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Comparative study of EPR system in different countries and EPR manual developed by EWG on ESM

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Why Extended Producer Responsibility?

- Different backgrounds can be observed in introducing EPR based recycling system
 - Increase of treatment cost by local government
 - Packaging and container waste, and home appliances in Japan.
 - Pollution from recycling process and Improper treatment of residues from recycling process, promote proper treatment of new items.
 - Automobile shredder residues in Japan
 - Air bag of automobile, CFC of automobile and home appliances in Japan
 - Resource utilization
 - Small home appliances
- Regulations try to change not only cost sharing mechanism, but also design of products, such as change of materials.

Increase of treatment cost by local government

- As economic development, amount of waste generated increases, waste contents become more complex. Local government suffers the increase of waste treatment cost.
 - In early 1970s in Japan, local governments tried to impose waste collection and treatment responsibility on difficult waste such as plastic packaging, home appliances and tire. Although it was not possible to impose new responsibility on producers at that time, industries started to study the recycling technology and conduct pilot collection program.
 - After various efforts to reduce waste were conducted by local government in 1980s and early 1990s in Japan, EPR systems was applied to packaging and container waste and specific home appliances.

Pollution from Recycling System

- The major problem in recycling in developing Asian countries is dirty recycling .
- Even if formal recyclers invested in advanced facilities, they may face lack of waste for recycling, in market base recycling. The alternative systems have been designed, based on EPR principles.



← Extracting metals from Printed Circuit Board, Guiyu, China, (Nov. 2004)



← Dirty lead recycling which contaminate soil in Vietnam, (Dec. 2005)

The necessity of cost sharing mechanism of new items



Treatment of air bag in a automobile recycling facility in Osaka, Japan, 2004.

CFC collection from Air Conditioner, Akita, Japan, September 2009.



- As technology developed, new materials and parts are used. It is likely that new materials and parts are not recycled in market basis.
- New materials and parts may damage environment, unless proper treatment is conducted. Additional cost sharing mechanism is needed.

Improper Treatment of Residues from Recycling Process

- The most notorious illegal dumping case in Japan was Teshima Island case. From the early 1970s to 1990, more than 600,000 tons of waste including shredder dust was illegally dumped on the island. A part of it was burned without environmental control measures.
- A police crackdown in 1990 put a halt to the problem. This case triggers the movement toward proper management of automobile recycling and home appliances.

Extended Producer Responsibility

- In Japan and South Korea, principle of extended producer responsibility is applied to various waste streams such as home appliances, packaging and container waste, automobile.
- China and India apply EPR to electronic and electrical equipment.
- Many Asian countries are considering to apply EPR to various waste.

The differences between Japan and South Korea (1)

- Item wise or unified system
 - Japan: Item-wise approach. Different types of producer responsibilities are applying to packaging and containers, specific home appliances(TV, Air Conditioner, Washing Machine and dryer, refrigerator and freezer), automobile, computer, mobile phone battery.
 - South Korea: Unified system. EPR regulation emphasizes the physical responsibility .

The differences between Japan and South Korea (2)

- Pro and Con of Item wise and unified system approach
 - Item-wise approach can take into account the differences of product characteristics such as distribution and collection channel, existing collection system and others. On the other hand, the responsibilities of producers in different recycling systems is different.
 - Unified system is more fair in terms of responsibility, but it is difficult to take into account the differences of goods.

How far regulation define the system? (1)

- Collection system
 - For example, Home Appliance Recycling Law in Japan defines the collection system. When retailers deliver the relatively big home appliances (TV, Air Conditioner, Washing Machine and dryer, refrigerator and freezer) to the customer, retailers should collect the discarded one. The system is based on the traditional business custom in Japan.
- Recycling fee
 - advanced fee collection or post fee collection
 - implicit and explicit fee collection from consumer
 - Who decide the level of recycling fee? government or producers
 - Who manage the collected fee?

