

# Circular Economy in Japan

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Note) This presentation contains the views of the presenter and does not represent the official stance of the Ministry of Economy, Trade and Industry or the Japanese government.

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# History of Circular Economy Policy in Japan (1R → 3R → CE)

1991

## Act on Promotion of Use of Recyclable Resources (1991.4)

- ✓ Recycling of collected resources (paper, glass), factory byproducts (slags, coal ashes)
- ✓ DfE for recycling (cars, TVs, refrigerators, etc.)
- ✓ Labeling (steel and aluminum cans, PET bottles, NiCad batteries)

1R

1999

## Circular Economy Vision 1999 (1999.7)

- ✓ Advocating "3R" principles
- ✓ Main agenda was "appropriate waste-management" to **minimize landfilling**

Law Amendment  
New Measures

2001

## Basic Act on Establishing a Sound Material-Cycle Society (2001.1)

- ✓ Waste-hierarchy principles (Reduce, Reuse, Recycle, Thermal recovery, Disposal)
- ✓ Basic Plan on establishing a sound material-cycle society

3R

2020

## Resource Effective Utilization Promotion Act (3R Act) (2001.4)

- ✓ Designates 69 items, and 10 business categories to promote efficient resource use
- ✓ requiring Design for Environment (DfE) to 69 items

Adding items  
Enhancing guidelines

2023

## Circular Economy Vision 2020 (2020.5)

- ✓ **Further Integration of the Environment into the Economic system**
- ✓ **Promoting industries' voluntary actions as corporate and business strategies** with a view to expanding circular products and businesses to the global market
- ✓ **Re-establishing a regillient circular system in mid- and long-term perspective**

CE  
Vision

&

## Strategy of Resource-Autonomous Circular Economy for Growth

- ✓ **Improving the competitive market environment** (regulations/rules) (2023.3)
- ✓ **Policy support** (Circular economy toolkit)
- ✓ **Industry-Government-Academia Collaboration** (Circular Economy Partnership)

CE  
Strategy

# **Current Status of Circular Economy (3Rs) in Japan**

# Japan's Current Legal Framework for Circular Economy

Basic Law  
For 3Rs

**Act on the Promotion of Effective Utilization of Resources**  
**(3R Act)** (fully revised in 2001)  
*Designates 69 items, and 10 industries to promote efficient resource use*

Focusing on  
Individual Item

**Small home  
appliances  
Recycling act**  
(2013-)



*Small home  
appliance*

**Containers &  
packaging  
(C&P) Recycling  
act**

(2000-, revised in  
2006)



*C&P of Glass,  
paper, plastic  
etc.*

**Home  
appliances  
Recycling act**  
(2001-)



*Refrigerators, TVs,  
air conditioners,  
washing machines*

**End-of-life  
vehicle  
Recycling act**  
(2005-)



*Vehicles*

**Construction  
materials  
Recycling act**  
(2002-)

*Wood,  
concrete,  
asphalt*

**Food  
Recycling act**  
(2001-, revised in  
2007)

*Food residue*

Focusing on  
Material

**Act on Promotion of Resource Circulation for Plastics** (2022-)

Basic Law for  
waste  
management

**Act on Waste Management and Public Cleansing** (1972-, revised in 2017)

Responsibilities of municipalities for waste from households, License to waste disposal and treatment company, set standards for waste processing

Basic Law  
For  
Circular  
Society

**Basic Act on Establishing a Sound Material-Cycle Society** (2001-, revised in 2012)

Basic principle

1. Reduce
2. Reuse
3. Recycle
4. Thermal recovery
5. Disposal

Basic Plan on establishing a sound material -cycle society

# Ref: Law for Promotion of Effective Resource Use (fully amended in 2001)

## Promote “3R (Reduce, Reuse, Recycle)” at each stage of lifecycle

### Collection

#### 2 specified products (collection, recycle)

- Require **collection and recycle**  
PC / small batteries (including 29 appliances using small batteries)

#### 7 specified products (labeling)

- Require **labelling to promote collection**

- \* Construction material (PVC)
- \* Steel / Aluminum cans
- \* PET bottles
- \* Paper / Plastic C&P
- \* Small batteries

∞PVC



PET



Ni-Cd

### Design

#### 19 specified products (reduce)

- Promote **DfE for “reduce,”** such as **product with longer life, use of sustainable feedstocks**

automobile / PC / home appliances (6) / pinball machines / slot machines / steel furniture (4) / gas and oil appliances (5)



#### 50 specified products (reuse)

- Promote **DfE for “reuse / recycle,”** such as **use of sustainable feed stocks and easy-to-disassembly design**

19 specified products (reduce) / copying machine / unit bath / kitchen unit / 28 appliances using small batteries



### Manufacturing

#### 5 Specified sectors (reuse)

- Promote **use of recycled material/parts**

- \* Paper manufacturers
- \* Glass bottle manufacturers
- \* Construction
- \* Copying machine
- \* HVC pipes manufacturers



#### 5 specified sectors (reduce)

- Promote **reduce and recycle of byproducts** (sludge, slug etc.)

