

Promotion of the 3Rs in Asia and Needs for Information and Knowledge Development

Yasuhiko Hotta, PhD
Deputy Project Manager
Waste and Resources Project
Institute for Global Environmental Strategies

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Institute for Global Environmental Strategies (IGES)



- Environmental policy research institute founded in 1998 with supported from the Government of Japan,
- 7 Project Areas: Climate Policy, Biofuel, Forest Conservation, Fresh Water, Waste and Resources, Capacity Development and Education, Business and Environment.
- 2 teams for inter-project collaboration: Policy and Governance Team and Economic Analysis Team
- About 60 full time researchers (non-Japanese research staffs more than 30%)
- Headquarters: Hayama (south of Tokyo), 3 other domestic offices (Tokyo, Kobe, and Kitakyusyu), and 2 international offices (Bangkok and Beijing)

Major research interest of WMR, IGES: Internationalization of waste and recycling –related issues in Asia

Waste and recycling issues have been internationalized; they can no longer be addressed by domestic measures alone

A. Problems from economic integration

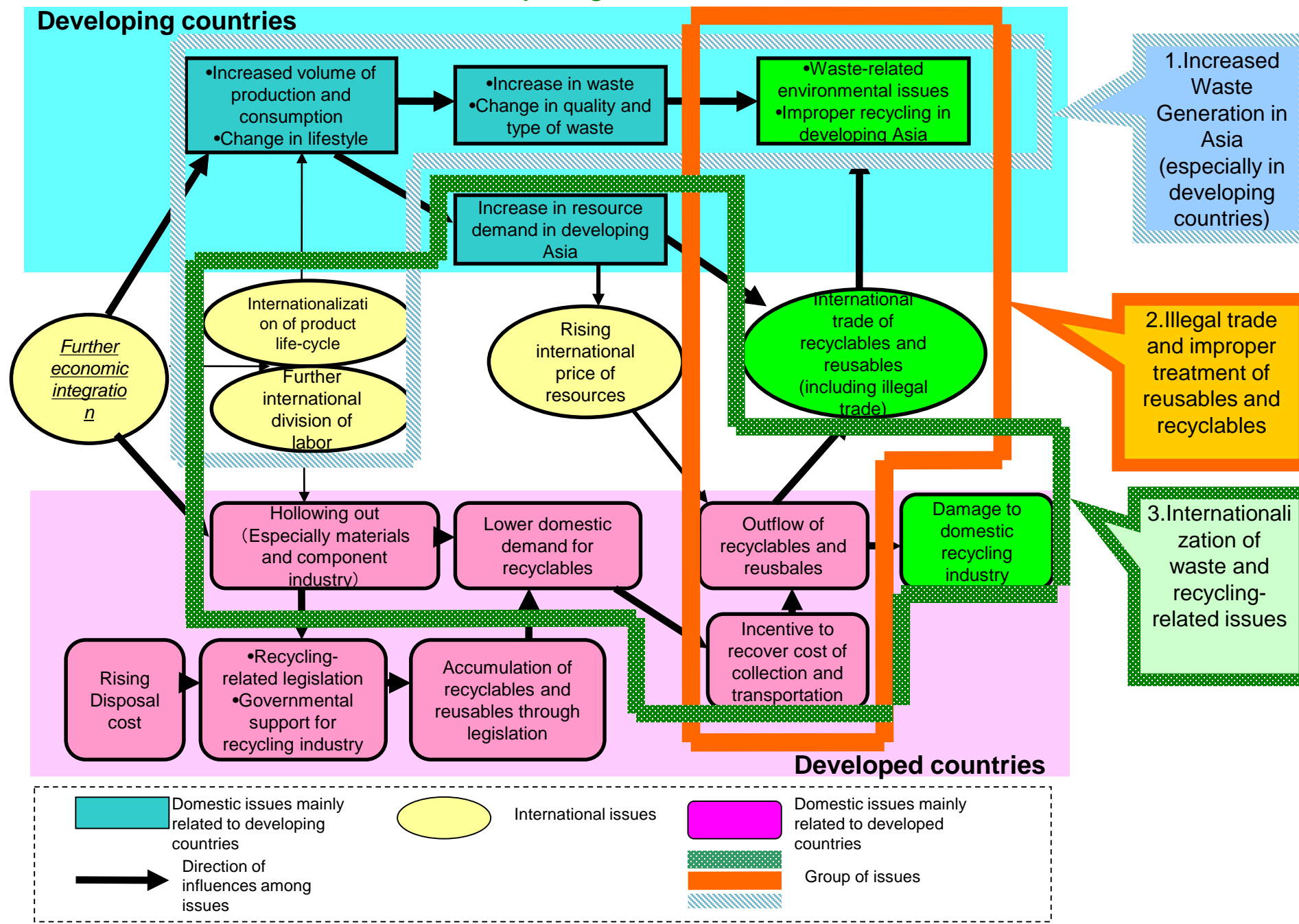
- Increased waste generation (quantity and complexity)
- Increased illegal waste trade, trade in recyclables, improper recycling
- Environmental damage from improper recycling and illegal and open dumping
 - Especially air, water, & soil contamination
 - Especially toxic and hard to manage materials from e-waste

B. Opportunities from economic integration

- Opportunity for increased efficiency and specialization in recycling (increased efficiency of resource utilisation)
- Increasing needs for regional policy response

