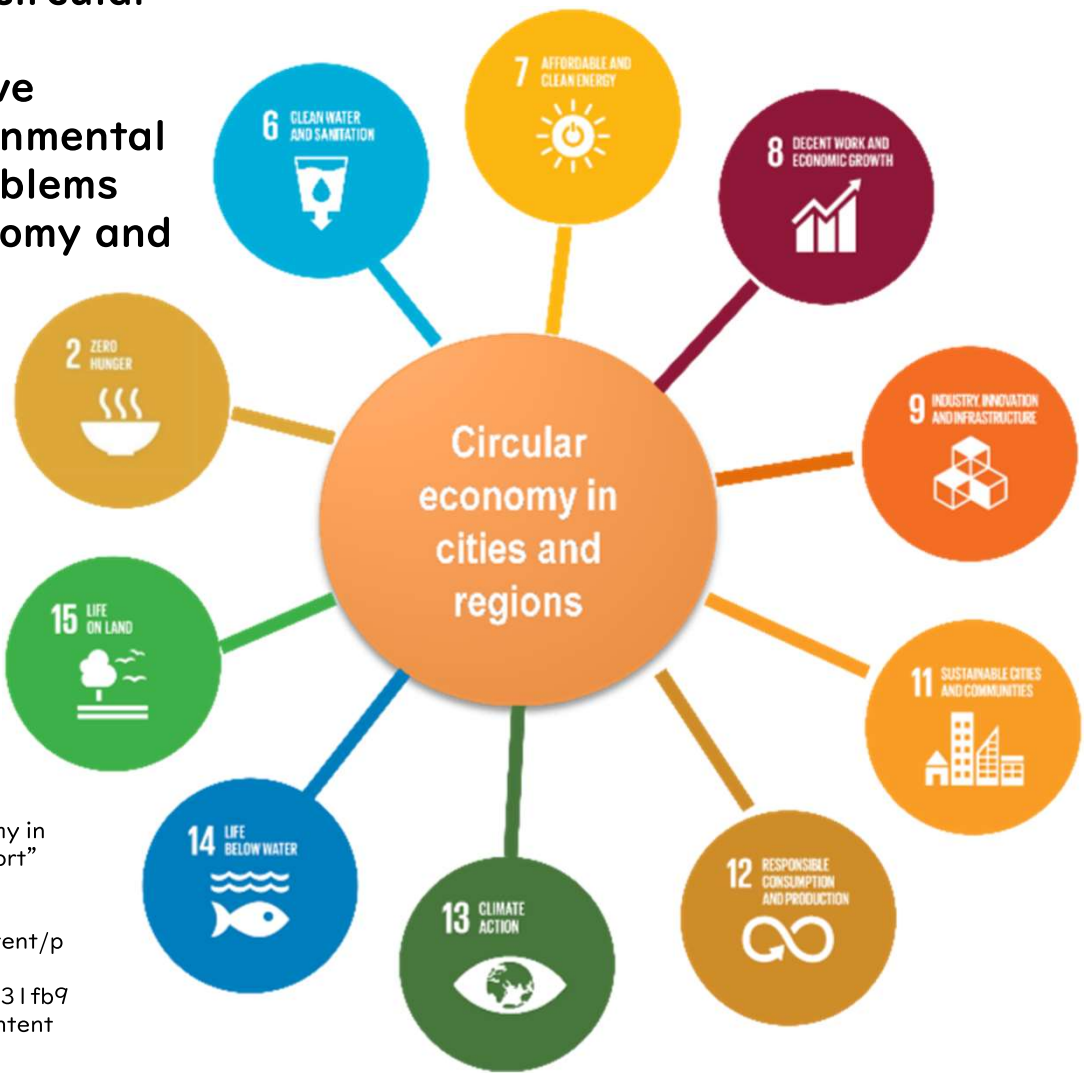
The 5th Fundamental Plan for Establishing a Sound Material-Cycle Society —Making the Realization of a Circular Economy a National Strategy—

Approved by the Cabinet on August 2, 2024

Transitioning to a circular economy can simultaneously solve societal and environmental issues, such as problems related to the economy and people's lives



The relationship between a circular economy and SDGs in all regions

Source: OECD "The Circular Economy in Cities and Regions : Synthesis Report" (https://www.oecd-ilibrary.org/sites/10ac6ae4-en/1/3/1/index.html?itemId=/content/publication/10ac6ae4-en&_csp_=1ebb6c6466 1c2ec985d3 1fb93fe1 8274&itemIGO=oecd&itemContentType=book)