How far regulation define the system? (2)

- Physical Responsibility
 - Who decide credited recyclers? Government or Producer
 - Mandatory target: collection rate and/or recycling rate(re-commercialized rate, including or not including energy recovery, material recycling rate)

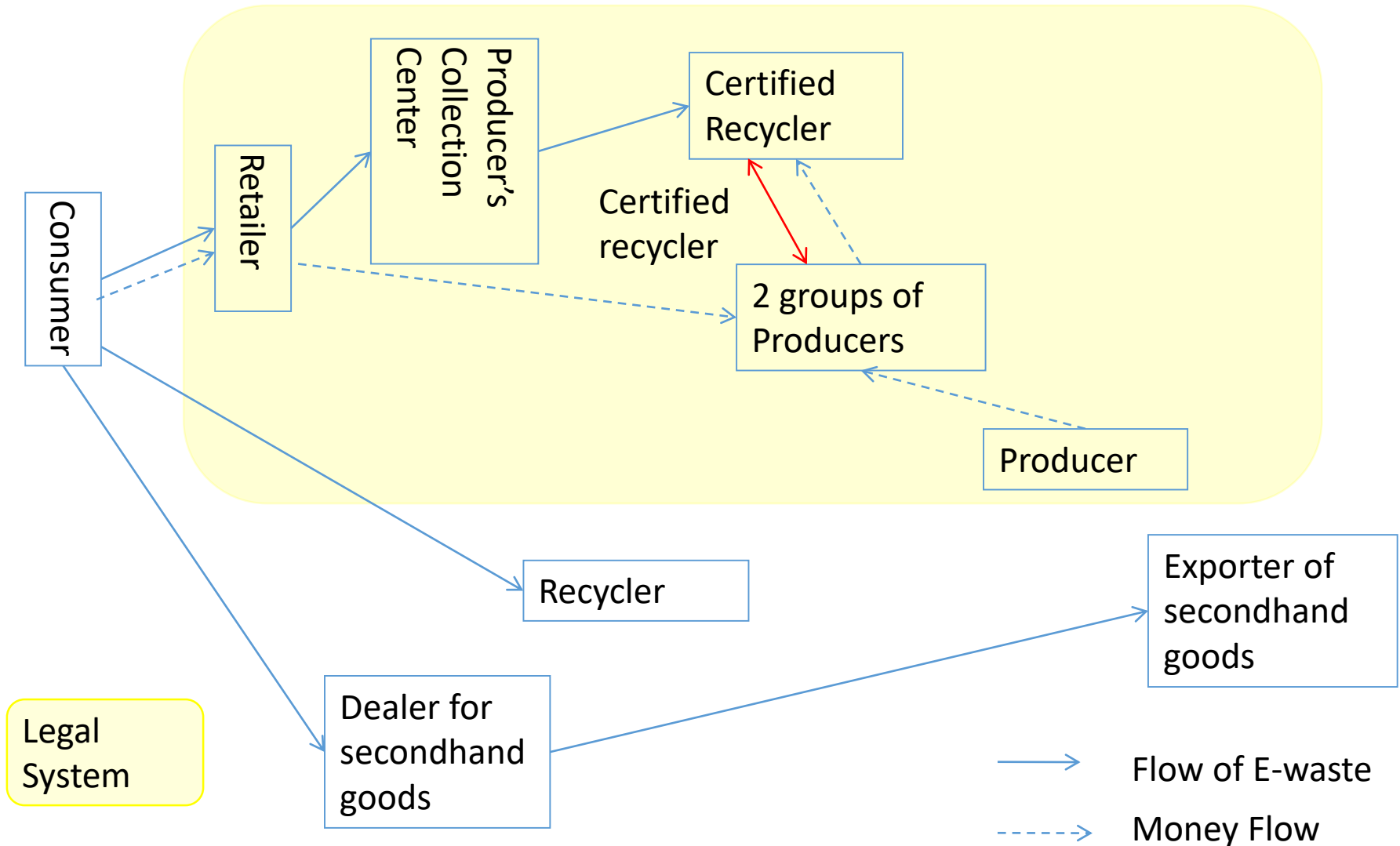
Variety of Designing Recycling System (1)

	Japan: Automobile	Japan: Packaging and Container	Japan: Home Appliance
Major target stakeholder	Manufacturer	Producer and User of packaging and container	Producer, Retailer
Target product or waste	Automobile shredder dust, CFC, and air bag used in automobile	Packaging and container	TV, Air Conditioner, Refrigerator, Washing Machine
Financial Responsibility	To collect recycling fees from consumer at purchasing and allocate the fund to recyclers	Generally producer and user of packaging and container pay recycling fee to designated organization.	Collect recycling fees from consumer at discarding and allocate the fund
Physical Responsibility	Proper treatment of Automobile shredder dust, CFC, and air bag used in automobile	Generally producer ask designated organization to arrange recycle waste. Collection is conducted by local government .	Take back and dismantle waste home appliances. Satisfy minimum recycling rate. Retailer collect discarded appliances.