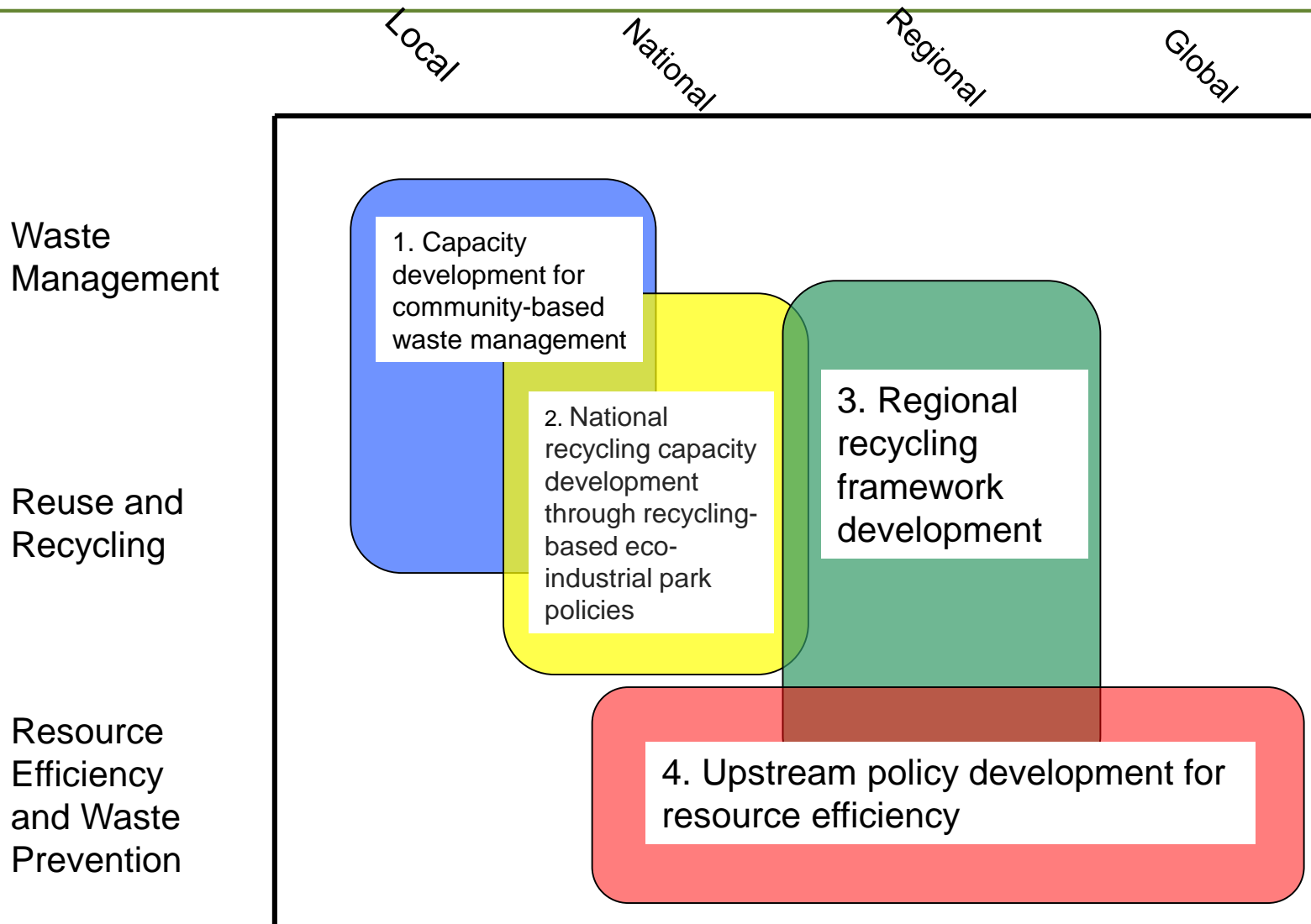
See more detailed argument in Hotta and Elder et. al. (2008), “Policy Considerations for Establishing an Environmentally-Sound Regional Material Flow in East Asia.” *The Journal of Environment & Development.*, March 2008

Internationalization of waste and recycling-related issues in Asia



Source: Hotta, Elder et al. (2008)

Research Focus of Waste and Resources Project of IGES



Support for various International Environmental Policy Processes

- Support secretariat function and development of documents related to international conferences
- Implementation of surveys related to the processes
- Strengthen the collaboration with relevant international organizations and research institutes

Examples of policy processes to which IGES/WMR Project contributes

- 3R Initiative (as G8 Process as well as in Asia)
- G8 Environmental Ministers Meeting (Kobe, May 2008)
- National 3R Strategy Development (in collaboration with UNEP and UNCRD)
- Kitakyushu Initiative for a Clean Environment
- Strategic Approach to International Chemicals Management (SAICM)
- Policy Dialogue on Chemical Management among China, Republic of Korea and Japan
- OECD-Japan Seminar on Material Flows and Resource Productivity
- Revision of indicators for sound material cycle society by Japanese government

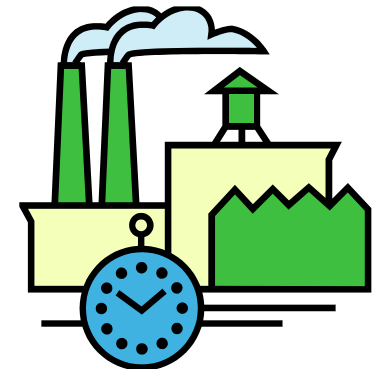
1. Capacity development for community-based waste management

- This component addresses waste management and local resource utilisation in developing countries in Asia.
- It aims to identify appropriate institutional settings and capacity building needs for sustainable waste management, including waste reduction, reuse and recycling.
- Special attention is given to community-based approaches and the roles of different stakeholder groups. Another focus is on co-benefits between the 3Rs and GHG reduction from utilization of waste biomass in Southeast Asia.
- This component is partially carried out as an integrated part of Kitakyushu Initiative for a Clean Environment.



