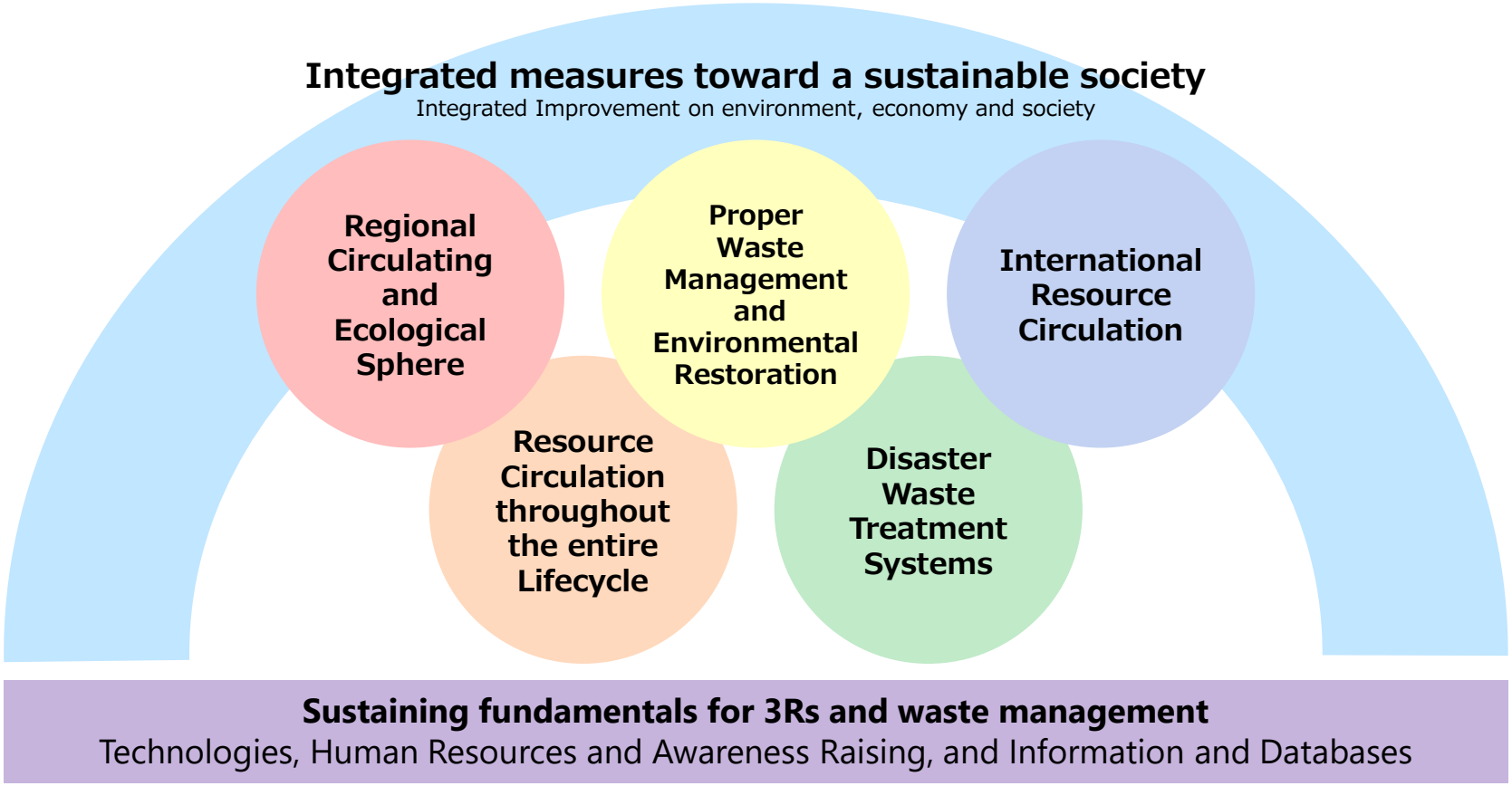
The 4th Fundamental Plan for Establishing a Sound Material-Cycle Society

Tentative Translation

The Fundamental Plan

- The Plan is formulated based on the Basic Act on Establishing a Sound Material-Cycle Society (established in 2000).
- It sets a med-to long-term direction for the establishment of a sound material-cycle society in Japan, and indicates measures to be implemented in a strategic manner.
- The 4th Fundamental Plan was approved by the Cabinet on June 19th, 2018.

Pillars of the 4th Fundamental Plan



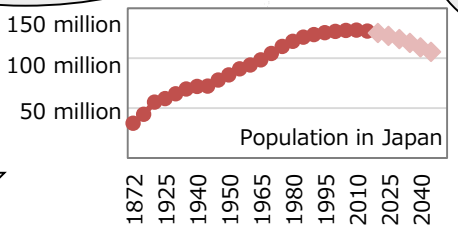
Challenges Facing Japan

Increasing global uncertainty, Progress in international coordination

SUSTAINABLE DEVELOPMENT GOALS
17 GOALS TO TRANSFORM OUR WORLD

Source: UN Information Centre

Declining population with an aging population and decreasing birthrate, regional decline



