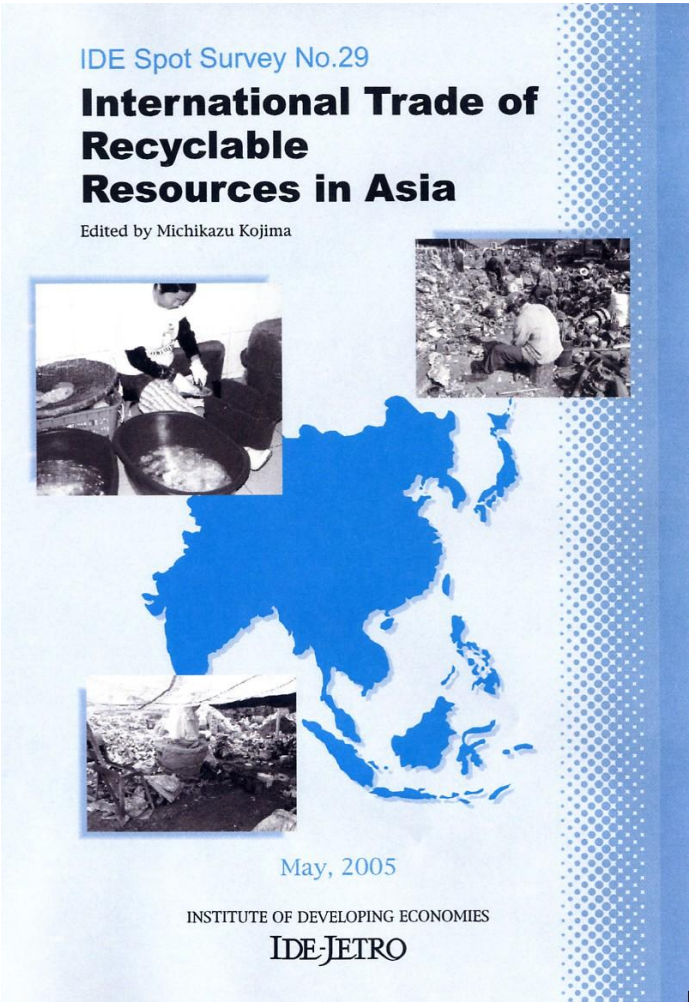
UNEP-IETC **Open Session on WEEE/E-waste Take-back System**
July 15, 2011

