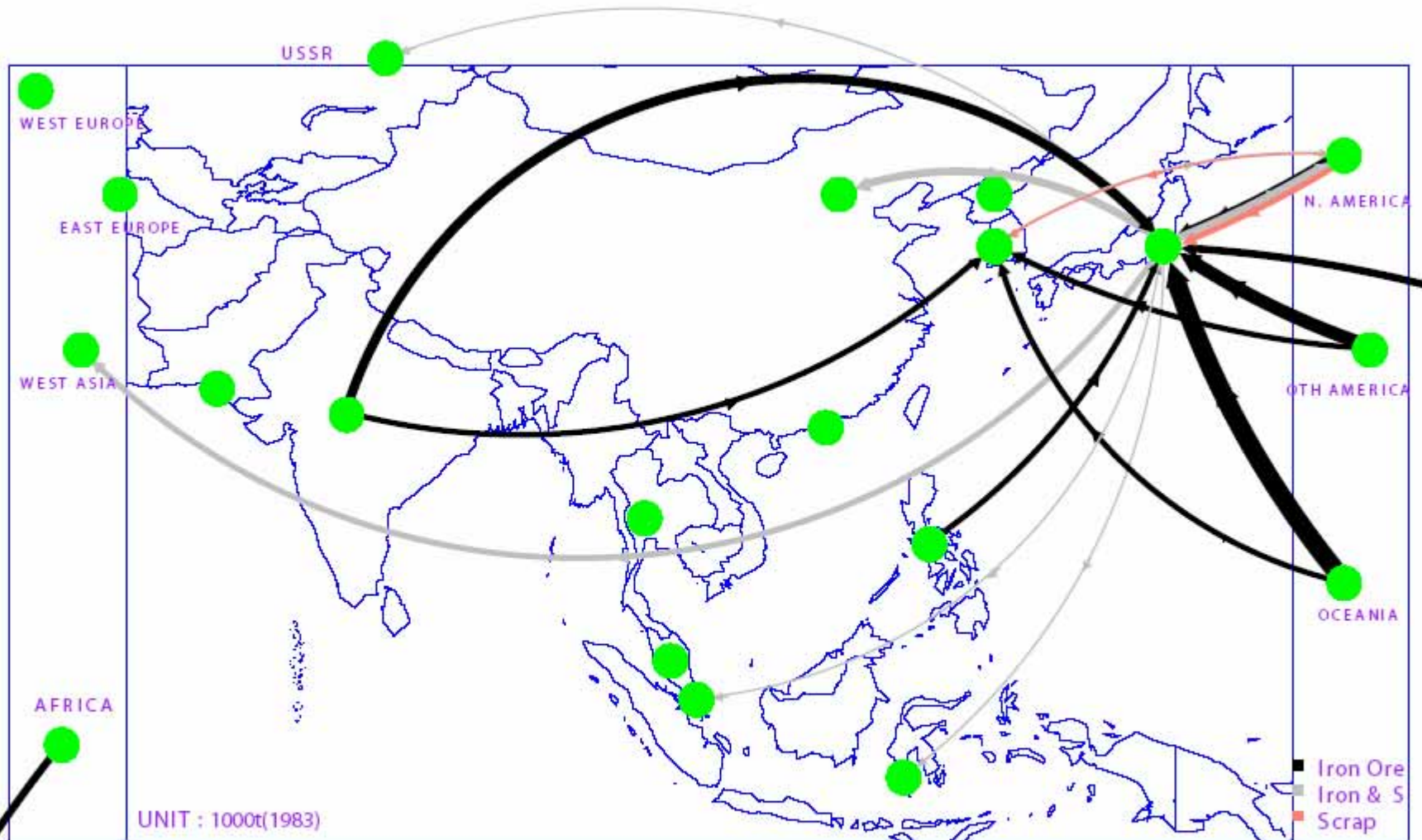
Rapid economic growth

Approximately half of the world population,
26% of the world GDP



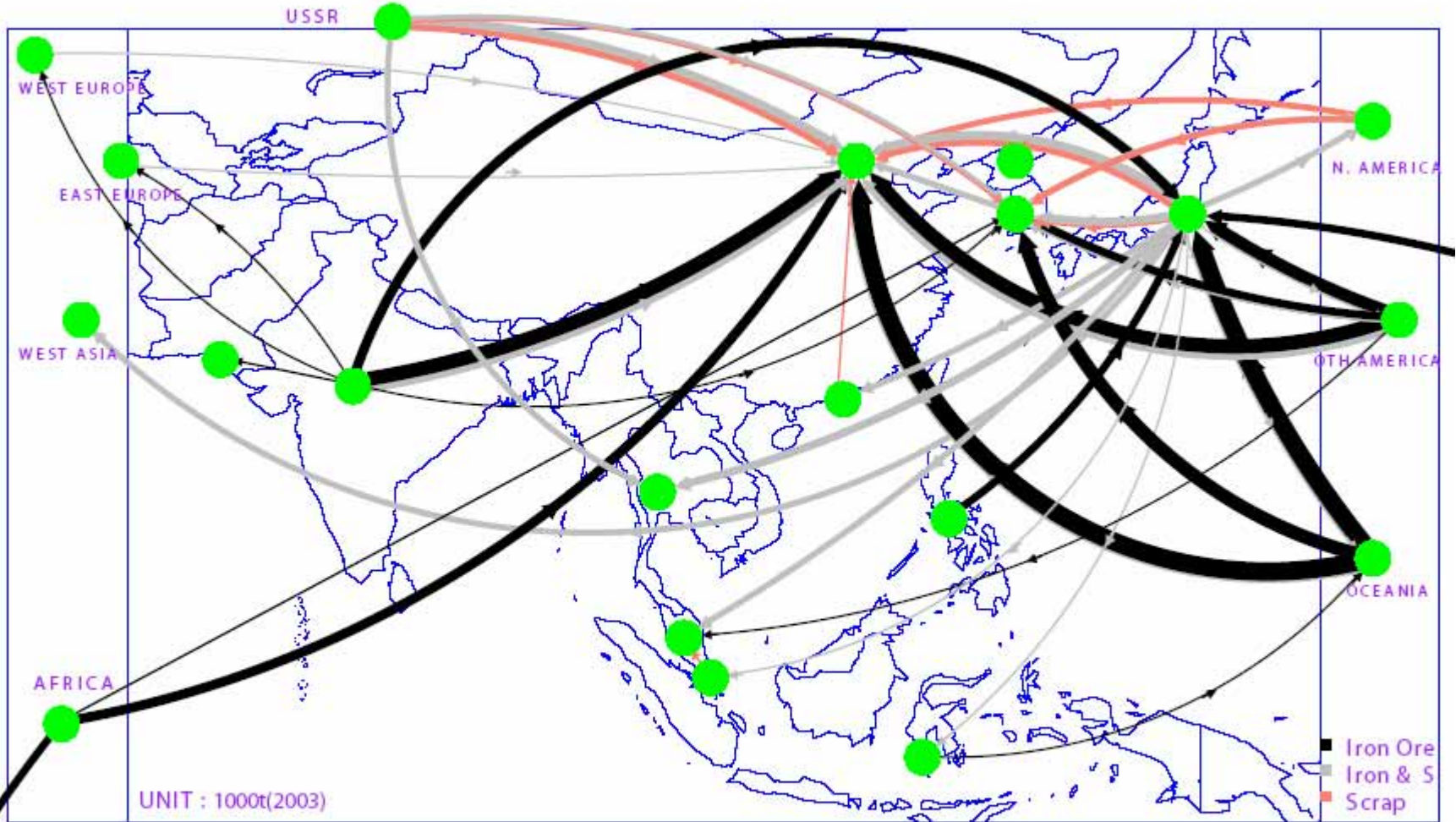
- Increasing quantity of solid waste
- Diversified quality of solid waste
- Trans-boundary movement of 3Rs-related goods, materials and products
- Rising price of material resources