Source: National Institute of Population and Social Security Research

Economic stagnation, Society 5.0

Source: Cabinet Office

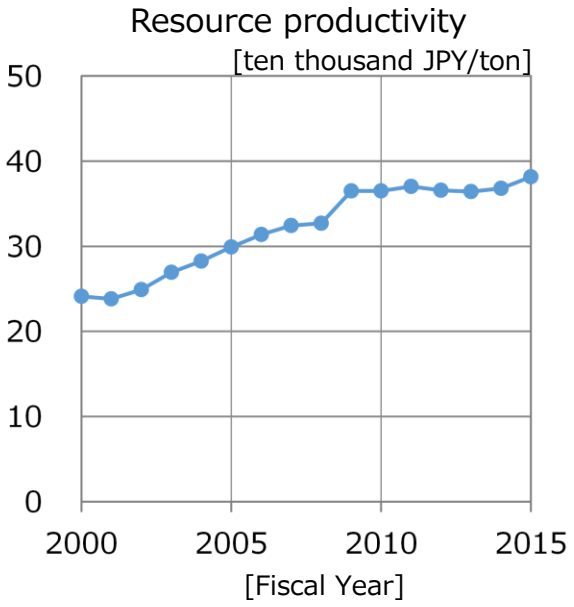
A Sound Material-Cycle Society

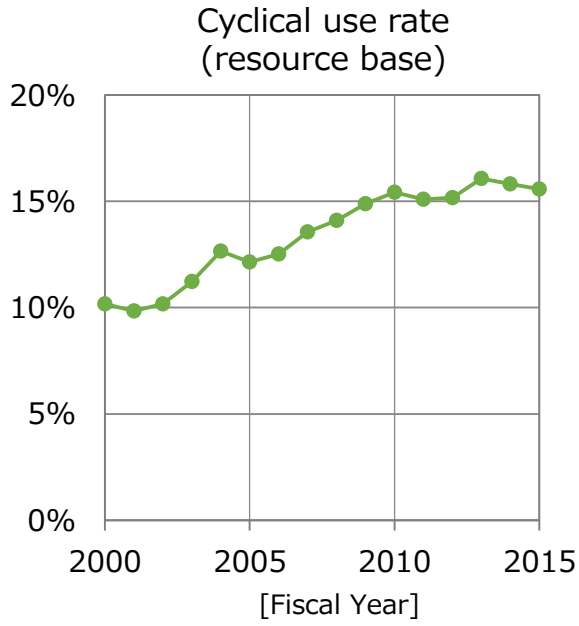
Current status

- Resource productivity has experienced major progress sinceFY 2000, but has been leveling-off

Recent issues

- Restoration of the environment and reconstruction from radioactive contamination by the nuclear accident
- Frequent occurrence of large-scale disasters and delays in responses
- Change in people's perspective (from material wealth to spiritual wealth)
- Shortages of human resource for waste treatment and recycling



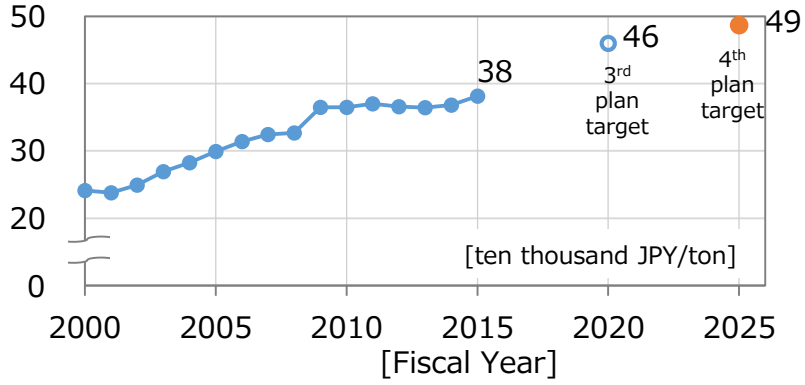


Targets and Indicators for Progress Monitoring

Resource productivity =GDP/ Input of natural resources, etc.

FY2025 target: 490,000JPY/ton =approx. double from FY2000

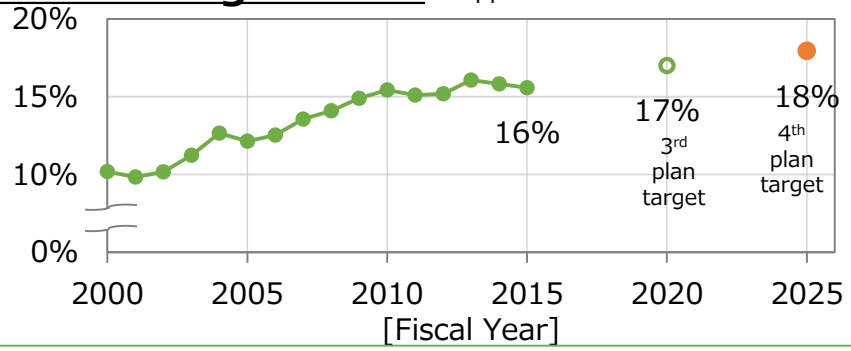
- An indicator that comprehensively represents how effectively materials are used in industrial activities and people's daily lives, in terms of creating more wealth using fewer resources.
- The indicator was first adopted in a national-level plan in Japan.



Cyclical use rate (resource base)

=Amount of cyclical use / (Amount of cyclical use + Input of natural resources, etc.)

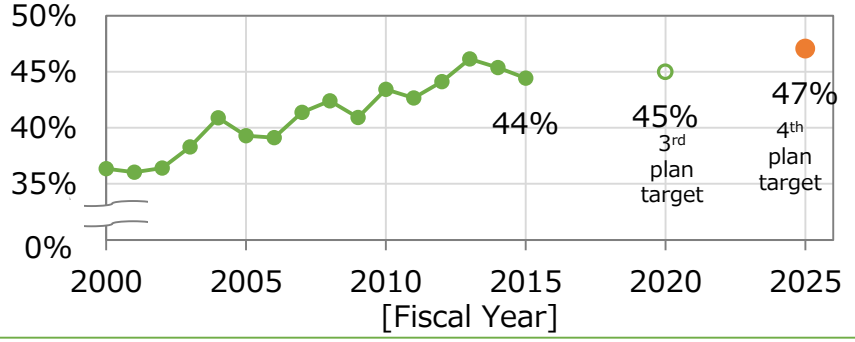
FY2025 target: 18% = approx. 80% increase from FY2000



Cyclical use rate (waste base)

=Amount of cyclical use/ Generation of waste, etc.

