

ANNUAL REPORT

ON THE ENVIRONMENT
IN JAPAN 2021



TABLE OF CONTENTS



1 SOCIOECONOMIC REDESIGN AND THREE TRANSITIONS — 03

- 1 Ministerial Meeting of the “Online Platform” on a Sustainable and Resilient Recovery from COVID-19 — 04
- 2 Declaration of GHG net-zero by 2050 — 04
- 3 Leaders Summit on Climate — 04
- 4 Toward Biodiversity Conservation — 05



2 THREE TRANSITIONS: DECARBONIZED SOCIETY, CIRCULAR ECONOMY, AND DECENTRALIZED SOCIETY — 06

- 1 Transition to a Decarbonized Society — 07
- 2 Transition to a Circular Economy — 10
- 3 Transition to a Decentralized Society — 11



3 CREATING A SUSTAINABLE SOCIETY AT COMMUNITY AND PERSONAL LEVELS — 13

- 1 Making Communities More Sustainable and Resilient: Circular and Ecological Economy — 14
- 2 Post-COVID Work Style and Lifestyle — 18
- 3 Efforts to Protect People’s Health, a Prerequisite for Sustainable Society — 24



4 EFFORTS FOR RECONSTRUCTION AND ENVIRONMENTAL RESTORATION FROM THE GREAT EAST JAPAN EARTHQUAKE — 26

- 1 Air Dose Rates — 27
- 2 Initiatives for Environmental Restoration of the Disaster Stricken Areas — 27

ADDITIONAL MATERIALS

- GHG Emissions in Japan — 30
- Biodiversity — 32
- Sound material-cycle society — 34
- Atmospheric and water environments — 36
- Environmental risks of chemicals — 38

SOCIOECONOMIC REDESIGN AND THREE TRANSITIONS

The COVID-19 pandemic emerged in 2020 as a major new crisis, in addition to the climate change crisis. These two crises are profoundly intertwined. To deal with both crises, it is essential for humanity to bring about social reform to improve the environment, economy, and society in an integrated manner, conserve biodiversity, and reestablish symbiosis with nature.

For this reason, Japan's environmental policy is focused on three transitions: transition to a decarbonized society, transition to a circular economy, and transition to a decentralized society. These transitions call for a radical socioeconomic redesign to build communities based on the ideas of circular and ecological economies and encourage people to transform their individual lifestyles.

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MINISTERIAL MEETING OF THE “ONLINE PLATFORM” ON A SUSTAINABLE AND RESILIENT RECOVERY FROM COVID-19

In September 2020, the Ministry of the Environment hosted a ministerial meeting of the “Online Platform” on a Sustainable and Resilient Recovery from COVID-19 with full support of the United Nations Framework Convention on Climate Change (UNFCCC).

While the 26th Conference of the Parties (COP26) to the UNFCCC was postponed, the

online ministerial meeting contributed to strengthening international solidarity and enhancing the momentum for global climate action. Ninety-six participating countries shared and sent out strong messages about their visions and concrete actions to face the two crises of COVID-19 and climate change.

2

DECLARATION OF GHG NET-ZERO BY 2050

Many countries around the world are moving forward with a green recovery and other initiatives to achieve economic recovery after the COVID-19 pandemic, for example, by pursuing more ambitious climate targets, and creating more sustainable socioeconomic systems. The pandemic has altered the political and economic structures of the world. We must promote climate actions and energy strategies in integration with the responses to this structural change.

In this context, Japanese Prime Minister Yoshihide Suga declared in his policy speech to the 203rd Session of the Diet on October 26, 2020, that by 2050, Japan would aim to reduce greenhouse gas (GHG) emissions to net-zero, that is, to realize a carbon-neutral, decarbonized society.

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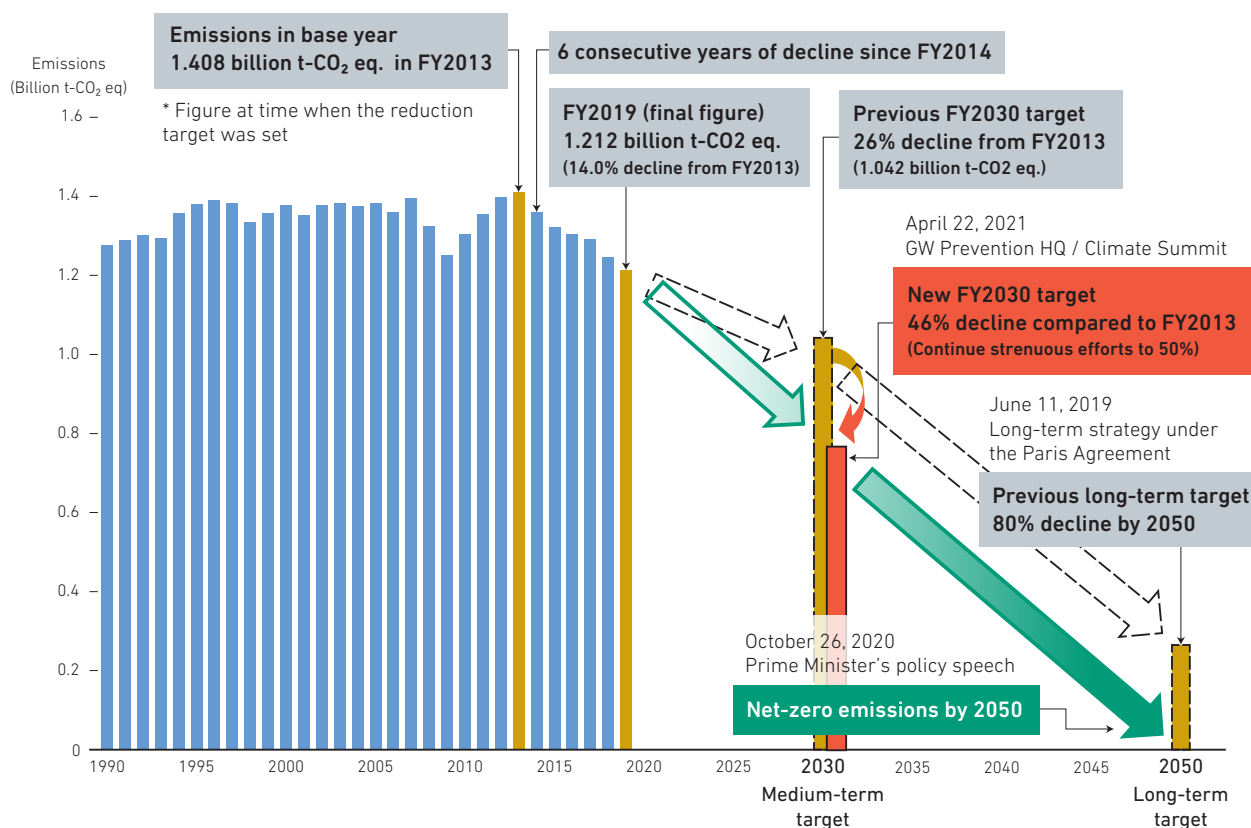
LEADERS SUMMIT ON CLIMATE

On April 22 and 23, 2021, the US hosted Leaders Summit on Climate, which was attended by the heads of state and senior representatives of some 40 countries and regions.

At the summit, the leaders discussed raising their nationally determined contributions (NDCs), net-zero GHG emissions by 2050, and the need to phase out coal-fired power plants. Prime Minister Yoshihide Suga stated that Japan would take a big step toward overcoming this global issue. Japan

aims to reduce its GHG emissions by 46% in fiscal year 2030 from its fiscal year 2013 levels, setting an ambitious target that is aligned with the long-term goal of achieving net-zero by 2050. Furthermore, Japan will continue strenuous efforts in its challenge to meet the lofty goal of reducing its emissions by 50%. Thus, he announced a new target that was significantly higher than the previous target of 26%.

Japan's Medium- and Long-term Targets for GHG Reduction



Source: National Greenhouse Gas Inventory Report of Japan (April 2021)

4

TOWARD BIODIVERSITY CONSERVATION

An ecosystem supported by rich biodiversity brings essential benefits (ecosystem services) to human survival. A healthy ecosystem contributes to the welfare of people by providing safe water and food, as well as by supporting a safe and secure daily life and fostering unique local cultures. However, the loss of biodiversity and deterioration of ecosystem services are advancing worldwide. In addition, emerging infectious diseases, such as the novel coronavirus infection, are considered to be deeply related to the loss of biodiversity caused by changes in land use, as well as to climate change and other changes in the Earth's environment. A holistic approach is needed to address these issues, rather than treat them as separate problems.

The "Post-2020 Global Biodiversity Framework" proposes new global targets over the Aichi targets. It is expected to be adopted in May 2022 as the

15th meeting of the Conference of the Parties to the Convention on Biological Diversity (CBD-COP15) has been postponed because of the COVID-19 pandemic. Within the deliberations on the post-2020 framework, discussions are underway to enhance specific biodiversity targets related to socioeconomic activities in order to stimulate transformative changes, while achieving a better balance among the three objectives of the Convention on Biological Diversity (conservation, sustainable use of biological diversity, and benefit-sharing of the utilization of genetic resources). With due attention to these international discussions, the Ministry of the Environment has been formulating a new National Biodiversity Strategy.