- \* Pulp and paper manufacturers
- \* Inorganic/organic chemical product manufacturers
- \* Steel manufacturers
- \* Copper refining
- \* Car manufacturers



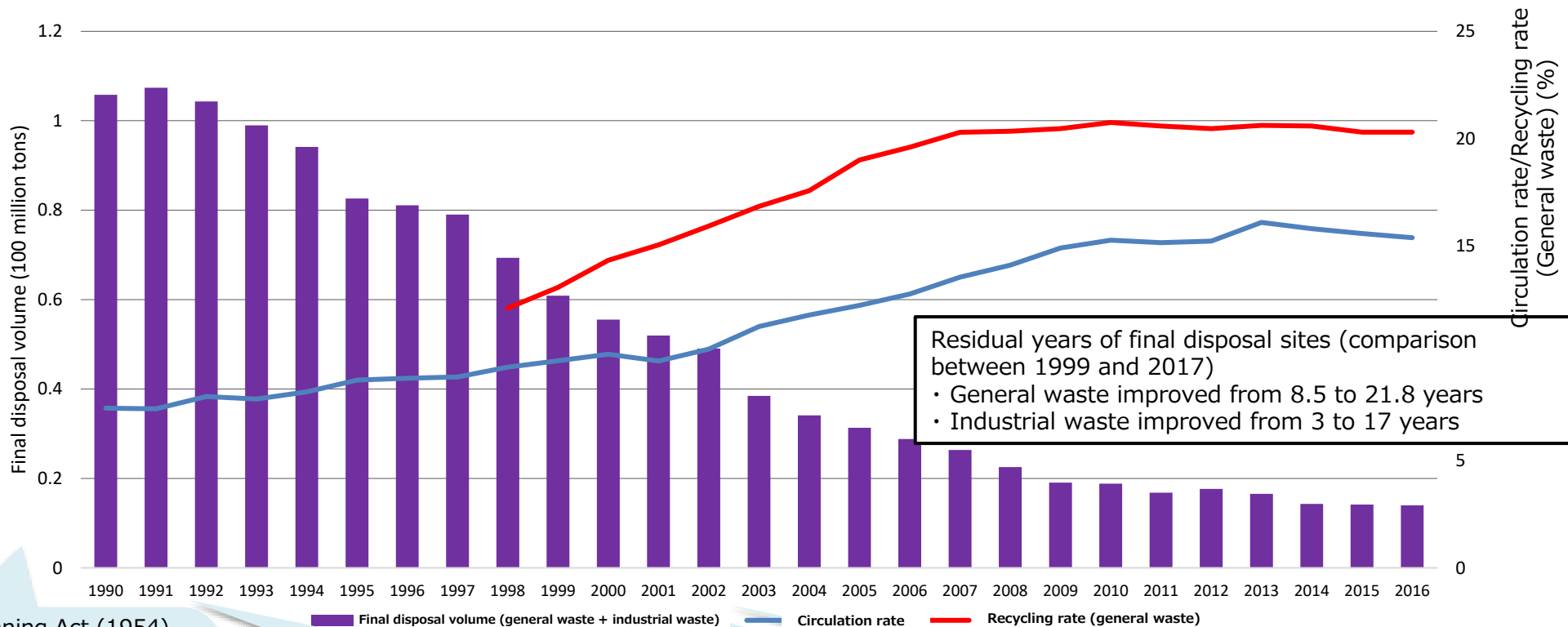
#### 2 specified byproducts

- Require **recycle of byproducts**
- \* Coal ash (electricity sector)
  - \* Sand, concrete blocks, asphalt, wood (construction sector)

(use)

# Changes in final disposal volume, circulation and recycling rates

- Until now, the main issues in waste administration have been dealing with a shortage of final disposal sites and illegal dumping.
- Initial goals to address these challenges are steadily being met through the financing of various recycling systems.



Residual years of final disposal sites (comparison between 1999 and 2017)

- General waste improved from 8.5 to 21.8 years
- Industrial waste improved from 3 to 17 years

## Cleaning Act (1954)

Act on Emergency Measures for the Improvement of Living Environment Facilities (1963)

Note: Promoted the installation of incineration facilities

Waste Management Act (1970)

## Revision of the Waste Management Act (1991)

Note: Implemented manifesto, strengthened penalties, etc.

Act on the Promotion of Utilization of Recyclable Resources (1991)

Containers and Packaging Recycling Act (1995)

Home Appliance Recycling Act (1998)

## Act on the Promotion of Effective Utilization of Resources (2001)

Note: Revised and renamed the Recycling Act to the 3R Act  
Basic Act on Establishing a Sound Material-Cycle Society (2001)

Automobile Recycling Act (2002)

Small Home Appliance Recycling Act (2013)

# Status of Recycling in Container and Packaging Materials

Material	Indicator	FY2025 target	FY2022 performance
Glass bottles	Recycling rate*1	70%+	72.0%
PET bottles		85%+	86.9%
Steel cans		93%+	92.7%
Aluminum cans		92%+	93.9%
Plastic containers and packaging	Recycling rate*2	60%+	65.0%
Paper containers and packaging	Collection rate	28%+	22.9%
Paper containers for beverages		50%+	38.7%
Cardboard boxes		95%+	94.8%