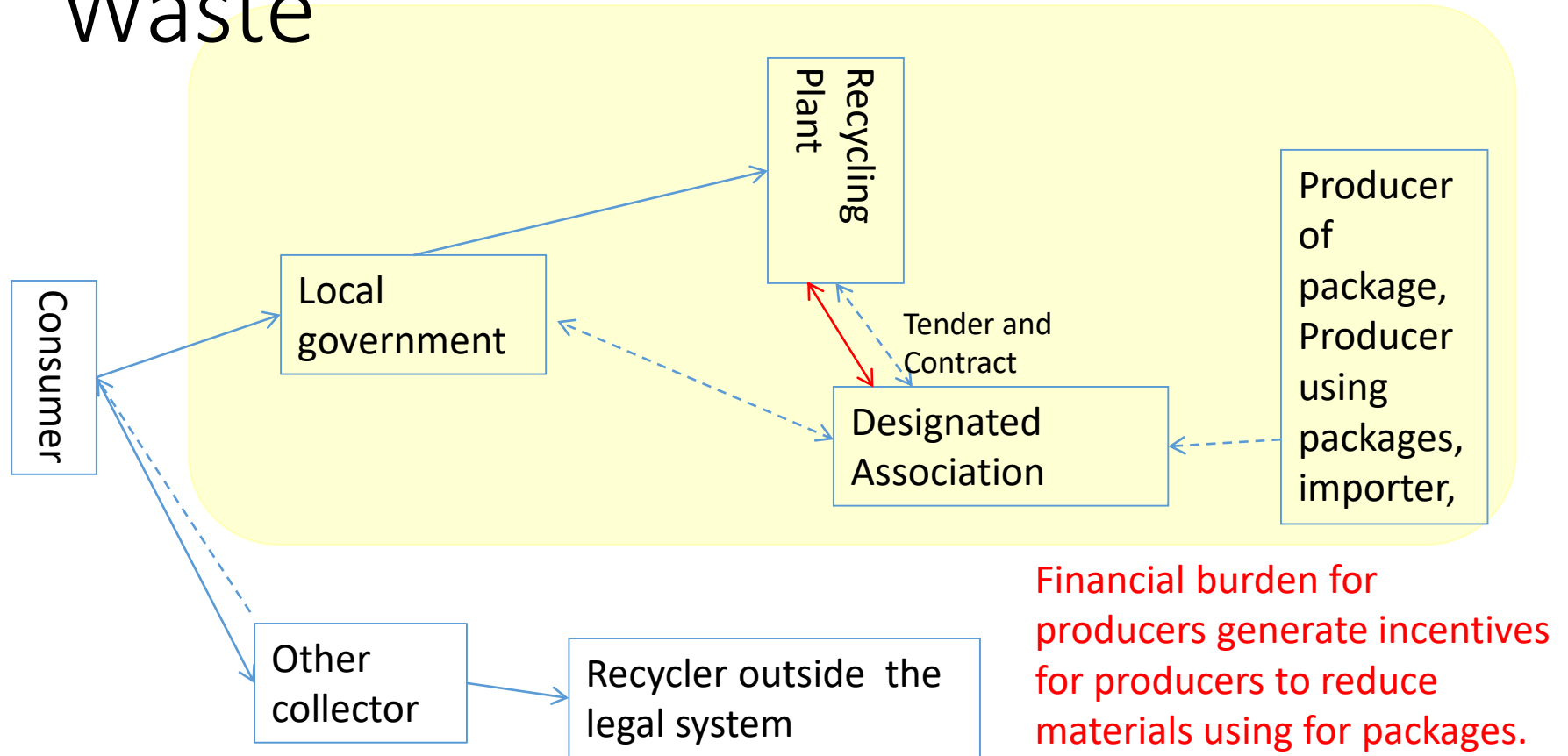
Variety of Designing Recycling System (2)

	India: E-waste	South Korea: Producer Responsibility	China: E-waste
Major target stakeholder	Producer, Collection Center, Dismantler, Recycler, Refurbisher	Producer	Producer
Target product or waste	Computer telephones, TV, Refrigerator, Washing Machine, Air Conditioner, Fluorescent lumps	Home appliances, IT products, automobile, Packaging and container	TV, Air Conditioner, Refrigerator, Washing Machine, Computer
Financial Responsibility		No collection of explicit recycling fee from consumer.	Manufacturer should pay recycling fee, based on the sales in the market
Physical Responsibility	Collection program, which should be approved by government, should be conducted,	Satisfy minimum recycling rate which is calculated as collection rate multiplied by recycling rate	No Physical Responsibility for producer.

