経済産業省
Ministry of Economy, Trade and Industry

Resource Efficiency and Circular Economy in the EU and Japan

Current Activities and Future Direction Related to RE and CE in Japan

15.Feb.2016
Recycling Promotion Division,
Industrial Science and Technology Policy and Environment Bureau,
Ministry of Economy, Trade and Industry

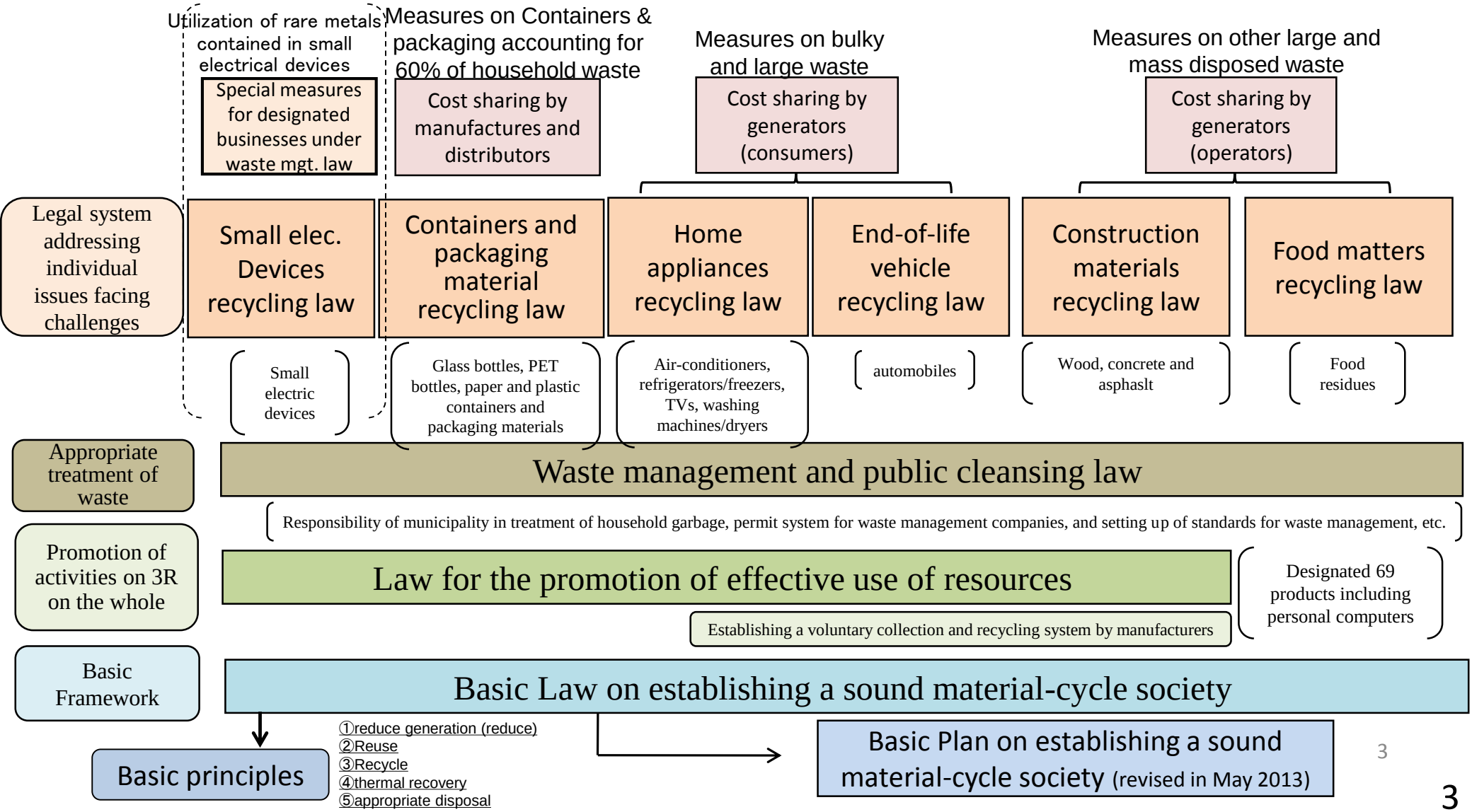
1. Current Situations in Japan
2. EU's RE and CE from Our Point of Views
3. Comparative Analysis between EU and Japan
4. Future Directions

Chronological Tables of Relevance

	Legal framework (implementation)	Social situation, etc.
		rapid economic growth: Disposal of large amount of waste and its inappropriate handling/treatment resulted in a series of severe environmental contamination
1971	Waste management law	・・・Responsibilities and treatment standards of waste were set
1991	Recycling promotion law	・・・Introduction of planned activities on recycling based on the law
1995	Containers & Packaging recycling law	・・・Oldest of the individual laws
2001	Basic law on a sound material-cycle society	・・・3R Concept: with higher priority on Reduce and Reuse than Recycling
	Law on effective use of resources	・・・Recycling promotion law fully revised to take integrated approach on 3R
	Home appliances recycling law	1R ▪▪▪▪▪▶ 3R
	Law on recycling of food matters	
2003	First B.P. on a sound material-cycle society	Establishment of a sound material-cycle society which reduces consumption of natural resources and environmental burden
2005	End-of-life vehicle recycling law	
2006	C&P recycling law revised	
2007	Food matters recycling law revised	
2008	2nd B.P. on a sound material-cycle society	
	Home appliances recycling law revised	More emphasis on promoting 2R (Reduce and Reuse) which has higher priority than Recycling. Promotion of high-tech “horizontal (same product) recycling” Promotion of International corporation for 3Rs.
2013	Small elec. devices recycling law	
	3rd B.P. on a sound material-cycle society	

Legal Framework on RE(Resource Efficiency)

○Recycling law on individual products are devised for the products facing issues and challenges after disposal.



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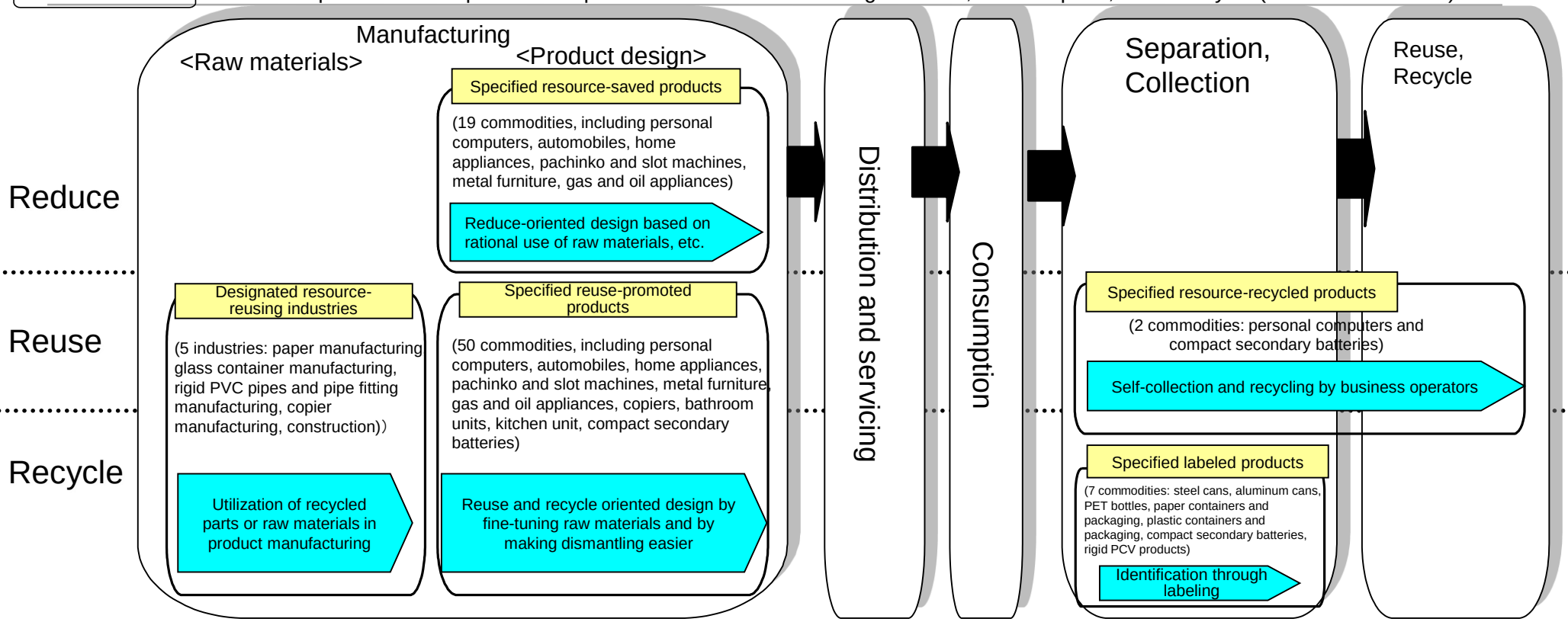
Outline of the Law for the Promotion of Effective Utilization of Resources