FY2025 target: 47% = approx. 30% increase from FY2000

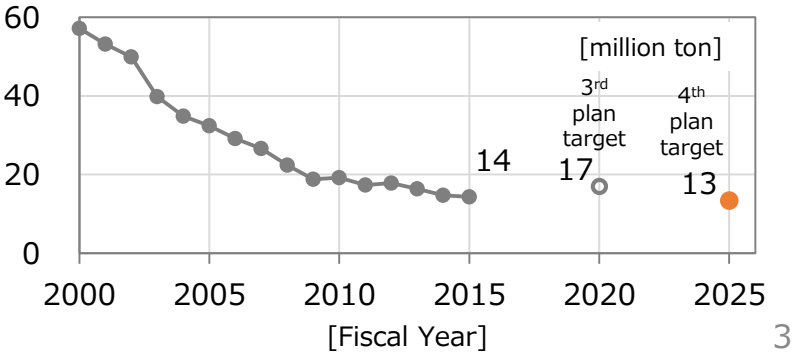


Final disposal amount

FY2025 target: 13 million ton = 77% cut from FY2000

[Municipal solid waste] 1 million ton in FY2025 = 70% cut from FY2000

[Industrial waste] 10 million ton in FY2025 = 77% cut from FY2000



Integrated Measures toward a Sustainable Society

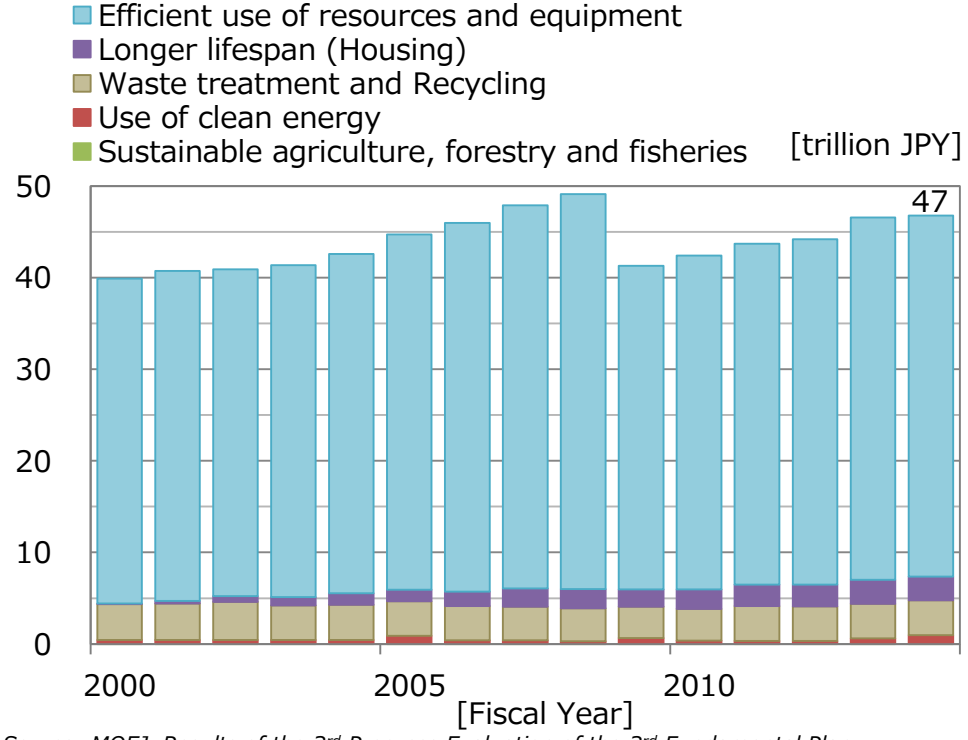
Vision

- ✓ **A society where everyone can use natural resources in a sustainable manner**
- ✓ **Environmental loads restrained within the Earth's capacity**
- ✓ **A safe and healthy life secured in conjunction with a rich ecosystem**
- ✓ **Integrated Improvements on environment, economy and society**

Indicators and targets

Market size of business related to a sound material-cycle society

FY2025 target: approx. double from FY 2000



Source: MOEJ, Results of the 3rd Progress Evaluation of the 3rd Fundamental Plan
http://www.env.go.jp/recycle/circul/keikaku.html

Amount of Food loss

FY2030 target:
halve Food loss from households from 2020

[ten thousand ton]

FY	2000	2014	2015	2016	2017
Food loss from households	433	312	302	282	289

Note: provisional figures, will be further examined
Source: MOEJ

Food loss from business
Target will be set in the Basic Policy of the Food Recycling Act

Integrated Measures toward a Sustainable Society

Planned measures

- Measures aimed at the establishment of Sound Social-Ecological and Material-Cycling Sphere
- Promotion and evaluation of 2R-related business, such as sharing
- National campaign towards halving food waste from households
- Waste management system corresponding to the aging society
- Energy production from unused woody biomass e.g. thinnings
- Further promotion of waste energy utilization
- Measures against marine litter including microplastics
- Facilitate and optimize disaster waste treatment operations
- International expansion of waste treatment/ recycling infrastructure

Source: UN Information Centre

Regional Circulating and Ecological Sphere

Vision

- ✓ **Improve local resource efficiency and vitalize local economies based on an integrated approach toward circulation, low carbon, and harmony with nature, utilizing renewable resources, stock resources and circulative resources**
- ✓ **Resilient and compact city planning**

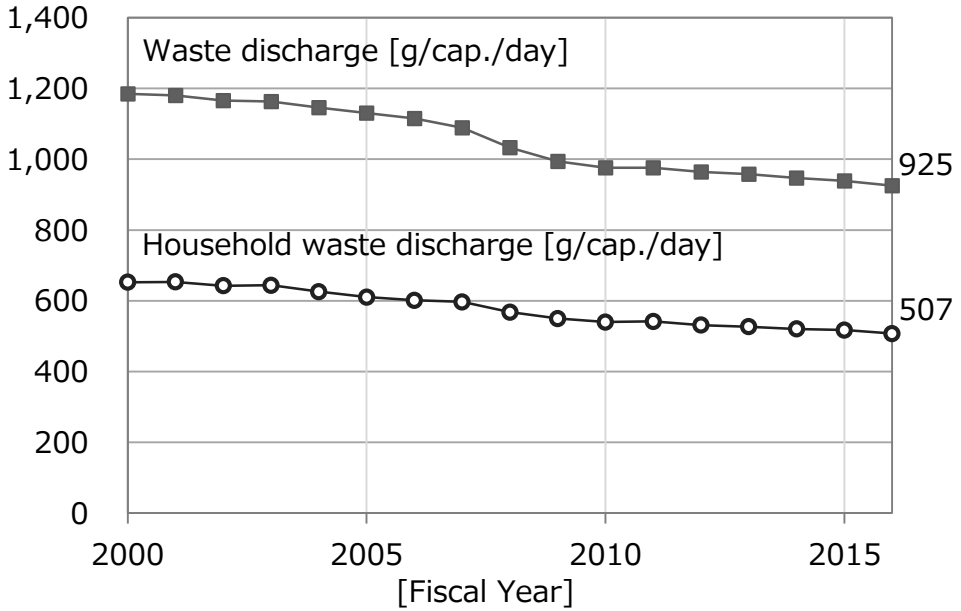
Indicators and targets

Household waste and municipal waste generation per capita per day

FY2025 target:

[Waste] 850 g/cap./day

[Household waste] 440 g/cap./day



Source: MOEJ http://www.env.go.jp/recycle/waste_tech/ippan/stats.html

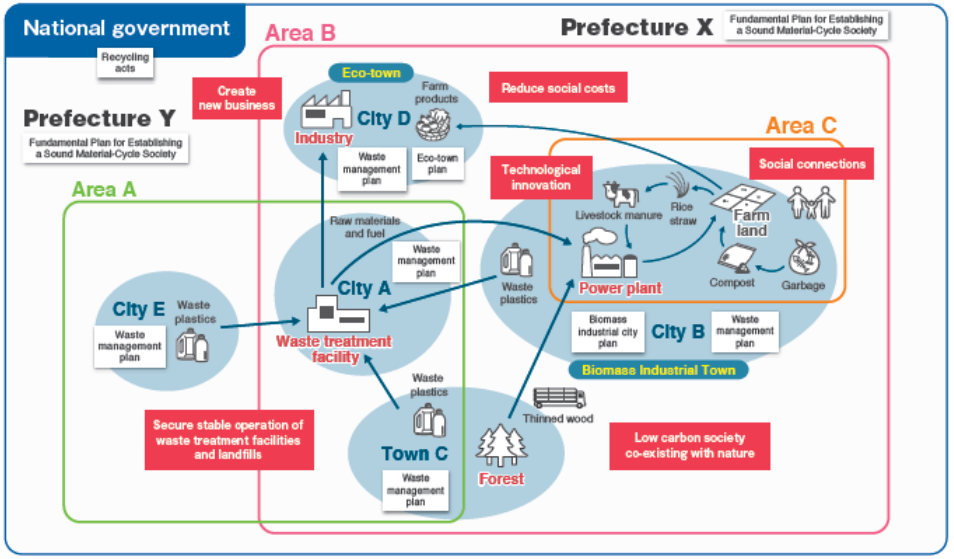
Regional Circulating and Ecological Sphere

Planned measures

Measures aimed at the establishment of "Regional Circulating and Ecological Sphere"

- Uncover barriers
- Feasibility studies
- Guidebooks for certain themes
- Sharing good practice
- Expert advises, etc.

Multi-layered resource circulation at an optimal scale, in consideration of regional characteristics and the nature of circulative resources



Source: MOEJ http://www.env.go.jp/press/102392.html

Promote the local use of biomass

- Production of fertilizer, livestock feed and high value-added product
- Conversion to renewable energy
- Energy recovery from methane fermentation of sewage sludge and food waste

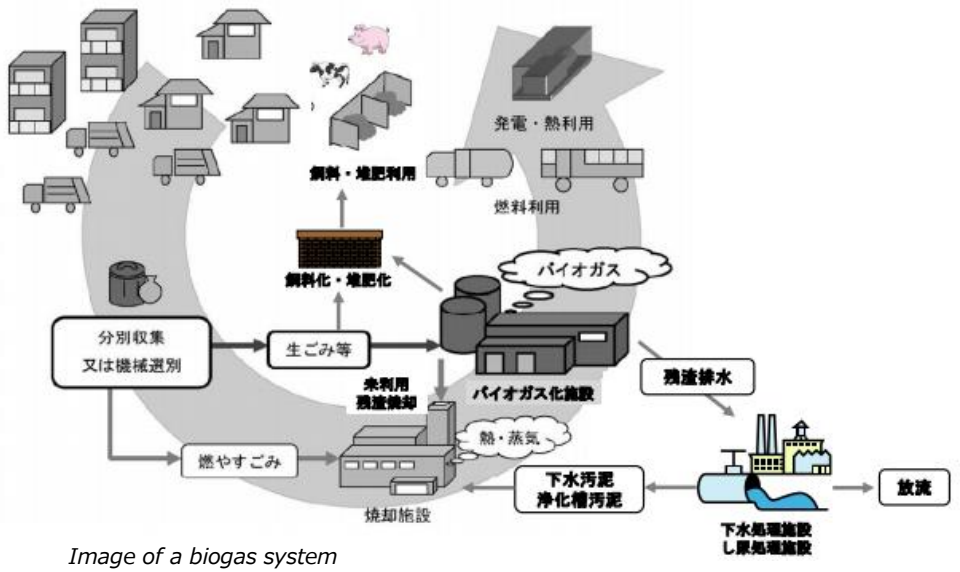


Image of a biogas system
Source: MOEJ http://www.env.go.jp/recycle/waste/biomass/manual.html

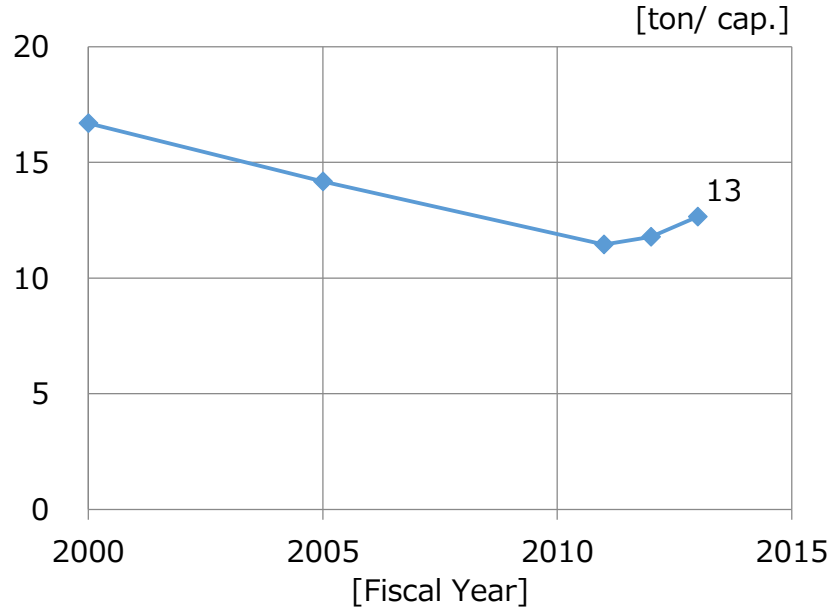
Resource Circulation throughout the Entire Lifecycle

Vision

✓ **Through the 4th Industrial Revolution, conduct resource circulation throughout the entire lifecycle by "providing the necessary products and services to the persons in need, when necessary, and in the necessary amounts."**