JAPAN: Big Home Appliances(TV, Air Conditioner, Refrigerator, Washing Machine)



Japan :Packaging and Container Waste

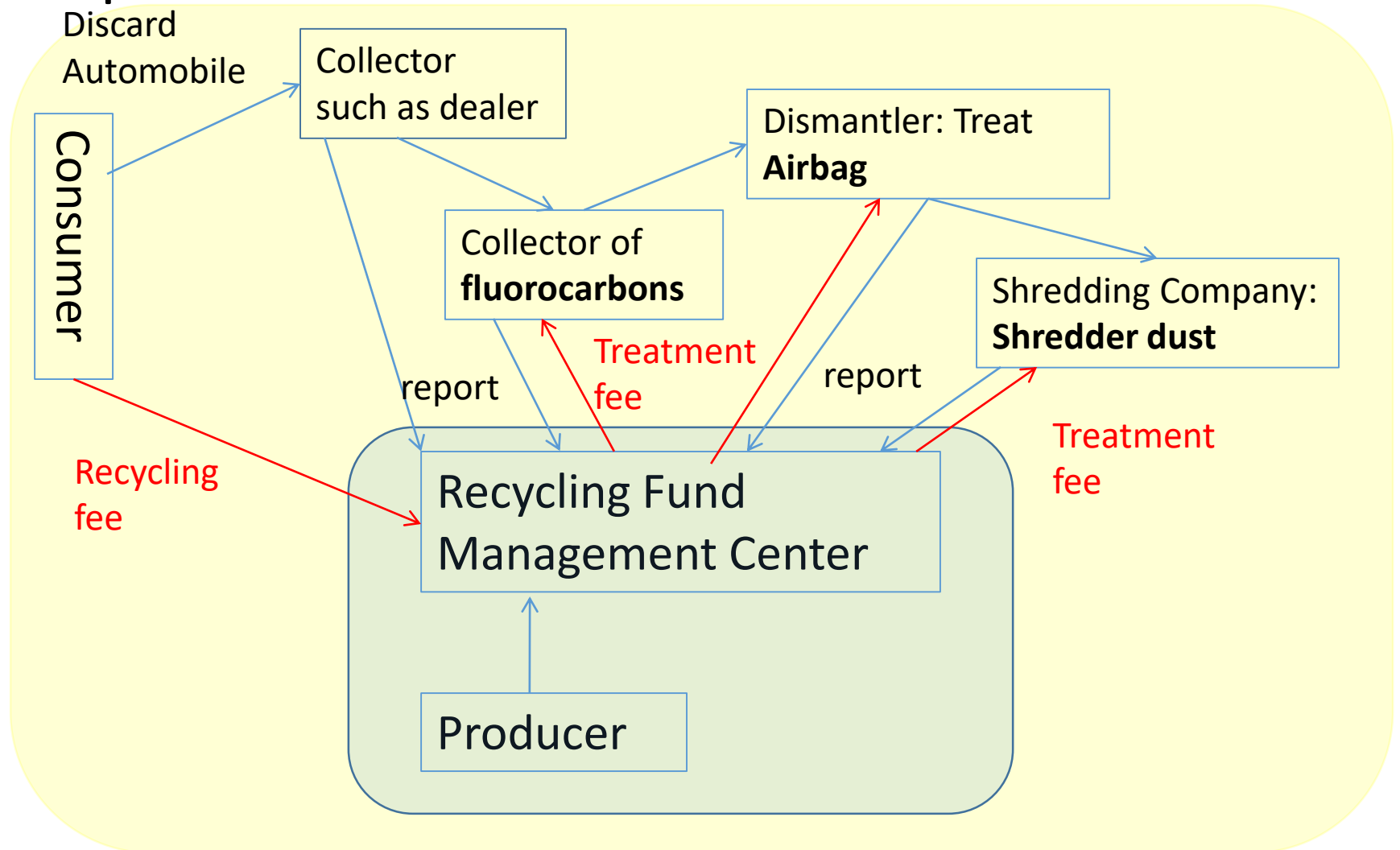


Legal system