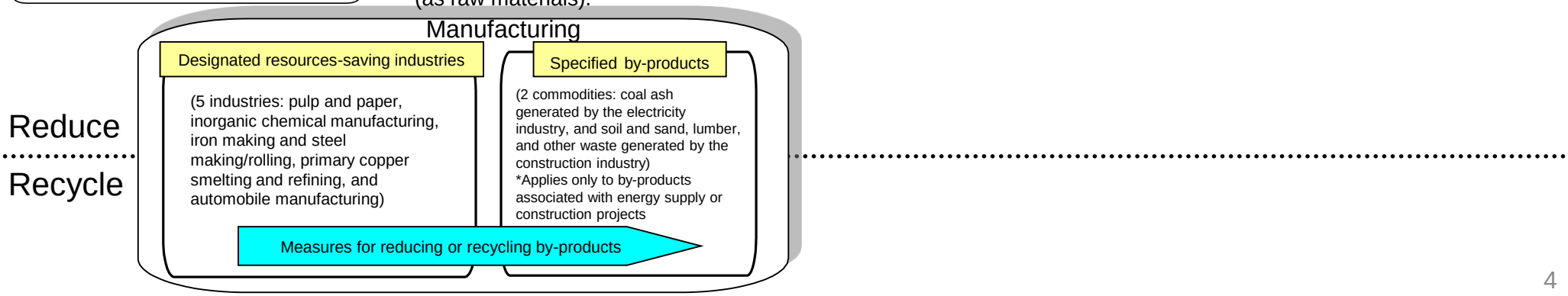
I. Product measures

Business operators are required to adopt measures to reduce waste generation, to reuse parts, and to recycle (reuse as resources).



II. By-product (workplace) measures

Business operators are required to adopt measures to reduce generation of by-products in plants and to recycle them (as raw materials).



Law for the Promotion of Effective Utilization of Resources (Specified Resources-Saved Products and Specified Reuse-Promoted Products)

Televisions, refrigerators, washing machines, air conditioners, microwave ovens, clothes driers, and personal computers, etc. are designated as “Specified Resources-Saved Products” and “Specified Reuse-Promoted Products”.

Category	Details		Specified products / industries
Products	**Specified Resource-Saved Products**	Require the actions of the rational use of raw materials, promotion of a longer use of the product, and the control of the generation of other used commodities	Electric home appliances (television sets, refrigerators, washing machines, air conditioners, microwave ovens, clothes driers), personal computers, gas and oil appliances, automobiles, metal furniture, pachinko machines
	Specified Reuse-Promoted products	Require the promotion of the use of recyclable resources and recyclable parts	Electric home appliances (television sets, refrigerators, washing machines, air conditioners, microwave ovens, clothes driers), personal computers, devices using compact rechargeable batteries, gas and oil appliances, bathroom units and kitchen systems, metal furniture, copiers, automobiles, pachinko machines
	Specified Resource-Recycled Products	Require the actions of voluntary collection and resource recovery and recycling	Personal computers, compact rechargeable batteries (including devices in which compact rechargeable batteries are used)
	Specified Labeled Products	Require labeling to promote separate collection	Plastic container and packaging, paper container and packaging, compact rechargeable batteries, PET bottles, steel cans, aluminum cans, PVC construction materials
	Specified Byproducts	Require the actions to promote the use of the byproducts as recycled resources	Coal ash generated by the electricity industry, soil and sand, slabs of concrete and asphalt, and lumber generated by the construction industry
Industries	Designated Resource-Saving Industries	Require to reduce the generation of byproducts	Automobile manufacturing, iron-making and steel-making/rolling, primary copper smelting and refining, pulp and paper, inorganic chemical manufacturing and organic chemical manufacturing
	Designated Resource-Reusing Industries	Require to use recyclable resources and recyclable parts	Paper manufacturing, construction, glass container manufacturing, copier manufacturing, rigid PVC pipes and pipe fitting manufacturing

Source: METI website on 3R Policies http://www.meti.go.jp/policy/recycle/main/english/law/promotion.html

⇒ A follow-up to monitor the initiatives of manufacturers is conducted based on the “Guidelines for each product category by the Industrial Structure Council”（aligned with the Act on the Promotion of Effective Utilization of Resources）. Also, METI regularly conducts an investigation on the status of the initiatives.

Law for the Promotion of Effective Utilization of Resources
(Specified Resources-Saved Products and Specified Reuse-Promoted Products)

For each product category, a set of “Judgment Criteria”, with which product manufacturers shall comply to take actions, is stipulated under the Ministerial Ordinance.

Summary of “Judgment Criteria” for Specified Resource-Saved Products and Specified Reuse-Promoted Products

Specified Resources-Saved Products	Specified Reuse-Promoted Products
1. Rationalization of the Use of Raw Materials, etc.	1. Efforts relating to Raw Materials
2. Promotion of Long-Term Use	2. Efforts relating to Structure
3. Ensuring Safety in Repair, etc.	3. Efforts relating to Sorting
4. Ensuring Opportunity for Repair, etc.	4. Ensuring Safety in Treatment
5. Considerations for Safety, etc.	5. Considerations for Safety, etc.
6. Technological Improvement	6. Technological Improvement
7. Advance Assessment of Products	7. Advance Assessment of Products
8. Provision of Information	8. Provision of Information
9. Efforts relating to Packaging Materials, Etc.	9. Efforts relating to Packaging Materials, Etc.

Source: summarized using the “Summary of Judgment Criteria” for Specified Resource-Saved Products and Specified Reuse-Promoted Products by METI: Ministry of Economy, Trade and Industry.

Policy Framework regarding Eco-Design (Electrical and Electronic Equipment)

- As a policy framework to promote the environment-conscious products in the field of electric and electronic equipment in Japan, there are the “Act on the Rational Use of Energy (Energy Conservation Law)” and the “Law for the Promotion of Effective Utilization of Resources” (“Specified Resources-Saved Products”, “Specified Reuse-Promoted Products”, and “Specified Labeled Products”). In the perspective of product introduction into the market, both acts include the provisions on the environment-conscious design in the design phase.
- In addition, as a policy to promote the introduction of environment-conscious products into the market, there is the “Act o Promotion of Procurement of Eco-Friendly Goods and Services by the State and Other Entities (Green Purchasing Law)”, which stipulates the promotion of purchasing eco-friendly goods by the State and other authorities, etc.