International trades of iron ore, steel, & scrap iron (1983)



Trade Flow of the Iron in the Asia[1983]

International trades of iron ore, steel, & scrap iron (2003)



Trade Flow of the Iron in the Asia[2003]



Key trends in Asia

Rapid economic growth

Approximately half of the world population,
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Effectiveness of 3Rs and ESM

Rising price of material resources

Increasing quantity of solid waste

Diversified quality of solid waste

Key trends in Asia

Trans-boundary movement of 3Rs-related goods, materials and products

Promotion of the **3Rs**
(**R**educe, **R**euse and **R**ecycle)

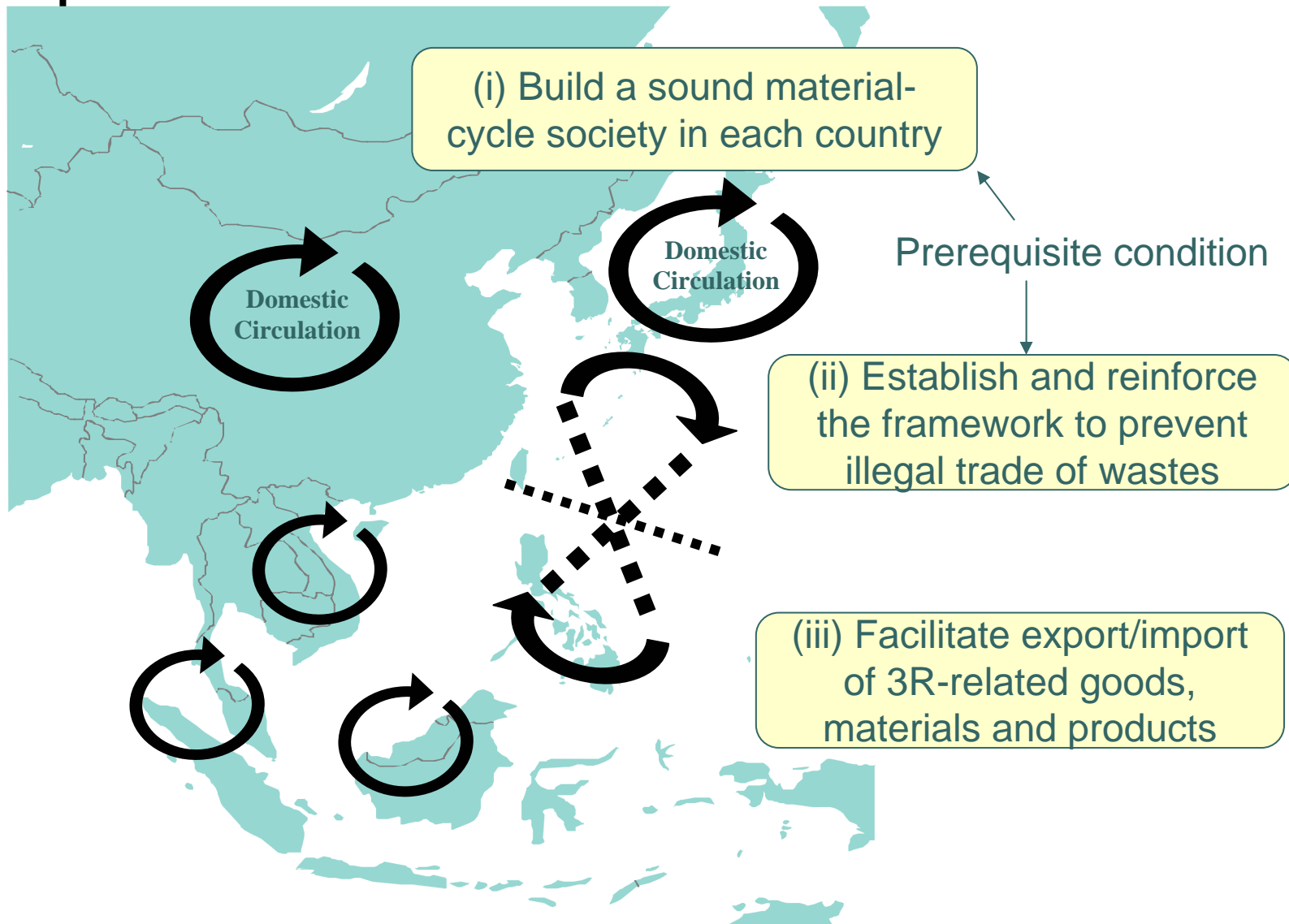
and

Promotion of the **ESM**:
Environmentally **S**ound
Management of Waste

*More efficient use of products and resources
and Reduction of environmental burdens*