Background and Key Points

Main issues

Climate change

Environmental contamination

Loss of biodiversity

Contraction of regional economies

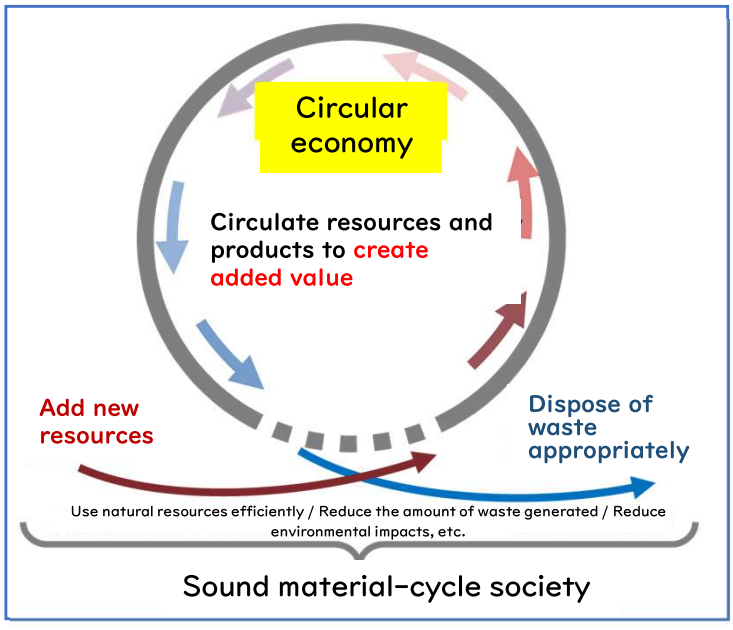
Declining population with an aging population and decreasing birthrate

International competition to acquire resources

Well-being / higher quality of life

Solving problems by creating a sound material-cycle society

- Creating a sound material-cycle society by transitioning to a circular economy can solve various environmental, economic, and societal issues faced by Japan while at the same time creating new markets, improving the lives of residents, and fostering well-being and raising the quality of life of everyone in Japan, now and in the future
- The key is to switch from a one-way linear economy (in which the structure of the economy and society is linear, consisting of mass production, mass consumption, and mass disposal) to a circular economy (in which resources are used sustainably, efficiently, and effectively and then circulated for reuse)



Net-Zero & Nature-Positive

Economic security & enhanced industrial competitiveness

Regional revitalization & higher quality of life

A transition to a circular economy is vital and necessary

Current Conditions, Issues, and Pathways to Potential Solutions in Japan

	Main issues and their backgrounds	Main policy approaches	Future outcomes
Environmental restrictions	Rising global temperatures and accelerating species extinction	・Measures integrated with Net-Zero and Nature-Positive(*) approaches (Promotion of resource circulation could contribute to reducing GHG emissions from sectors that account for about 36% of Japan's total emissions.) ・Ensuring appropriate disposal of waste and measures for dealing with hazardous waste	・Minimize resource consumption and reduce the amount of waste generated ・Simultaneously address problems such as climate change, biodiversity loss, and environmental contamination (accelerate synergies) ・Reduce environmental impacts while achieving economic growth

(*) Net-Zero: Balancing greenhouse gas emissions with the removal of greenhouse gasses from the atmosphere.
Nature-Positive: Nature Revitalization; Preventing and reversing the loss of biodiversity in order to set nature on a recovery course.

From the UNEP International Resource Panel (IRP):
The global extraction and processing of natural resources is the main driver of the following planetary crisis and account for: over 55% of GHG emissions, over 90% of biodiversity loss and water stress, and up to 40% of particulate matter health-related impacts. Climate and biodiversity impacts from such extraction and processing greatly exceed targets based on staying within 1.5 degrees of climate change and avoiding biodiversity loss.

Economic security & enhanced industrial competitiveness	Competition for resources, soaring resource prices such as minerals, and resource supply concerns	・Maximize circulation of resources ・Enhance integrated resource circulation in Japan and overseas	・Implement thorough resource recycling throughout lifecycles ・Build integrated system for resource circulation in Japan and overseas ・Increase product and service competitiveness through use of recycled materials ・Improve Japan's international presence in terms of securing resources
	Insufficient use of renewable materials	・Environmentally friendly design ・Expand use and supply of recycled materials through higher level recycling ・Lead formulation of international rules	
Regional revitalization & higher quality of life	Contraction of regional economies, declining population with an aging population and decreasing birthrate, depopulation, increasing empty homes and stores, etc.	・Create a resource circulation system that leverages regional characteristics ・Promote coordination and collaboration with local public organizations	・Solve regional issues (stimulate local industries and create jobs, revitalize communities, etc.) ・Create attractive regional communities by leveraging the characteristics of local resources ・Transform behaviors and lifestyles and produce a high quality of life
	Societal structure predicated on mass production, mass consumption, and mass disposal	・Lifestyle transformation (use of products made with recycled materials, reuse and repair, elimination of food loss and fashion loss, etc.)	

What is the Fundamental Plan for Establishing a Sound Material-Cycle Society (Fundamental Plan)?

The Plan was formulated based on the Basic Act on Establishing a Sound Material-Cycle Society (enacted in 2000). Its goal is to comprehensively and systematically promote measures related to the establishment of a sound material-cycle society.
As a general rule, a new Plan is formulated roughly every five years based on the Basic Environment Plan.