Lessons from Collection System of WEEE/E-waste in Asia

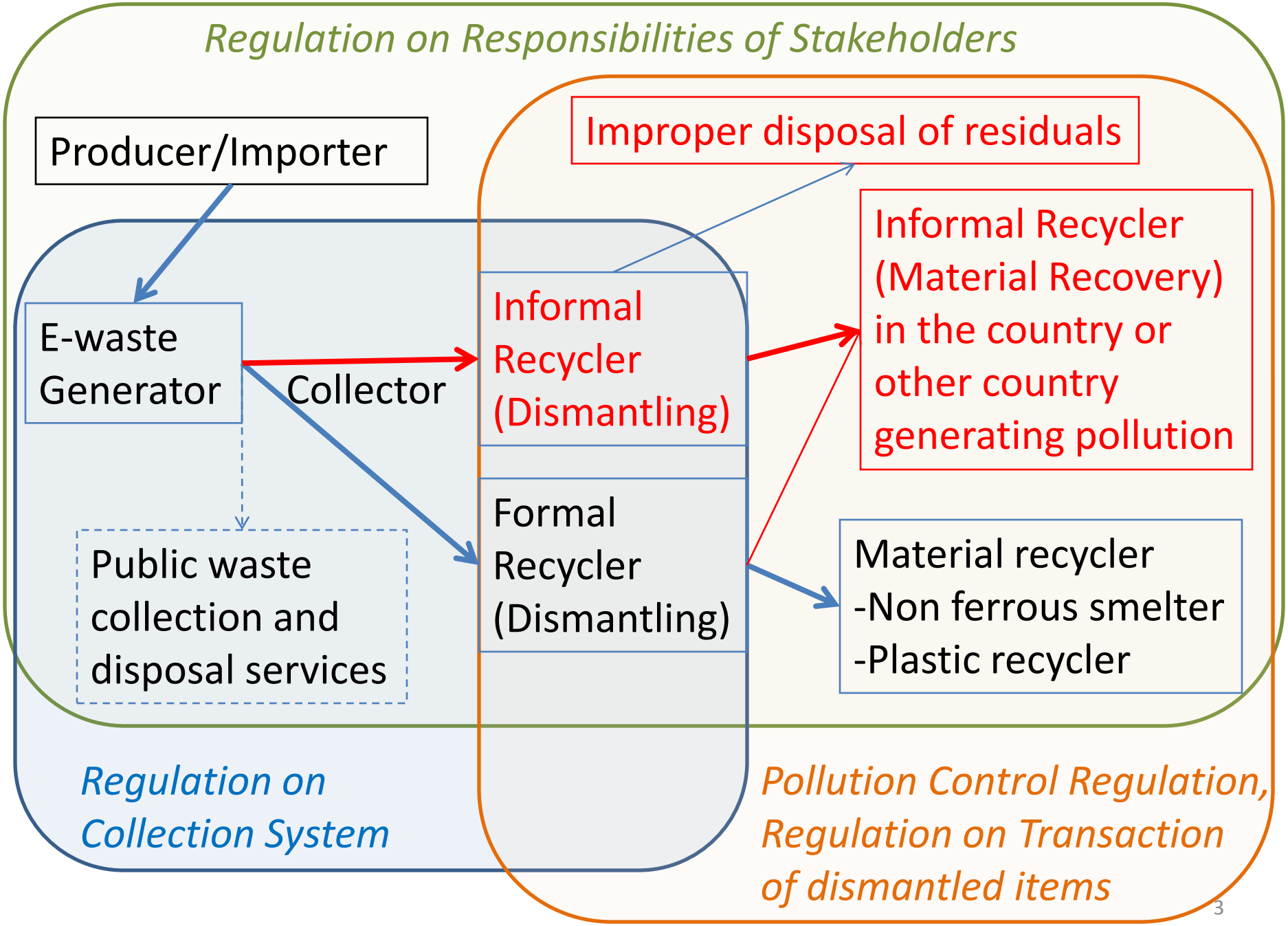
Michikazu KOJIMA
Institute of Developing Economies
JETRO

Self Introduction.



Senior Research Fellow of Institute of Developing Economies, JETRO.

- A member of Working Group on Enhancing International Recycling in Industrial Structure Council. (June 2004 to June 2005.)
- An expert contributing to Recycling Based Economy Project conducted by APEC Human Resource Development WG. (2004-2005)
- A member of expert committee on Formulating International Sound-Material Cycle Society in Central Environmental Council (Nov. 2005-)
- A member of Supporting Committee of JICA's Study on Recycling Industry Development in the Philippines (Jun. 2006-March 2008)
- A resource person for UNCRD's project to support development of Vietnam 3R National Strategy (Jan 2008 – March 2009)


Regulation on Responsibilities of Stakeholders
Producer/Importer
Improper disposal of residuals
Informal Recycler (Material Recovery) in the country or other country generating pollution
E-waste Generator
Collector
Informal Recycler (Dismantling)
Formal Recycler (Dismantling)
Material recycler
-Non ferrous smelter
-Plastic recycler
Public waste collection and disposal services
Regulation on Collection System
Pollution Control Regulation, Regulation on Transaction of dismantled items

COLLECTION SYSTEM

Why should we consider collection system?

- Some waste is not recycled in market basis. Or the amount of waste recycled is limited.
  - Because of limited demand, low quality of recycled product, high transportation cost
  - Example: Flurecesent lump, cell battery, rechargeable battery
- Pollution from recycling
  - Because of weak enforcement of pollution control regulation
  - Example: computer, cell phone, printed circuit board, coated wire