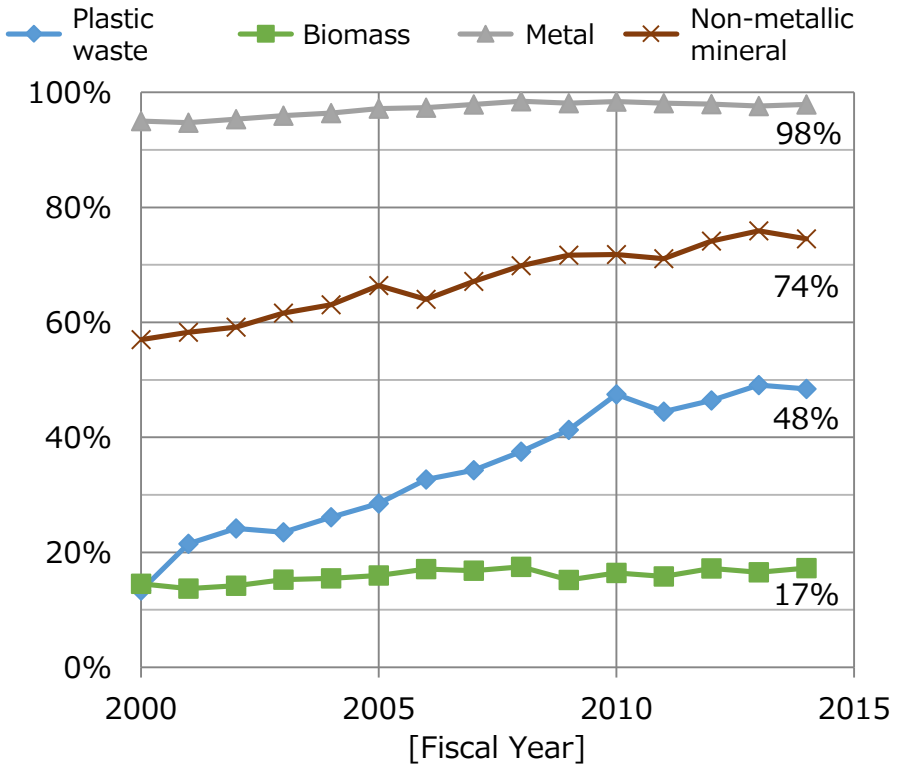
Indicators and targets

Natural resource consumption per capita based on Raw Material Input (RMI)



Source: MOEJ, Results of the 3rd Progress Evaluation of the 3rd Fundamental Plan
http://www.env.go.jp/recycle/circul/keikaku.html

Cyclical use rate (waste base) per waste category



Source: MOEJ "Survey on the Study of Measures to Cope with Wide-Area Transfer of Wastes and Fact-Finding Survey on the Amount of Recycled Wastes (Chapter on Fact-Finding Survey on the Amount of Recycled Wastes)」"

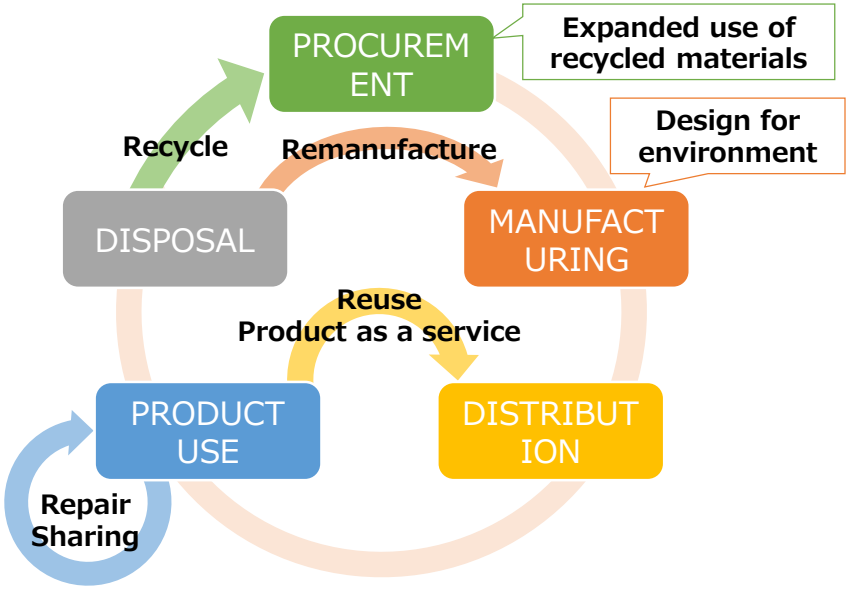
Resource Circulation throughout the Entire Lifecycle

Planned measures

Strengthening upstream actions

- Design for environment
- Sustainable procurement
- Reduce, reuse (2R)
- Expanded use of recycled materials
- 3D modeling, etc.

Promotion and evaluation of business related to 2Rs, including sharing



Source: MOEJ

Priority areas

Plastics

- Establishment of a Plastic strategy and promotion of accompanying measures

Biomass

- National campaign to reduce food loss, measures against inappropriate recycling of food waste, and efforts toward food recycling

Source: MOEJ

A poster for food loss prevention
Source: MOEJ

Metals

- Promoting the collection and recycling of small home appliances along with the Tokyo 2020 Medal Project

Stone/ construction materials

- Reducing construction and demolition waste by strengthening buildings and prolonging their lifespan

Recently spread Products and materials

- Mandatory recycling system for solar power generation facilities
- Diaper recycling

Tokyo 2020 Medal Project
Source: MOEJ

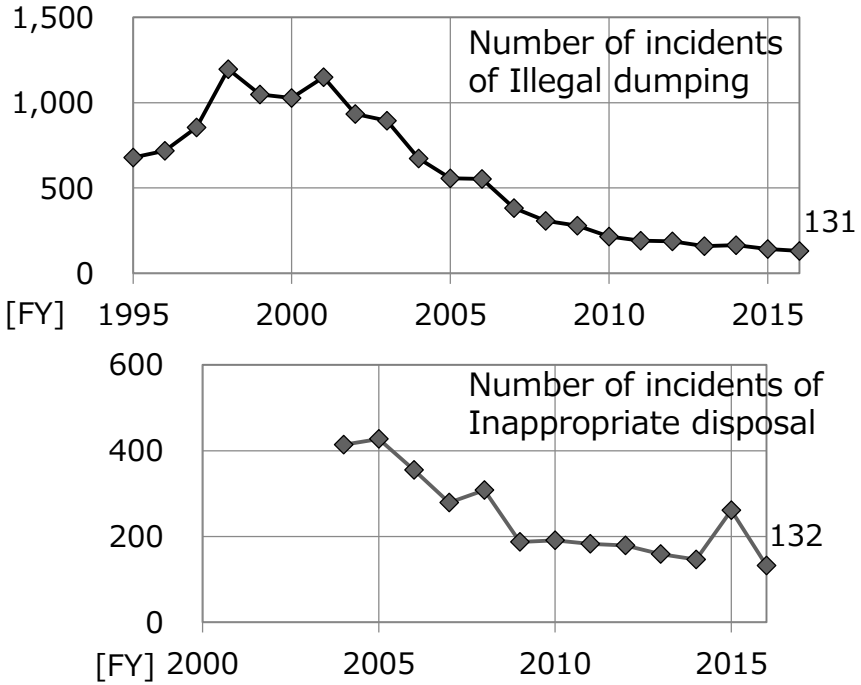
Proper Waste Management and Environmental Restoration

Vision

- ✓ **A society with appropriate waste treatment systems and technologies**
- ✓ **A society in which the marine litter issue has been resolved, with no inappropriate disposal, and abandoned buildings properly demolished/removed**
- ✓ **Restoration of the environment in areas affected by the Great East Japan Earthquake, with future-oriented reconstruction**