\*1: Recycling/Supply \*2: Recycling/Collection

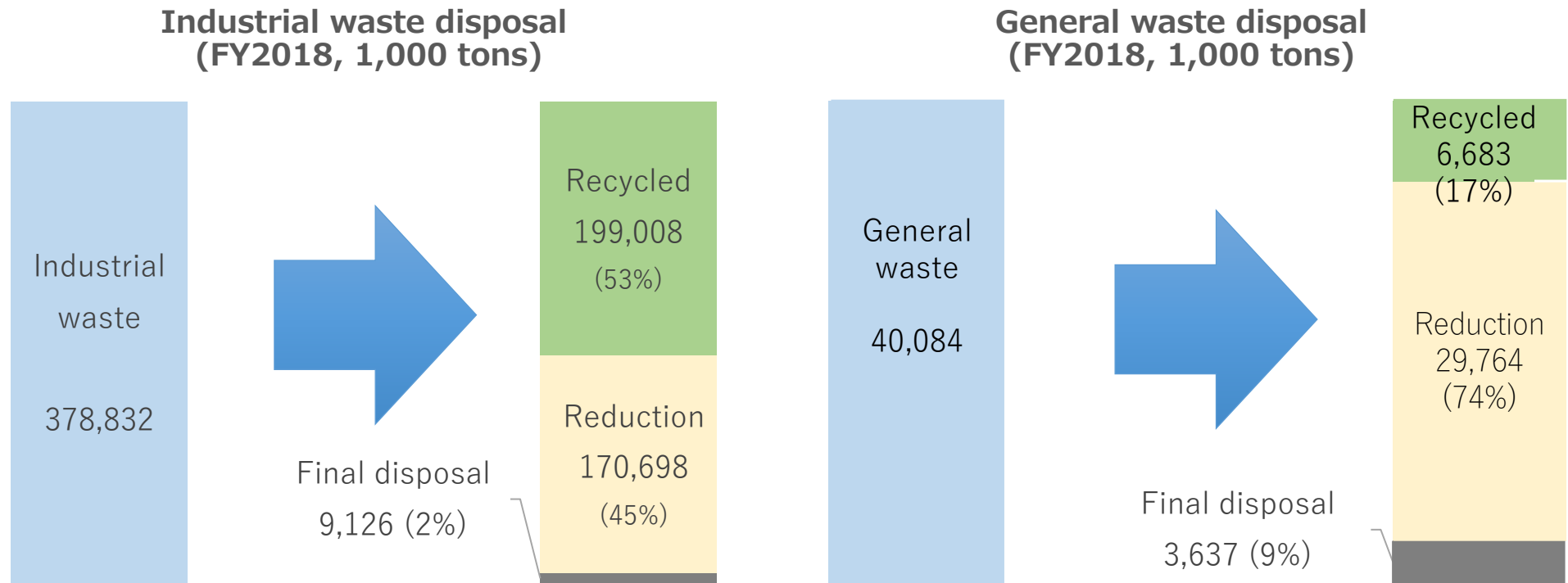
Data Source: 3R推進団体連絡会 ([https://www.3r-suishin.jp/PDF/2023Report/Followup\\_Report2023\\_all.pdf](https://www.3r-suishin.jp/PDF/2023Report/Followup_Report2023_all.pdf))