Current plan (The 5th Plan)

- Showcase the transition to a circular economy at the forefront
- In addition to environmental benefits such as responding to climate change and protecting biodiversity, these initiatives will also contribute to greater economic security, greater industrial competitiveness, regional revitalization, and a higher quality of life

The plan is being formulated as a national strategy that will create a brighter future for generations to come

The 4th Plan (2018)

Integrated improvements in environmental, economic, and societal areas

The 3rd Plan (2013)

(1) Reinforcement of measures that are focused not only on recycling but also reducing and reusing
(2) Response to the Great East Japan Earthquake

The 2nd Plan (2008)

(1) Initiatives integrated with efforts to create a low-carbon society that exists in harmony with nature
(2) Creation of regional circulating spheres
(3) Creation of an international sound material-cycle society

The 1st Plan (2003)

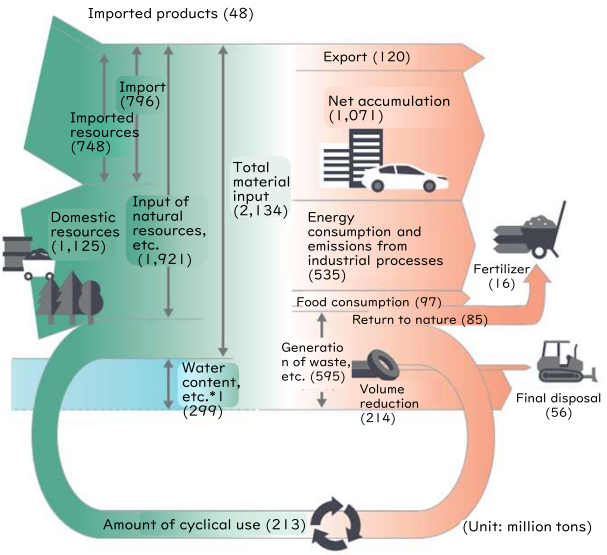
Set numerical cyclical use rate targets, resource productivity targets, and final disposal amount targets
Introduce a new way of thinking about the material flow *

Implementation of measures focused on economic and societal benefits

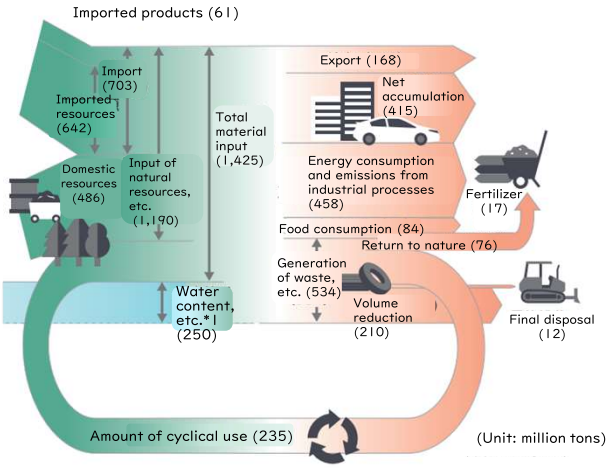
Implementation of measures focused on environmental benefits

*Material flow

FY2000 (Reference)



FY2021



Note: Water content, etc.: Water content of waste, etc. (sludge, livestock excrement, human waste, waste acid, and waste alkali) and incidental input from sediment and the like associated with economic activities (sludge from mining, construction, and water works; tailing from mining)
Source : MOEJ

Five Pillars (Key Fields)

1. Create sustainable communities and a sustainable society by transitioning to a circular economy with the aim of forming a sound material-cycle society

2. Thoroughly circulate resources throughout entire lifecycles through resource circulation-oriented coordination between business operators

3. Build diverse regional circulation systems and revitalize regions

4. Improve resilience of platform for circulating resources and managing waste, steadily and appropriately dispose of waste and restore the environment

5. Build a proper global resource circulation system and promote the overseas expansion of Japan’ s resource circulation industry

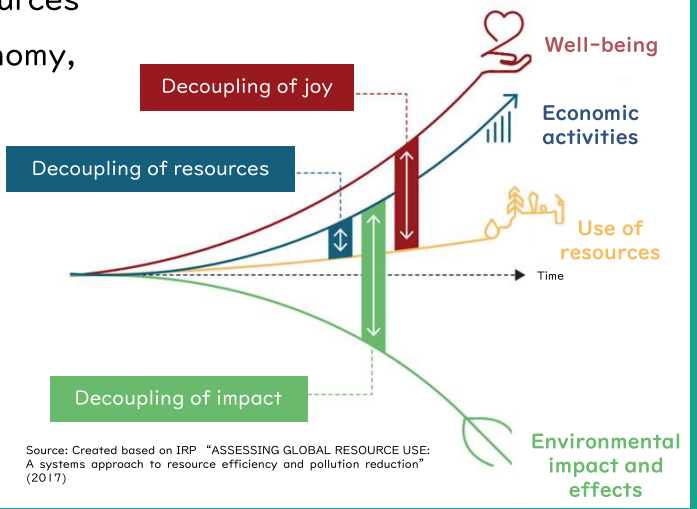
Key Field 1: Create Sustainable Communities and a Sustainable Society by Transitioning to a Circular Economy with the Aim of Forming a Sound Material-Cycle Society