Sound material cycle society in Asia through 3Rs

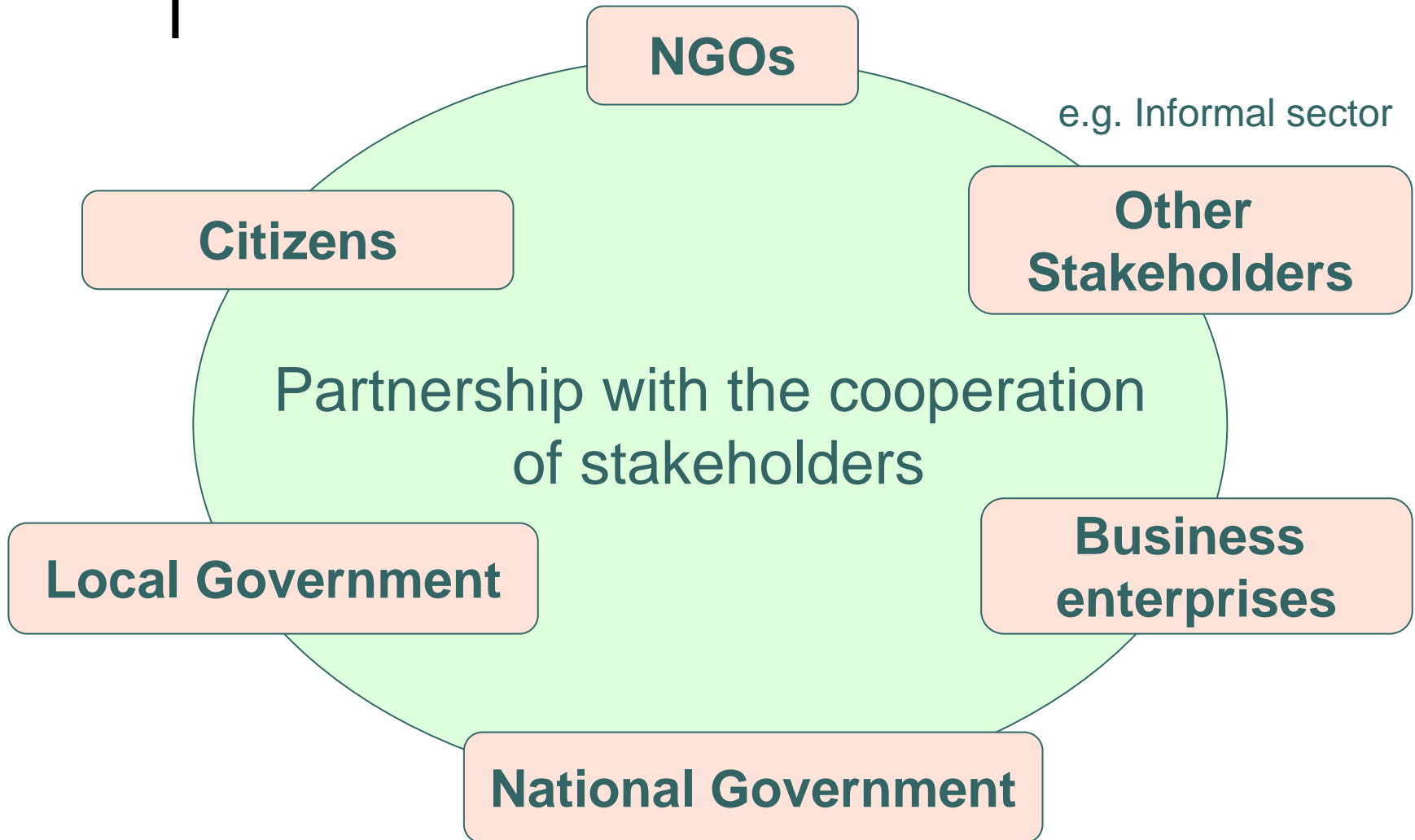




3. Key actors to promote 3Rs



Partnership among stakeholders





On-going Programmes and Projects related to the 3R Initiative in Asia

- Assistance for development of national strategies
- ESM of E-waste in the Asia-pacific region
- The Asian network for Prevention of Illegal Transboundary Movement of Hazardous Wastes
- 3R Knowledge Hub
- Sub-regional 3R Expert Meetings
- Asia-Pacific Solid Waste Management Expert Meetings
- JICA projects



4. Japan's Efforts towards a Sound Material-Cycle Society



Reform of waste management and recycling policy toward a Sound Material-cycle Society

1. Three main trends of waste and recycling measures
 - **Responsibility of waste-generating businesses** (mainly for industrial wastes)
 - Recycling measures through **Extended Producer Responsibility (EPR)**
 - **Collaboration** between local and central governments, (mainly for municipal wastes)

2. Crosscutting approach
 - Promotion of various **technical developments** (EcoDesign, 3R technologies, Incineration and final disposal technologies)
 - New approaches toward **lifestyle change** (“Mottainai” spirit, everyday life, education, green purchasing)



Concept of a Sound Material-Cycle Society

- Japan is undertaking the transition to a Sound Material-Cycle Society.

A sound material-cycle society, in which the consumption of natural resources is minimized and the environmental load is reduced as much as possible, is established by promoting reduction, reuse, recycling, energy recovery and appropriate disposal.