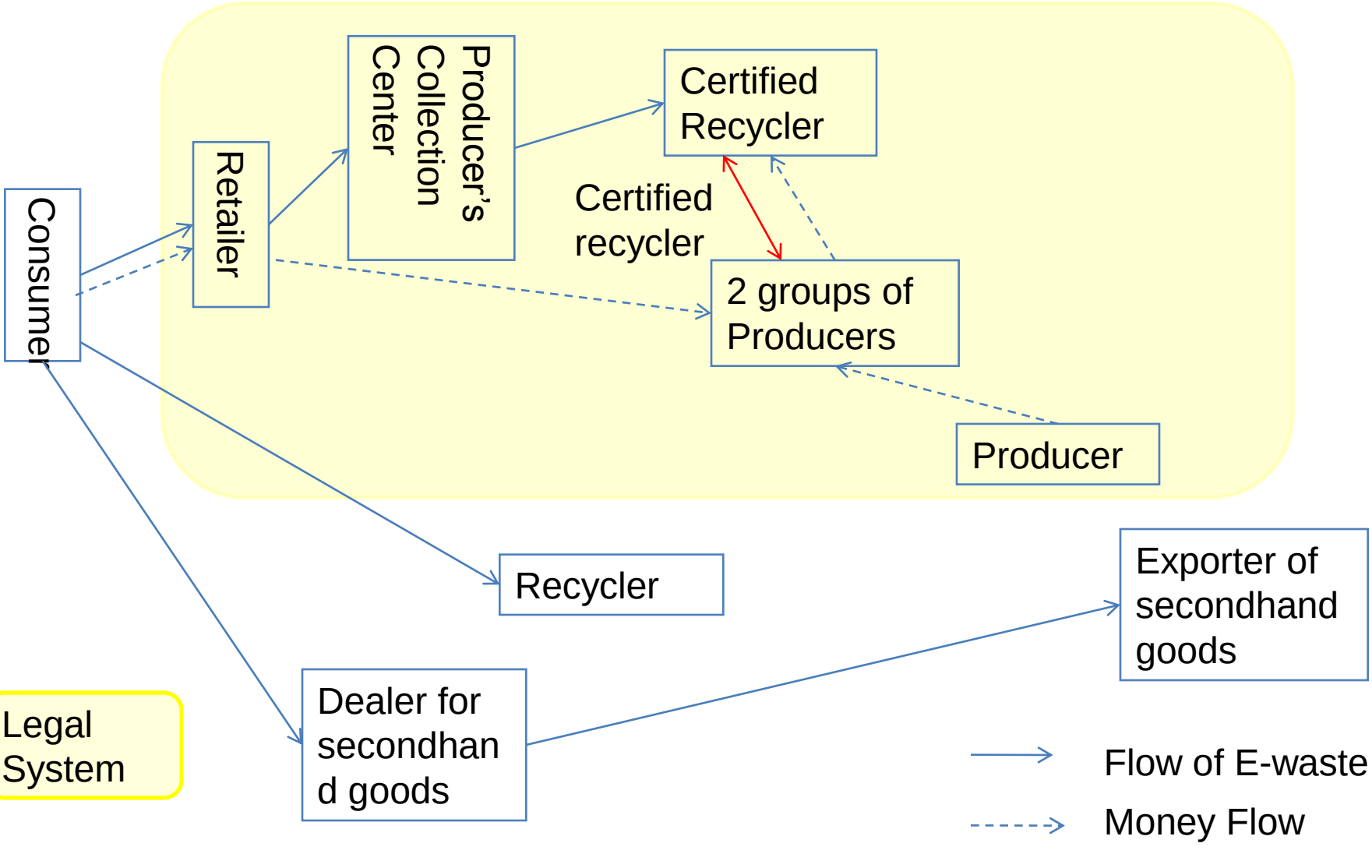
Design of Collection System: How to collect?

- There are several types of collection systems for e-waste
  - Fully market based
  - Buy-back center and collection center
  - Collection event
  - Curb-side collection by local government
  - Drop box : mobile phone, rechargeable battery
  - Postal service : PC in Japan
  - Retailers should take back discarded one, when they deliver new one to customer, if customer want to discard old one : TV, Refrigerator, Air Conditioner, Washing Machine in Japan