# **Current Status of Circular Economy (3Rs) in Japan (Challenges towards Carbon Neutral)**



# Challenges: Improvement for utilizing recyclable resources

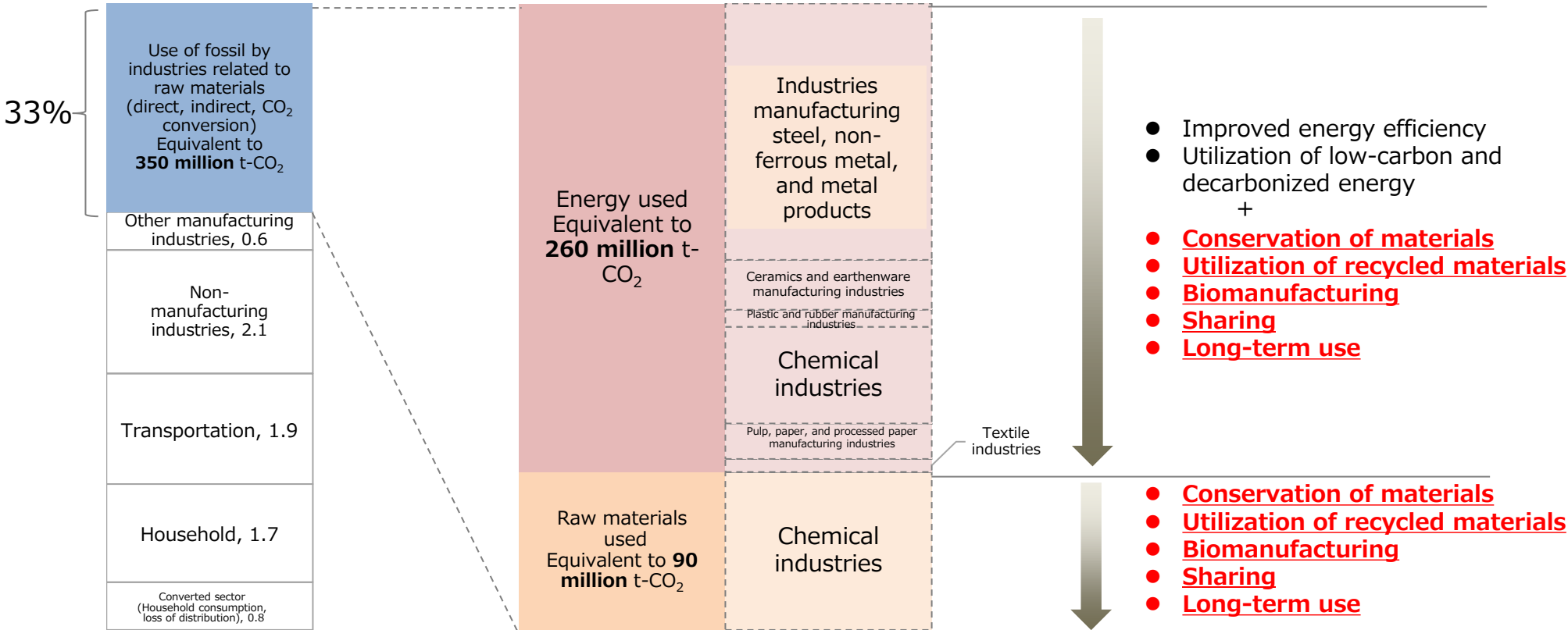
- The amount of final disposal has been reduced mainly by incineration including thermal recovery. Around 80% of GHG emissions in Japan's waste sector come from waste incineration, etc. (simple incineration, thermal recovery, and fuel use).
- To reduce GHG emissions, expanding the use of recyclable resources is necessary.



[Source] Ministry of the Environment, "Survey on the Status of Industrial Waste Disposal," "Survey on the Status of General Waste Disposal"

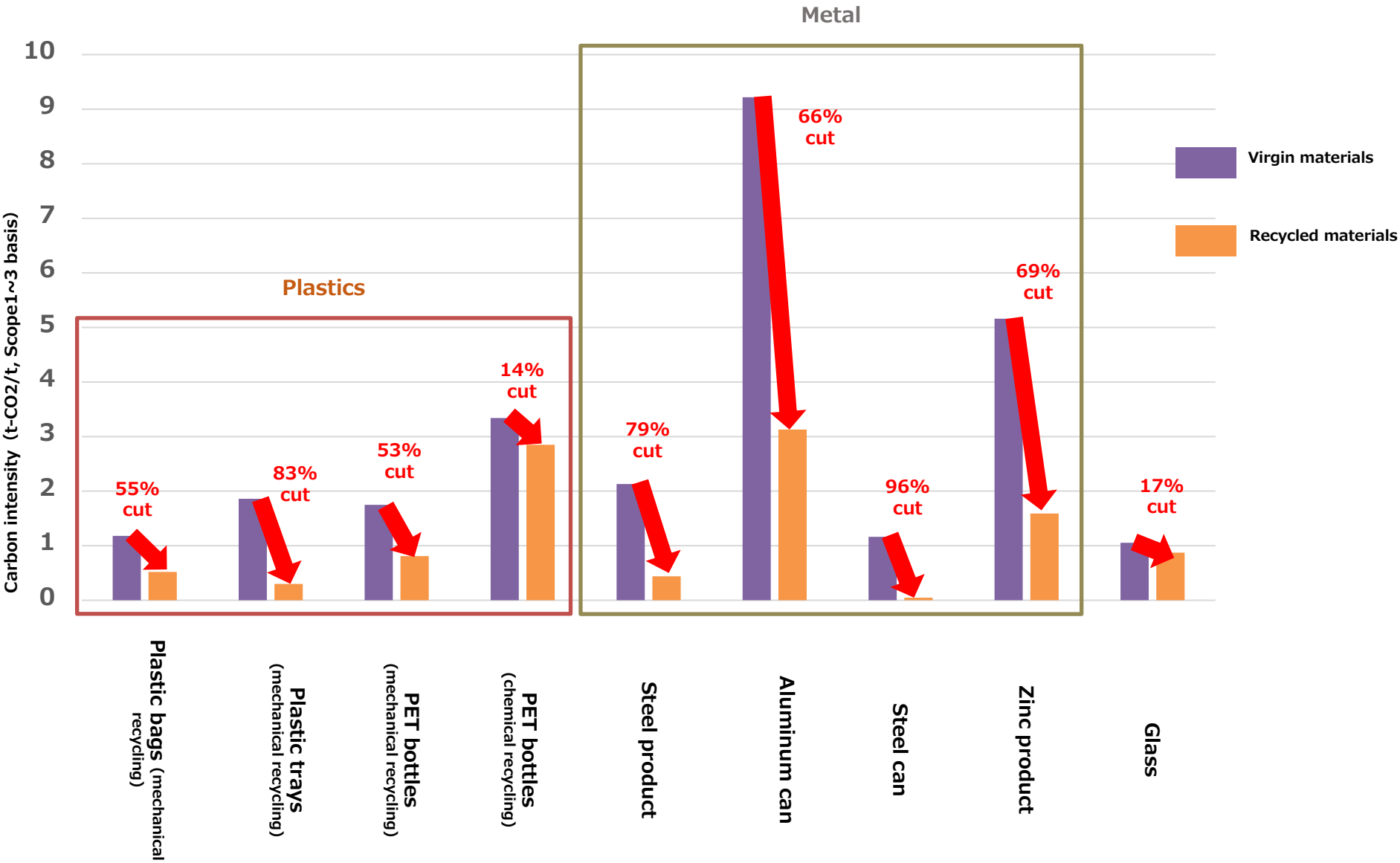
# Necessity of reducing CO<sub>2</sub> emissions from material productions