2. National recycling capacity development through recycling-based eco-industrial park policies

- This component aims to identify factors that can facilitate the development of appropriate capacity and infrastructure for environmentally sound recycling, especially in rapidly industrialising countries in Asia.
- In particular it investigates how policies can promote the establishment of recycle-oriented eco-industrial parks (clusters of recycling companies) in countries at different stages of socio-economic development.
- These activities were carried out together with Professor Toru Matsumoto at Kitakyushu University.



3. Regional recycling framework development

- This component addresses policies related with the trans-boundary movements of second-hand goods, recyclables and waste.
- It aims to identify pathways to the establishment of a regional recycling network in East and Southeast Asia.
- Topics studied include the applicability of policies based on the principle of Extended Producer Responsibility (EPR), and appropriate policy responses to environmental and social problems related with international trade in second-hand goods.



4. Upstream policy development for resource efficiency

- This component deals with policy measures targeting upstream stages of products' life-cycles.
- This includes for example information systems aimed at helping actors at different stages of products' life-cycles to ensure environmentally sound materials management.
- In FY 2008, the component received a three-year research grant from the waste management research fund of the Ministry of the Environment of Japan for a study which explores the feasibility of a regionally harmonised system for information exchange between producers and recyclers of electrical and electronic products.



Needs for knowledge and information development

Some examples

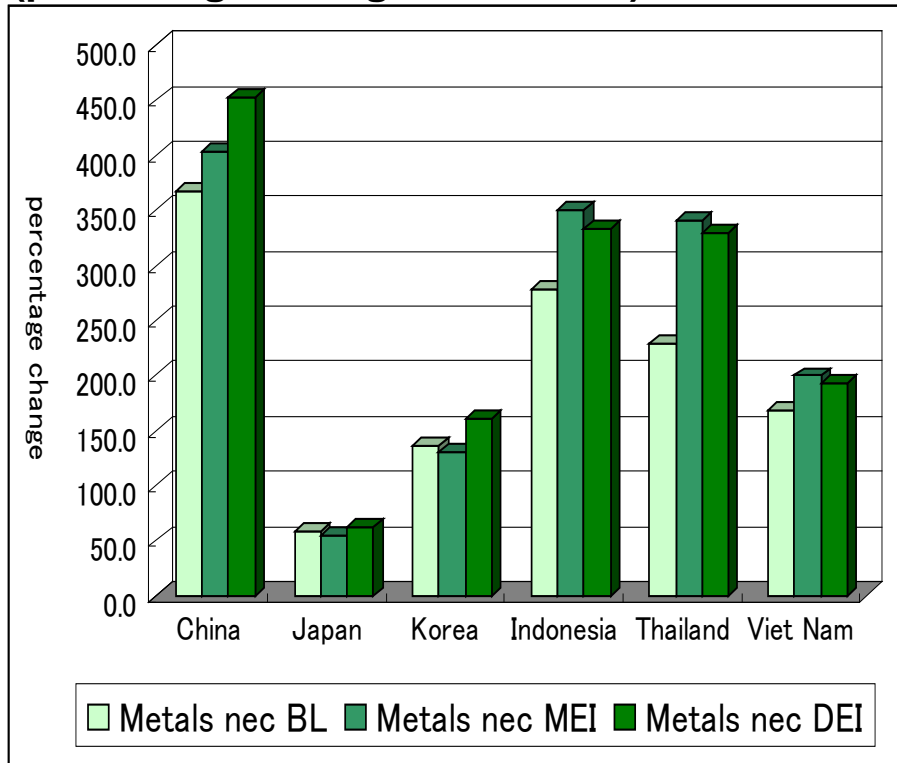
1. Example of relation between macro resource demands and the promotion of the 3Rs (Global/regional level)
2. Example of environmental data preparedness in non-OECD countries (National level)
3. Example of information sharing scheme (National/industrial level)