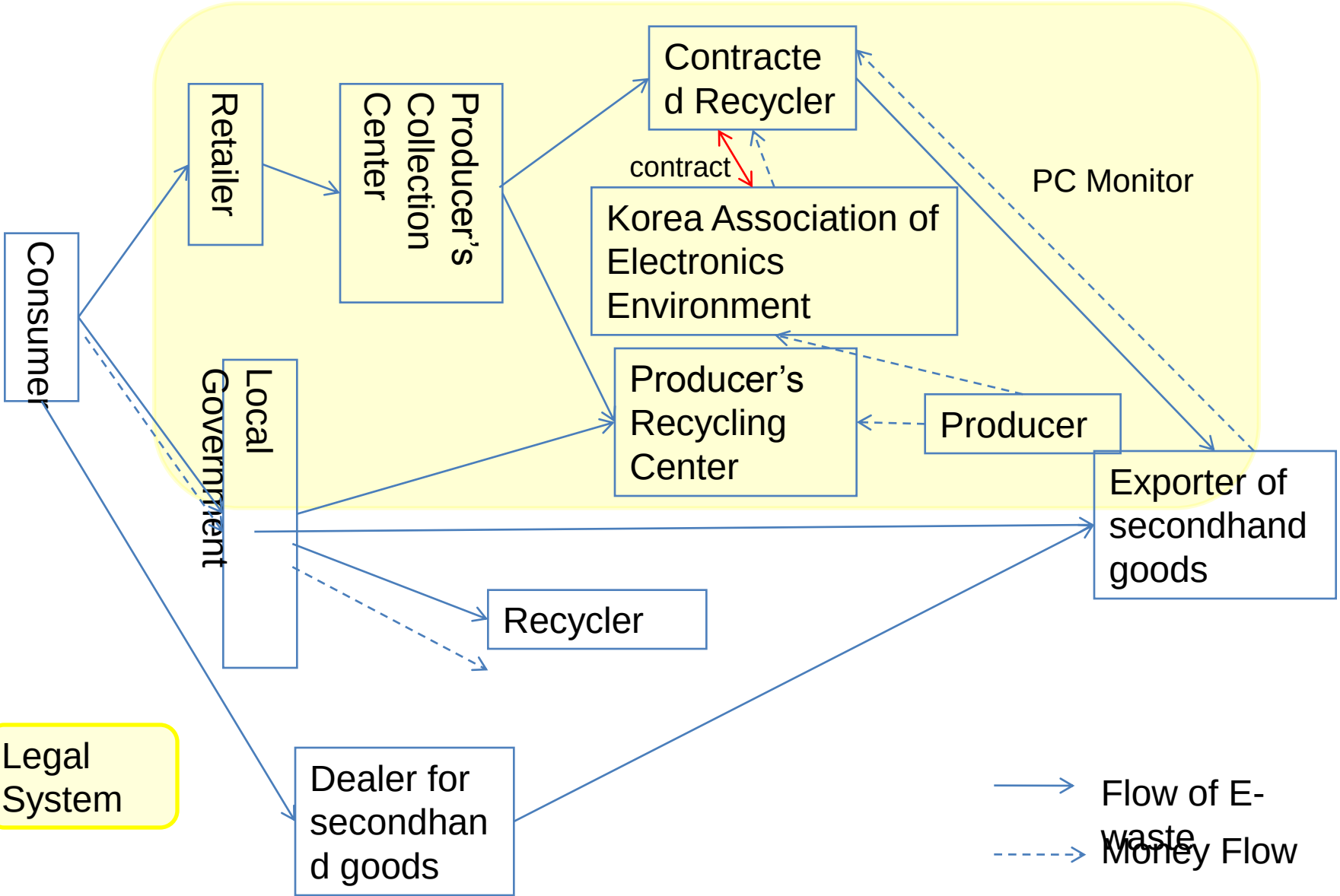
Who is collecting? Who should collect?

- Local government
  - Putra Jaya in Malaysia asks waste collection service company or to operate buy back center
- Stakeholders joining voluntary agreement with government
  - Hong Kong has collection programs of rechargeable batteries and e-waste, with stakeholders, such as importers, retailers and NOGs.
- Manufacturer's voluntary efforts
  - HP collects waste computers from business customers in China and other countries.
  - Dell collect waste computers from customers who buy Dell computers in Malaysia and Singapore.
  - Fujitsu started take back program for their IT products in Singapore, Thailand and the Philippines in 2007.
- Retailer
- Informal collector
- NGOs
  - Penang Environment Working Group conduct voluntary collection program on battery and fluorescent lump
- Manufacturer mandated by government to organize the collection program