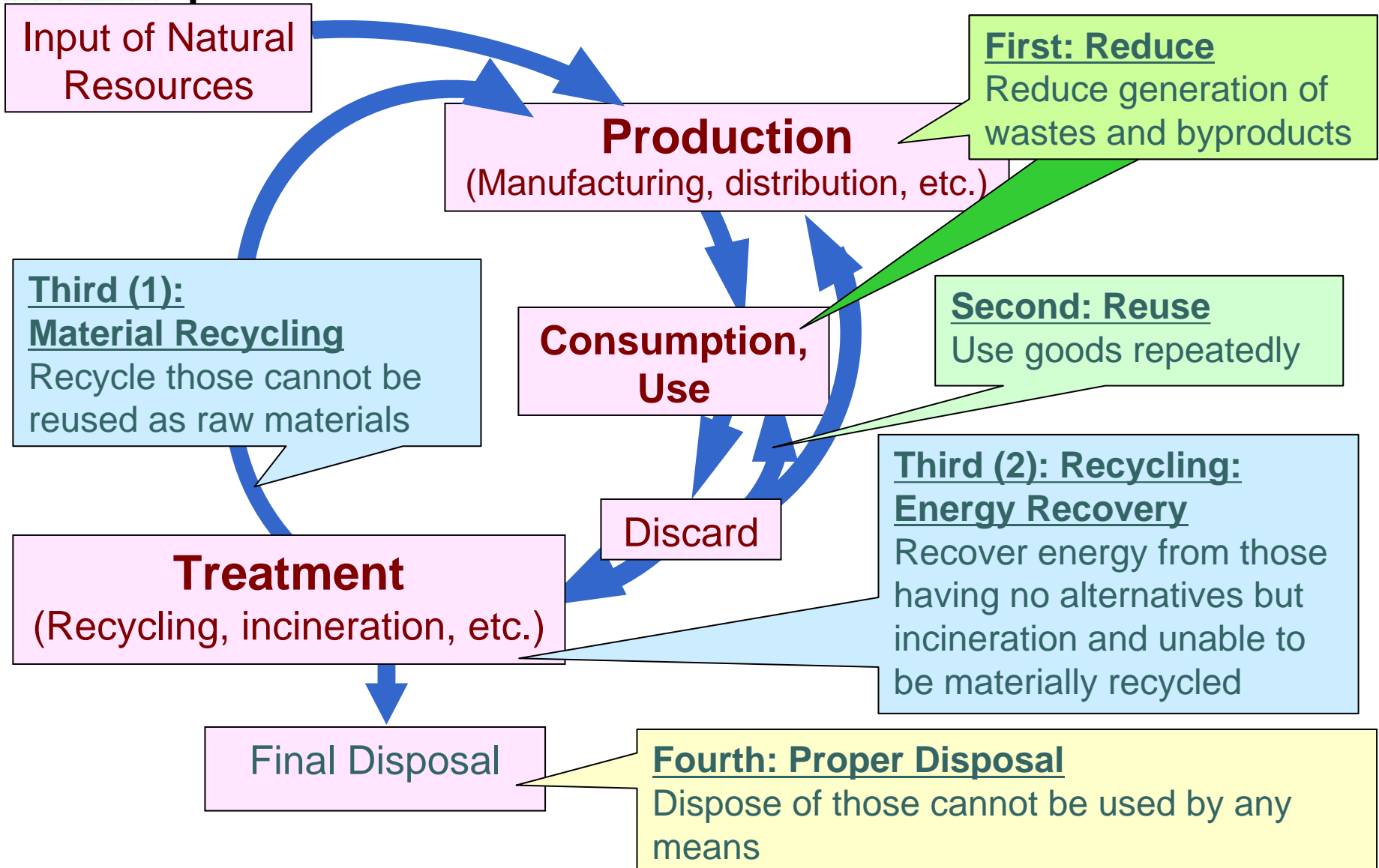
Fundamental Law for Establishing a Sound Material-Cycle Society

○ Basic Principles

- Realize a society in which sustainable development is possible with less environmental impact
- Prioritize the ways of handling products, waste and recyclables
- Ensure the appropriate material cycle in nature