Example 1

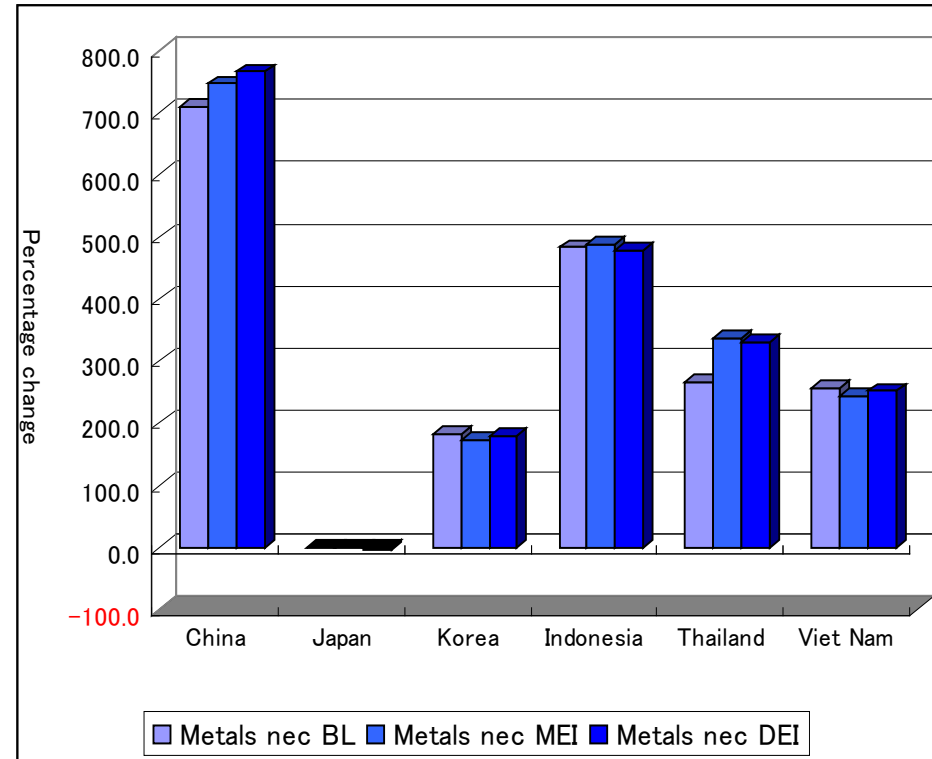
Global/national level

Example 1: Analysis of macro future resource demands and the 3Rs

Electronics sector's demand for imports (percentage change 2001-2020)



Electronics sector's demand for domestic product (percentage change 2001-2020)



- Huge increase in electronics industry's demand and trade of metals (also consumption of electronic goods) =>
- Huge increase in potentially hazardous e-waste

Example 1: Analysis of macro future resource demands and the 3Rs

1. The above result is to get some indirect suggestions on how economic integration drives increasing demands in potentially hazardous recyclables.
2. It assumes that metal demands in electronic sectors may drive more trade in mixed and potentially risky materials including non-ferrous/rare metals such as e-waste.
3. Metal needs for electronics will increase much higher than needs for construction sector.
4. Thus, the result can conclude demand for imports of potentially hazardous recyclables which includes metals will be significantly increased in developing Asia.
5. However, domestic consumption of materials continues to increase. Thus, trade measure may not be enough for proper management of used products with hazardous substances.
6. Modeling analysis does not directly reflect “resource availability” and “trade in recyclables”. Thus, reflecting these aspects would be a potential future task.

Example 2

National level

Example 2: Capacity assessment of selected non-OECD countries to monitor material flows and resource efficiency

Overall purpose of the study

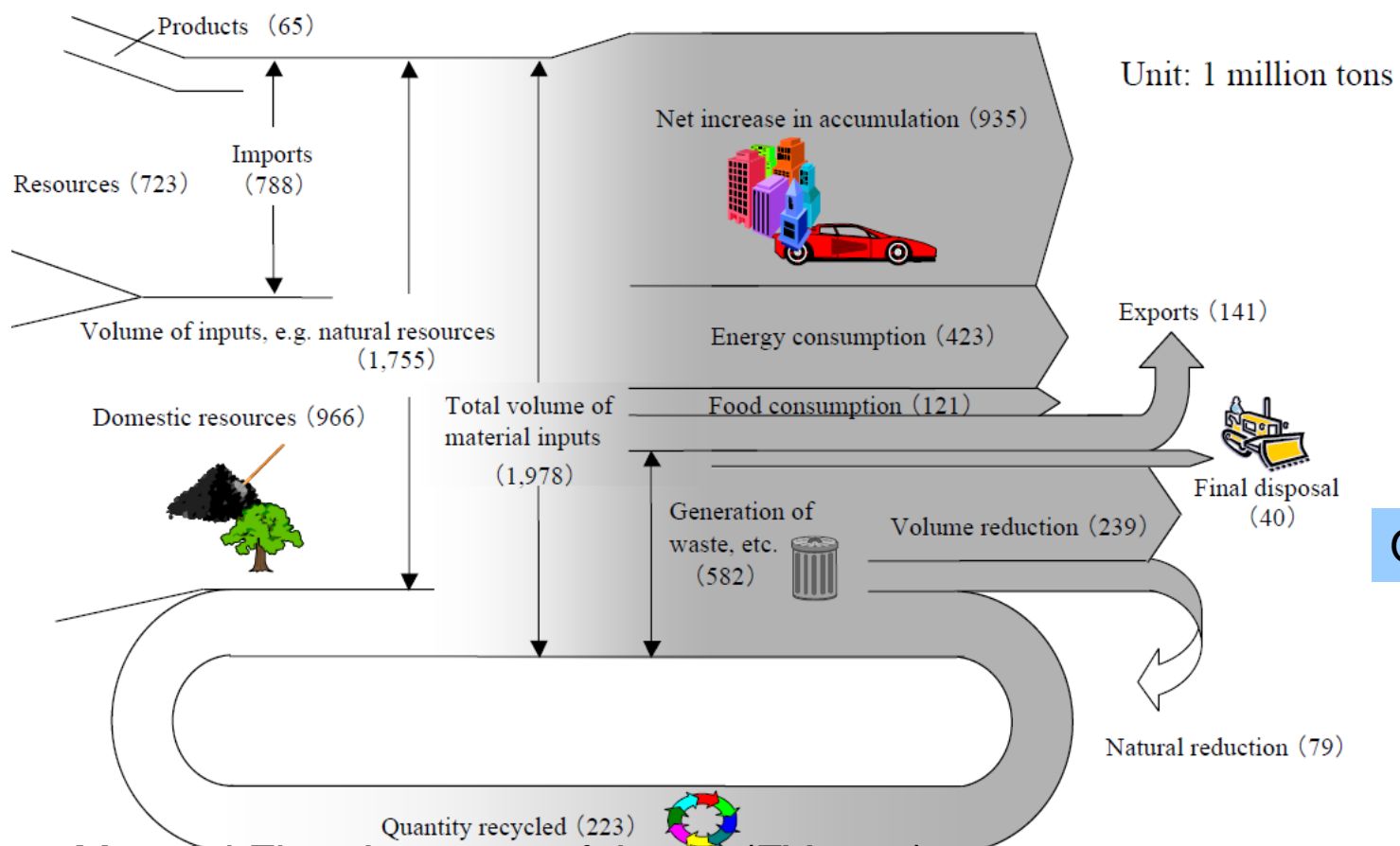
To examine the capacity for economy-wide MFA in the target countries