THREE TRANSITIONS: DECARBONIZED SOCIETY, CIRCULAR ECONOMY, AND DECENTRALIZED SOCIETY

The world's socioeconomic systems are halted or slowed down significantly by the COVID-19 pandemic, and Japan is no exception. While the world struggles to tide over this crisis, climate change and environmental degradation have been advancing. In response, Japan is joining other countries in efforts to reduce GHG emissions to net-zero by 2050 to combat climate change, which is sometimes referred to as the “climate crisis.”

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TRANSITION TO A DECARBONIZED SOCIETY

Toward the realization of GHG net-zero, decarbonized society by 2050

On October 26, 2020, Japanese Prime Minister Yoshihide Suga declared Japan's aim to reduce GHG emissions to net-zero by 2050 in his policy speech to the 203rd Session of the Diet.

In December 2020, the Council for National and Local Decarbonization first met in the Prime Minister's Office. The Council reaffirmed the importance of collaboration and co-creation between the central and local governments to achieve GHG net-zero by 2050 at the local level, particularly in the aspects of people's lives and society, which are closely linked to the responsibilities of the local governments. It was agreed that a roadmap for a decarbonized society for 2050 should be drawn up from the perspectives of citizens, together with the paths for

collaboration among the government agencies concerned and local governments. The "Roadmap for Decarbonization of all local governments by 2050" was released in June 2021.



Prime Minister Yoshihide Suga delivers a policy speech at the 203rd Session of the Diet

Source: Official website of the Prime Minister of Japan and His Cabinet

Mainstreaming renewables for power supply through mobility decarbonization

Electric vehicles (EVs), fuel cell vehicles (FCVs), and mobility tools offer various benefits.

(1) They decarbonize the transportation sector, while mainstreaming renewables for power supply sources as mobile batteries. (2) The batteries can be reused. (3) They can supply electric power in emergency situations and function as a component of a decentralized and self-reliant energy system. The Ministry of the Environment strongly encourages the purchase of renewable energy as well as EVs and like vehicles that are in effect "mobile batteries."

The Ministry of the Environment extends assistance to projects for the construction of decarbonized regional transportation models based on an EV sharing service as a new lifestyle. Likewise, the Ministry assists with the construction of decentralized and self-reliant energy systems that aim to mainstream renewables for power supply by combining regional renewable energy and EVs as mobile batteries simultaneously with the enhancement of the resilience of the system.

The expansion and further promotion of Zero Carbon City

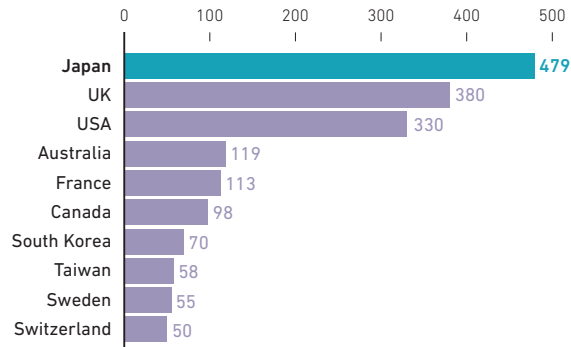
The Ministry of the Environment recognizes a municipality that officially aims to reduce GHG or CO₂ emissions to net-zero by 2050 as the "Zero Carbon City." As of August 31, 2021, 444 municipalities representing a cumulative total population of 114 million were recognized as such. By providing various types of assistance to local

governments aiming to be a Zero Carbon City, the Ministry is working to achieve multiple policy objectives as follows: significant GHG emissions reduction at local levels, growth of the regional circular economy through implementation of renewable energy projects beneficial to the region, and reinforcement of resilient communities.

Task Force on Climate-related Financial Disclosures (TCFD)

The Ministry of the Environment has expressed its official support to the TCFD. The Ministry supports the efforts made by Japanese companies in line with the Recommendations of the Task Force on Climate-related Financial Disclosures of June 2017. As of August 31, 2021, a total of 2,435 organizations worldwide (financial institutions, companies, governments, etc.) have expressed their support. Japan ranks top in terms of the number of supporters, with 479.

Number of TCFD-supporting organizations (top 10 countries and regions)



Note: As of August 31, 2021

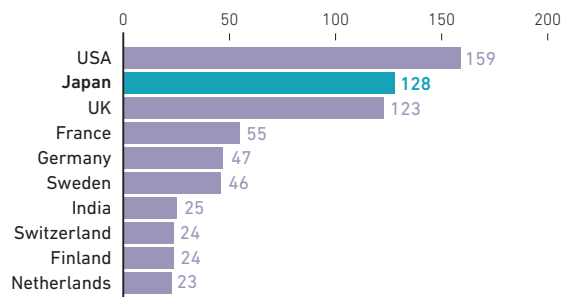
Source: TCFD Website: TCFD Supporters; produced by Ministry of the Environment

Science-based targets in line with the Paris Agreement

An international initiative that certifies companies that set the medium- to long-term science-based target (SBT) on GHG emissions reduction in line with the Paris Agreement is attracting attention worldwide.

As of August 31, 2021, 875 companies worldwide were certified of which 128 were from Japan.

Number of SBT-certified businesses by country (top 10 countries)



Note: As of August 31, 2021

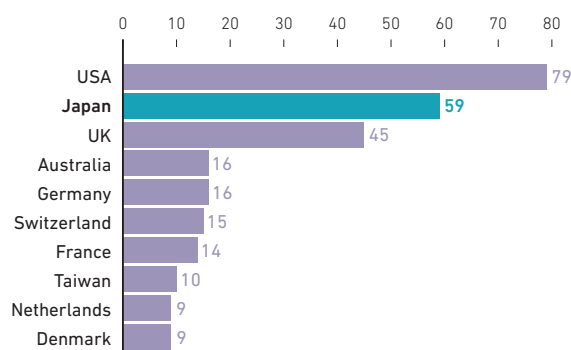
Source: Science Based Targets Website: Companies Take Action; produced by Ministry of the Environment

International initiative RE100

RE100 is an international initiative of corporations committing to secure 100% of their electricity throughout their entire operations from renewable energy sources. As of August 31, 2021, there are 323 RE100 members worldwide, including 59 Japanese companies.

In June 2018, the Ministry of the Environment became the first public entity in the world to sign up as an RE100 Ambassador with a view to spearheading by itself actions to mainstream renewables for power supply. Since the FY2020, all of the power requirements of the Shinjuku Gyoen National Garden have been met by renewables. Likewise, all Regional Environmental Offices throughout Japan procure 100% renewable power.

Number of RE100-participating businesses by country (top 10 countries)



Note: As of August 31, 2021

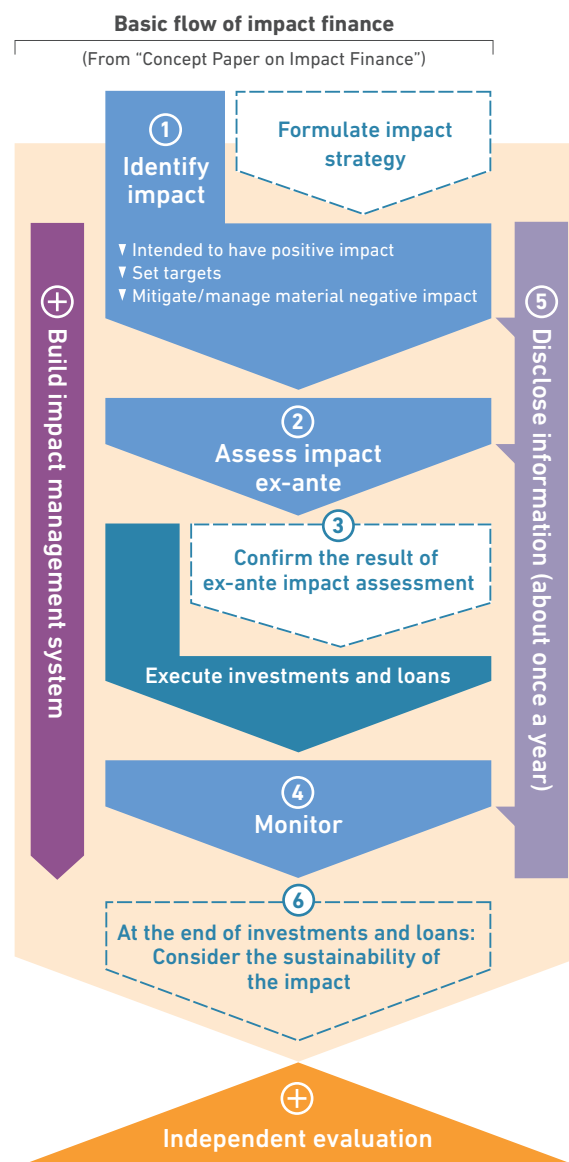
Source: RE100 Website; produced by Ministry of the Environment

Promotion of ESG finance

Japan accounted for only about 2% of the world's total ESG investment balance in 2016, but by 2018, it jumped to about 7%, recording the world's fastest growth. The amount of Japan's ESG investment in 2019 was approximately \$3 trillion (336 trillion yen), which is nearly six times larger than the 3-year period from 2016.