	Energy Efficiency/Conservation	3R (Reduce/Reuse/Recycle)	Reduction of Chemical Substance Risks
Measures for environment-conscious design	“Top Runner Program” based on the “Energy Conservation Law” →sets energy efficiency/conservation performance standards based on the Top Runner Program calculation method for cars and home electric appliances, etc.	“Law for the Promotion of Effective Utilization of Resources”（“Specified Resources-Saved Products” and “Specified Reuse-Promoted Products”） →making 3R conscious design mandatory (however, the criteria for implementation are qualitative; thus the need for the industry and manufacturers to determine what concrete actions to adopt） →No substantial certification scheme	“Law for the Promotion of Effective Utilization of Resources” (“Specified Labeled Products”) → making the marking for presence of the specific chemical substances mandatory (J-Moss Mark, etc.)
Environment-conscious design for public procurement	“Green Purchasing Law”（“Judgment Criteria”）	“Green Purchasing Law” （“Provisions for consideration”） →this is not the “Judgment Criteria”, but it requires voluntary efforts by related party	“Green Purchasing Law”（“Judgment Criteria”）

Boosting RE industry (Eco-town project)

Project outline

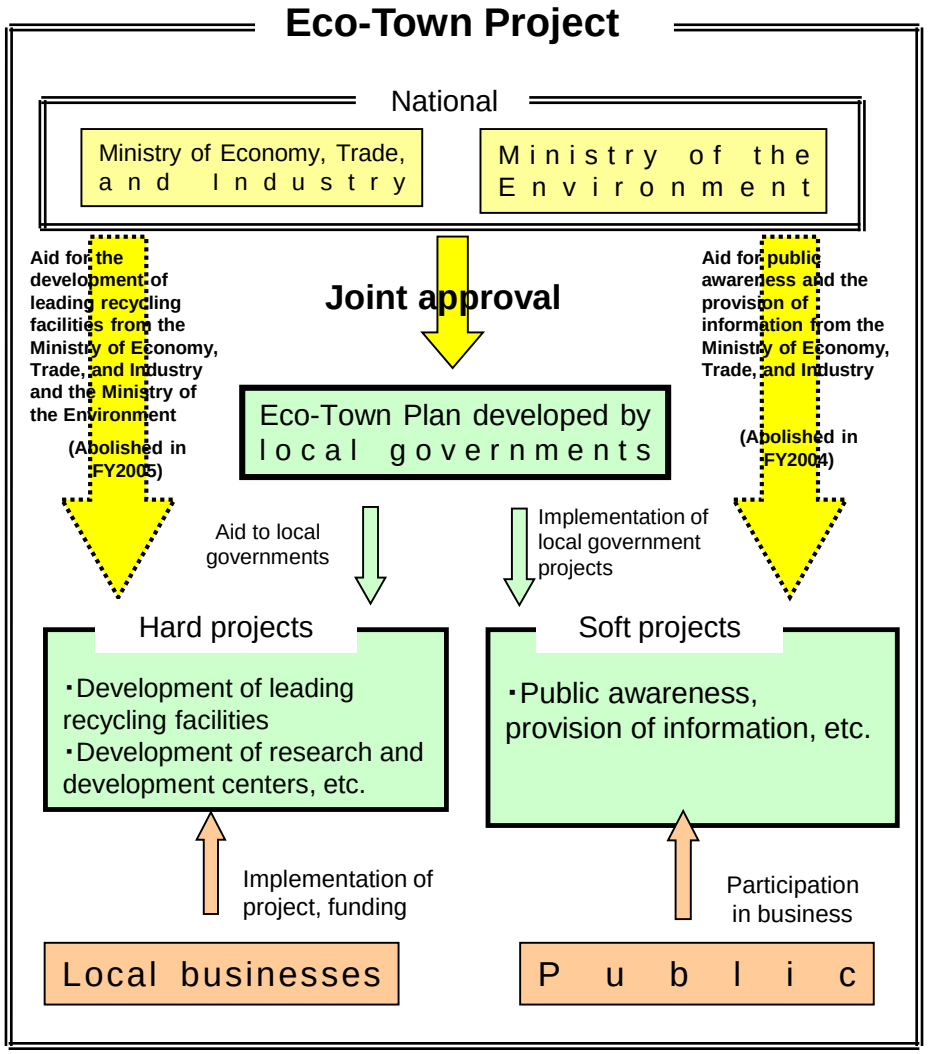
Purpose:

1. Regional development through the promotion of the environmental industry by utilizing local industry accumulation
2. Construction of a recycling-based economy and society through the promotion of waste reduction and recycling, with consideration for the uniqueness of regions

Business:

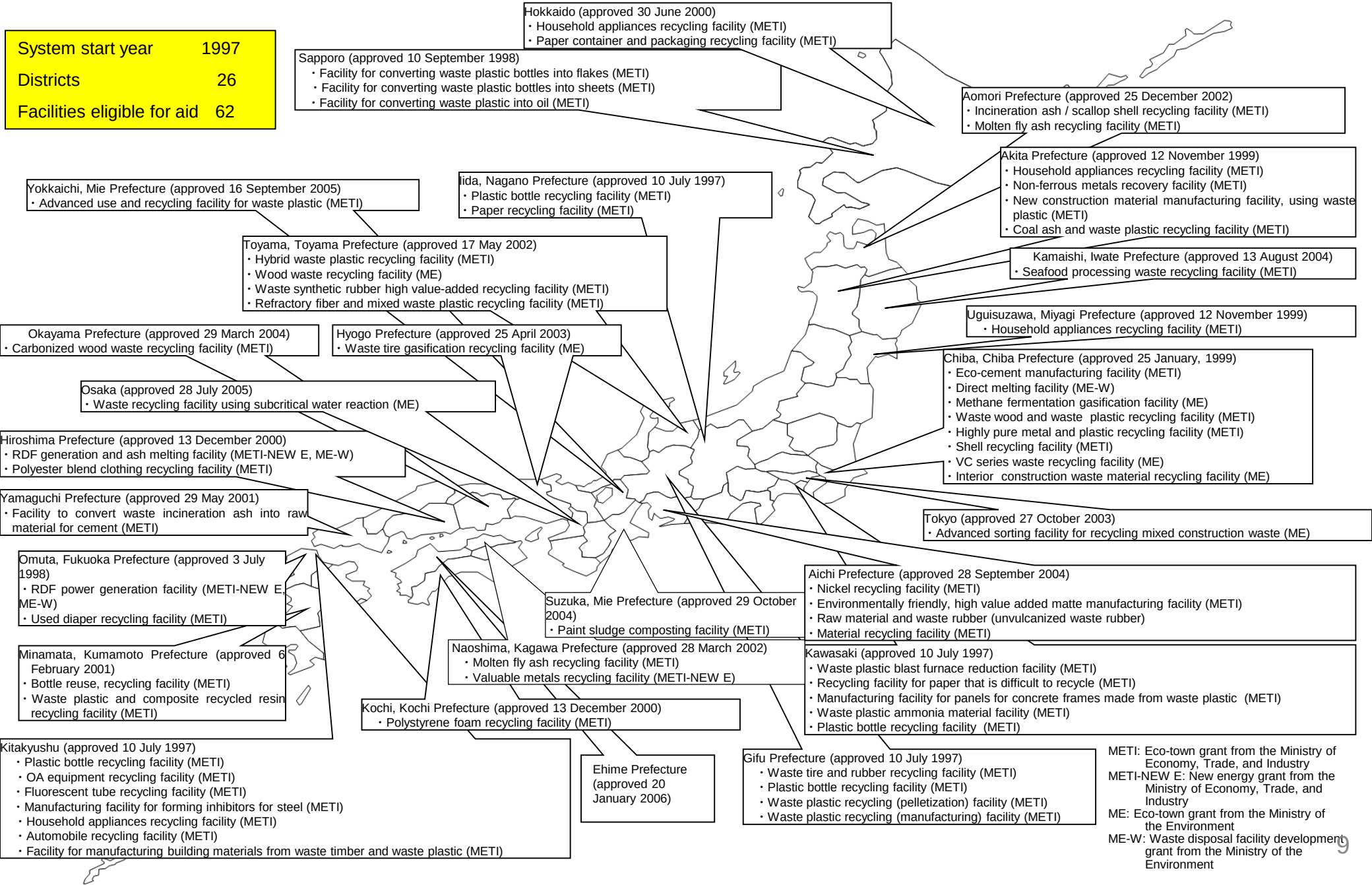
1. Local governments utilizing the characteristics of each region to create an “Eco-Town Plan (Urban Development Plan in Harmony with the Environment)”
2. The Ministry of Economy, Trade, and Industry and the Ministry of the Environment jointly approving plans which they recognize that can become model plans for other local governments
3. Provide financial support to local public organizations and private sector organizations for the development of recycling facilities that contribute to the formation of a leading recycling-based society, based on the plan (Abolished in FY2005)