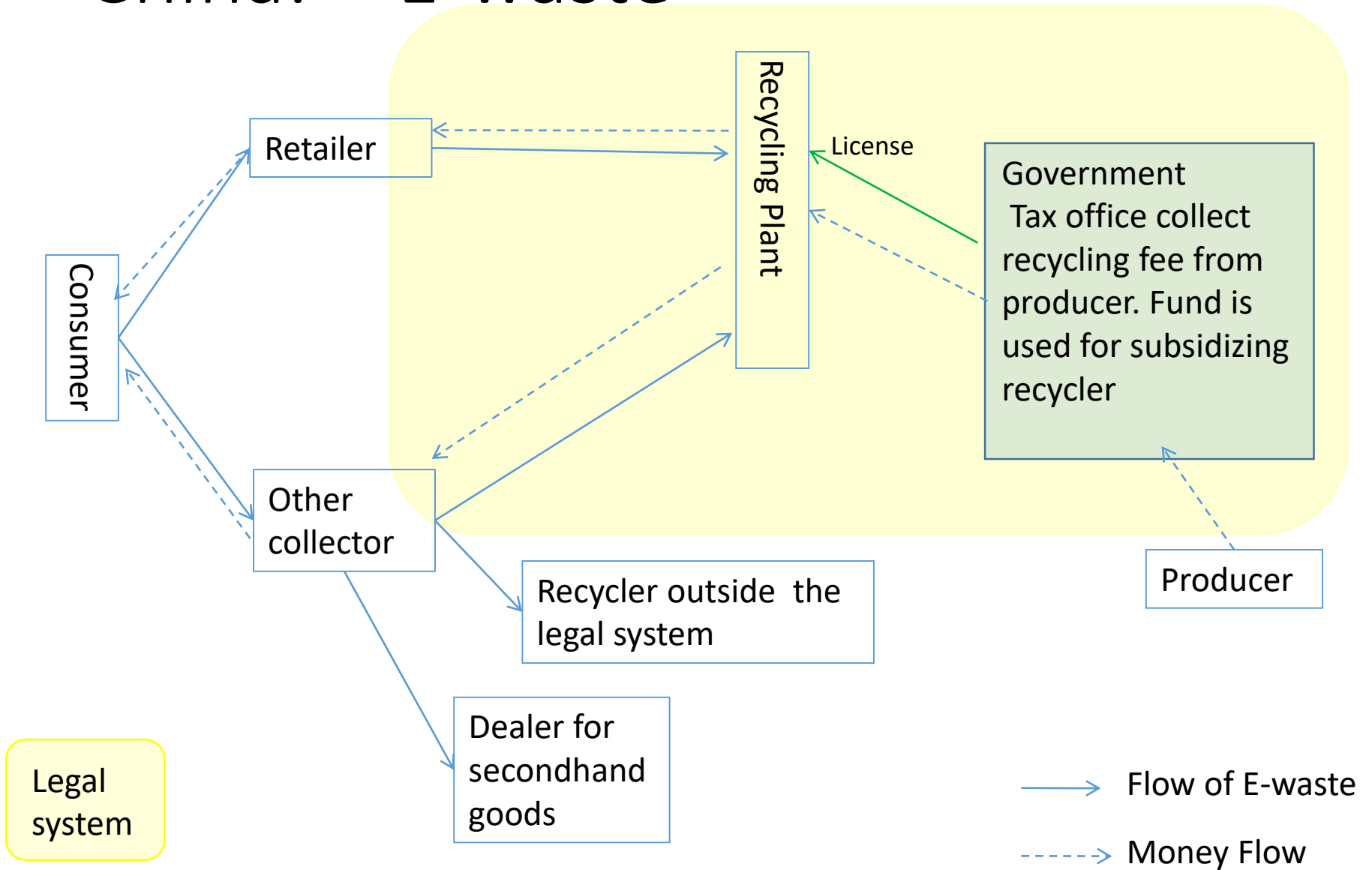
Producer

—> Flow of package and container waste
- - -> Money Flow

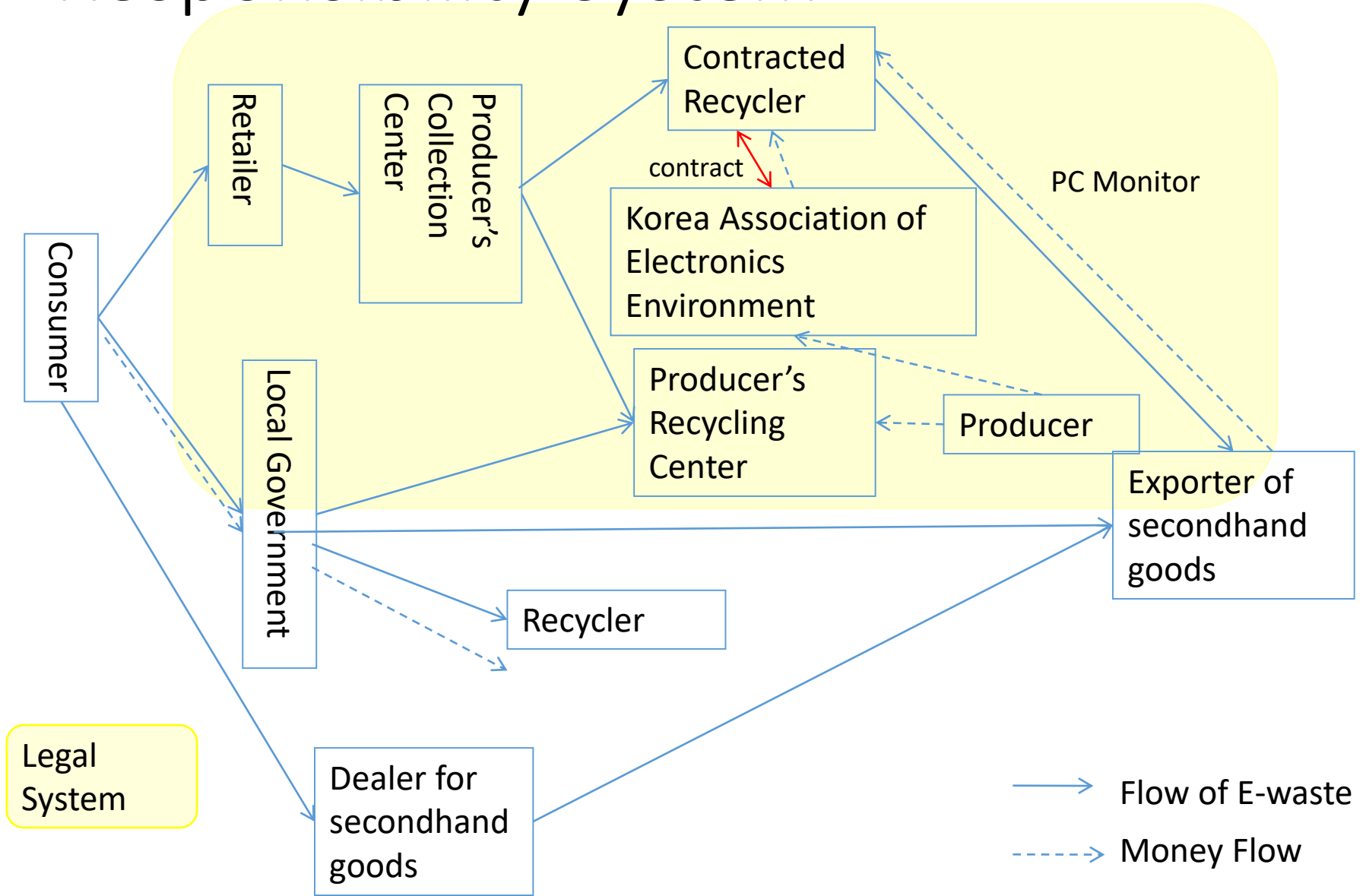
Japan: Automobile



China: E-waste



South Korea: Producer Responsibility System



Responsibilities of Producer

Basically physical responsibility, with financial responsibility of management of recycling fee collected from consumer.