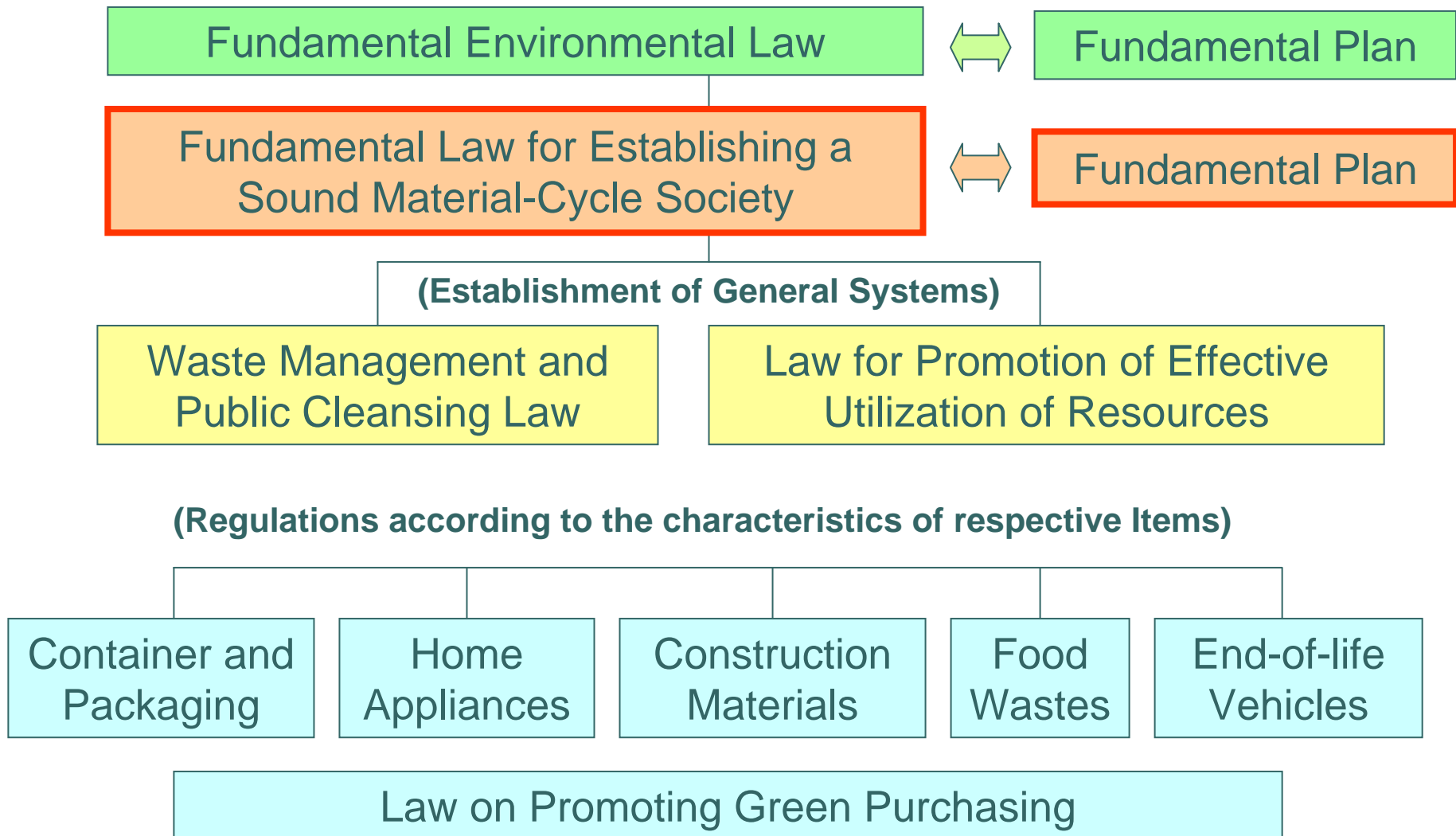


Scheme of a Sound Material-Cycle Society





Law and Regulation





Fundamental Plan for Establishing a Sound Material-Cycle Society

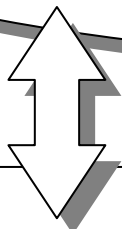
- Adopted by the Japanese Cabinet in 2003
- Developed as one of the programmes of a 10-year framework in the Johannesburg Plan of Implementation



Fundamental Plan for Establishing a Sound Material-Cycle Society

Image of a Sound Material-Cycle Society

Manufacturing: DfE (Design for Environment), long-life products, lease & rental
Waste management: cyclical use, appropriate disposal system



Quantitative Targets: FY2000-2010

1 Targets for Indicators Based on Material Flow Accounts

- a) Resource Productivity
- b) Cyclical Use Rate
- c) Final Disposal Amount

2 Targets for Indices Related to Efforts

- Reducing the quantity of municipal solid waste
20% reduction of garbage discharged from households per person per day compared with FY2000
- Promoting sound material-cycle related businesses
Doubling the size of the related market and the number of related jobs compared with FY 1997



Fundamental Plan for Establishing a Sound Material-Cycle Society

Quantitative Targets: FY2000-2010

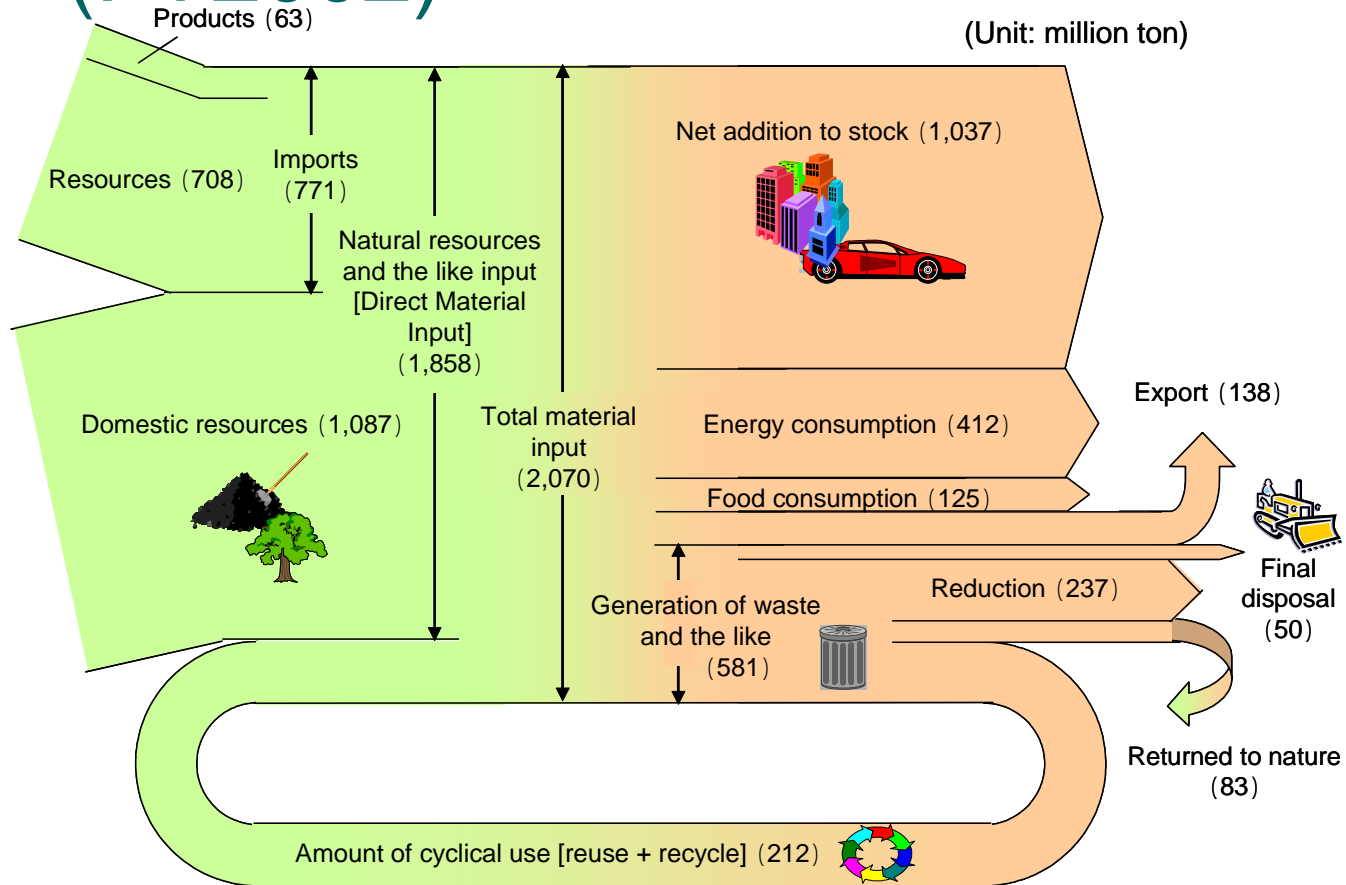


Efforts Required of Entities

- National Government
Fostering partnerships among stakeholders
- Citizens
Changing their lifestyle
- NPOs and NGOs
Promotion of their activities
- Business Organizations
Promoting the “3Rs” based on EPR (Extended Producer Responsibility)
- Local Governments
Enforcing laws and regulations; acting as coordinators