- More than 30% of fossil resources are used to manufacture materials (use of energy and raw materials), and **decarbonization of materials is essential for climate neutrality.**
- **Utilizing recyclable resources (e.g., recycled materials, bioresources) and reviewing business models (sharing and long-term use) can effectively** reduce CO<sub>2</sub> emissions economically and efficiently.



(Unit: 100 million t-CO<sub>2</sub>) [Source] Converted CO<sub>2</sub> amounts are calculated using the carbon unit table in the Comprehensive Energy Statistics (FY2020 results)

# Lower carbon footprint of recycled materials



# **Reinforcing Circular Economy Policy**

# Necessity and Meanings of Reinforcing Circular Economy Policy

## Environmental and Natural Resource constraints

### ◆ GHG/CO2 reduction, Carbon Neutral

\*Lower carbon footprint (20~80%) from circular resources against virgin ones

\*Emissions from incineration and thermal recovery

\*Reduce, reuse, long-term use, re-commerce, remanufacturing, refurbish, servitization(ex. PaaS, MaaS)

### ◆ Waste management

\*Limited capacity of final disposal site, prevention of plastic pollution, eWaste

\*Stricter restrictions on international trade in wastes (Governments, the Basel convention, etc.)

### ◆ Supply of natural resources (esp. Critical Raw Materials)

\*Global demand increase, supply shortage and depletion, price hike, etc.

\*Limited number of supplier countries and their protection policies

\*Japan's low self-sufficiency rate for natural resources

### ◆ Global proliferation of Circular Economy policies and initiatives (incl. private groups')

\*Compliant to government policies in the foreign market(esp. EU), Requirement from business partners

\*Late response to CE will bring risks of losing market and business partners.

## Economic Opportunities

### ◆ Market Growth Expectation

(Japan) 2020:JPY 50 trillion → 2030:JPY 80 trillion ⇒ 2050:JPY120 trillion

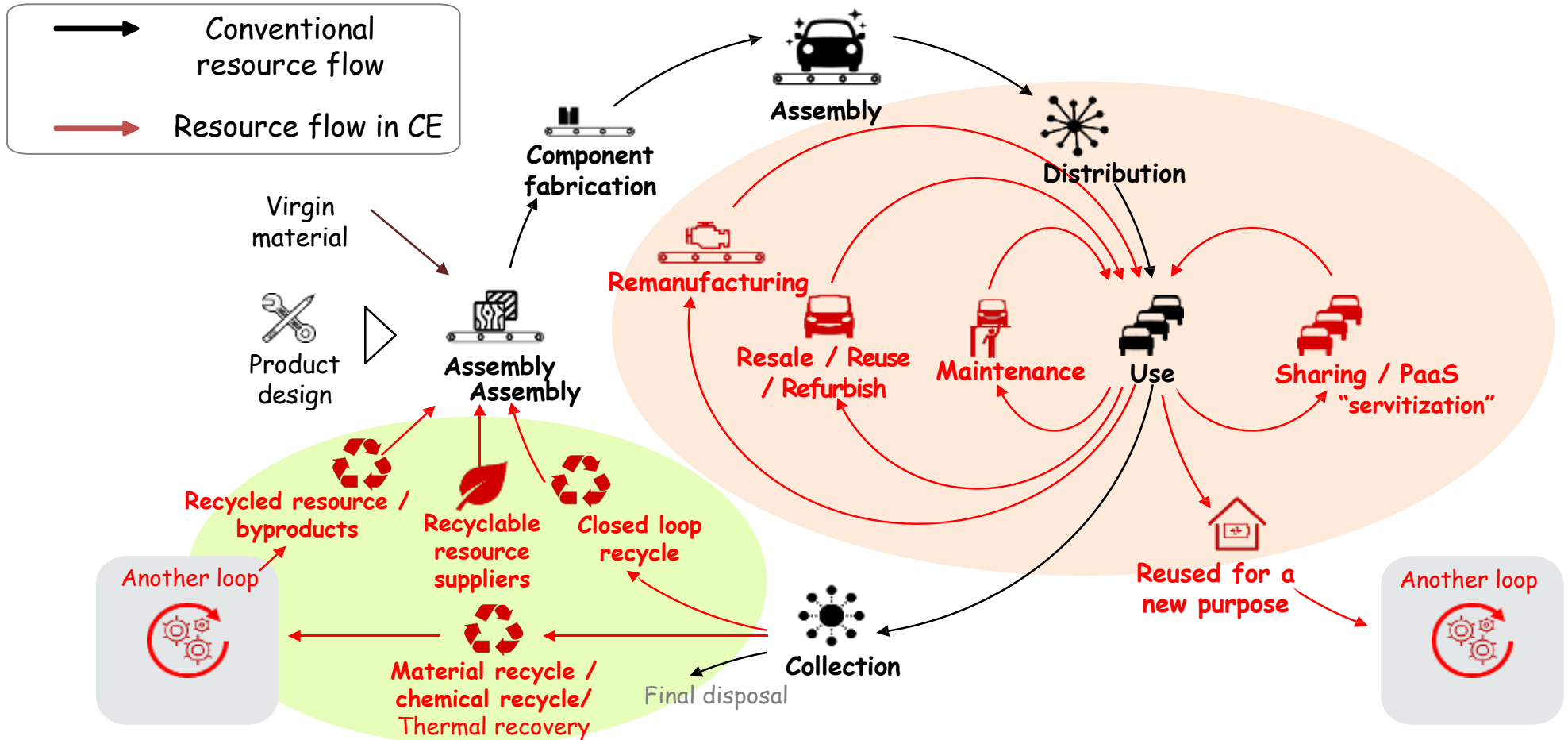
(Global) 2030:USD 4.5 trillion ⇒ 2050:USD25 trillion (Accenture Strategy 2015)