System



Map of Approved Districts for Eco-Town Projects

System start year	1997
Districts	26
Facilities eligible for aid	62



Hokkaido (approved 30 June 2000)
・Household appliances recycling facility (METI)
・Paper container and packaging recycling facility (METI)

Sapporo (approved 10 September 1998)
・Facility for converting waste plastic bottles into flakes (METI)
・Facility for converting waste plastic bottles into sheets (METI)
・Facility for converting waste plastic into oil (METI)

Aomori Prefecture (approved 25 December 2002)
・Incineration ash / scallop shell recycling facility (METI)
・Molten fly ash recycling facility (METI)

Akita Prefecture (approved 12 November 1999)
・Household appliances recycling facility (METI)
・Non-ferrous metals recovery facility (METI)
・New construction material manufacturing facility, using waste plastic (METI)
・Coal ash and waste plastic recycling facility (METI)

Kamaishi, Iwate Prefecture (approved 13 August 2004)
・Seafood processing waste recycling facility (METI)

Uguisuzawa, Miyagi Prefecture (approved 12 November 1999)
・Household appliances recycling facility (METI)

Chiba, Chiba Prefecture (approved 25 January, 1999)
・Eco-cement manufacturing facility (METI)
・Direct melting facility (ME-W)
・Methane fermentation gasification facility (ME)
・Waste wood and waste plastic recycling facility (METI)
・Highly pure metal and plastic recycling facility (METI)
・Shell recycling facility (METI)
・VC series waste recycling facility (ME)
・Interior construction waste material recycling facility (ME)

Tokyo (approved 27 October 2003)
・Advanced sorting facility for recycling mixed construction waste (ME)

Yokkaichi, Mie Prefecture (approved 16 September 2005)
・Advanced use and recycling facility for waste plastic (METI)

Iida, Nagano Prefecture (approved 10 July 1997)
・Plastic bottle recycling facility (METI)
・Paper recycling facility (METI)

Toyama, Toyama Prefecture (approved 17 May 2002)
・Hybrid waste plastic recycling facility (METI)
・Wood waste recycling facility (ME)
・Waste synthetic rubber high value-added recycling facility (METI)
・Refractory fiber and mixed waste plastic recycling facility (METI)

Okayama Prefecture (approved 29 March 2004)
・Carbonized wood waste recycling facility (METI)

Hyogo Prefecture (approved 25 April 2003)
・Waste tire gasification recycling facility (ME)

Osaka (approved 28 July 2005)
・Waste recycling facility using subcritical water reaction (ME)

Hiroshima Prefecture (approved 13 December 2000)
・RDF generation and ash melting facility (METI-NEW E, ME-W)
・Polyester blend clothing recycling facility (METI)

Yamaguchi Prefecture (approved 29 May 2001)
・Facility to convert waste incineration ash into raw material for cement (METI)

Omuta, Fukuoka Prefecture (approved 3 July 1998)
・RDF power generation facility (METI-NEW E, ME-W)
・Used diaper recycling facility (METI)

Minamata, Kumamoto Prefecture (approved 6 February 2001)
・Bottle reuse, recycling facility (METI)
・Waste plastic and composite recycled resin recycling facility (METI)

Suzuka, Mie Prefecture (approved 29 October 2004)
・Paint sludge composting facility (METI)

Aichi Prefecture (approved 28 September 2004)
・Nickel recycling facility (METI)
・Environmentally friendly, high value added matte manufacturing facility (METI)
・Raw material and waste rubber (unvulcanized waste rubber)
・Material recycling facility (METI)

Naoshima, Kagawa Prefecture (approved 28 March 2002)
・Molten fly ash recycling facility (METI)
・Valuable metals recycling facility (METI-NEW E)

Kawasaki (approved 10 July 1997)
・Waste plastic blast furnace reduction facility (METI)
・Recycling facility for paper that is difficult to recycle (METI)
・Manufacturing facility for panels for concrete frames made from waste plastic (METI)
・Waste plastic ammonia material facility (METI)
・Plastic bottle recycling facility (METI)

Kochi, Kochi Prefecture (approved 13 December 2000)
・Polystyrene foam recycling facility (METI)

Kitakyushu (approved 10 July 1997)
・Plastic bottle recycling facility (METI)
・OA equipment recycling facility (METI)
・Fluorescent tube recycling facility (METI)
・Manufacturing facility for forming inhibitors for steel (METI)
・Household appliances recycling facility (METI)
・Automobile recycling facility (METI)
・Facility for manufacturing building materials from waste timber and waste plastic (METI)