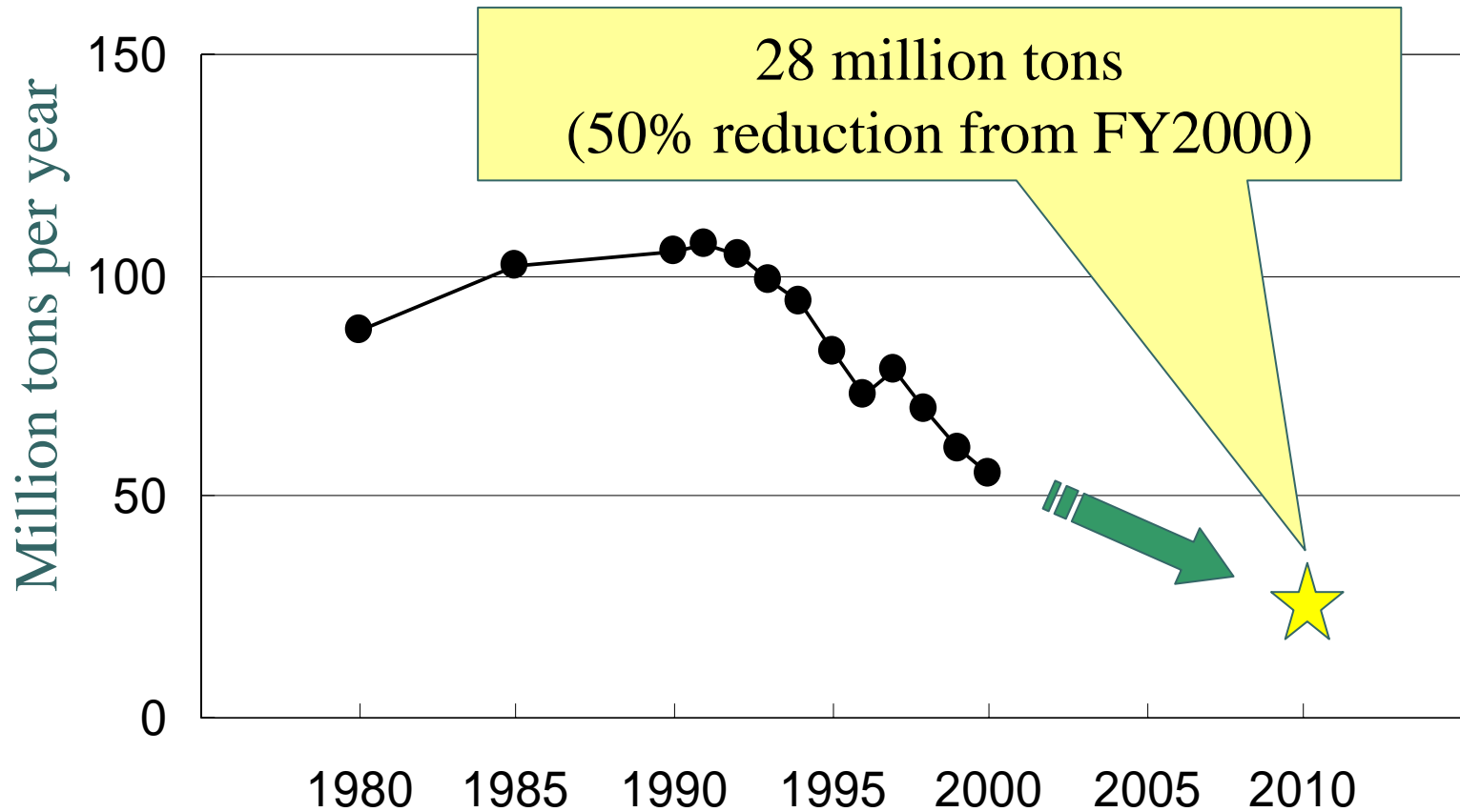
Material Flow Accounts of Japan (FY2002)



- 1) Total material input is about 2.1 billion tons.
- 2) Amount of cyclical use (reuse + recycling) is 212 million tons.
- 3) Amount of final disposal (landfill) is 50 million tons.