\*Further integration of the environment into the economic system is the key to realize circular economy.

\*Infrastructures, new business models and startups, innovative technologies, etc.

# Circular Economy / Linear Economy

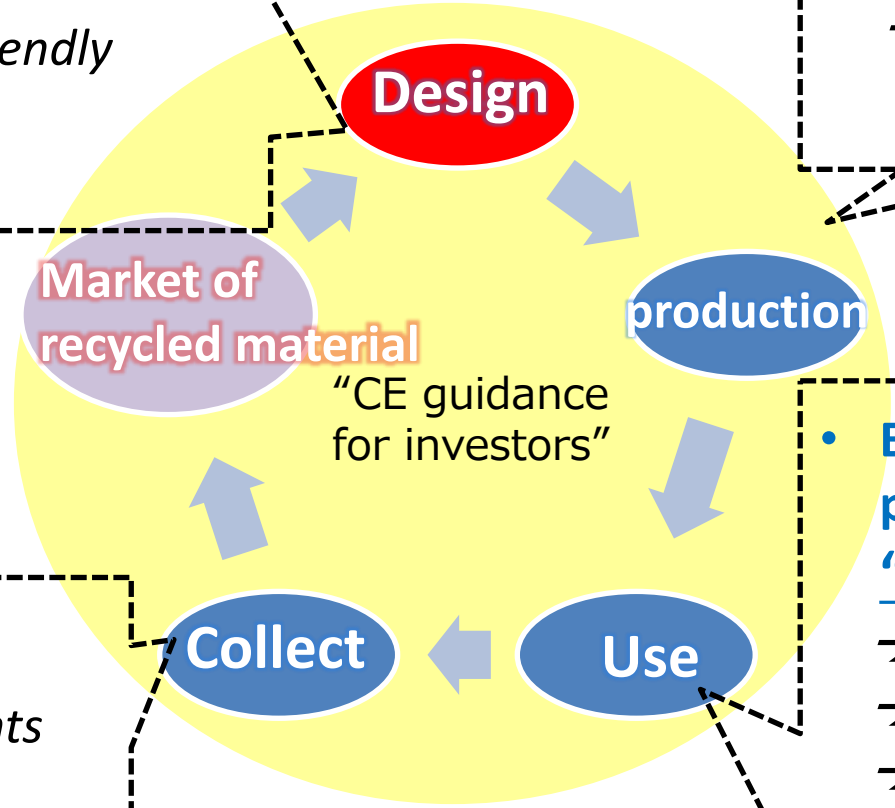
- **Linear Economy:** One-way economy of mass production, mass consumption, and mass disposal
- **Circular Economy:** An economy that maximizes added value through services and other means, while making efficient and cyclical use of resources at every stage



# Ref: business model with high circularity

- **DfE** (design for environment)
  - Reduce
  - reusability/recyclability
  - durability/ reparability/ upgradability
  - use of environment-friendly material
- **Order-made design**

- **Reduce losses (production/sales)**
  - Optimize production process
  - Production on demand



- **Promote recycle**
  - making collection points
  - waste reduction,
  - taking appropriate recycling method

- **Efficient use of products through "Servitizing"**
  - Leasing
  - Sharing
  - PaaS/MaaS
- **Promote reuse** of products

# Major Challenges

## 1. Enhancing 3Rs, Promotion of Circular Products and Materials

- ◆ Recycled materials are less competitive against virgin ones in terms of price, quality and stable supply.
  - Review of DfE for CE (single material, easier demolishing, target setting, recycled material content requirement, etc.)
  - Establishing effective and collaborative collection and recycling scheme(from municipal level to regional, with collaboration among producer companies, recyclers and other concerned parties.)
  - Technical innovation for sorting, recycling, etc. (Digital techs, Chemical recycling, etc.)