Medium- to long-term direction

- Create, autonomize, and expand initiatives for circulating distinctive local circulative resources and recyclable resources to stimulate regional economies, create more attractive regional areas, and stimulate regional revitalization
- Accelerate the shift to a circular economy and stabilize the supply of resources essential for regional economic revitalization and Japanese industry
- Contribute to greater international industrial competitiveness and economic security by efficiently using and circulating imported resources
- Simultaneously achieve net-zero, circular economy, and nature-positive goals

Future ideals

- The transition to a circular economy will form a sustainable, sound material-cycle society
- In addition to reducing environmental impacts, these changes will enable people to live richer lives and will provide companies with profits and growth



Source: Created based on IRP "ASSESSING GLOBAL RESOURCE USE: A systems approach to resource efficiency and pollution reduction" (2017)

Key Field 2: Thoroughly Circulate Resources Throughout the Entire Lifecycle Through Resource Circulation-Oriented Coordination Between Business Operators

Medium- to long-term direction

- Increase the scale of the market for circular economy-related businesses from its current 50 trillion JPY to 80 trillion JPY or more by 2030, and then to 120 trillion JPY by 2050
- Create new value through coordination between the manufacturing/retail industries, etc., and the waste disposal/recycling industries, etc.
- Effectively use stock while promoting a business model that creates services and maximizes added value

Future ideals

- Engage in environmentally friendly design, promote reuse and repair, etc., and make advances in recycling
- Visualize progress of initiatives by defining value chain circulation indicators, etc.
- Share information regarding resource circulation between related business operators
- Certify for sustainable resources and materials and engage in green procurement based on that certification

J4CE(*) Business Networking Meeting (held on September 6, 2023)

(*) Japan Partnership for Circular Economy

Partnership founded in March 2021 by the Ministry of the Environment, the Ministry of Economy, Trade and Industry, and the Japan Business Federation for the purpose of strengthening public and private partnerships.

Direction of Measures in Each Field

2030

Direction for each material	Ensuring traceability through the use of digital technologies Overall optimization of 3R+Renewable measures throughout society	Implement thorough resource circulation throughout lifecycles
Plastics and waste oil	Promote 3R+Renewable initiatives and create market rules based on the Plastic Resource Circulation Act, etc. Promote the recycling of waste oil such as upcycling waste solvent	Use recycled materials, use biomass materials for new materials, and thoroughly recapture heat energy when incineration is required **Double the amount of recycled plastic**
Biomass	Utilize unused forest thinnings, livestock excrement, sewage sludge, etc., for biomass fertilizer, biomass energy, etc. Reduce food loss, recirculate food resources to create fertilizer, energy, etc. Implement measures to manufacture and supply sustainable aviation fuel (SAF) made from biomass waste products, etc., that are difficult to reuse	Usage that does not exceed the rate at which biomass is regrown in nature **Halve food loss** **Replace 10% of fuel with SAF (air transport operators)**
Base metals, rare metals, and other metals	Initiatives such as for thoroughly recovering metals in Japan In various countries, primarily in Asia, recycle metals from used products which are difficult to dispose of or recycle	**Recycled e-scrap (Approximately 500,000 t)** Secure important mineral resources by optimizing the entire lifecycles to minimize the acquisition of natural resources and by building a global resource circulation system with ASEAN countries, etc. **Double the amount of recycled metal materials that are processed**
Soil, stone, and construction materials	Build higher quality societal stock through environmentally friendly construction material design, the extension of building lifespans, etc. Recover reusable metals from cement manufacturing processes, expand use of by-products, waste materials, and difficult to process materials, and expand use of mixed cement	Engage in high added value reuse of resources Improve quality of recycling and expand applications of recycled resources

Direction of Measures in Each Field

2030

Direction for each product	Promote environmentally-friendly design and the use of recyclable materials in the production stage Promote new business models such as reuse, repair, maintenance, subscriptions, etc., in the usage stage	Optimize processes for thoroughly recycling resources throughout lifecycles
Buildings	Build and maintain a high quality societal stock, reduce waste generation by extending building lifespans Reuse building materials that can be effectively utilized, recycle construction-related waste plastic	Development of compact, resilient communities Reduce amount of waste generated as a result of disasters
Automobiles	Promptly assess the current state of GHG emissions Analyze GHG emissions reduction effect, impact of promotion of vehicle electrification, and battery emissions conditions Assist with expansion of supply of recycled plastic materials for use in automobiles	Consider decarbonization strategies for the automobile recycling field	Decarbonization throughout entire automobile lifecycles (net zero emissions) Decarbonization of automobile recycling process
Small and large home appliances	Foster recycling movement and promote efforts by local governments, etc. Increase recovery of aluminum, copper, and fluorocarbons by promoting collection of waste home air conditioning units	Increase amount of efficient and effective collection of small home appliances Promote collection through the steady enforcement of the Home Appliance Recycling Act and by raising awareness of the Act, etc.
Textiles (Fashion)	Deliberate methods for collecting textile products in Japan, develop technologies for sorting and separating collected textile products Environmentally friendly design during design and manufacturing stages Promote consumer understanding	Appropriate levels of production, purchasing, and resource circulation throughout society Refine recycling technologies	Make fashion sustainable Cut amount of clothing disposed of by households by 25%
Products and materials whose usage has become widespread as a result of global warming countermeasures, etc.	Create new mechanisms for promoting and facilitating the reuse and recycling of solar power generation equipment Thoroughly implement appropriate reuse, recycling, and disposal of lithium batteries and lead batteries Develop 3R-related technologies, including refining recycling technologies, and deploy relevant equipment		