Based on the "Recommendation from the High Level Meeting on ESG Finance" of July 2018, the Ministry of the Environment launched the "ESG Finance High-Level Panel" in February 2019 as a forum for discussion and action by leading finance and investment industry leaders and the government to raise awareness and commitment to ESG finance. The panel meets periodically. In July 2020, the High-Level Panel issued a Concept Paper on Impact Finance, with the intent of mainstream impact finance, with the involvement of large-scale private funds, by positioning impact finance as a developed form of ESG finance to pursue impacts on the environment, society, and economy.

Overview of Impact Finance



Source: Ministry of the Environment

Developing high-quality environmental infrastructures

On September 8, 2020, the Japan Platform for Redesign: Sustainable Infrastructure (JPRSI) was established as a framework to support Japanese companies and other relevant actor's initiatives aimed at developing high-quality environmental infrastructure overseas.

A total of 350 entities (as of March 2021) have joined as members of the platform. Its dedicated website and seminars will provide members looking to develop projects overseas with valuable information

on environment-related funding and good practices from past projects.

With the cooperation of local Japanese governments that have the knowledge and experience of creating a decarbonized society, we have supported foreign cities in designing local systems to promote decarbonized society and to install decarbonization technology, by promoting the City-to-City Collaboration Program between local governments in Japan and abroad.

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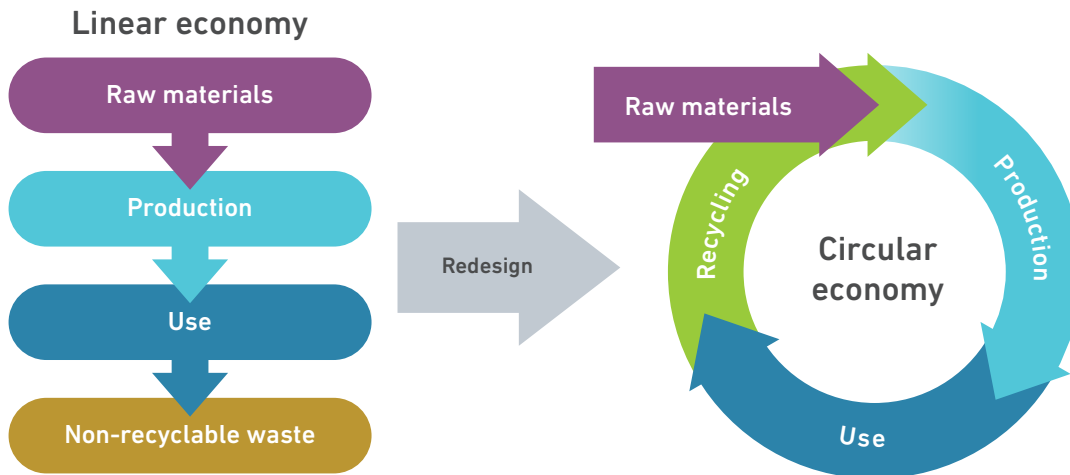
TRANSITION TO A CIRCULAR ECONOMY

Circular economy

In January 2021, the Ministry of the Environment agreed with Keidanren (Japan Business Federation) to launch the “Japan Partnership for Circular Economy (J4CE),” a public–private partnership aimed at accelerating the transition to a circular economy. This partnership was founded in March.

In the same month, the Ministry of the Environment, in collaboration with the World Economic Forum (WEF), hosted a “Japan Circular Economy Roundtable” meeting to disseminate to the world Japanese companies’ best practices related to the circular economy.

Circular Economy



Source: Ministry of the Environment, based on The Government of the Netherlands
 “A Circular Economy in the Netherlands by 2050—Government-wide Program for a Circular Economy” (2016)

Implementation of the resource circulation strategy for plastics

In January 2021, the Central Environment Council presented a recommendation titled “Recommended Future Course of Resource Circulation for Plastics.” In line with this recommendation, the Cabinet approved in March 2021 “Bill for the Plastic Resource Circulation Act.” It was enacted in June 2021 at the 204th session of the Diet.

The Ministry has formulated a roadmap for bioplastic introduction and an ESG guidance on the resource circulation of plastics. The Ministry will continue to consider and launch additional budget, finance, and institutional measures to implement the Resource Circulation Strategy for Plastics in a comprehensive manner.

Deepening the Osaka Blue Ocean Vision

The leaders of the G20 Osaka Summit of June 2019 shared the “Osaka Blue Ocean Vision,” which aims to reduce additional pollution by marine plastic litter to zero by 2050. Worldwide engagement, including that of emerging and developing Asian countries that supposedly allow

large amounts of plastic to flow into the ocean, is required to solve the issue of marine plastic litter. Japan has been calling on non-G20 countries to share the Vision, and 87 countries and regions have already joined as of August 2021.

Engaging all stakeholders to address marine plastic waste problem (PILOT Corporation)

The Ministry of the Environment runs the “Plastics Smart” campaign to encourage and enhance “wise use of plastics.” The Plastics Smart website showcases more than 2,300 best practices for a wide range of stakeholders.

For example, PILOT Corporation released in December 2020 the “Super Grip G Ocean Plastic” oil-based ballpoint pen, which uses reclaimed resin from marine plastic waste. TerraCycle Japan, a collaborating partner of PILOT Corporation, produces reclaimed resin from marine plastic waste collected in Japan. PILOT Corporation was the first Japanese company to use such materials for writing instruments. By expanding the use and distribution of recycled materials derived from marine plastic waste, PILOT is promoting the collection and reduction of such waste.



Super Grip G Ocean Plastic

Source: PILOT Corporation

3

TRANSITION TO A DECENTRALIZED SOCIETY

Synergy between climate action and disaster risk reduction —Adaptive recovery

We live in a time when climate change can be called a “climate crisis.” Drastic disaster risk reduction (DRR) measures based on climate change risks are necessary. In June 2020, the Ministry and the Cabinet Office announced the “Strategy for Enhancing the Synergy between Climate Action and Disaster Risk Reduction in the Era of Climate Crisis” to effectively promote coordinated measures for climate change and DRR.

This message clearly states: that when recovering from a disaster, we must not be confined to simply restoring the affected area to the way it was before the disaster struck; rather, we must respond to disasters conveying the idea of “Adaptive Recovery” by implementing resilient measures including the control of land use where communities can ensure adaptation to climate change.

Promotion of green infrastructure and Eco-DRR

Japan is facing environmental changes, such as the intensification of disasters due to climate change. It is also experiencing changes in social conditions, such as declining and aging populations, and obsolete social capital. It is an urgent task to promote green infrastructure and Eco-DRR efforts by re-examining current land use and learning from the ancient wisdom in community building, in order to take advantage of the diverse functions of nature for disaster risk reduction purposes. With a view to promoting creation of communities resistant against disasters and harmony with nature, the Ministry of the Environment is formulating methods and putting together technical knowledge to draw up “ecosystem functions potential maps”

that would demonstrate the water-retaining capacity and biodiversity conservation effects of a basin if former wetlands and floodplains were restored for reinforcement of the basin’s overall flood control function.



The Kushiro Marsh helps control the flow rate of Kushiro River during heavy rainfall.

Source: Ministry of the Environment

Toward a virtuous cycle of protection and utilization of national parks

Japan has 34 national parks, designated for their outstanding natural beauty. They present a rich diversity of landscapes and biota because of Japan’s volcanic land formation, long latitudinal extension, and multiple climate zones. Accordingly, they are the cradles of different lifestyles and cultures of people living in harmony with nature. To make the most of these blessings, the Ministry of the Environment has been promoting the “Project to Fully Enjoy National Parks.” It aims to enhance the branding of the national parks and attract more domestic and international visitors by implementing measures to facilitate the utilization

of national parks while protecting what needs to be protected and conserved.

In addition, Japan is promoting the “Zero Carbon Park” campaign for the decarbonization of national parks. In March 2021, the Norikura Kogen Highlands (Matsumoto City) in Chubusangaku National Park was registered as the first Zero Carbon Park. Through this campaign, Japan is challenging to establish sustainable tourist destinations in national parks and to offer an opportunity for national park visitors to have first-hand experience of decarbonization and plastic waste reduction as sustainable lifestyle.

CREATING A SUSTAINABLE SOCIETY AT COMMUNITY AND PERSONAL LEVELS



For the country to be sustainable, every local community needs to become a sustainable society. For the local community to be sustainable, the lifestyles of all individual members need to be transformed into a sustainable lifestyle. From the perspective of well-being, it is important that people live in good health and happiness, and the community is self-reliant and self-confident while interacting organically with fellow communities. In this way, a genuine sense of wealth would spread to all corners of the country and lead us into a bright future.