## 2. New Business Models

- ◆ In transition from Linear Economy to Circular Economy, new business models are emerging and expected, and supporting measures and regulatory reforms are required accordingly.
  - Promotion of longer lifespan and repairability
  - Resale/Reuse/Refurbish businesses and product safety
  - Servitization (ex. PaaS/MaaS)
  - Startups

## 3. Market Mechanism (Evaluation and Communication)

- ◆ Circular materials, products and services should be preferred and selected in the market. Visualizing value of circularity is necessary to integrate CE to market mechanism. Consumer behavior change is also important.
  - Information Distribution Platform for CE (recycled material content, CFP, physical properties, etc.)
  - Standardization (circularity indicators, secondary materials, etc.), Labelling/Certification scheme
  - Investor and Stakeholder Relations (Non-Financial Info Disclosure and Communication)
  - Awareness raising, Education, etc.

**\* Promotion of industry's voluntary actions and multi-stakeholder collaborations are key in any way.**



# Three pillars of actions to realize Circular Economy

## 1 Business-Academia-Government Partnership (the Circular Partners, CPs)

In achieving a discontinuous transition to a circular economy (CE), individual company-based efforts are not enough, Multi-stakeholder collaborations are key to breakthrough the status quo.

- ◆ Establishing and disseminating regional collaboration models
- ◆ Setting voluntary targets for CE by top runner companies
- ◆ Establishing an Information Distribution Platform for CE etc.

## 2 Financing and supporting measures (CE Tool Kit)

Various measures are being prepared to support transition to Circular Economy. CE is within the scope of Green Transformation (GX) investment (JPY2~4 trillion (over the next 10 years) will be allocated for CE and other).

- ◆ Financing for R&D and harness of new techs
- ◆ Support investment, Digitization, Startups, Recommerce,
- ◆ Standardization (Secondary materials, DfE, etc.)

## 3 Review of Regulatory framework, etc.

Reforming regulatory framework from 3Rs (Reduce, Reuse, Recycle) to Circular Economy. (Amendment of 3R act, etc., if necessary.)

- ◆ “Design for Environment (DfE) for CE” (Review of contents and product coverage)
- ◆ Indicators and measurement, setting targets(quantitative/qualitative), disclosure, etc.
- ◆ Efficient waste collection system
- ◆ Review of regulations concerning new types of services (recommerce, refurbish, PaaS/MaaS, etc.)

# 1 the Circular Partners, "CPs" ( Business-Academia-Government Partnership)

- ◆ Launched in Sep. 2023. Since each entity's individual efforts will not ensure economic rationality and not realize CE, CPs will promote collaboration among the central and local govts, academia, businesses etc., who are ambitious and pioneering in CE.
- ◆ As of Dec 2023, 307 entities participate, incl. 118 large companies, 113 SMEs, 17 industrial orgs, 13 regional govts, 16 universities and research institutions and 30 others.
- ◆ The 1<sup>st</sup> general meeting (hybrid) was successfully held in Dec 2023 with participation of PM Mr. Kishida (video remarks), Ministers of METI and MOE, and top representatives from industry and local governments, and 151 members (in-person) and 200+ (online).
- ◆ The following WGs were established.

## Vision & Roadmap WG

To develop a vision and mid and long-term roadmap for 2030 and 2050 to realize CE in Japan. A vision and roadmap for each product and material, as well.

## CE Information Distribution Platform WG

Aiming to launch a "Circular Economy Information Distribution Platform" by 2025 to facilitate sharing of data necessary for circulation of products and materials, and to visualize status of Circularity.

## Regional CE Model WG

To create a "regional CE model (location of CE industries, formulation of wider area resource circulation networks, etc.)" according to the characteristics of regional economy.