This was done through a brief survey of:

- The availability of MFA-relevant national statistics,
- The existence of institutions working on Material Flow Accounting and/or Analysis,
- The use of Material Flow Data for national environmental policies and targets.

Material Flow Accounting (MFA) gives a macro-view of material flows

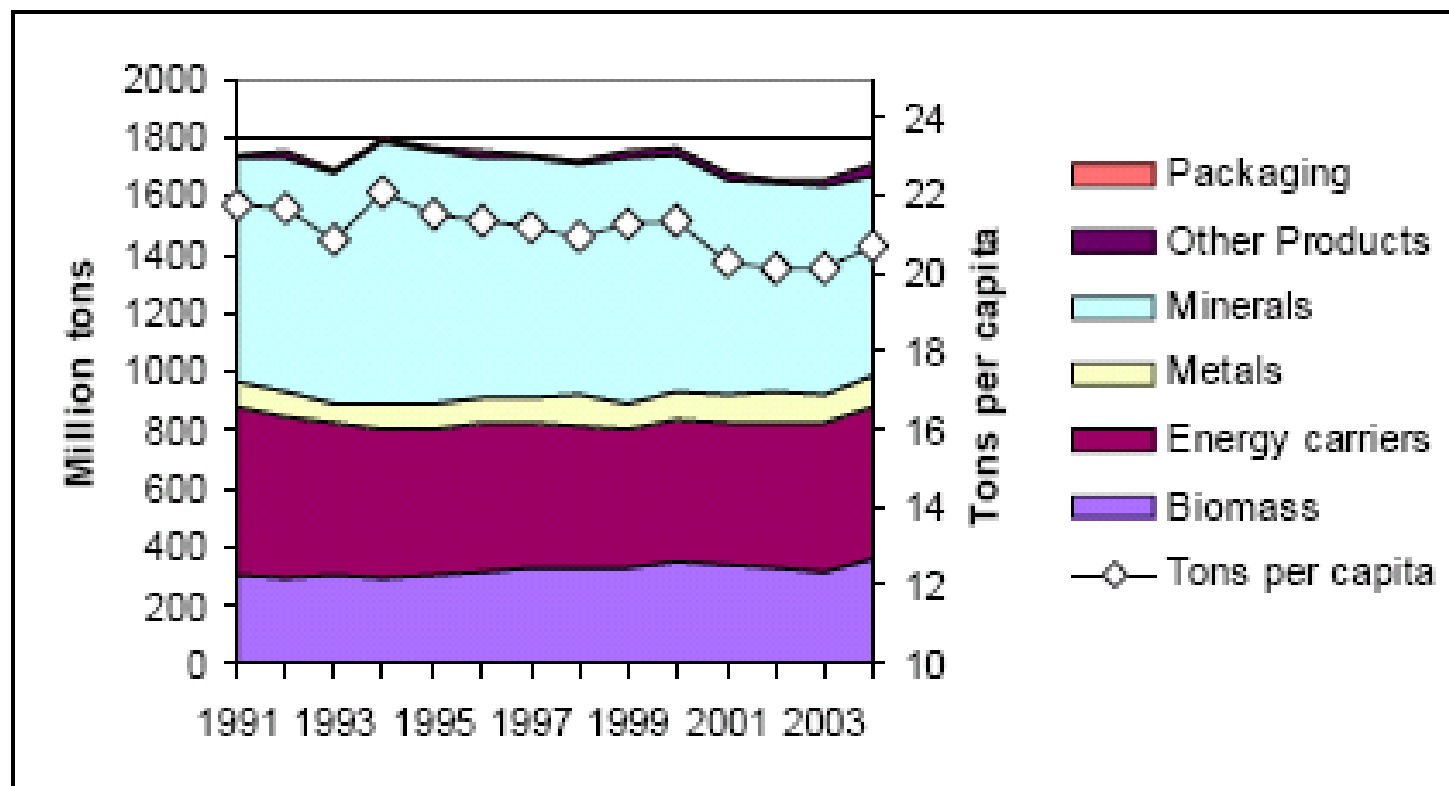
Input



Output

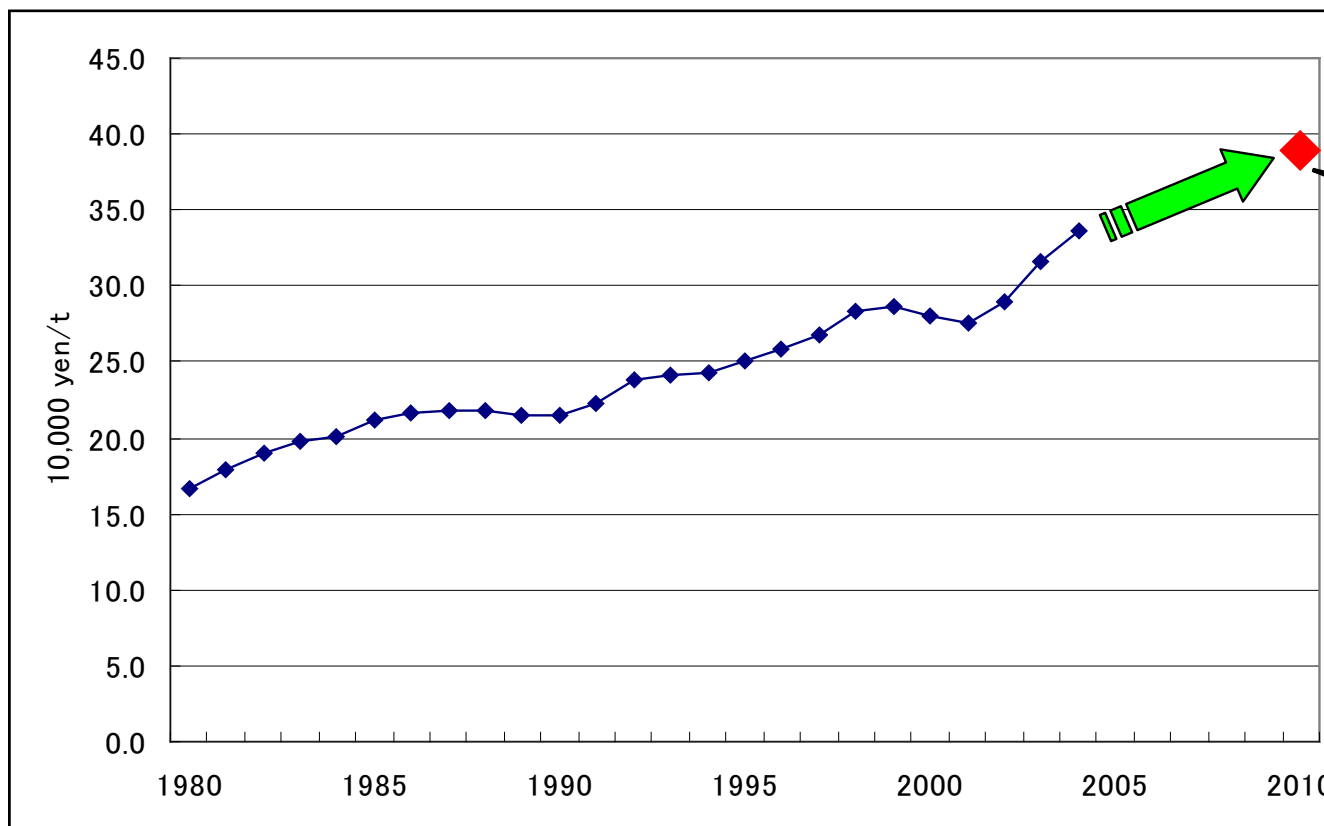
Material Flow Accounts of Japan (FY2003).
Source: MOEJ

MFA data can be used for monitoring material input to a national economy



Direct Material Input (DMI) of Germany.
Source: Wuppertal Institute, 2007

MFA can be used for target-setting



390 thousand yen/t
40% improvement from FY 2000

Resource Productivity (GDP/DMI) of Japan

Summary table – indicators of countries’ capacity for MFA

	Input data			Output data		Sector data			Use in PP		SFA		SP&C plan		
	All	Some	Few	All	Some	Some	No	Unknown	Yes	No	Yes	No	Yes	No	Unknown
Brazil		○		○		○			○		○		○		
China		○		○			○		○		○			○	
India	○			○		○			○		○				○
Malaysia		○		○				○		○	○				○
Philippines	○			○				○	○		○		○		
Russia		○		○		○			○		○		○		
Singapore	○				○		○			○		○	○		
Thailand	○			○		○			○		○			○	
Vietnam			○	○		○				○	○			○	

- ▶ Some of these countries’ capacity for MFA is maybe not so different from some OECD countries
- ▶ No ranking of the countries’ capacity has been made, but Singapore, Vietnam and Malaysia seem to have relatively low capacity

Work on MFA often fragmented and un-coordinated

- **Difficult to find** suitable **respondents** with good overview of MFA activities
- In China, Malaysia, and to some extent Brazil, **respondents contradicted each other.** Government officials said that several kinds of MFA data exist, while researchers said that such data are either not available at all, or very limited

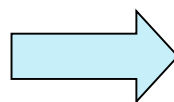
Lack of co-ordination, transparency and overview

Better co-ordination improves

- **Data access.** Data are easier to find.
- **Data usability.** Co-ordination of statistical definitions, reporting routines, documentation and updating frequency improves transparency and data compatibility

Administrative structure and national capacity

Some countries have a **federative administrative structure** where states or provinces have considerable autonomy