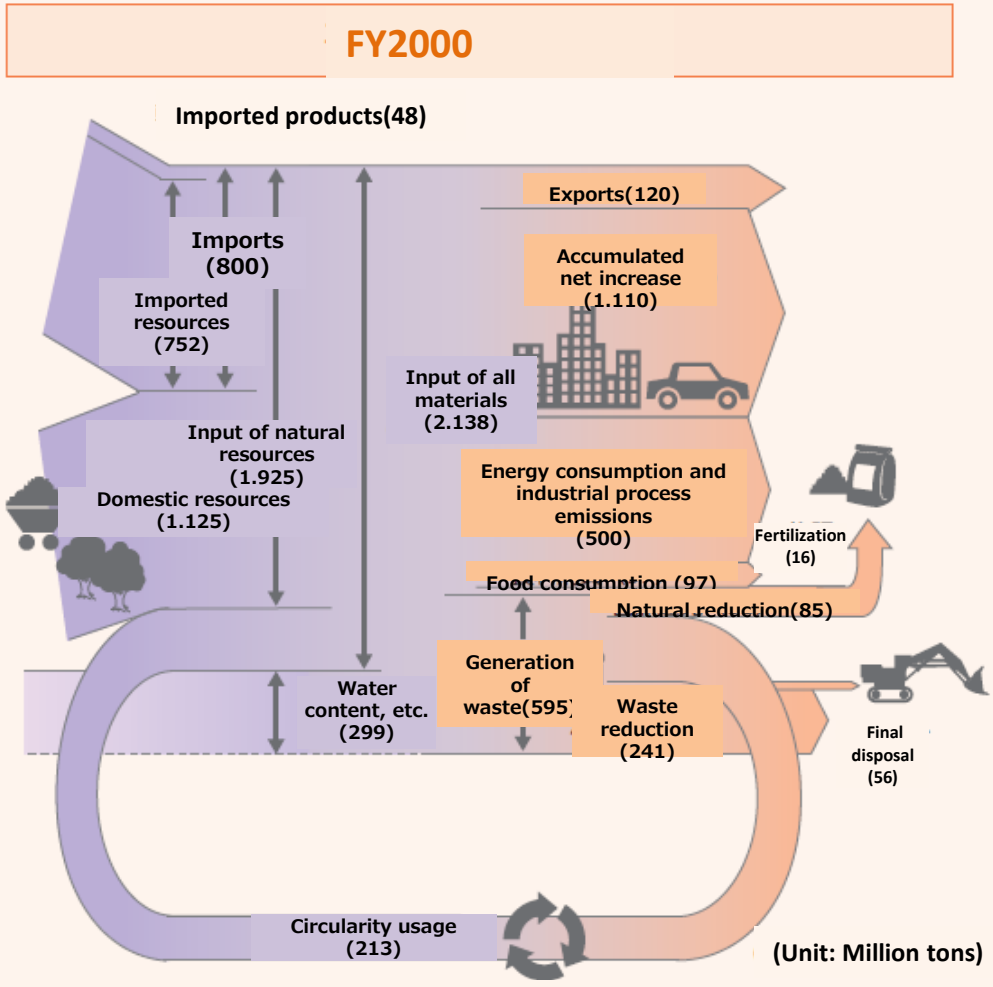
Ehime Prefecture (approved 20 January 2006)

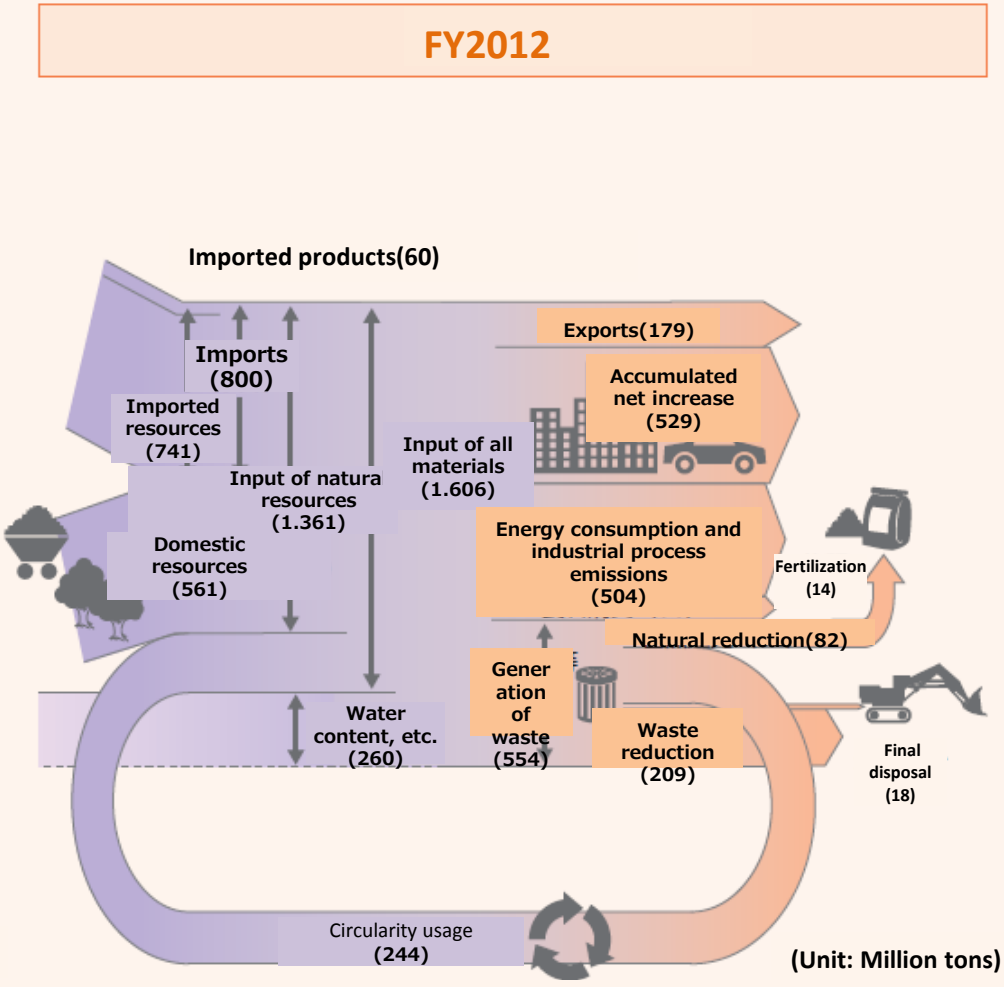
Gifu Prefecture (approved 10 July 1997)
・Waste tire and rubber recycling facility (METI)
・Plastic bottle recycling facility (METI)
・Waste plastic recycling (pelletization) facility (METI)
・Waste plastic recycling (manufacturing) facility (METI)

METI: Eco-town grant from the Ministry of Economy, Trade, and Industry
METI-NEW E: New energy grant from the Ministry of Economy, Trade, and Industry
ME: Eco-town grant from the Ministry of the Environment
ME-W: Waste disposal facility development grant from the Ministry of the Environment

Material Flow in Japan

- Circularity usage is increasing (213 -> 244 Million tons)

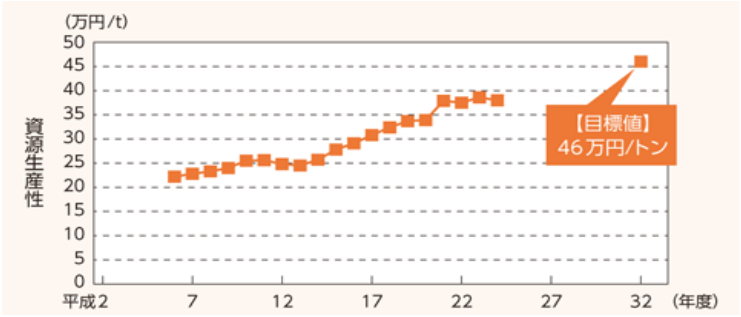




(Note) Water content, etc.: Water content in waste (sludge, animal manure, excrement, waste acid, and waste alkali) and input of earth and sand accompanying economic activities (sludge from the mining industry, construction industry, and water supply business, and slag from the mining industry)

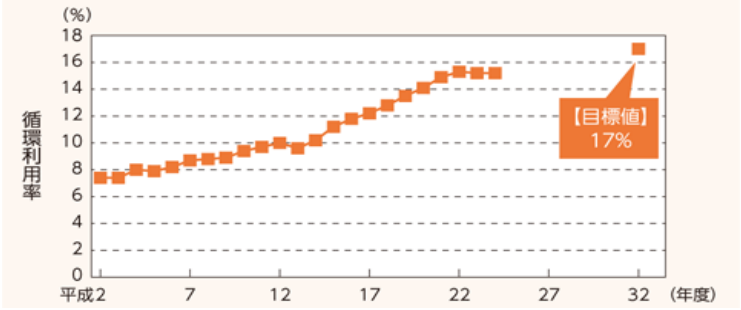
source : Annual Report on the Environment, the Sound Material-Cycle Society and Biodiversity in Japan 2015(Ministry of Environment)