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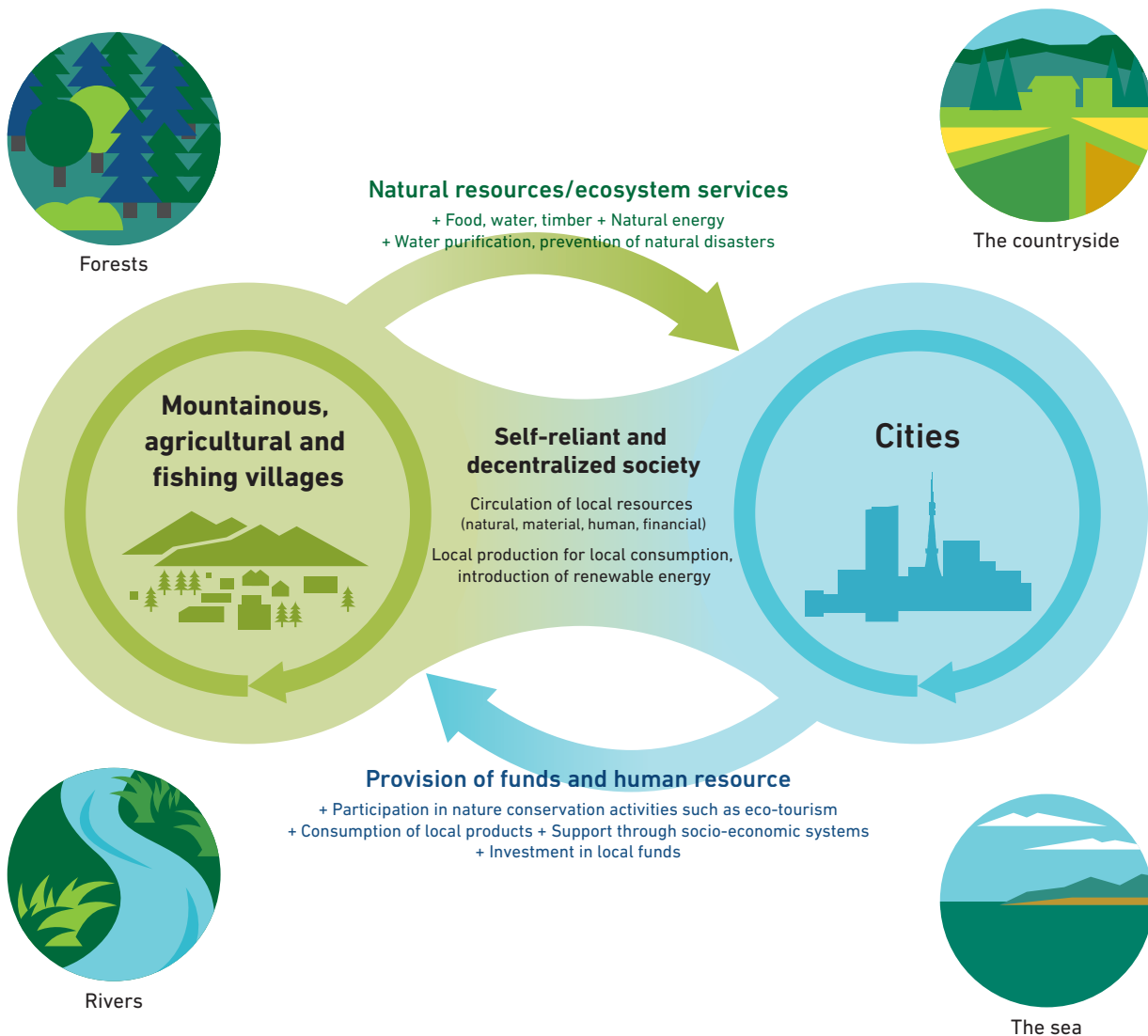
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MAKING COMMUNITIES MORE SUSTAINABLE AND RESILIENT: CIRCULAR AND ECOLOGICAL ECONOMY

The Circular and Ecological Economy is a term to describe a “self-reliant and decentralized society” in which communities utilize their respective local resources to create businesses and projects for environmental, economic, and social betterment, while simultaneously forming a mutually beneficial

network of communities (for example, between rural and urban communities) based on each other’s own strengths. It was proposed in the Fifth Basic Environment Plan, approved by the Cabinet in 2018.

Conceptual Illustration of Circular and Ecological Economy



Source : Ministry of the Environment

Many regions throughout the country are creating a circular and ecological economy

The basic approach for creating a circular and ecological economy is to reduce money outflow and increase its inflow by making the most of the resources produced by the regional natural capital

and the resources that have been left unused. The money thus earned is circulated in the region to reinforce its economic infrastructure.

Introduction of renewable energy

According to trade statistics from the Ministry of Finance, Japan's imports of mineral fuels amounted to approximately 17 trillion yen in 2019, evidencing a huge money outflow.

If energy can be locally generated for local consumption as well as external sale, the energy balance would improve, and the regional economy would benefit from the virtuous cycle.

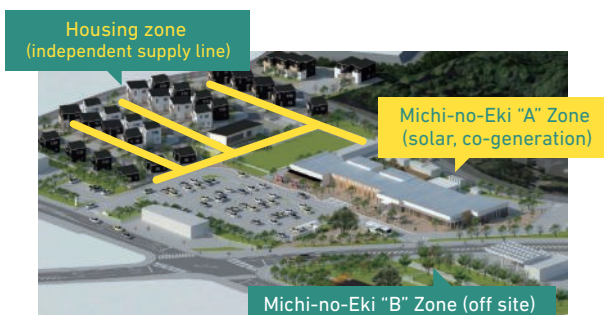
It must not be forgotten that a community equipped with a decentralized and self-reliant energy system is resistant and resilient to disasters. According to recent projections, climate change will intensify natural disasters. A secure source of energy supply in times of disaster is critically important task for a community.

Energy supply in the event of a disaster (CHIBA Mutsuzawa Energy)

Mutsuzawa Smart Wellness Town in Chiba Prefecture is a complex of municipal housing and a Michi-no-Eki (roadside rest area). The entire energy demand of the complex was supplied by CHIBA Mutsuzawa Energy Co., Ltd. by solar power, solar heat, and gas co-generation. Mutsuzawa Smart Wellness Town is also a designated disaster response center. Chiba Mutsuzawa Energy helps strengthen the disaster preparedness of the area, while in normal times provides the local community with low-carbon, low-cost energy. In addition, the company uses domestic natural gas to run a gas engine power generator for both normal and emergency situations. The waste heat generated is used to warm up the groundwater after natural gas extraction for use as a

hot spa. In this way, the company develops water-soluble natural gas for self-contained local energy production for local consumption.

When a typhoon caused a large-scale power outage in Mutsuzawa Town and other parts of the Boso Peninsula, the Smart Wellness Town was hardly affected because the power lines were underground and electricity was supplied to municipal housing and major facilities of the Michi-no-Eki, allowing self-reliant energy supply. On that occasion, the town made hot showers and toilets available to residents free of charge. Over 1,000 people used the service, and the Smart Wellness Town successfully performed its role as a disaster response center.



Mutsuzawa Smart Wellness Town

Source: CHIBA Mutsuzawa Energy Co., Ltd.



Power supply during blackout

Source: CHIBA Mutsuzawa Energy Co., Ltd.

Solving environmental and social issues by sale of local specialties

In December 2010, the Act on Promotion of the "Sixth Industry" to Create New Value Added Using Agricultural Products in Rural Area (Law No. 67 of 2010) was enacted. As a result, efforts are underway in various parts of the country to transform the primary sector of the economy into "the sixth sector" by integrating processing and distribution/sales activities into production and

thereby increase the value-added to raise the income from agriculture, forestry, and fisheries.

These efforts, when they are directed to the resolution of local problems and lead to environmental improvement and increase money circulation in the area, may well be considered efforts to create a circular and ecological economy.

Promoting organic cosmetics to preserve endangered species and revitalize a marginal village (Minnano Okueigenji Co., Ltd.)

Since April 2018, Minnano Okueigenji has sold organic cosmetic series "MURASAKI no Organic," which contains an extract of the root of *Lithospermum erythrorhizon*, commonly called purple gromwell.

Purple gromwell has been known to Japanese people since ancient times, appearing in Manyōshū, the oldest anthology of Japanese poetry. However, it has a low heat tolerance. The germination rate is 3% and the yield is 5%. It is on the list of endangered species IB (EN) in the Ministry of the Environment's Red Data Book. The government of Higashiomi City, Shiga Prefecture, commissioned a local agricultural high school to study the cultivation of purple gromwell, the city flower. The study found Okueigenji area, which has an average temperature about 2.7 degrees Celsius lower than the city center, is a suitable location.

However, purple gromwell has a severe replant failure problem. One must allow for 5 years before replanting the same soil. Every year, Minnano Okueigenji clears and restores some 500 square meters of abandoned fields together with the people of the local community.

The company also organizes tours to introduce visitors to the taste of the traditional local specialty Mandokoro tea and the skills of experienced woodworkers. Once nearly marginalized, the Okueigenji area is frequented by tourists. Minnano Okueigenji states that its aim is to become an SDG-conscious and ethical community-based company, contributing to the creation of a circular and ecological economy with thoughtful consideration to the people and the environment.



Organic cosmetics "MURASAKI no ORGANIC"

Source: Minnano Okueigenji Co., Ltd.



Root of purple gromwell

Source: Minnano Okueigenji Co., Ltd.

Putting values on unused regional resources

Industrialization and globalization have led us to move massive amounts of resources and goods with a focus on price and efficiency. As a result, we have acquired the habit of getting inexpensive things easily and throwing them away easily. We are faced with huge volumes of waste materials, such as plastics that do not naturally return to the environment, and we must use extra energy for

their treatment and disposal. We are damaging the Earth in this way. To create a sustainable local community, it is essential to reduce dependence on underground resources. Instead, we should use all the benefits that the natural chain consisting of forests, the countryside, rivers, and the sea brings about, and then returns them back to Nature.

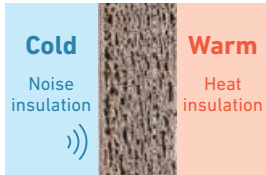

Effective utilization of surplus sludge using traditional craft and local resources (Komatsu Matere Co., Ltd.)