Targets for Indicators Based on MFA Output: Final Disposal Amount

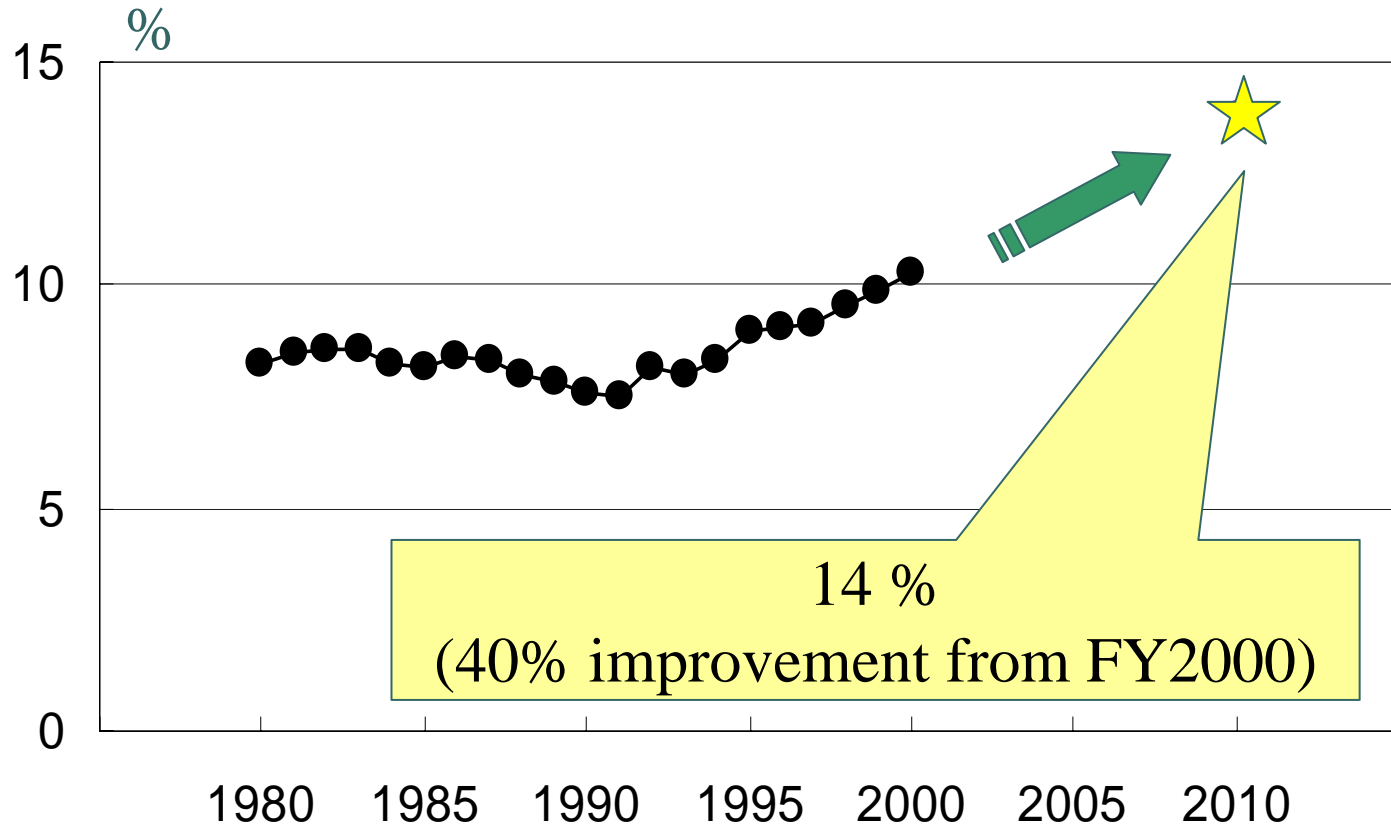


**Final Disposal
Amount**

= Final disposal amount of waste



Targets for Indicators Based on MFA Cycle: Cyclical Use Rate

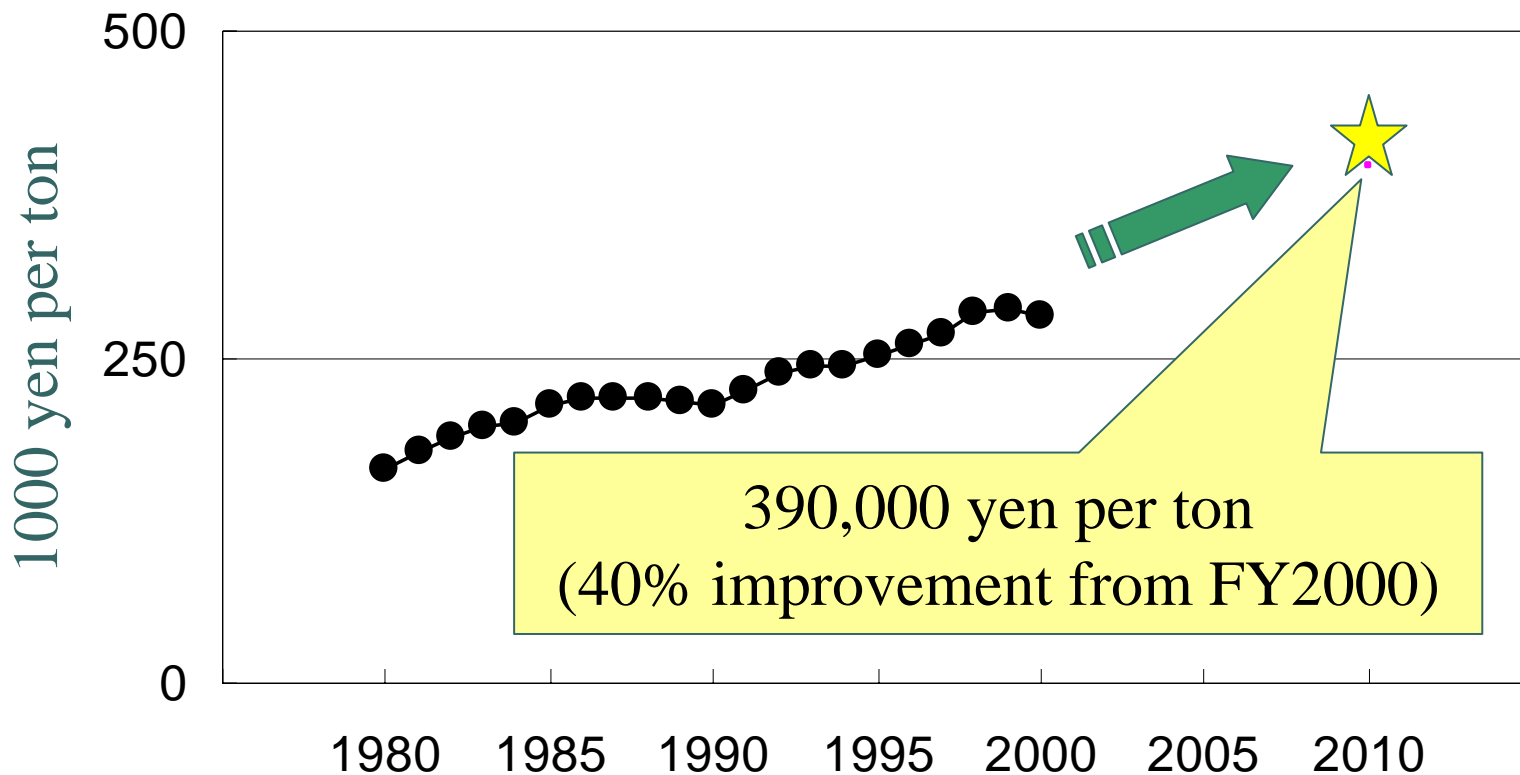


$$\text{Cyclical Use Rate} = \frac{\text{Amount of cyclical use (reuse + recycling)}}{\text{DMI + Amount of cyclical use}}$$



Targets for Indicators Based on MFA

Input: Resource Productivity



$$\text{Resource Productivity} = \frac{\text{GDP}}{\text{DMI* (Input of natural resources and the like)}}$$

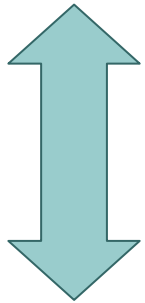
*DMI: Direct Material Input



Why do material flows matter ?

➤ Dematerialization

Total size of MF, scarcity of resources, scarcity of waste dumping site, etc.



Proxy of environmental impacts ?