Financial Responsibility.
Fund is managed by government

Physical Responsibility

Japan : Big Home Appliances, Automobile

China: e-waste
Malaysia: e-waste
Thailand: e-waste

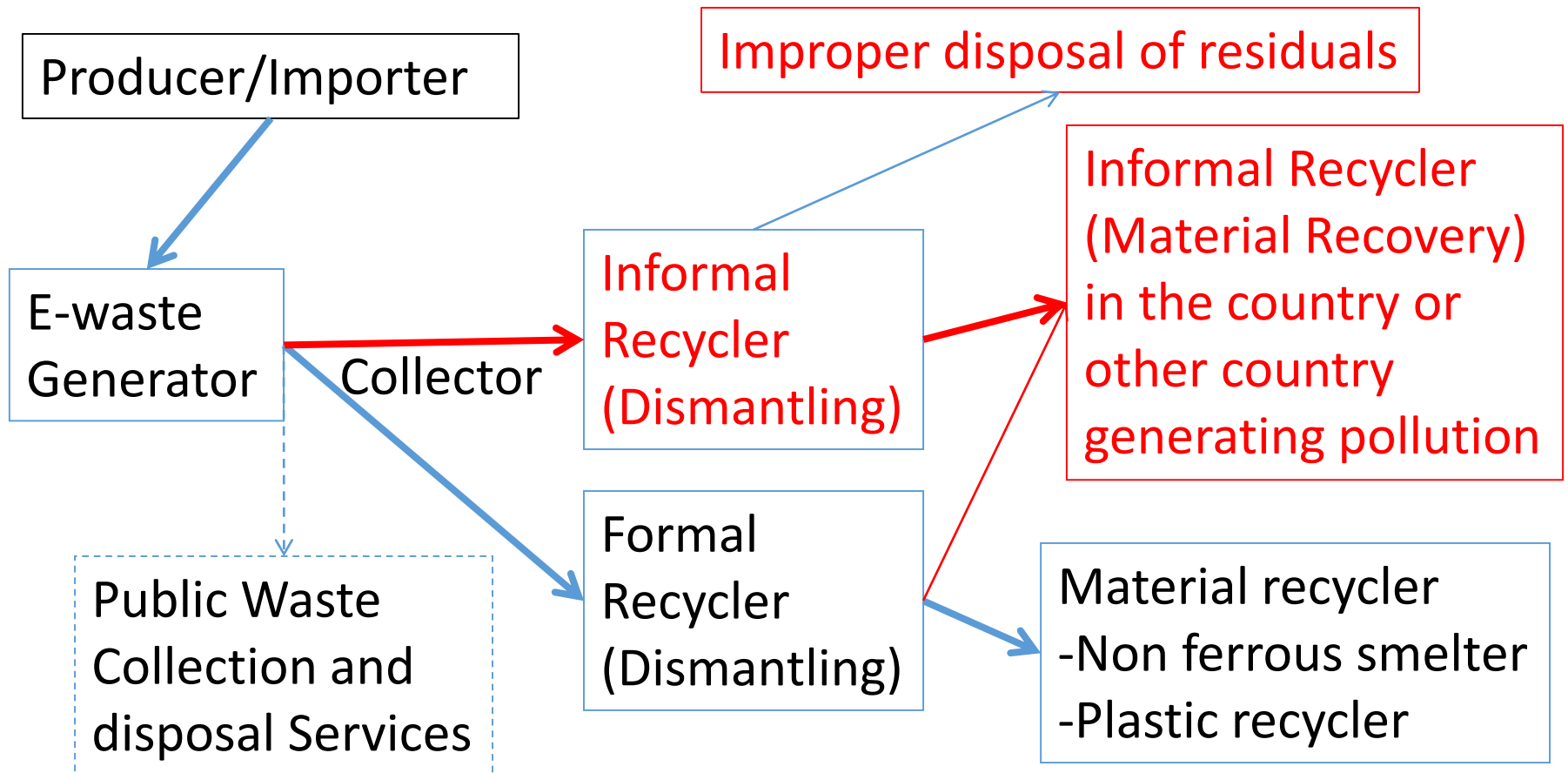
Financial Responsibility

Japan: Packaging and Container Waste
South Korea : e – waste and others

India: e-waste
Vietnam: e-waste and others

Mainly collection responsibility with financial responsibility to achieve physical target.

To fulfill physical responsibility PRO is organized to manage recycling fee from producers.



One of major challenges for proper e-waste management is to change the flow of e-waste. E-waste should be sent to proper facility with pollution control measures.

Regulation on Responsibilities of Stakeholders including EPR

Producer/Importer

E-waste
Generator

Collector

Public Waste
Collection and
disposal Services

Informal
Recycler
(Dismantling)

Formal
Recycler
(Dismantling)