Key Field 3: Build Diverse Regional Circulation Systems and Revitalize Regions

Medium- to long-term direction

- Promote initiatives to circulate resources at a scale optimized for specific regions and resources
- Appropriately maintain and manage local stock resources and use them wisely, over the long term, to contribute to sustainable and energetic community development
- Build an efficient system for circulating regional resources, assisting with the revitalization of regional economies
- Promote transformation of people’ s action and lifestyle through the provision of a variety of options, such as reused products, repair services, and products made with recycled materials, thus realizing a higher quality of life
- Prepare an environment that promotes sustainable finance
- Promote waste disposal over wider geographical areas, promote the integration of waste processing facilities, extend the lifespans of aging waste processing facilities, and improve the energy recovery efficiency of waste processing facilities
- Firmly establish the circulation of forest resources

Raise number of municipalities working on or considering the recycling of used disposable diapers to 150 by 2030

<Kamishihoro Town, Hokkaido>

- In Kamishihoro Town, which has a thriving dairy industry, methane gas produced during the processing of livestock excrement is used to generate biogas electricity. Most of the electricity is sold under the FIT system and, further, by using specified wholesale supply mechanisms, renewable energy can be generated and consumed locally.
- The supply (sale) of electricity within the region is handled by karch Co., Ltd., which is jointly financed by the town, a gas company, financial institutions, and other organizations. The price of electricity is roughly 2% less than that provided by major power companies, reducing the burden placed on members of the community.

Biogas plant

Future ideals

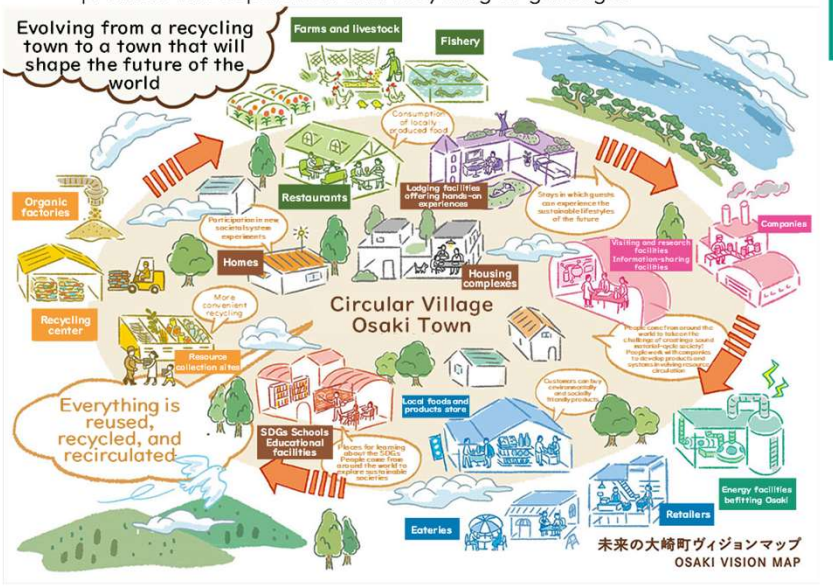
- Circulate resources at a scale optimized for specific regions and resources, even given dwindling populations, low birthrates, and population aging
- Solve regional issues such as reinvigorating communities, creating jobs, stimulating local industry, and dealing with the problems presented by population aging, and realize regional revitalization
- Protect ecosystems by managing natural environments and building resource circulation systems
- Organize and share information about pioneering regional initiatives, such as the revitalization of local economies and societies through economic activities in the field of resource circulation, so that similar initiatives can be rolled out nationwide

Examples of Regional Initiatives

Osaki Town, Kagoshima

Evolving from a recycling town to a town that will shape the future of the world

- Prompted by landfill space becoming scarce, residents, companies, and the local government have worked as one to promote the separation and recycling of garbage.