Indicators and targets

Number of incidents of Illegal dumping and Inappropriate disposal

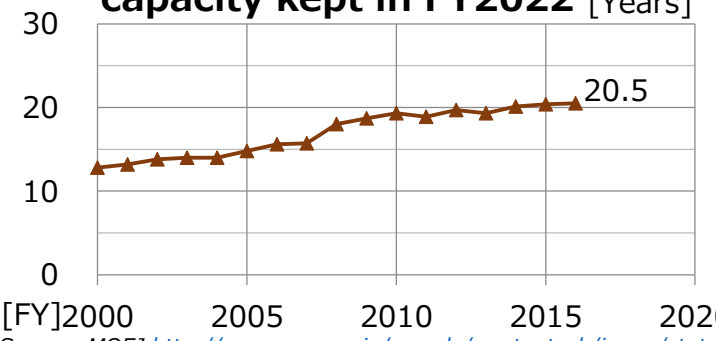


Note: Includes incidents involving the dumping of industrial waste covered by prefectures and government ordinance cities with an amount of waste per incident larger than 10t (including all incidents with special controlled waste.) Cases involving sulfuric acid pitch and ferosilt were not included.

Source: MOEJ https://www.env.go.jp/recycle/ill_dum/santouki/index.html

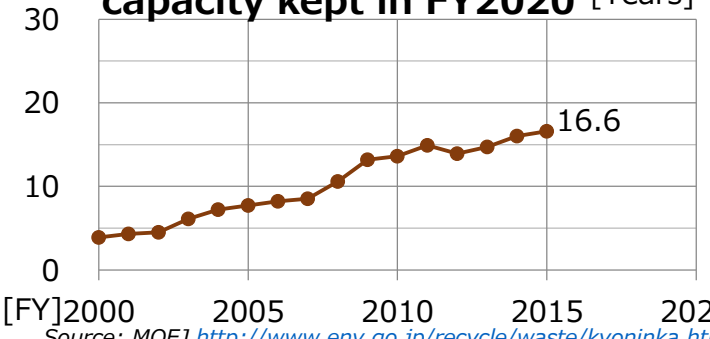
Residual years of landfills

Municipal waste: 20 years worth capacity kept in FY2022 [Years]



Source: MOEJ http://www.env.go.jp/recycle/waste_tech/ippan/stats.html

Industrial waste: 10 years worth capacity kept in FY2020 [Years]



Source: MOEJ http://www.env.go.jp/recycle/waste/kyoninka.html

Proper Waste Management and Environmental Restoration

Planned measures

Further promote appropriate waste management

- Stable and efficient waste treatment system
- Strengthen measures against global warming and disaster on waste treatment system
- Waste treatment facilities that creates added value for the local community
- Waste management system corresponding to the aging society
- Further mandate electronic manifests
- Restore and advance the recycling industry

Waste treatment facilities as local energy centers and emergency centers
Source: MOEJ

Restoration of environments

- Measures against marine litter including microplastics
- Measures for abandoned buildings i.e. empty houses and store buildings

Beach cleaning activities by volunteers
Source: MOEJ

Restoration of the environment affected by the Great East Japan Earthquake

- Steadily implement appropriate disposal of waste contaminated by radioactive substances
- Volume reduction and reuse of removed soil generated from decontamination works
- Pursue future-oriented reconstruction of the affected areas

Crushing and sorting facility at a temporary site in Naraha, Fukushima
Source: MOEJ

Temporary incineration facility in Naraha , Fukushima
Source: MOEJ

Disaster Waste Management Systems

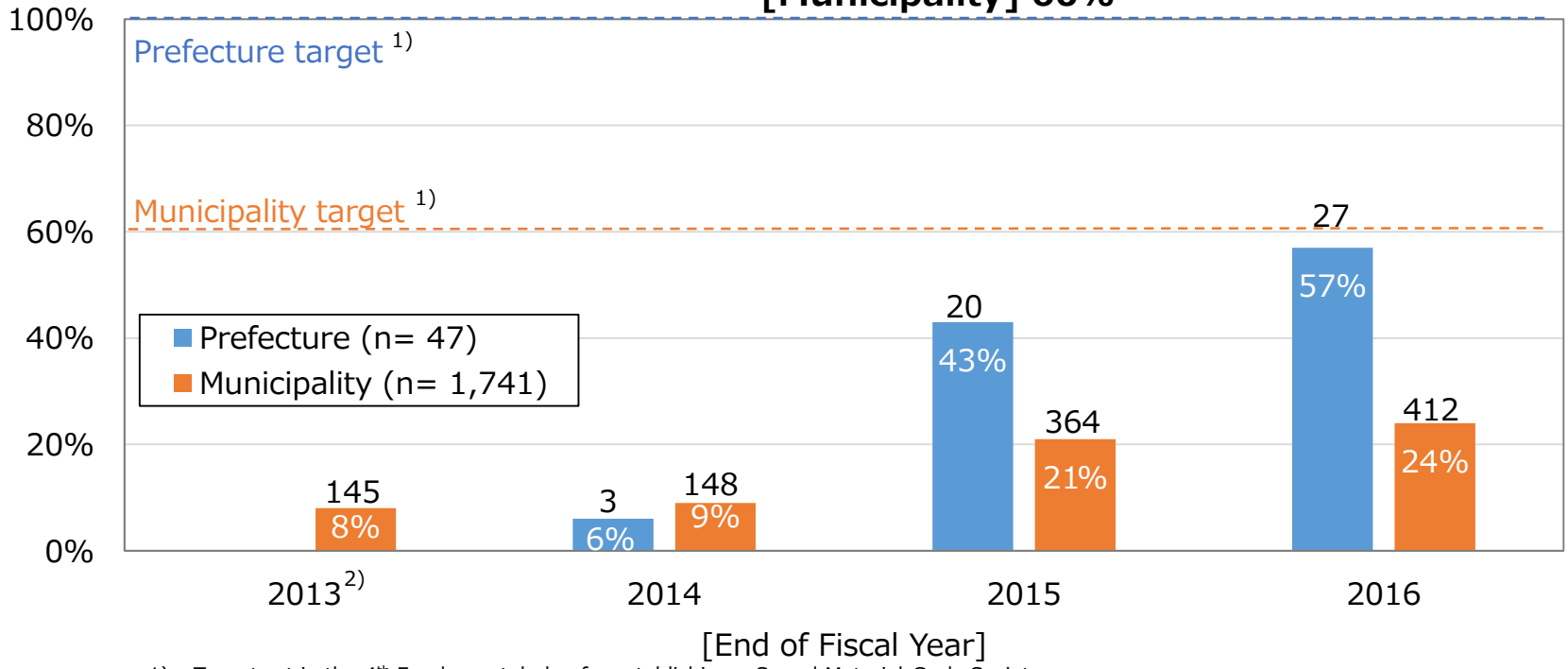
Vision

- ✓ **More resilient, multi-layered waste management systems on municipal, regional block, and nationwide levels**
- ✓ **Strengthen waste management systems during normal periods to enable the swift and proper treatment of waste in the event of disasters**