## To be established

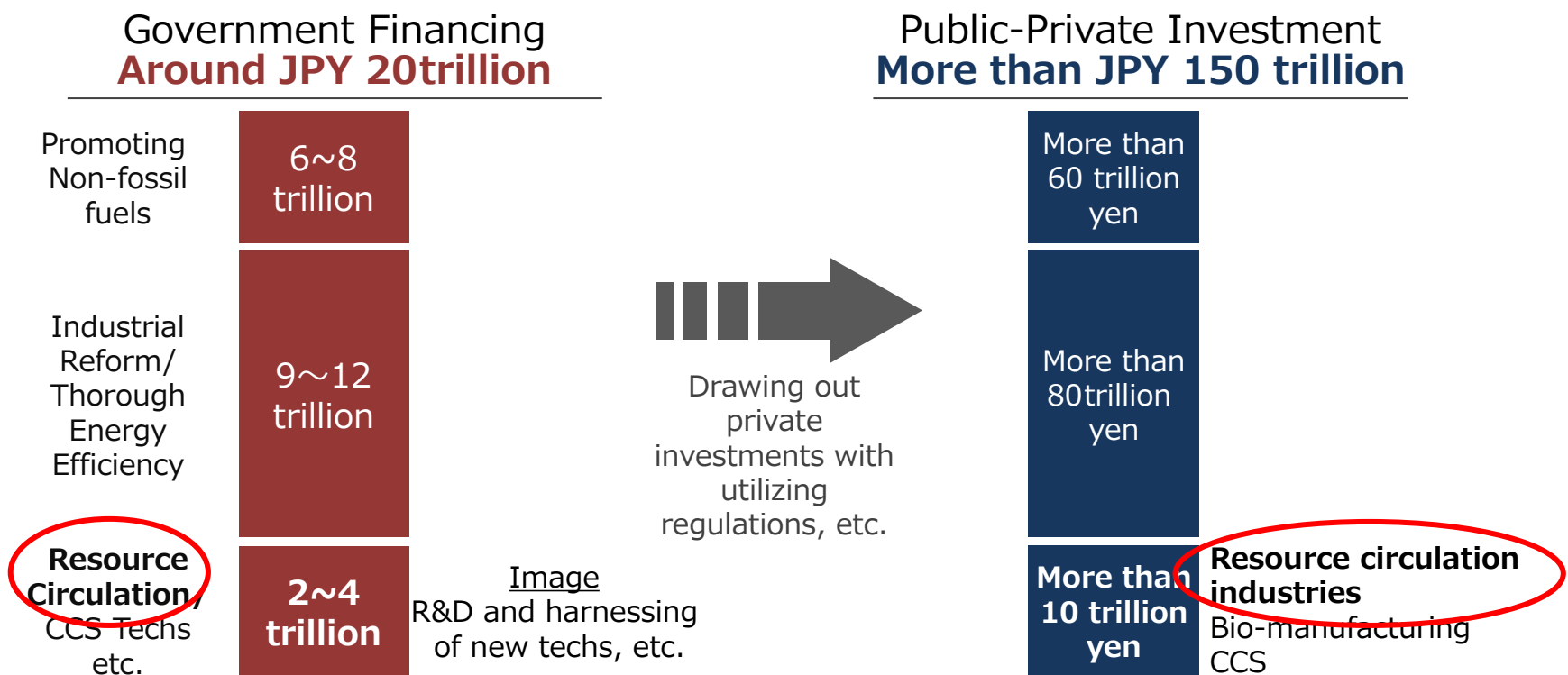
To start multi-stakeholder discussions among CP members on standardization, marketing & promotion, international collaboration, and technology developments.

## 2 Financing and supporting measures (CE Tool Kit)

- ◆ Various measures are being prepared to support transition to Circular Economy.
  - **Financing** for R&D and harness of new techs
  - **Supporting investment, Digitization, Startups, Recommerce,**
  - **Standardization** (Secondary materials, DfE, ISO TC323 Circular Economy, etc.)

### GX Economy Transition Bonds (Japan Climate Transition Bond Framework)

- ◆ More than 150 trillion yen of public-private investment is required over the next 10 years for Green Transformation (GX) investment, and Japan had decided to issue 20 trillion yen of GX Economy Transition Bonds to finance these investments.
- ◆ **CE is within the scope of GX Economy Transition Bonds (JPY2~4 trillion (over the next 10 years) will be allocated for CE and other).**



### 3 Review of Regulatory framework, etc.

- ◆ **Reforming regulatory framework from 3Rs (Reduce, Reuse, Recycle) to Circular Economy. (Amendment of 3R act, etc., if necessary.)**
  - **“Design for Environment (DfE) for CE”** (Review of contents and product coverage)
  - **Indicators and measurement, setting targets**(quantitative/qualitative), **disclosure**, etc.
  - **Efficient waste collection system**
  - Review of **regulations concerning new types of services** (recommerce, refurbish, PaaS/MaaS, etc.)

### Consultation in the Subcommittee on Resource Circulation Economy

- ◆ METI had started formal consultation process in the subcommittee under METI’s Industrial Structure Council. Three meetings had been held since Sep. 2023.
- ◆ Thorough reviews are ongoing incl. necessity of amending/formulating related laws, such as 3R act.

#### Points of Discussion in the subcommittee

##### 1. How to promote distribution of circular resources (incl. rule making)

###### **(1) Securing quantity of recycled materials**

Producer side: Promoting the use of recycled materials, Producers’ participation in waste collection  
Recycler side: Ensuring economic rationality

###### **(2) Ensuring quality of recycled materials**

Producer side: Improving recyclability by DfE for CE,  
Technology advancement for use of recycled materials  
Recycler side: Advancing sorting and recycling technologies, standardization of quality

→**Both require producer-recycler cooperation.**

###### **(3) Value creation through visualization of circularity**

- ✓ Promoting circulation by connecting resource information
- ✓ Visualization of circular products

##### 2. Initiatives to save resources

- ✓ Efficient use of products and promotion of re-commerce

**Thank you**