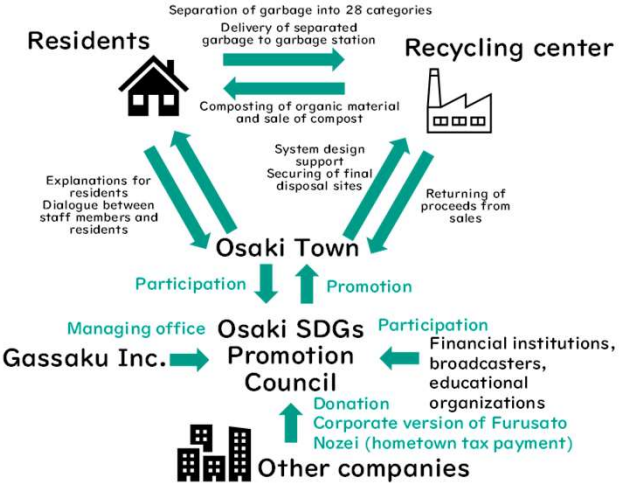


Source: Osaki Town website "Osaki's Sustainable Development Goal (SDG) Initiatives" (https://www.town.kagoshima-osaki.lg.jp/ke_kikaku/sdgs.html)
*This is a provisional English translation

Outcomes of initiatives

- 83% of the town's garbage is recycled
- The per-capita cost of waste processing is 9,364 JPY (As of March 31, 2021; roughly 2/3 of the national average)
- Proceeds from sales of recyclable waste were approx. 7.25 million JPY
- Approx. 40 job positions were created in the recycling center
- Local community functions have been enhanced through the use of collective garbage separation

Source: Created based on Osaki SDGs Promotion Council "Osaki's Initiatives | OSAKINI Project" (https://www.osakini.org/base/)

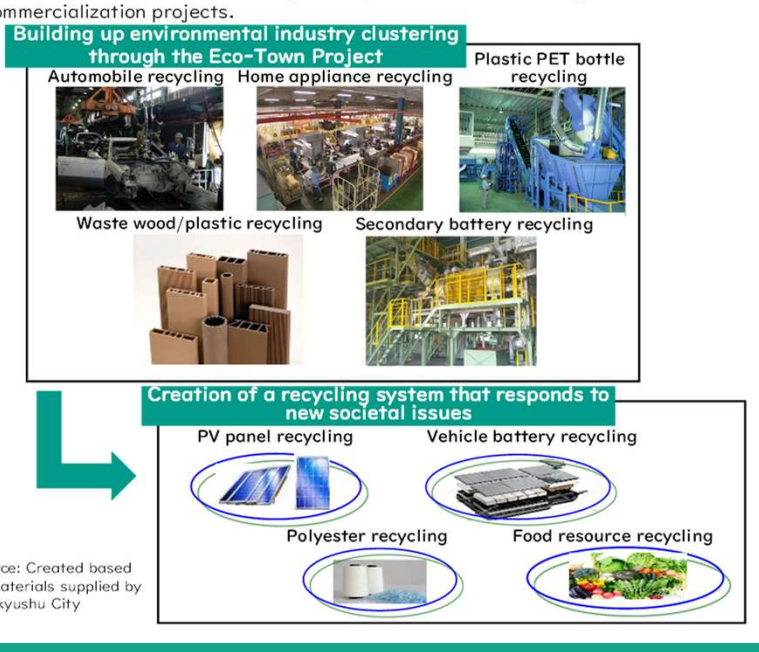


Source: Created based on Osaki SDGs Promotion Council "Osaki's Initiatives | OSAKINI Project" (https://www.osakini.org/base/), Osaki Town website "Information on Corporate Hometown Tax Donation "Your donations will change the future of the world"" (https://www.town.kagoshima-osaki.lg.jp/ke_kikaku/kigyoubannhurusatonouzei.html) ,etc.

Kitakyushu City, Fukuoka

Integrating environmental conservation policies with industrial revitalization

- Kitakyushu City is implementing pioneering initiatives for realizing a sound material-cycle society by tackling the problem of pollution. It is home to a collection of some of Japan's largest recycling companies. The city is contributing to the achievement of carbon neutrality and the creation of a circular economy.
- In recent years, it has been building recycling systems that tackle new societal issues and promoting the creation of a circular economic model through coordination between manufacturing/retail industries and waste disposal/recycling industries.
- In 2022, the city created the Kitakyushu City Economy Vision Promotion Council. This council has been deliberating the city's vision and creating new commercialization projects.

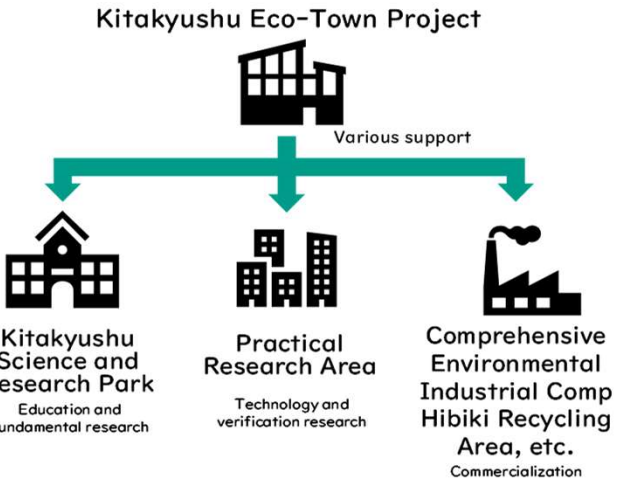


Source: Created based on materials supplied by Kitakyushu City

Environmental, economic, and social achievements

- The project has achieved the following as of March 2024.
- No. of clustered companies：25
  - ✓ No. of business projects：27
  - ✓ Total investment：Approx. 90.0 billion JPY
  - ✓ No. of workers hired：Approx. 1,000
  - ✓ No. of visitors： 100,000 per year