Indicators and targets

Proportion of prefectures and municipalities with disaster waste management plans

FY 2025 target: [Prefecture] 100%
[Municipality] 60%



1) Target set in the 4th Fundamental plan for establishing a Sound Material-Cycle Society
2) Survey before FY 2013 covered municipalities only

Source: MOEJ

Disaster Waste Management Systems

Planned measures

Municipal level

- Encouragement to formulate disaster waste treatment plans
  - ➢ Support with model projects on assessment and review of the plans including the viewpoint of business continuity
- Support communication between municipalities and citizens, in order to gain cooperation from residents in times of disaster

MOEJ on-site support team at a temporary sorting site
Source: MOEJ

Regional block level

- Run regional block conferences and review the action plans
- Hold joint training sessions, occasion for personnel exchanges and seminars

Nationwide level

- Store actual treatment/ disposal data on disaster waste and run an information platform
- Facilitate and optimize disaster waste treatment operations
  - ➢ Use the latest technology e.g. IT, satellite data
- Strengthen the D.Waste-Net platform and enrich countermeasures during normal circumstances
- Designate waste disposal facilities as local energy centers and emergency centers

Disaster waste properly sorted and kept at a temporary site under municipality control
Source: MOEJ

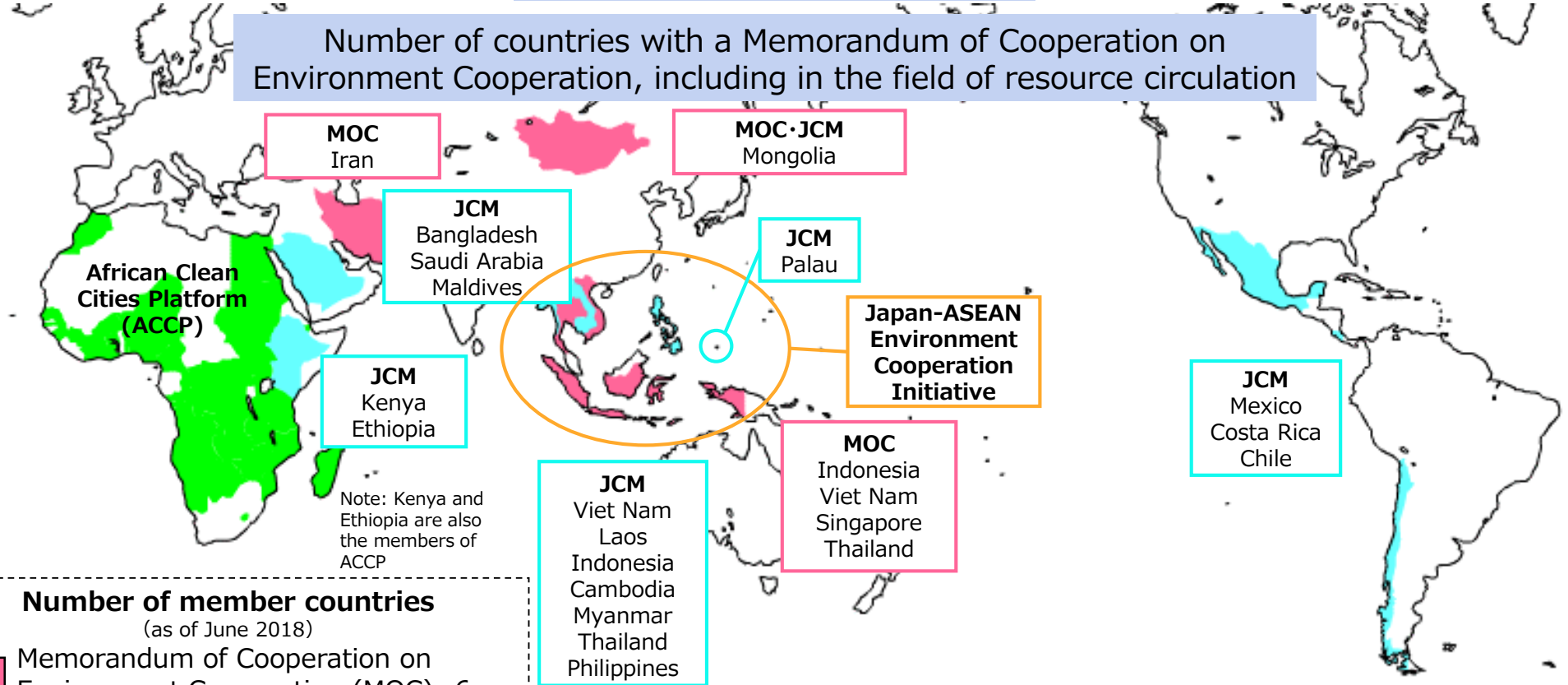
International Resource Circulation

Vision

✓ **A resource efficient society, where a safe and healthy life as well as a rich ecosystem are secured through appropriate international resource circulation systems and international contribution of the resource circulation industries in Japan**

Indicators and targets

Number of countries with a Memorandum of Cooperation on Environment Cooperation, including in the field of resource circulation



Number of member countries
(as of June 2018)

- Memorandum of Cooperation on Environment Cooperation (MOC): 6
- Joint Crediting Mechanism (JCM): 17
- African Clean Cities Platform: 31

Source: MOEJ

International Resource Circulation

Planned measures

Appropriate international resource circulation system

- Enhance cooperation to improve resource efficiency at an international level and promote 3R based on the Toyama Framework on Material Cycles adopted at the 2016 G7 Toyama Environment Ministers' Meeting
- Cooperation and knowledge sharing for the African Clean Cities Platform
- Appropriately and steadily promote recycling while taking advantage of Japan's advanced environmental technologies for secondary resources generated in Japan and overseas by revising the Basel Convention Implementing Laws and related government ordinances

Shipped-back scraps
Source: MOEJ

International expansion of the Japanese resource circulation industries

- Introduce "MOTTAINAI" ethic overseas and improve awareness not to waste resources
- International expansion of high-quality environmental infrastructure through a package of outstanding environmental technologies, institutions and systems from Japan
- Provide management know-how from Japan regarding disaster waste. Coordinated scheme with JICA to support disaster-affected countries