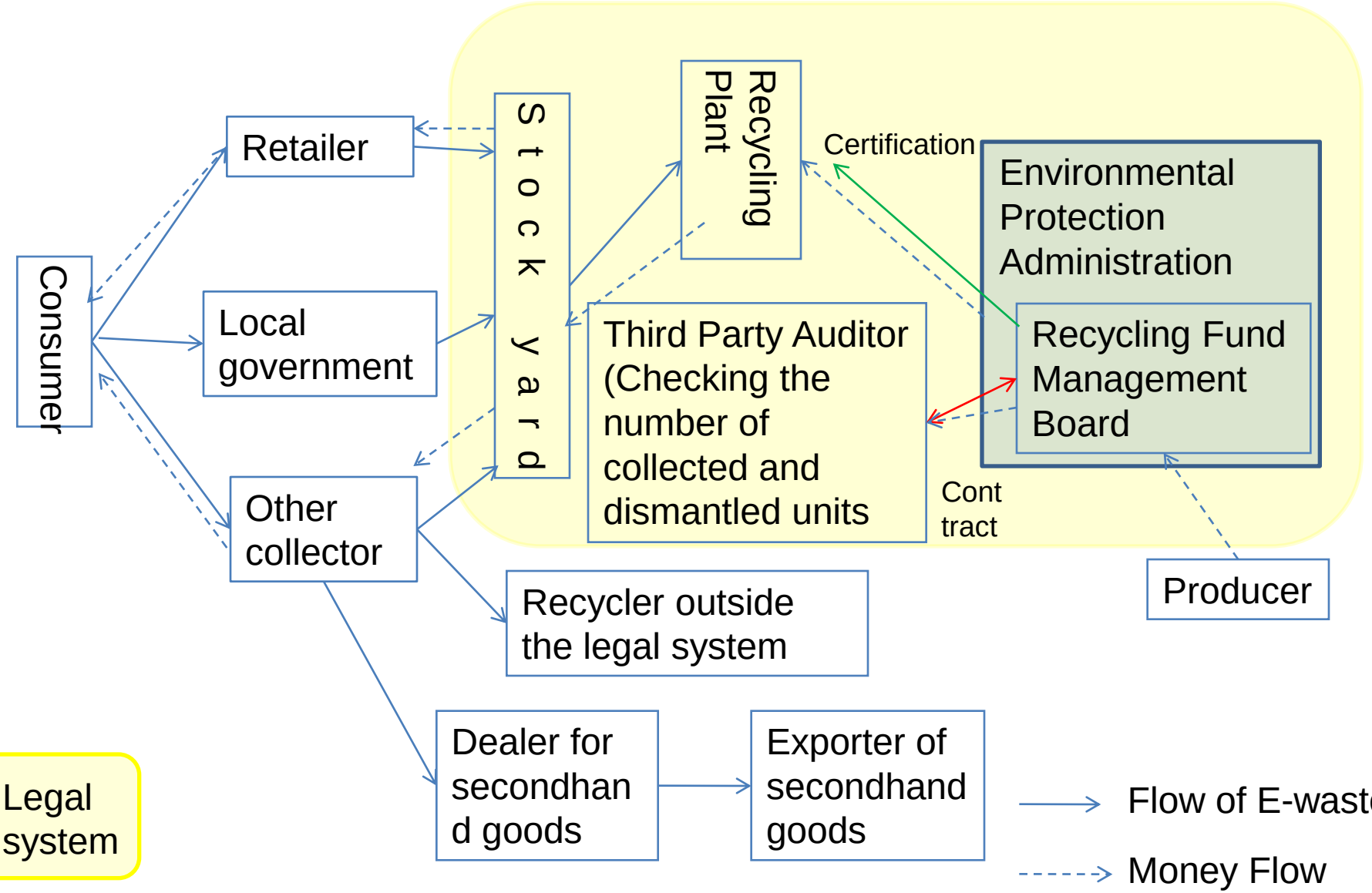
JAPAN: Big Home Appliances(TV, Air Conditioner, Refrigerator, Washing Machine)



South Korea: E-waste Flow



Taiwan: E-waste Flow



E-waste Buyer on Street

Waste buyer on a street in Beijing, May, 2006

- Waste collector on street also buy e-waste from household or others. They bring e-waste to Junk shop.