Source: Created based on materials supplied by Kitakyushu City "Kitakyushu City's Environment: Before and After" (https://www.city.kitakyushu.lg.jp/kankyou/file_0156_00008.html)



Source: Created based on Kitakyushu City "Promoting the creation of a sound material-cycle society for the future" (https://www.city.kitakyushu.lg.jp/files/000152552.pdf)

Key Field 4: Improve Resilience of Platform for Circulating Resources and Managing Waste, Steadily and Appropriately Dispose of Waste and Restore the Environment

Medium- to long-term direction

- Transform mentalities and behavior such that people choose products with high environmental value, create demand for such products, and establish an environment that recognizes the importance of resource circulation
- Promote the visualization of information regarding products and materials essential for resource circulation and the status of this circulation
- Improve the multi-level resilience of waste disposal systems in local public organizations, regional blocks, and nationwide in order to appropriately and rapidly process waste from disasters
- Promote the appropriate processing of waste, reinforce efforts to combat improper waste processing and illegal dumping, and steadily implement measures to deal with hazardous waste
- Promote initiatives to appropriately process waste contaminated by radioactive materials and initiatives for volume reduction and recycling of removed soil aimed at restoring the environment from the Great East Japan Earthquake

Future ideals

- Develop new technologies that promote 3R, establish mechanisms for corporate information disclosure, etc., and increase ESG investment
- Increase reuse of products and expand use of products made using circulated and renewable resources
- Accelerate the processing of waste from disasters and build wide-area coordination systems

Typhoon Hagibis waste collection site
MOEJ Disaster Waste Countermeasure Photo Channel – Disaster Waste Countermeasures in Pictures (in Japanese only), Typhoon Hagibis (2019)
(http://kouikishori.env.go.jp/photo_channel/r01_typh19/detail/?id=HA-10-04-001)

Key Field 5: Build a Proper Global Resource Circulation System and Promote the Overseas Expansion of Japan's Resource Circulation Industry

Medium- to long-term direction

- Lead discussions regarding the global resource circulation and form international rules
- Build an integrated system for resource circulation such as important mineral resources in Japan and overseas
- Promote the overseas expansion of Japanese circulation industry by combining mechanisms, human resource development, systems, technologies, and the like into sets

Future ideals

- Create an environmentally-appropriate international resource circulation system
- Globally expand the use of Japanese resource circulation technologies and infrastructure, as well as improve resource efficiency and circulation in Japan and overseas

Manual disassembly of E-waste[1)]

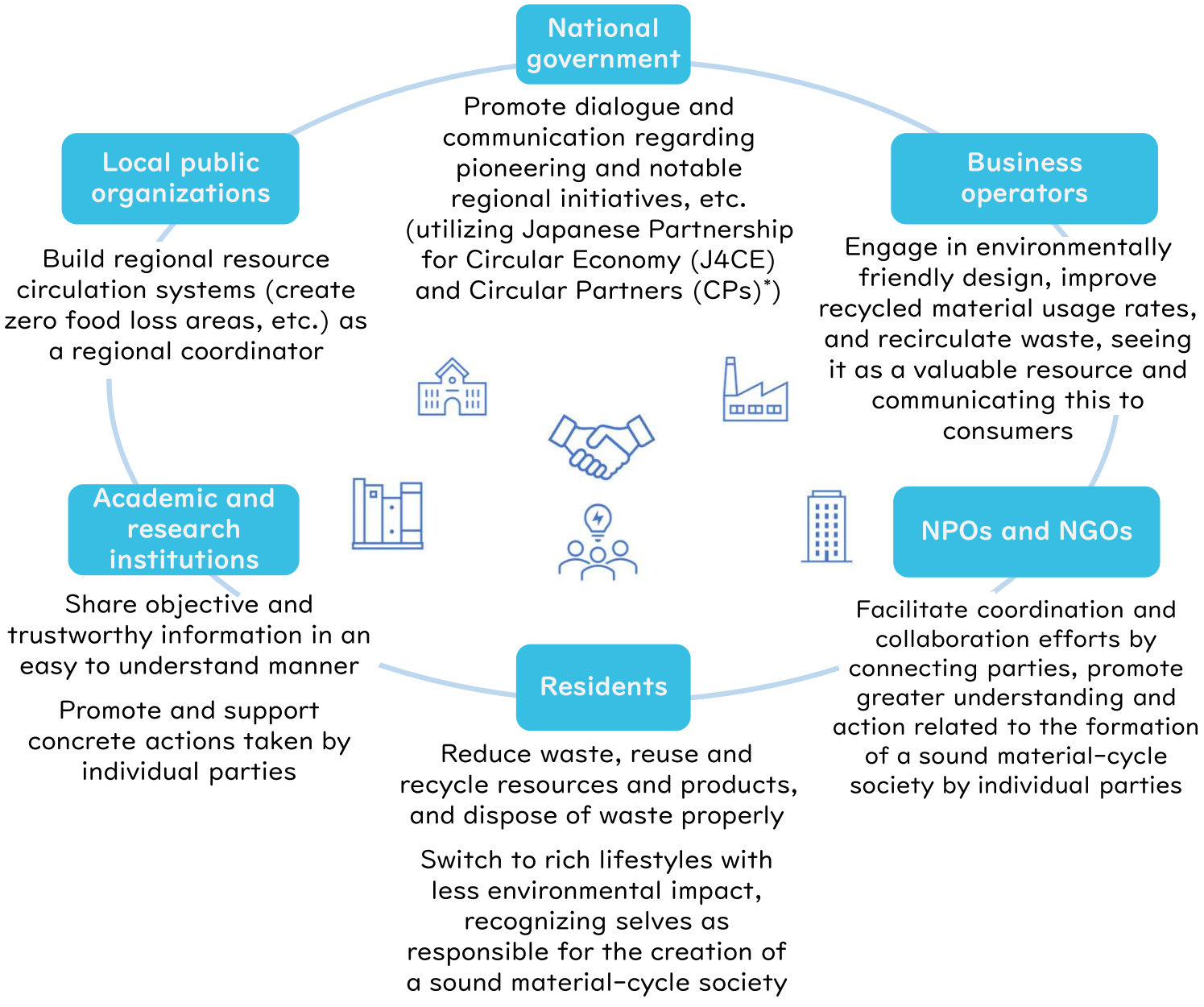
Open burning of cables[2)]