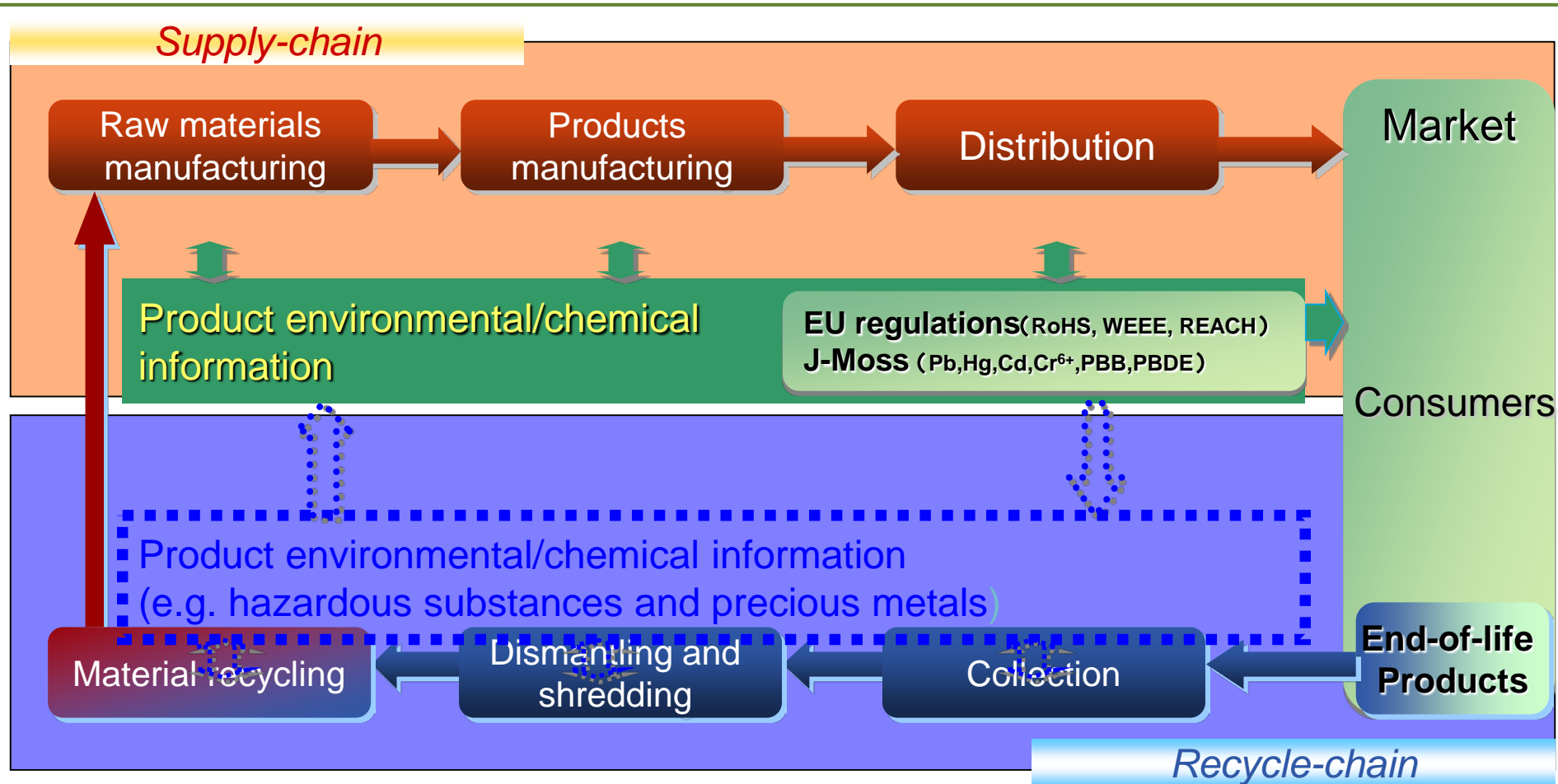
Only looking at the national/federal level gives a limited understanding of data availability and MFA capacity

- **How responsibility** for statistics collection **is shared** among administrative levels (municipalities, states etc. and nation) **influences the capacity** for economy-wide MFA
- A highly **distributed responsibility** means that the **national capacity** for MFA will be **decided by the state** or municipality with the **lowest capacity**

Example 3

National/industrial level

Example 3: Material and Information Flows from a Product Life-Cycle Perspective

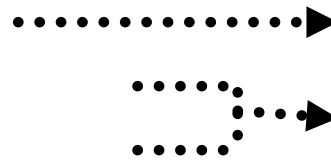


↔ : Material flow
↔ : Information flow

Rationale and Potential Benefits

● Information disclosure: *from Producers to Recyclers*

- Safer recycling process
- Higher recycling rate
- Less contaminated materials



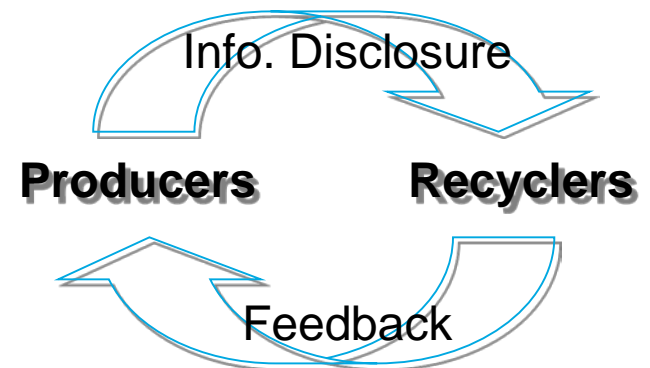
Regulatory framework is also needed

Economic benefits for recyclers

Rationale: Improved recyclers' knowledge on embedded substances can make recycling operations *safer, more efficient and less polluting.*

● Feedback: *from Recyclers to Producers*

- Promote **Design for Environment (DfE)**



Rationale: Improved producers' knowledge on recycling information can lead to improved product design.