Komatsu Matere is a fabric manufacturer based in Ishikawa Prefecture. Leveraging technological strength of dyeing, it is active in a variety of business areas, from fashion fabrics to construction materials, based on stains. Effective utilization of the surplus biomass cake that comes out of the wastewater treatment process in fabric dyeing has long been a challenge for the company. Through collaboration with a local ceramic company that inherits the tradition of famous Kutani ware, Komatsu Matere has successfully developed "greenbiz," a micro-porous

foam ceramic that also uses diatomaceous earth, another local resource. "greenbiz" has high water absorbency and helps prevent serious damage from torrential rains by storing rainwater. It also helps to reduce the heat island phenomena by evaporation heat. Other features include thermal insulation, acoustic absorption, and non-inflammability. These properties make greenbiz an ideal material for a wide range of applications, including rooftop greening, paving blocks, and agriculture.

Four characteristics of greenbiz

Four characteristics of greenbiz

 <p>1</p> <p>Water absorption/ freezing resistance</p> <p>Water holding capacity of more than 12 t at 1,000 m². For guerrilla heavy rain drainage measures. Hard to break when frozen. Ideal for protective material of waterproof layer.</p>	 <p>2</p> <p>Water permeability</p> <p>Water permeates side to side without stagnation. The permeability function is four times that of a normal permeability block.</p>	 <p>3</p> <p>Heat insulation and sound absorption</p> <p>Biomass cake, a waste product, is mixed with clay, diatomaceous earth and others, and foamed and fired. The continuous microporosity formed by foaming provides heat and noise insulating functions.</p>	 <p>4</p> <p>Non-combustible/ aging deterioration</p> <p>It is an inorganic substance fired at a high temperature (1,000 °C) and does not burn. It maintains its performance for a long time without deterioration due to ultraviolet rays or hydrolysis.</p>
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Source: Komatsu Matere Co., Ltd.

Promotion of ESG financing to support the creation of a circular and ecological economy

Regional financial institutions are encouraged to play a central role in addressing regional challenges while revitalizing the regional economy through the sustainable use of local resources. These efforts to improve the environment, economy, and society

in an integrated manner form part of the creation of a circular and ecological economy. It is important to deepen efforts by promoting the role that those regional financial institutions play in this effort as “ESG regional finance.”

Deepening of the circular and ecological economy

The spread of the COVID-19 pandemic has forced us to change our way of living. However, from another perspective, this may be a good opportunity to deepen and accelerate the creation of a circular and ecological economy.

According to the December 2020 Second Cabinet Office Survey on Changes in the Public’s Views and Behaviors under the Influence of COVID-19 Pandemic, 33.8% of all Tokyo residents surveyed were interested in moving to rural areas, and 47.1% of them were among respondents aged 20–30 years. They represented increases of 1–4% from a comparable survey conducted in May of that year.

For rural areas that have been plagued by population decline and lack of human resources

since before the pandemic, the growing interest in rural migration among urban youth could be an opportunity. This is because younger generations are more fortunate to have received environmental education in schools and elsewhere than older generations. They are believed to have more affinity for the rural lifestyle of living in harmony with nature. For this age group of people who were born in the second half of the 1990s, when mobile phones and smartphones became popular, information and communications technology (ICT) is a matter of course and not something to be learned. With their flexible way of thinking and ICT skills, the young generation would hopefully meet regional challenges and create new values to build a circular and ecological economy.

2

POST-COVID WORK STYLE AND LIFESTYLE

The new lifestyle of avoiding the Three C’s (closed spaces, crowded places, and close-contact settings)

that has been imposed by the COVID-19 pandemic is dramatically changing the way people work.

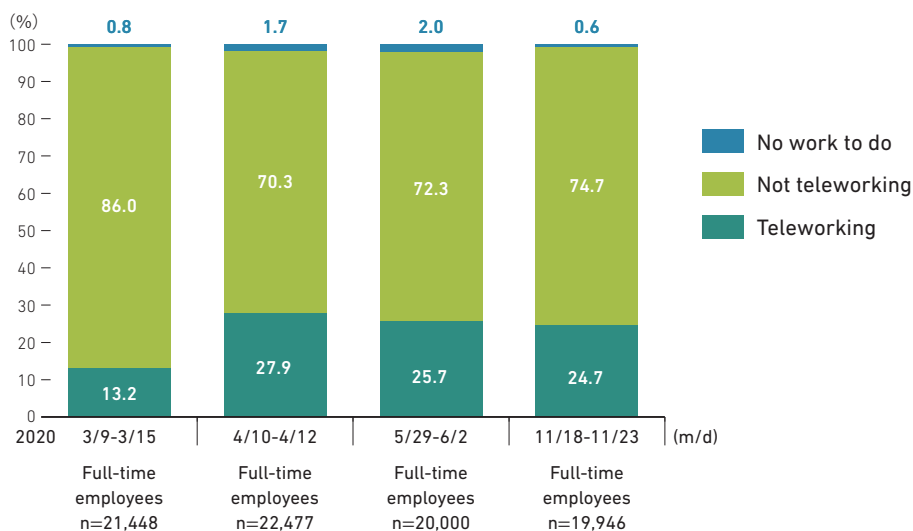
Work style

Expanding the use of telework

After the state of emergency was first declared in seven prefectures in April 2020, the rate of telework increased nationwide. It remained at a high level even after the state of emergency was lifted.

According to recent surveys on the use of teleworking after the end of the pandemic, an increasing number of workers responded that they preferred teleworking.

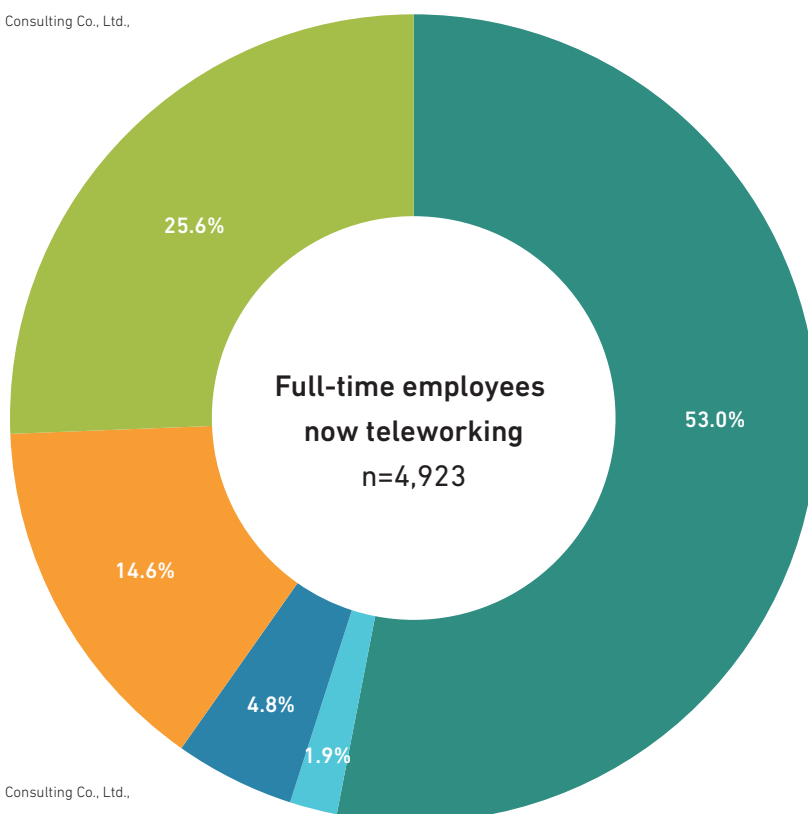
Changes of teleworking ratio (national average)



Source: Ministry of the Environment, based on Persol Research and Consulting Co., Ltd., "The 4th Quick Survey on the Impact of COVID-19 on Teleworking"

Preference in teleworking continuation even after COVID-19

- Want to continue very much
- Want to continue
- Hard to say
- Not want to continue
- Not want to continue at all



Source: Ministry of the Environment, based on Persol Research and Consulting Co., Ltd., "The 4th Quick Survey on the Impact of COVID-19 on Teleworking"

Workcation

Workcation is a newly coined word that combines “work” and “vacation.” It is a kind of telework out of lodging in a national park, resort, hot spring, etc. Basically, there are two types of workcations: vacation-oriented and work-oriented. In the former type, the worker takes paid holidays to go out to a resort or tourist area and work remotely from there.

In the latter type, the worker interacts with the hosts and examines the local challenges with a view to starting a new business. Other types of workcations include worker training camps and conferences in retreats, satellite offices, and shared offices.

Further changes in lifestyle.

The crisis situations we currently face, such as climate change and the COVID-19 pandemic, are attributable to the current socioeconomic system.

It is, at the same time, inseparable from the lifestyle we have become accustomed to by seeking for material utility and convenience.

Housing

Comfortable Home Campaign

The Ministry of the Environment launched the “Comfortable Home Campaign” in November 2020. The campaign launch coincided with the arrival of winter and the rise of household energy consumption for heating. It calls for people’s behavioral change through the introduction of large-impact energy efficiency measures, such as heat insulation renovation, net zero energy house (ZEH), and high-efficiency home appliances.