Changes in Monitoring Indicators



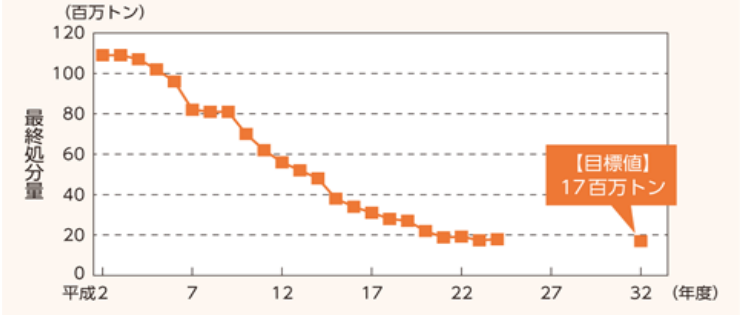
○ Material Productivity (= GDP/amount of natural resources)

➢target: 460 thousand yen/ton by 2000FY
(to improve 80% from 2020FY:250 thousand yen/ton)



○ Circularity Usage Rate (= circularity usage/ (circularity usage +input of natural resources))

➢target: 17% by 2020FY
(to improve 70% from 2000FY:10%)



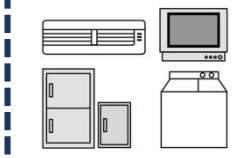
○Landfilling Amount

➢target: 17 Million tons by 2020FY
(to reduce 80% from 2000FY: 56 million tons)

source : Annual Report on the Environment, the Sound Material-Cycle Society and Biodiversity in Japan 2015(Ministry of the environment)

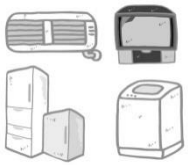
Regulations and Indicators Set in Each Stage of Product Lifecycle

Product Lifecycle



Product Design

Manufacture, Sale & Use



Discharge & Collection

Treatment & Recycling

Utilization of Recycled Materials

Reuse

Regulations and Indicators

Law for Promotion of Effective Utilization of Resources (targets: TV, PC, etc.)

- ✓ Products specified for resource conservation: making products and their components smaller, lighter and durable
- ✓ Products specified for reuse: using recycled plastics, making products easier to demanufacuture

Green Purchasing Law (targets: refrigerator, TV, PC, etc.)

- ✓ Items specified for product procurement: focusing on energy efficiency and choosing CFC-free goods; easy access to information on chemical substances contained in goods

Home Appliance Recycling Law (targets: air conditioner, TV, etc.)

- ✓ Collection Rate Target: 56% by the end of FY2018 (49% as of 2013)

Small Home Appliance Recycling Law (targets: cell phone, digital camera, etc.)

- ✓ Collection Amount Target: 140,000 tons per year by the end of FY2015 which is roughly 1kg per person in a year (some 50,000 tons as of 2014)

Home Appliance Recycling Law

- ✓ Recycling Rate*1 : written as right table

Note: *1 recycling rate can be calculated as the total weight of materials recycled divided by the total weight of units treated for recycled

Air Conditioner	80%
Tube TV	55%
LCD and Plasma TV	74%
Refrigerator	70%
Washing Machine	82%

Law for Promotion of Effective Utilization of Resources (copier manufacturer)

- ✓ Industries specified for reuse: setting of target; maintenance of equipment; making a utilization plan of recyclable resources
- ✓ Parts-reuse rate in the copier manufacturing industry for 2002 was 2.45kg/unit and 2.54kg/unit in 2005

Criteria for Four Items of Home Appliances (targets: air conditioner, TV, etc.)

- ✓ Year of manufacturing, status of equipment (energization check), appearance

Criteria for Used Electrical and Electronic Equipment

- ✓ Model, year of manufacturing, status of equipment, packing/loading status, past record of trading as used goods

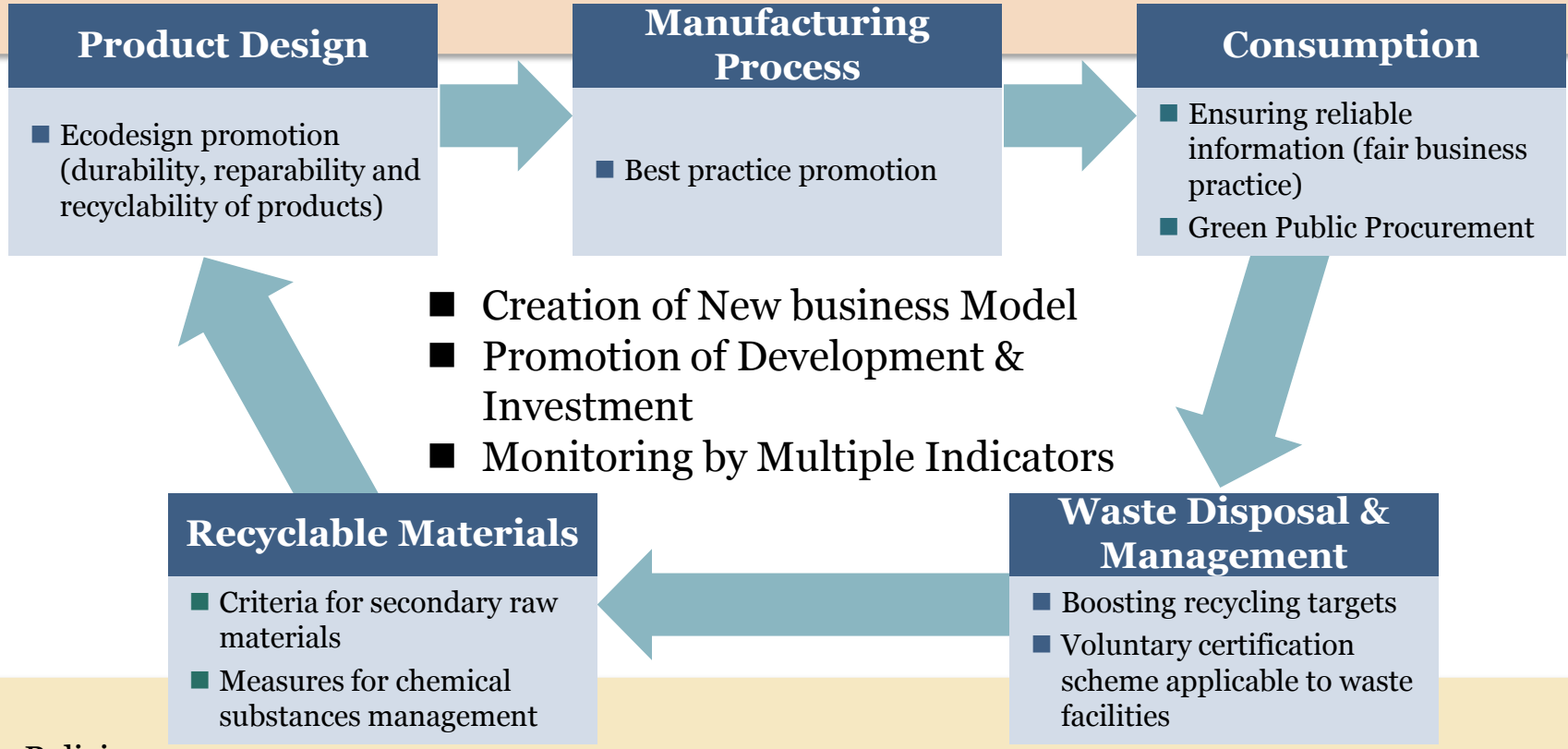
What is RE/CE

- RE is
  - Improving the resource productivity with minimizing the impact on the environment and using resources in a more sustainable manner.
  - “Resource” mean not only materials, but all resources including water , energy etc.
  - Including reducing waste, recycling, re-using, share, PaaS and so on.