Waste treatment facility constructed by a Japanese firm in Yangon, Myanmar
Source: MOEJ

Sustaining Fundamentals for 3Rs and Waste Managements

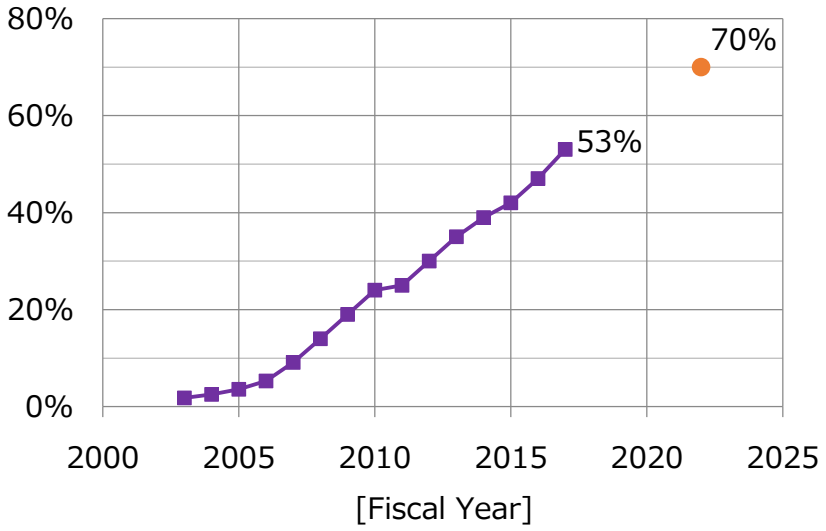
Vision

- ✓ **Maintained and updated information infrastructure**
- ✓ **Necessary technology and human resources under continuous development**
- ✓ **Understanding of the role of all stakeholders in progress towards a sound material-cycle society**

Indicators and targets

Diffusion rate of electronic manifests

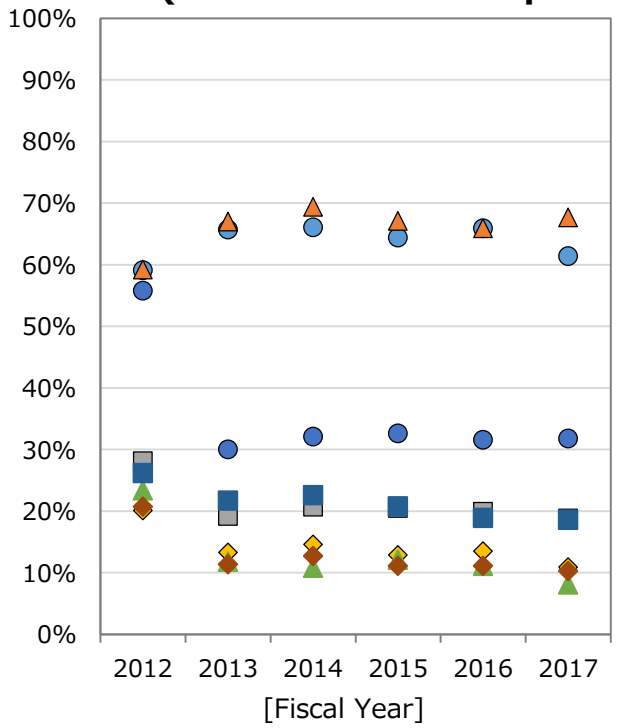
FY2022 target: 70%



Source: Japan Industrial Waste Information Center

Implementation rate of specific 3R actions

FY2025 target: approx. 20% up (from the FY2012 public opinion poll)



Reduce

- Bringing a bag when shopping to avoid using plastic bags or asking for simple packaging
- Often choose refill products
- Do not purchase throw-away products
- Choosing rental/leasing products to avoid buying unnecessary products
- Trying to avoid wasting of food through Eco-friendly cooking or not throwing out food products that are past their expiration dates

Reuse

- Buying products (e.g. beer or milk) packed in reusable containers

Recycle

- Dropping unwanted small electronic devices (e.g. mobile phones) at collection points offered by cell phone retailers and home electric appliance stores
- Actively purchase recycled products made from recycled materials

Source: MOEJ, Questionnaire surveys on changes in thoughts and actions to establishing an Sound Material-Cycle society

Sustaining Fundamentals for 3Rs and waste managements

Planned measures

Information and Databases

- Method and indicators to evaluate and show the efforts of stakeholders
- Digitize information and procedures related to waste management and promote the use of the digitalized information in the waste/ recycling field including electronic manifests

Improve the function and user-friendliness of the electronic manifest system
Source: MOEJ

Technologies

- Promotion of efficient waste collection and expanded use of advanced sorting technology
  - ➢ Exploit IoT and data analysis, robots and AI
- Research on cutting-edge green technology
  e.g. chemical production from biomass

Optical sorting device for waste plastics
Source: MOEJ

Human resource development and Awareness raising

- Raise awareness and encourage the young generation to act through a “Re-Style” campaign linked to pop culture
- Public awareness campaigns with the business sector

Re-Style

Re-style website
Source: MOEJ

Framework of the Progress Monitoring

- In order to measure the overall progress towards a sound material-cycle society, Material flow indicators with specific targets are set in the 4th Fundamental Plan.
- For accurate monitoring and evaluation of the steps of each stakeholders and encourage further actions, thematic indicators for each seven pillars of the 4th Fundamental Plan are given, some also with specific targets.

Material flow indicators	• Monitor the material flow to identify and stimulate the transition in the Japanese economy • Targets on Resource productivity, Cyclical use rate and Final disposal amount representing the three aspects of material flow, namely inflow, cyclic flow and outflow
Thematic material flow indicators	Monitor the improvement on the material flow by the efforts of each stakeholders
Thematic management indicators	Monitor the effort itself of the each stakeholders

Thematic management indicators (Examples)

Integrated measures toward a sustainable society	Market size of the related businesses; Amount of Food loss
Regional Circulating and Ecological Sphere	Household waste and municipal waste generation per capita per day
	Natural resource consumption per capita based on RMI
Resource Circulation throughout the entire Lifecycle	Cyclical use rate (waste base) per waste category
Proper Waste Management and Restoration of Environment	Number of incidents of Illegal dumping and Inappropriate disposal
	Residual years of landfills
Disaster Waste Management Systems	Proportion of prefectures and municipalities with disaster waste management plans
International Resource Circulation	Number of countries with MOC on resource circulation field
Sustaining Fundamentals for 3Rs and Waste Management	Diffusion rate of electronic manifests
	Implementation rate of specific 3R actions

Note: Underlined are the indicators first introduced in the 4th Fundamental Plan