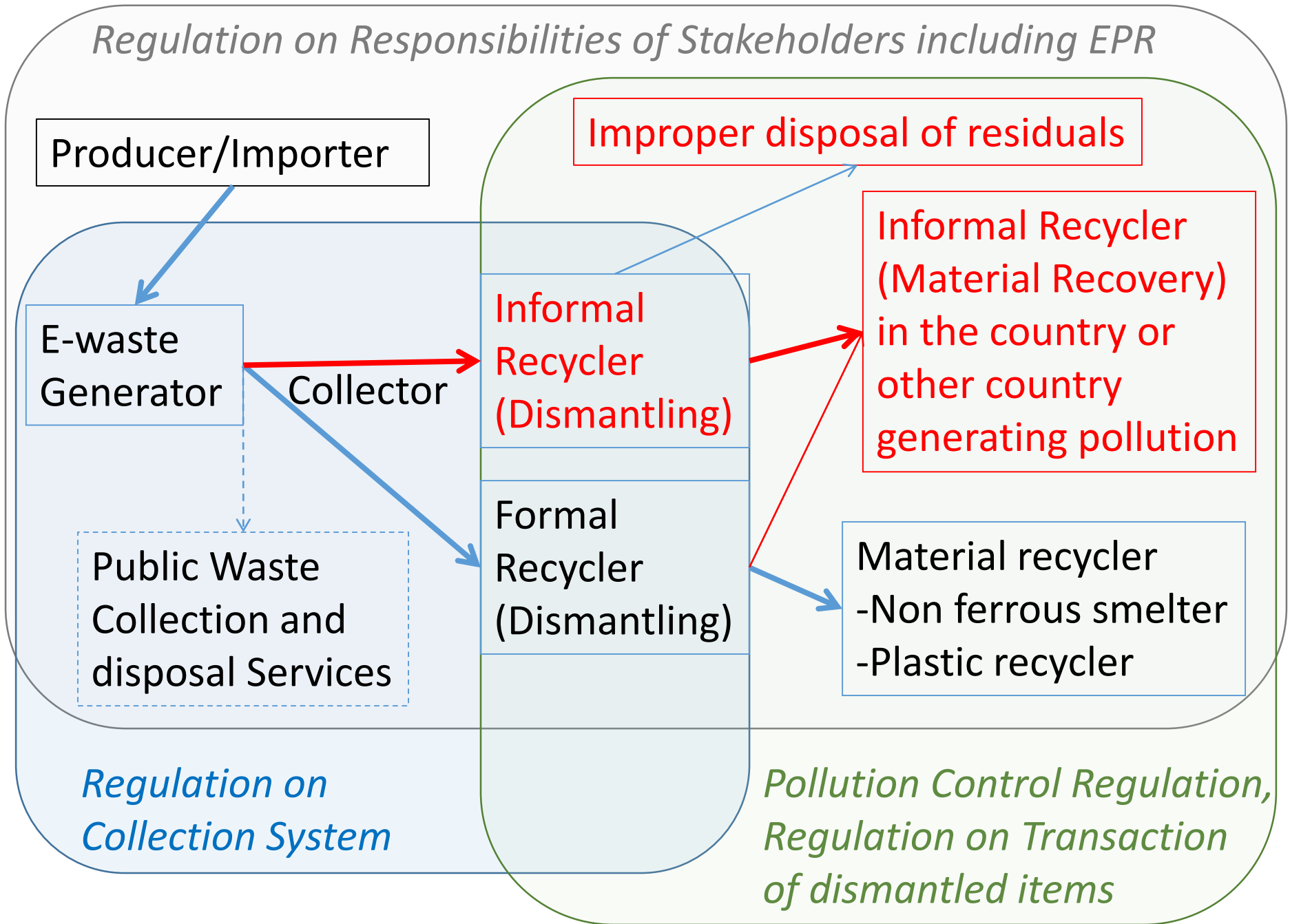
Improper disposal of residuals

Informal Recycler
(Material Recovery)
in the country or
other country
generating pollution

Material recycler
-Non ferrous smelter
-Plastic recycler

*Regulation on
Collection System*

*Pollution Control Regulation,
Regulation on Transaction
of dismantled items*



EPR

manual developed by

EWG on ESM

Draft practical manual on Extended Producer Responsibility

- Draft practical manual on Extended Producer Responsibility, which is developed by Expert Working Group on ESM, is circulated as INF document at COP13.
 - UNEP/CHW.13/INF/8
- Decision COP BC-13/2.
 - Welcomes the draft practical manuals on extended producer responsibility prepared by the expert working group⁶ and invites Parties and others to submit comments thereon to the Secretariat by 30 November 2017

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Reference

- Kojima(ed.) *Promoting 3Rs in Developing Countries: Lessons from the Japanese Experience*, Institute of Developing Economies, downloadable from <http://www.ide.go.jp/English/Publish/Download/Spot/30.html>.
- CHUNG, Sungwoo and Michikazu Kojima “Design of E-waste Recycling Indicators in East Asia” in Kojima and Damanhuri (ed.) *3R Policy in Southeast and East Asia* vol. 2, a report submitted to ERIA.