- CE is
  - One of important themes to achieve RE.
  - Economic & industrial policy for boosting job creation, economic growth and investment by the creation of new services and business models.
  - Covering the whole product lifecycles: from production and consumption to waste management and the market for secondary raw materials.
  - To reduce waste, green house gas emissions and protect environment by an effective utilization of resources.

Flow of EU's Circular Economy (CE) Policy

Major Policies
- Ecodesign Directive sets requirements on durability, reparability and recyclability of products
- Best Available Techniques (BAT) Reference Document (BREF): Best practice promotion
- Environmental Communication: Labeling, Product Environmental Footprint



Major Policies
- Waste Framework Directive, recycling directive (containers, WEEE): Ban on landfill, boosting recycling targets
- EU certification & standards applicable to waste facilities (Eliminating illegal routes, equivalent conditions)
- Development & application of quality standards for secondary raw materials

Source) Presentation made by Mitsubishi Research Institute, Inc.

CE policy's impacts on Japanese Businesses

Category		Possible impact on Japanese businesses	
Product design	Ecodesign promotion	Manufacturers	Durability, reparability and recyclability of products used in the EU
Production Process	Best practice promotion	Manufacturers	Measures to be taken at production facilities if best practice is selected as BAT's reference document
Consumption	Ensuring reliable information (fair business practice)	Manufacturers	When labelling and Product Environmental Footprint are introduced in Japan, relevant information will be developed and provided
	Green public procurement	Manufacturers	When new requests are added to CE procurement criteria, measures for them need to be formulated
Waste disposal & management	Higher recycling target	Manufacturers	Increased financial burden due to EPR
	Voluntary certification scheme for disposal facilities	Recyclers	Necessary of adoption if the EU certification scheme becomes international standard
Secondary materials	Quality standards for secondary raw materials	Recyclers	Necessary in manufacturing new technologies for secondary raw materials
	Measures for chemical substances	Entire businesses	Measures to make a request for chemical substances management in the supply chain
Overall	New business models	Entire businesses	Necessary for developing new business models including industrial symbiosis
	Development & investment promotion	Government & businesses	Securement of investment opportunities
	Monitoring by multiple indicators	Government & businesses	Necessary for international consistency

Source) Presentation made by Mitsubishi Research Institute, Inc.

Japan-EU Industrial Policy Dialogue

＜Goal＞

(1) Review of industrial policy and progress of industrial cooperation between Japan and Europe, and exchange of views for promoting business environment infrastructure etc. (Co-chair : Vice-Minister for International Affairs METI and Director General DG Grow)

(2) Launch of the Working Group (Director level) for specific political issue for discussion.

①Chemicals WG ②Standardisation and CA WG ③Climate Change and Environment WG

④CSR WG ⑤Automobile WG

(preparation for launch of Robotics WG and Smart Appliance WG)

＜Regulatory Cooperation＞

Agreement on the joint statement on regulatory cooperation for harmonizing rules in the following 12 categories and 13 issues in the meeting in March 2015.

①***Robotics***

②***Chemicals***

- **Risk assessment of chemical substances**
- **Transferring information of chemical substances**

③***Revision of Flammability Classification in GHS***

④***Automobile*** ⑤***Conflict Minerals*** ⑥***Eco-design*** ⑦***Construction***

⑧***Resource efficiency*** ⑨***Medical devices*** ⑩***IT and manufacturing***

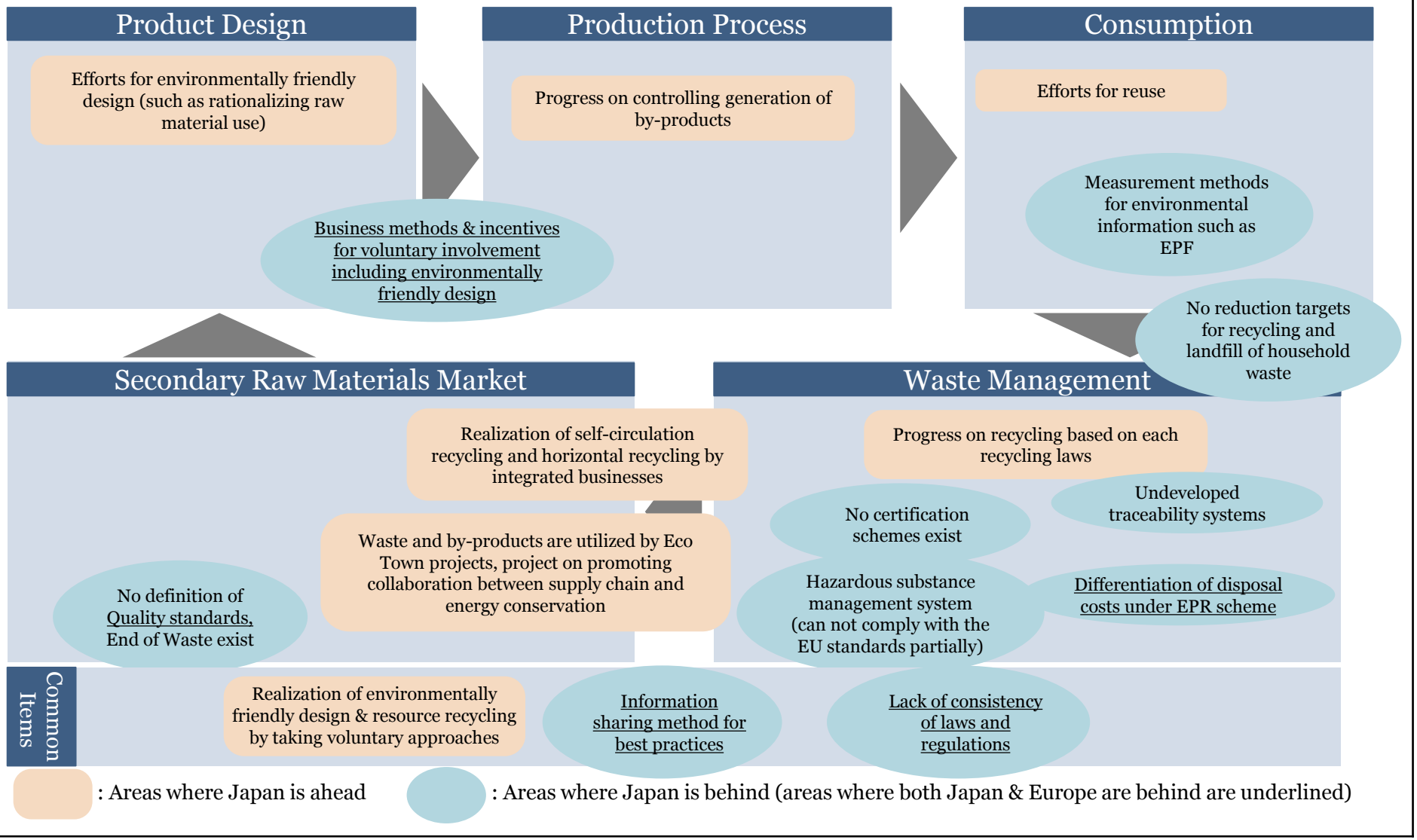
⑪***FLMs(Forced Localization Measures) in ICT*** ⑫***Personal data protection***