Choice of renewable energy power

Installing solar panels on roofs is not the only way to use renewable energy power in your house. Electric power used at home can be changed to the renewables by purchasing from electricity retailers that have solar, wind, and other renewable energy-based power on their supply menu.

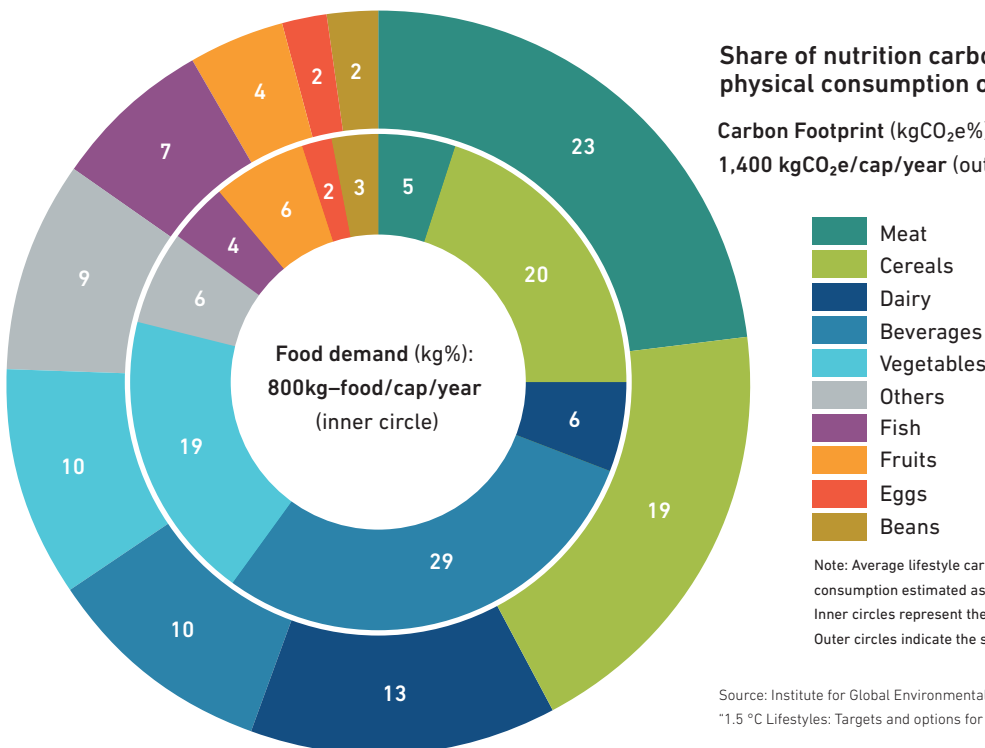
Food

Food, in its product life cycle from production through processing, consumption, and disposal, is not free from environmental burdens, such as CO₂ emissions, wastewater discharge, the use of chemical pesticides and fertilizers, forest clearing for agriculture, and food waste. It is important to be aware of the environmental impact of the food we consume every day.

For example, the carbon footprint of the food consumed by an average Japanese person every year is estimated to be 1,400kg-CO₂e. Meat, grain, and dairy products ranked high in this order in the list of carbon footprints. In particular, meat has a very high GHG emission intensity, accounting for about one-quarter of total emissions, with a much lower share in food consumption.

Share of nutrition carbon footprints and physical consumption of Japan (2017)

Carbon Footprint (kgCO₂e%):
1,400 kgCO₂e/cap/year (outer circle)



- Meat
- Cereals
- Dairy
- Beverages
- Vegetables
- Others
- Fish
- Fruits
- Eggs
- Beans

Note: Average lifestyle carbon footprints and physical amount of consumption estimated as of 2017.
Inner circles represent the share of physical amount of consumption.
Outer circles indicate the share of carbon footprints.

Source: Institute for Global Environmental Strategies (IGES)
“1.5 °C Lifestyles: Targets and options for reducing lifestyle carbon footprints”

“Local production for local consumption” of farm and marine products not only eliminates CO₂ emissions by transportation and improves food self-sufficiency, but also enhances the circular economy within the region and revitalizes local industries.

Meanwhile, the food industry is starting to produce and market an increasing number of environmentally or socially conscious processed

foods or prepared foods. Likewise, many chain restaurants and retailers are increasingly putting on their menus and shelves foods and food products that have been produced, transported, packaged, and served with attention to their environmental and social impacts. As consumers, we have the opportunity to be environmentally conscious and help build a sustainable society by choosing such foods as constantly as possible.

Sustainable food sourcing (McDonald's Company (Japan), Ltd.)

As one of the world's largest food service companies, McDonald's focuses on four pillars (food, communities, planet, and people) to solve social issues and environmental problems in the world. In particular, the company works to use sustainable labels to promote sourcing of sustainable food materials and supplies.

In August 2019, one of the company's popular menu items, Filet-O-Fish, obtained a chain-of-custody certification from the international non-profit organization, Marine Stewardship Council (MSC). McDonald's examined the freezing process of the fish portion and succeeded in cutting its annual consumption of water by about 50% and annual CO₂ emissions from electricity by about 38%. In addition, fish waste has been reduced by approximately 5% through recycling initiatives. Fish-derived waste has been reduced by approximately 5%.



Filet-O-Fish in a new packaging with MSC label

Source: McDonald's Company (Japan), Ltd.

MSC-C-57384

As part of its efforts to reduce food loss and waste, the Ministry of the Environment is promoting a campaign to encourage eating-out in restaurants and taking home any leftovers. To promote taking-home leftovers, the Ministry of the Environment co-organized with the Consumer Affairs Agency, the Ministry of Agriculture, Forestry and Fisheries, and the Doggie Bag Promotion Committee the “New Doggie Bag Idea Contest.” It was a public contest to find a more familiar name (in Japanese) for the act of taking any leftover food served in a restaurant. Of the 2,723 proposals received, the grand prize was awarded to “mottECO” as the new name for “taking home in a doggie bag.” A logo was created for the promotion. The term “mottECO” has a double meaning in Japanese of “Let's take it home!” and “More ecological.”



mottECO logomark

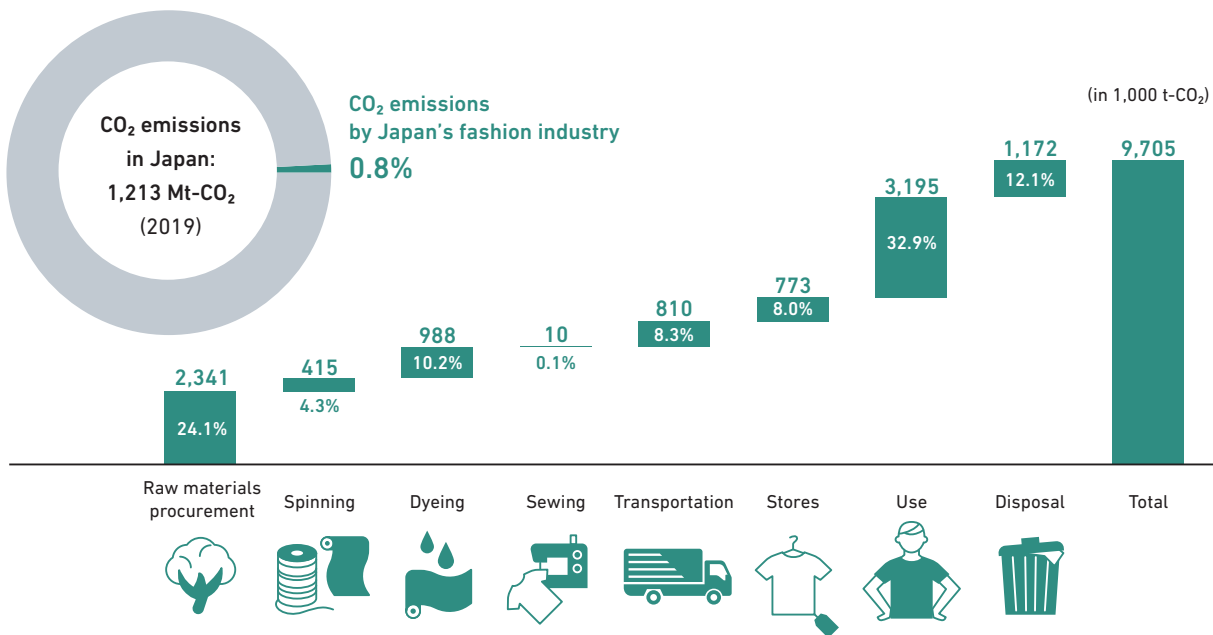
Source: Ministry of the Environment

Clothes

Of the global CO₂ emissions from clothing, the proportion of CO₂ emitted by apparel supplied to Japan is estimated to be 4.5%. In tonnage, it is estimated to be 95 million tons, 94.6% of which is attributable to upstream transportation. The amount of CO₂ emitted from clothing in Japan is estimated to be 9.7 million tons, or 0.8% of the total emissions in Japan.