[1)] JICA: Information collection and confirmation survey on E-waste management in Malaysia and neighboring countries (2014)
[2)] NIES: International resource circularity of E-waste, Nies Research Booklet, No.57 (2015)

Promoting Coordination and Collaboration Efforts Aimed at Forming a Sound Material-Cycle Society

Roles of individual parties and coordination between them

- Various parties, such as the national government, local public organizations, residents, NPOs and NGOs, and business operators, must coordinate and collaborate with each other to form a sound material-cycle society



*: Created by the Ministry of Economy, Trade and Industry and the Ministry of the Environment in March 2023 with the purpose of promoting coordination by the national government, municipalities, universities, companies, and other related parties throughout resource lifecycles.

Vision for a Sound Material-Cycle Society

Resource circulation-oriented consumer behavior

Purchasing appropriate amounts, selecting products that are highly reusable or durable, selecting products that are easy to recycle, prioritizing the purchasing of recycled products, etc.

Reduce / Reuse / Recycle

Maintenance / Repair

Effective utilization of products

Effectively using stock while promoting a business model that creates services and maximizes added value

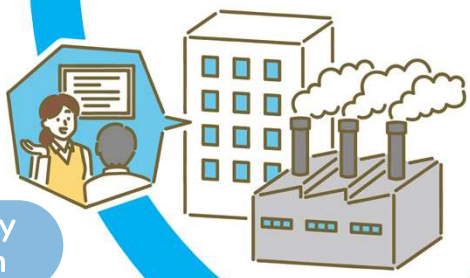
Information disclosure

Providing customers with diverse options whose environmental value is clearly indicated, promoting the transformation of consumer lifestyles

Sharing / Leasing

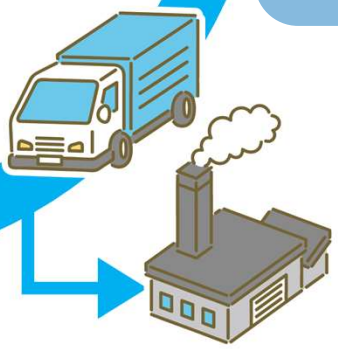
Thorough waste separation

Promoting the appropriate and active waste separation and collection, including collection of waste from offices and stores and collection of manufacturing scrap material from factories, etc.



Collection and transport

Promoting the designing and deployment of waste collection and transport systems that can handle the growing number of households consisting of elderly people



Environmentally friendly design

Employing a thoroughly environmentally friendly approach from the design phases of products, etc., such as making them easy to disassemble or easy to recycle, using single materials, etc.

Reducing the consumption of natural resources

Maximizing circulated resource and renewable resource usage rates, choosing suppliers with low environmental impacts when natural resources must be used

Recycling

Making advances in the development of technologies for expanding the use of bio-plastics and the development of advanced crushing and sorting technologies that optimize resource recovery

Waste processing

Performing intermediary processing such as volume reduction only for waste which cannot be recycled or used for energy recovery and then performing final waste disposal

環境省
Ministry of the Environment

[Contact]
Office for Promotion of Sound Material-Cycle Society
Environmental Regeneration and Material Cycles Bureau
Ministry of the Environment, Japan
1-2-2 Kasumigaseki, Chiyoda-ku, Tokyo 100-8975, Japan
Tel : +81-(0)3-3581-3351

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