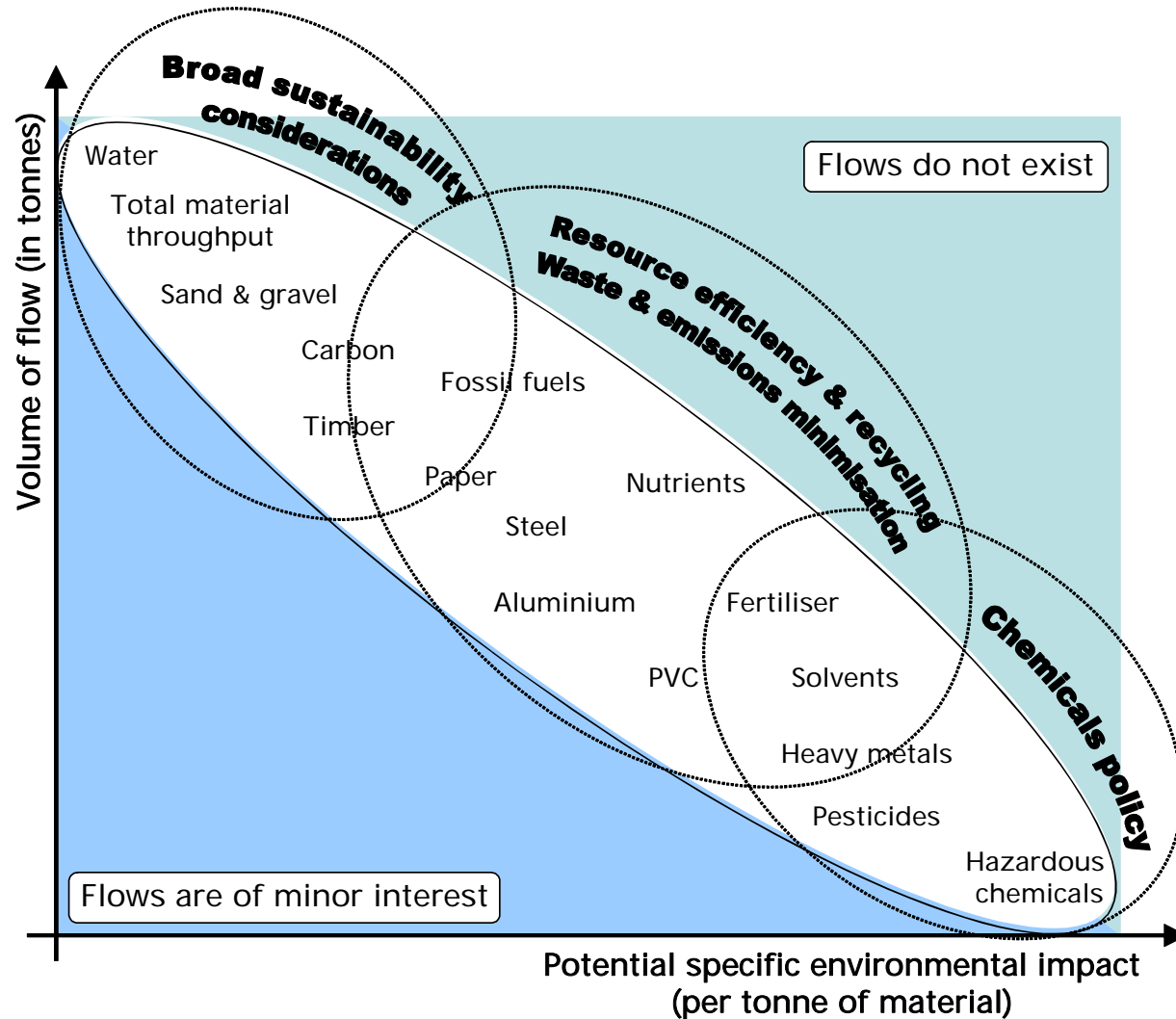
Common background of environmental problems?

➤ Detoxification

Minimization of use and release of critical (hazardous) substances



Schematic representation of material flows, environmental impacts and policy uses of MFA





Law and Regulation

Fundamental Environmental Law



Fundamental Plan

Fundamental Law for Establishing a Sound Material-Cycle Society



Fundamental Plan

(Establishment of General Systems)

Waste Management and Public Cleansing Law

Law for Promotion of Effective Utilization of Resources

(Regulations according to the characteristics of respective Items)

Container and Packaging

Home Appliances

Construction Materials

Food Wastes

End-of-life Vehicles

Law on Promoting Green Purchasing

MOEs Special research grant for 3R Initiative (2006-08FY)

Research project for establishing environmentally sound resource circulation and waste management systems in Asia

Advisory board by 7 senior experts

Top down project

Project leader	Dr. Yuichi MORIGUCHI(NIES)
Core members	Prof. Shin-ichi SAKAI (Kyoto University) Dr. Atsushi TERAZONO (NIES)

Outcome:

Contribution to 3R policy formulation in Asia

Research project teams by ca. 45 Japanese experts

- 3R scenario analysis for persistent chemicals associated with end-of-life products
- Life-cycle assessment of domestic and international recycling scenarios and its application to waste plastics
- Analysis of resource circulation systems for e-waste and waste plastics in Asia
- Comparative study of recycling systems for end-of-life vehicles
- Comparative study of local material cycle systems in Asia
- 3R policy regime reflecting international resource circulation
- Management of medical waste from the perspective of international health policy, the case of used syringe

Research partners in Asia

Field studies in Asia





5. Disseminating 3Rs to Asia and the World



Development of the 3R Initiative

- 2004 G8 Sea Island Summit (USA)
Propose "3R initiative"
- 2005 Ministerial Conference on the 3R Initiative (Tokyo)
Kick-off meeting for 3R initiative
Senior Officials Meeting on the 3R Initiative (Tokyo)
Kick-off meeting for 3R initiative
- 2006 **Asia 3R Conference (Tokyo)**
- 2007
- 2008 G8 Summit (Japan)





Japan's Action Plan (April 2005)

Realization of Zero Waste in Japan

- Fundamental Plan for Establishing SMC Society
- 3R-relevant policy

Support Developing Countries

- Assistance to capacity building of developing countries

Efforts toward Global Zero Waste Society

- Organizing an official-level meeting for 3R Initiative follow-up
- Development of 3R-relevant policy
- Knowledge and Technology Development in Asia
- Enhancement of actions through information sharing and networking