Computer, Monitor, Color TV, Printer, Refrigerator, Washing machine, Air conditioner, Printed Circuit Board, Copy Machine, Toner, Note book, Fax machine

Drop Box Collection by NGOs

Box for collecting waste fluorescent lumps and cell batteries (December 2005)

- PEWOG(Penang Environment Working Group)
  - Formed in 2000 by State Local Government of Penang, Malaysia.
  - Community Based Recycling Program (Collecting recyclable waste in more than 200 communities in 2005.)
  - Collection program of fluorescent lumps and cell batteries. Drop box is set at the entrance of shopping center and market.

Pilot collection program for cell phones in the Philippines

Metro Manila, 2007

- JICA, DTI and NSWMC in the Philippines conducted pilot collection program for mobile phone and accessary in 2007.
- They put drop box in malls and government office. Mobile phone accesaries were collected, but limited number of mobile phone was collected.
- The best place for collection was a mall where tens of repair shop and secondhand shops were located.

Buy back Center

Buy back Center in Putra Jaya, Malaysia, January 2010.

- Some local government and waste collection service company open the buy back center for recyclable waste including e-waste.
- Junk shop often by e-waste or dismantled parts of e-waste.

Collection Event

- Some Malls in the Philippines conduct collection event. Malls have contract with junk shop or e-waste recycler. Malls provide space for collection event in parking lot or other place.

Monthly collection event in parking lot of a mall in Metro Manila, Philippines, August 2009..

Lessons for Establishing Collection System（1）

- Utilize conventional market-based collection system, if it is appropriate.
- Even if new collection system is introduced, it is necessary to understand conventional market-based collection system.
- Incentives of actors in collection system should be considered.

Lessons for Establishing Collection System（2）

- Repair shops may become a major collection points in low income developing countries.
  - To identify the destination of e-waste from repair shops. If the destination is not appropriate, it is good to consider how the government can change them.
    - Mandatory regulation
    - Financial incentive

ISSUE OF ORPHAN

Examples of Orphan(1)

To implement EPR, it is necessary to identify producer or importer of goods. But if smuggled good, imitated products and no brand products dominates market, it may be difficult to put responsibilities to all of producers and importers.

Probably, faked products, which design are same, but have LG logo and Sony logo. July 2007, in Vietnam.

No brand TV which are made from used TV monitor with new casing. Customer can choose brand name. January 2007, in China.

Example of Orphan(2）

Probably smuggled secondhand fax machine, found in secondhand market in Guandong China. It is mentioned that customer service for this products is only provided in Japan. Transformer is put into the machine.

Volume of orphan

- It is difficult to estimate the volume of orphan.
  - According to an estimate, market share of no-brand air-conditioner, which are made by small manufacturer, is considered to be 20-30 % in Thailand.
  - A survey conducted by NIES and Kyoto University shows that more than half of desk top computer used in households in South Korea are no-brand one, which were made by small shops or by consumers by themselves.

Who bear the cost of orphan, instead of producer of orphan?

- Government
  - In packaging and container recycling regulation in Japan, small scale producer using packaging and container are exempted from bearing financial responsibility of producer. In stead of small scale producer, local government bear the recycling cost, because local government pay the cost of disposal of waste packaging and container.
- Consumer
  - In computer recycling system in Japan, consumer using orphan computer should par recycling fee.

Reducing the volume of Orphan

- It is the responsibility of government to reduce some type of orphan such as smuggled products, imitated products and unregistered products, if appropriate regulation exists. One of the option is to collect recycling fee from them, if the government caught them.

References (1)

- Michikazu KOJIMA(ed.) [2005] *International Trade of Recyclable Resource in Asia*, Institute of Developing Economies, downloadable from http://www.ide.go.jp/English/Publish/Download/Spot/29.html
- 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.

References (2)

- Kojima, Michikazu, Aya Yoshida and So Sasaki [2009] “Difficulties to apply extended producer responsibility in developing countries: Cases of e-waste recycling in China and Thailand” *Journal of Material Cycles and Waste Management*, Vol.11, pp.263-269.
- CHUNG, Sungwoo and Michikazu Kojima [2010] “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.