Information Exchange as EPR

- Information sharing is one of the core aspects of EPR:
 - ❖ *Financial responsibility*
 - ❖ *Physical responsibility*
 - ❖ *Informative responsibility*
- First two responsibilities, have been included in several legislations, but “Informative responsibility” has received little attention.
- e.g. the Japanese Home Appliances Recycling Law, does not include any obligation for producers to share information with recyclers.

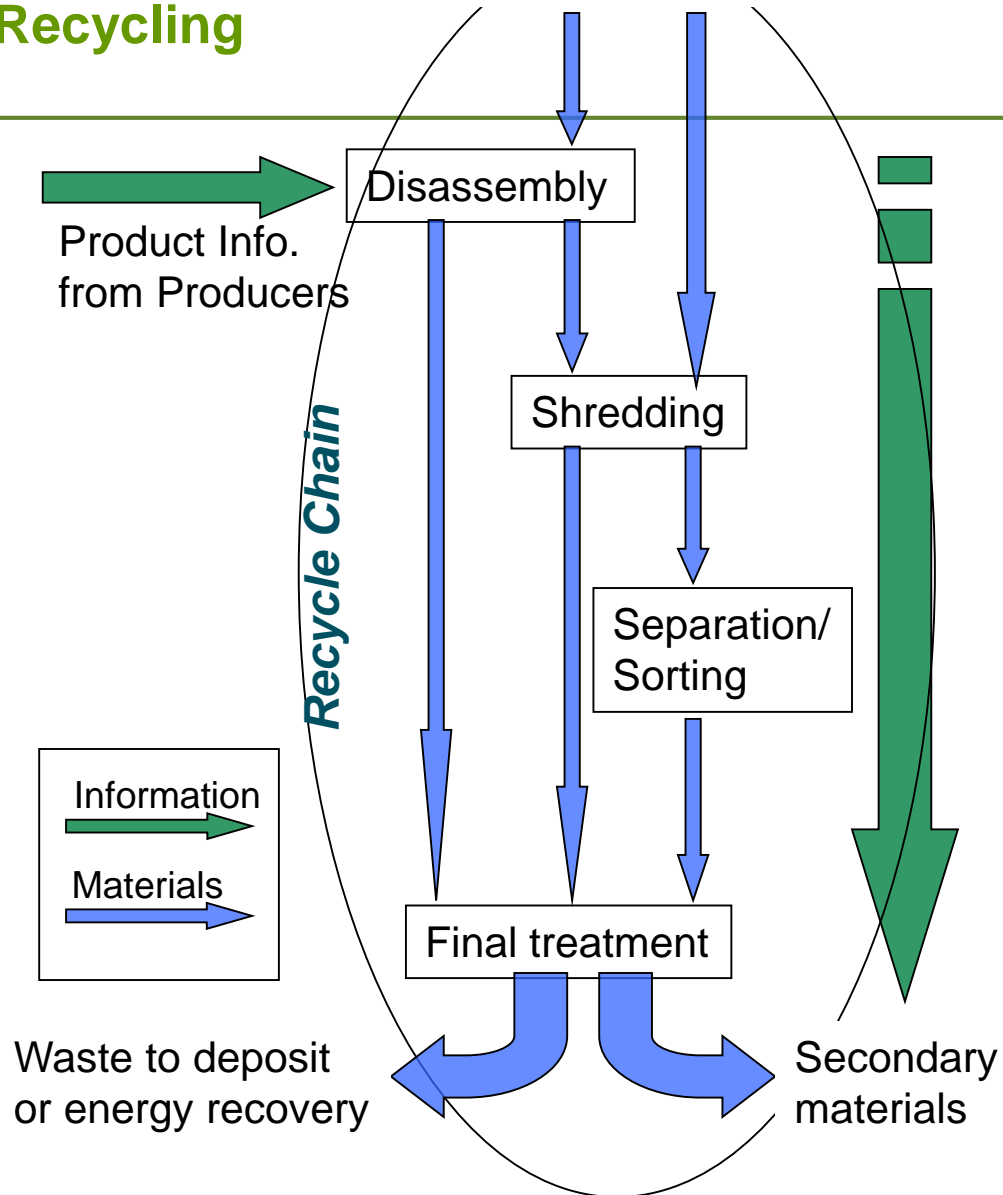
Challenge 1: Producers' Willingness to Disclose Information and IPR

- Most producers in EU hesitate to disclose information on substances to the public; only provide info. when directly asked by a recycler.
- Many producers regard information on substances as a company's secret; only willing to share info. with selected recyclers.
- If producers have to cover the full cost of recycling for its own products, they will have an incentive to share information to reduce recycling costs. (Individual Producer Responsibility)

WEEE Collected from End-Users

Information Management in the Recycling Chain

- Different kinds of information for different stages of the recycle chain
- Once WEEE is disassembled, difficult to identify the producer
- Information from producers may only be accessible at disassembly
- However, information on substances is needed mainly at the later stages,
- Therefore, need for an *Information management system along the recycling chain.*



Conclusion

- Along the internationalization of resource use, production and consumption, as similar to industrial policy, waste management and recycling policies conventionally focused on urban and national levels shall now consider international aspect of resource and pollution-related challenges.
- Thus, although facing in lack of conventional waste/resource-related data in some countries, data/information/knowledge necessary for developing the 3Rs policy is becoming more complex and multi-level.
- Need to develop/identify national as well as regional focal points as data/information/knowledge nodes.

Thank you for your kind attention!