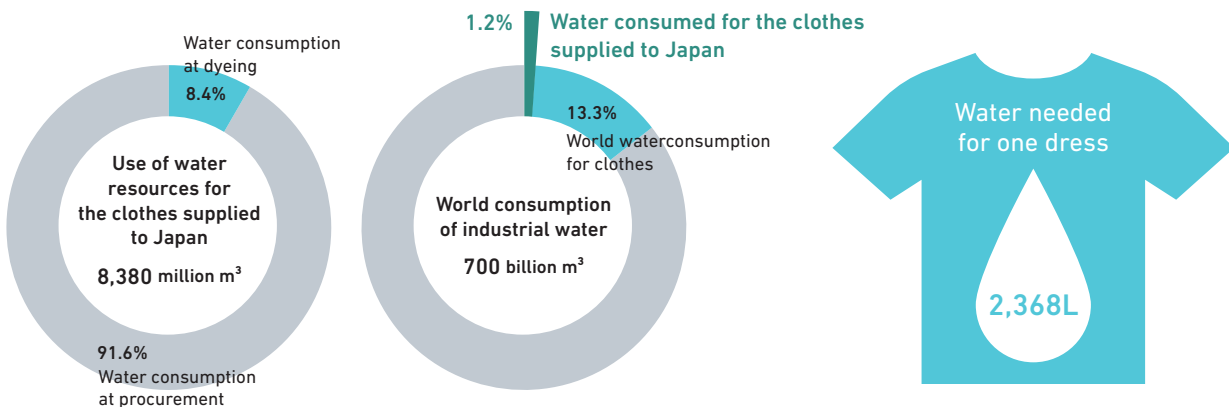
The water consumption for apparel supplied to Japan is estimated at 8.38 billion cubic meters, of which 91.6 % is said to be in the raw materials procurement stage. It is estimated that 9% of the water consumed by the fashion industry worldwide is consumed by apparel supplied to Japan. It is said that 2,368 liters of water is required to produce one dress.

Amount of CO₂ emitted in Japan out of the total CO₂ emissions associated with the clothes supplied to Japan



Source: The Japan Research Institute, Limited., based on McKinsey, "FASHION ON CLIMATE"; Ellen MacArthur Foundation, "A New Textiles Economy"; Pavan Godiawala, Noopur Anand, Jayantilal Mathurbhai Patel, "Sky-lighting: A solution to reducing energy consumption in Apparel Sector"; Trade Statics of Japan; Current Production Statistics, Fiber Handbook; Japan Textile Finishers' Association, "FY2019 Evaluation and Validation of the Low-Carbon Society Action Plan"; and other interviews.

Water consumption associated with the clothes supplied to Japan, and that of Japan's fashion industry



Note: For raw materials procurement, only natural fibers and animal fibers were counted. (Interviews revealed that 80% of chemical fibers do not require water and the remaining 20% is recycled in developing countries and elsewhere).

Source: The Japan Research Institute, Limited., based on M. M. Mekonnen and A. Y. Hoekstr., "The green, blue and grey water footprint of crops and derived crop products"; Fiber2Fashion.com. "Retail use of cotton"; Braaten, Ann W., "Wool"; in Steele, Valerie"; Jindawan W., Saowalak N., Pornpilai T., "Water footprint assessment of handwoven silk production"; Ministry of the Environment, "Water footprint calculation examples"; and Fiber Handbook

Clothing is said to have a heavy environmental impact all the way from production through use and disposal. The shift from “mass production, mass consumption, and mass disposal” to “optimal production, optimal purchase, circular use” is highly desired. When producers and consumers both work with creative ideas on their own, it becomes possible to shift to “sustainable fashion,” which is both appealing to the heart and helpful for environmental impact reduction.

On the part of the producers, efforts in this direction have begun. Environmental impact reduction efforts in production include the use of environmentally friendly cotton and recycled PET plastic bottles and the reduction of water consumption. In the product development stage, efforts are also underway, for example, fabrics that release few fiber fragments to prevent microplastic problems.

The industry has also started public education on environmental information by visualizing CO₂ emissions and other environmental impacts and labeling of sustainable materials. Hopefully, such efforts will be enhanced in the future.

Travel, traffic, and transportation

To reduce the environmental impact associated with travel, traffic, and transportation, the first thing we can do is to minimize the need for travel and the distance.

Therefore, it is important to choose a low-pollution, low-carbon means of transportation for daily use. By choosing to use public transportation, walking, or biking, everyone can help lower the intensity of the environmental impact caused by transportation.

To help realize “sustainable fashion,” consumers on their part can take actions to move to “optimal production, optimal purchase, circular use” of clothes. There are five such actions. Consumers can begin with one or two actions immediately.

- [1] Take good care of clothes, repair them, and wear them for a long time.
- [2] Enjoy fashion through hand-me-downs and trading secondhand clothes.
- [3] Choose a piece that can be worn for a long time.
- [4] Choose clothes made of environmentally friendly materials.
- [5] Put out your old clothes to store take-backs or community collection programs for material recycling.

Prime Minister Yoshihide Suga declared 100% electrification of new passenger cars sold in 2035. The “Green Growth Strategy through Achieving Carbon Neutrality in 2050” calls for innovations in batteries to promote the supply of EVs, FCVs, and other electrified vehicles.

3

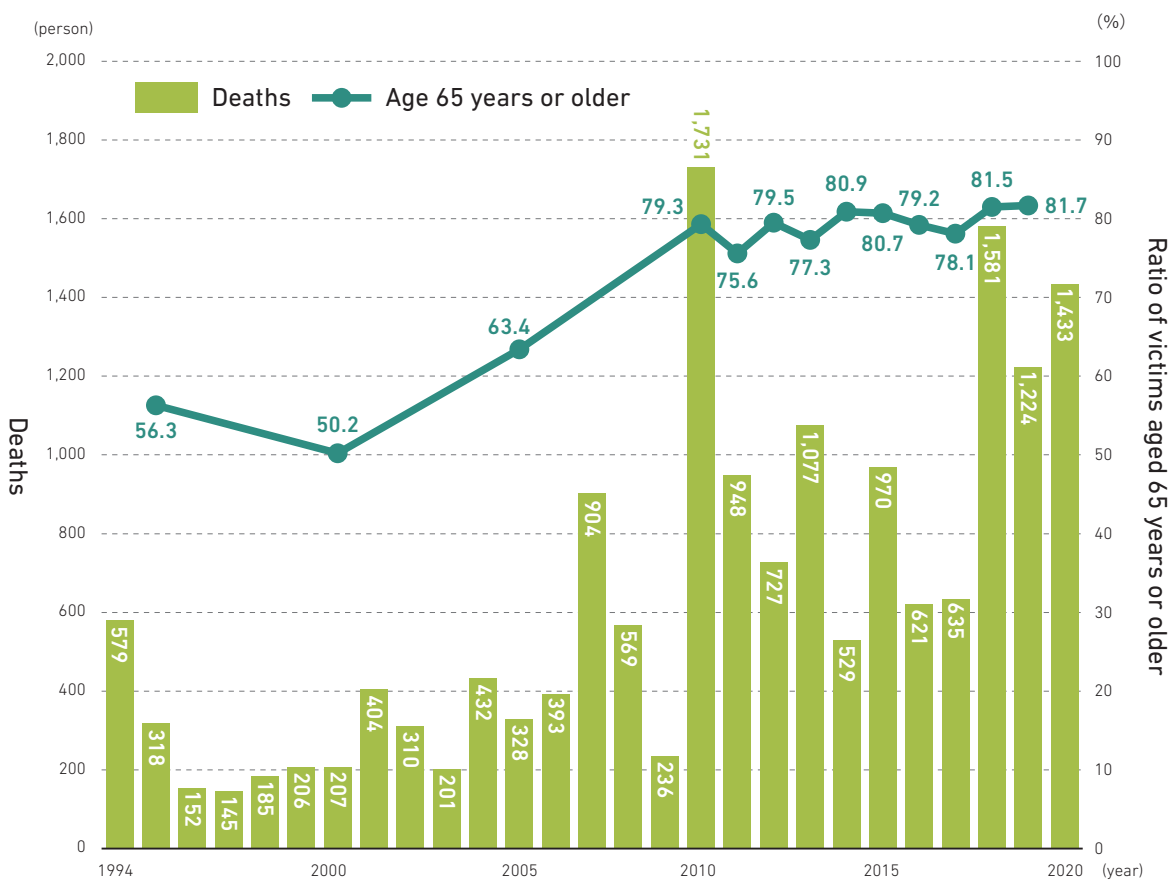
EFFORTS TO PROTECT PEOPLE'S HEALTH, A PREREQUISITE FOR SUSTAINABLE SOCIETY

For dynamic implementation of the redesign to a sustainable and resilient economy and society in the post-pandemic era through the above-mentioned transitions, it is essential to protect people's lives and health, and use the environment as a crosscutting base to support these transitions.

For example, some 65,000 people were transported to hospitals by ambulance in the months of June through September in 2020 due to heat illness, a phenomenon closely related to climate change. The estimated death toll amounted to 1,433, of which 80% were 65 years or older.

Although chemicals are essential in all aspects of our daily socioeconomic activities, there are lingering problems caused by their inappropriate use, such as industrial pollution incidents during Japan's high-growth period, and similar problems in other countries at the time of major socioeconomic change, leaving severe adverse effects on people, especially expecting mothers, elders, children, and other vulnerable population groups.

Yearly change of death toll by heat illness



Note: Numbers for 2020 are for June – September (preliminary)

Source: Ministry of the Environment, based on Ministry of Health, Labour and Welfare, "Vital Statistics"

Heat stroke alert

The Ministry of the Environment and the Japan Meteorological Agency together operate the nationwide “Heat Stroke Alert.” The alert is issued when a wet bulb globe temperature (WBGT) is forecast to hit 33 or higher within a day.