【Dialogue on Resource efficiency】

Dec. 2015 Meeting with EC DG Grow and DG ENV
EU-Japan WG conformity assessment and standardisation

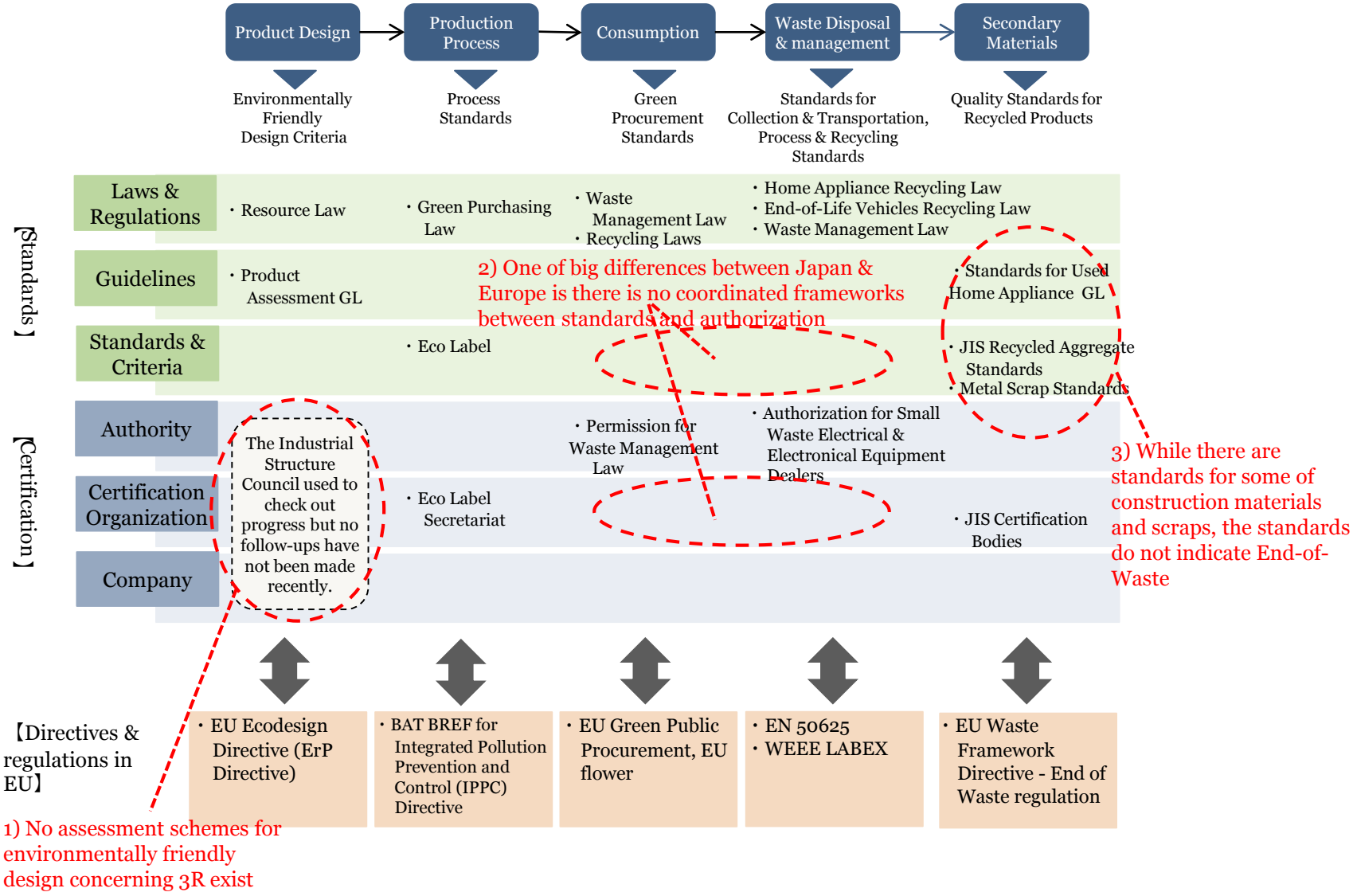
Feb. 2016 Climate Change and Environment WG
METI / EJCIC Seminar on RE/CE

A comparative analysis of recycling efforts between Europe and Japan



A comparative analysis of standards and certifications in EEE between Europe and Japan

Please note that there are various measurement standards other than the below.



Collection, Logistics and Treatment Requirements between Japan and EU

- The table below shows the comparison of standards on collection, logistics and treatment in case of electrical and electronic

		Japan A: Home Appliance Recycling Law B: Small Home Appliance Recycling Law	**EU** EN50625, WEEELABEX
Legal Framework		■ Stipulated in laws and regulations	■ Standards are quoted in the regulations of the member states
	Requirements for Businesses	■ Financial base and facility standards as well as disqualification conditions are stipulated	■ Maintaining management system or improving the system are stipulated
	Monitoring	■ A: No regulations on monitoring ■ B: The following are stipulated in the law: whole procedure from disposal to recycling needs to be clarified; necessary steps need to be taken in order to clarify recycling status	■ Process route of WEEE must be recorded (EU management system was developed and operated)
	Recycling Level	■ A: Recycling rates are stipulated in the law (55% - 80% depending on an item) ■ B: No quantitative criteria are developed	■ Recycling and recovery targets need to be met (recycling targets are 55% to 80% by the end of 2018)
Certification Scheme		■ Certified by national government	■ Certified by a third-party or industries' organization
International Consistency		■ n/a	■ EN50625 is planned to be proposed as IEC standards ■ Quoted in the equivalent conditions for treatment of WEEE outside the EU

Discussion on RE in G7

- Leaders' Declaration G7 Summit (Jun. 2015)

- It declares "we will continue to take ambitious action to improve resource efficiency as part of broader strategies to promote sustainable materials management and material-cycle societies."
- It is agreed to establish the G7-Alliance on Resource Efficiency as a forum to share knowledge and create information networks on a voluntary basis.
- G7 follows up their own actions till the next Summit. The G7 Alliance on Resource Efficiency will conduct workshops at least once a year under the leadership of the respective Presidency.

- Preparation for G7 Ise-Shima Summit

- The G7- Alliance workshops
  - Oct. 2015 Kickoff WS (Germany), Industrial Symbiosis WS (U.K.)
  - Nov. 2015 Biomass WS
  - Feb. 2016 International Cooperation WS (Japan)
  - Mar. 2016 Automotive Supply Chain WS (U.S.)
- Energy Ministers Meetings (May. 2016)
- Environment Ministers Meetings (May. 2016)
- Ise-Shima Summit (May. 2016)

Future Directions in Japan

- Promotion of global circulation
- “Upstream industries” - “Downstream industries” cooperation
- Reviewing the waste legislation and changing of “Downstream industries”
  - Innovations in 3Rs ([IoT])
  - Overseas deployment of Japanese technology
  - Stimulating the new growth industry, Reduction in social cost
  - Definitions of waste（「End of waste」「secondary raw materials」）
- Necessity of various correspondence based on the situation of each country
- Consideration of the validity of measures besides regulating means