The announcement is made in the late afternoon the day before and the early morning of the day. The aim is to warn people of the danger of severe heat and lead them to take preventive actions.

Japan Environment and Children’s Study

Since fiscal 2010, the Ministry of the Environment has been conducting a nationwide survey of 100,000 parents–child pairs, the Japan Environment and Children’s Study (JECS). To date, 4.5 million biological samples have been

collected and chemically analyzed. In addition, information on the health conditions of children has been accumulated through questionnaires.

There were 176 academic papers published by survey outcome as at the end of May 2021.

Approach to the entire life cycle of chemicals, materials and products

To promote the chemicals management throughout the life cycle in line with the Strategic Approach to International Chemicals Management (SAICM), the Ministry of the Environment is considering linkage between ESG finance and the voluntary chemicals management efforts of producers and users. The industries concerned are proactively promoting their voluntary initiatives to carry out independent and highly sophisticated

risk assessment of their products and to establish schemes for proper transfer of chemical information throughout the supply chain. To assist these initiatives, the Ministry plans to be actively engaged in international discussions so that the successor framework of SAICM will also lead to the involvement of diverse actors associated with the entire life cycle of chemicals.

EFFORTS FOR RECONSTRUCTION AND ENVIRONMENTAL RESTORATION FROM THE GREAT EAST JAPAN EARTHQUAKE

On March 11, 2011, a magnitude 9.0 earthquake struck off the coast of Japan. It was the most powerful earthquake ever recorded around Japan. It generated a tsunami that caused massive damage across a wide swath of northeastern Japan, particularly along the Pacific coast. At the same time, accidents at the Tokyo Electric Power Company Fukushima Daiichi Nuclear Power Plant (TEPCO Fukushima Daiichi NPP) released a large volume of radioactive materials into the environment, forcing many residents to evacuate to other areas.

The following sections present the work that is being performed to reconstruct and revitalize the disaster areas.

4

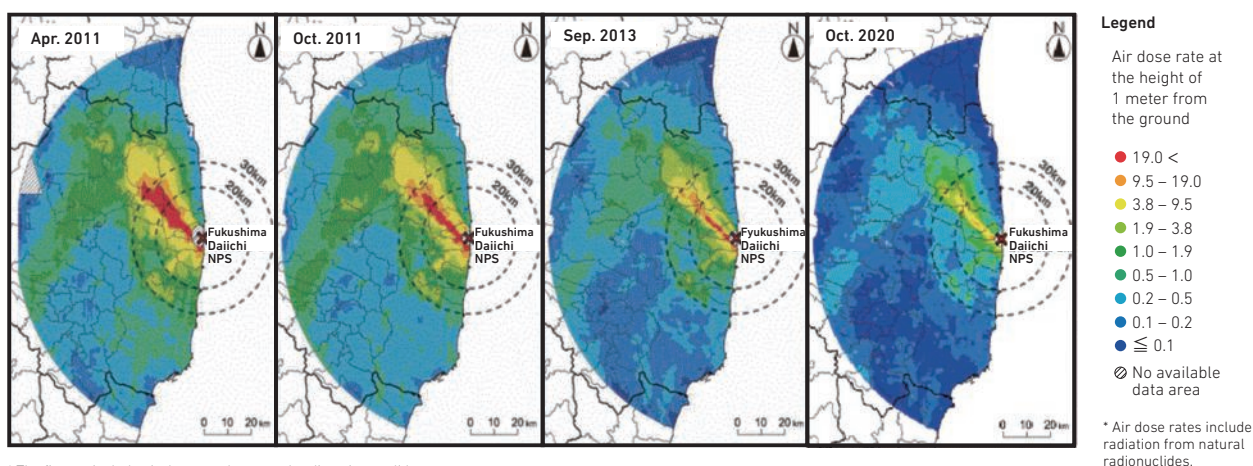
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AIR DOSE RATES

According to airborne monitoring data, as of October 2020, the air dose rate of radioactivity at a height of 1 m above the ground within the 80-km radius around the Fukushima Daiichi Nuclear Power Plant had declined by about 80% vs. the rate in November 2011. The radioactive materials released in the Fukushima Daiichi nuclear disaster included mainly iodine-131, cesium-134, and cesium-137, which have half-lives of about 8 days, about 2 years, and about 30 years, respectively. Considering the physical decay of the radioactive materials and expected attenuation by rainfall and

other natural causes, it was estimated that the amount of radiation vs. August 2011 would decline by about 40% after two years and about 50% after five years. The actual rate of decline in radiation is exceeding these estimates, probably due to decontamination work as well as rainfall and other natural phenomena.

Air dose rate distribution within 80 km radius of TEPCO Fukushima Daiichi Nuclear Power Plant



* The figures include air dose rate by natural radioactive nuclide.
Source: Nuclear Regulation Agency

2

INITIATIVES FOR ENVIRONMENTAL RESTORATION OF THE DISASTER STRICKEN AREAS

Measures such as decontamination of soil contaminated by radioactive materials

As mandated by law, by the end of March 2018, the national and local governments completed whole area decontamination of 100 cities, towns, and villages in eight prefectures, with the exception of the restricted area.

Communities in the restricted area have drawn up Plans for Specified Reconstruction and

Revitalization Base (SRRB), in accordance with the provisions of the Act on Special Measures for the Reconstruction and Revitalization of Fukushima, as amended in May 2017. Coordinated work being done under these plans includes the demolition of houses and other buildings, decontamination, and construction of infrastructure.

The Ministry of the Environment is carrying out decontamination and demolition work, in all SRRB: Futaba, Okuma, Namie, Tomioka, Iitate, and Katsurao. In March 2020, the evacuation

order was lifted for some areas of Futaba, Okuma, and Tomioka, close to the JR railroad station in the SRRB.

Establishment of the Interim Storage Facility

The Interim Storage Facility (ISF) has been built to safely and intensively store and manage until final disposal, both soil and waste removed in off-site decontamination work, as well as specified waste (radioactive waste that exceeds 100,000 Bq/kg*) in Fukushima Prefecture. A cumulative total volume of the soil and waste that had been transported to the ISF by the end of FY2020 was approximately 10.55 million m³. In continuation of this work, in accordance with the “Policy on the Interim Storage Facility Project in FY2021” announced in December 2020, the transportation of the removed soil and waste temporarily stored in Fukushima

Prefecture (except the restricted area) is expected to be mostly completed by the end of FY2021. At the same time, the transportation of the removed soil and waste from the SRRB has been carried out.

The necessary measures are to be taken so that the removed soil and waste in Fukushima Prefecture will be finally disposed of outside the prefecture within 30 years from the start of transfer to the ISF. The Ministry is promoting the development of volume reduction technologies and demonstration projects of removed soil recycling with the aim of reducing the final disposal volume of the removed soil.

Future-oriented initiatives directed toward the next stage of reconstruction

The Ministry of the Environment has launched the “Fukushima Regeneration/Future-oriented Project,” which aims to create and rediscover the strengths of the area from an environmental policy perspective. Based on a cooperation agreement with the prefectural government of Fukushima, the ministry is promoting an effective and

innovative package of measures, including industrial creation supported by recycling and other environmental protection technologies, upgraded utilization of natural parks and other natural resources, and decarbonized town development.

A row of cherry trees in Yonomori, Tomioka Town

The entire town of Tomioka, Fukushima Prefecture, was subjected to the evacuation order following the TEPCO Fukushima Daiichi NPP accident. Strenuous decontamination work led to the lifting of the evacuation order in 2017 for a large part of the town, but the northeastern part remained a restricted area.

A row of cherry trees in Yonomori has long been a symbol of Tomioka Town. Every spring before the disaster, people used to gather under the cherry trees for the Tomioka Town Cherry Blossoms Festival.

Thanks to the decontamination work, a gathering of the residents who were forced to evacuate to other areas was organized in 2017. Yosakoi dance was performed on the street for the first time in 7 years in 2017. In the following year, the Tomioka Town Cherry Blossoms Festival was resumed. The JR Yonomori Station was reopened on March 10, 2020,

and the evacuation order was lifted for some of the adjacent streets. From December 2020 to January 2021, an illumination event “YONOMORI Town Lights 2020” was held, and the street was illuminated by brightly colored lights.



Tomioka Town Cherry Blossom Festival

Source: Ministry of the Environment

Farming resumes in Kariyado area, Namie Town

The Ministry of the Environment has decontaminated approximately 8,700 ha of farmland. The Ministry of Agriculture, Forestry and Fisheries plays the central role in assisting farmers to resume agriculture in the decontaminated farmland. Resuming agricultural activity, however, is not easy after being away from it for so many years—the progress of resumption in communities formerly designated as Areas under Evacuation Orders is still at the halfway point.

The entire Namie Town was under “Evacuation Orders.” The about 350 residents of Kariyado area in the central part of Namie were forced to leave, and rice cultivation was abandoned for a long time.

As decontamination efforts for Namie progressed, the Evacuation Orders were lifted in March 2017 for Kariyado and other areas not designated as Restricted Areas. That year, some paddy rice seedlings were planted. In 2019, farmers in the neighborhood formed a farming management organization—“Kariyado Fureai Farm.” The entire community worked together to grow rice, managing to plant it in 3 ha of farmland in 2020.

The harvest was good, and radioactive cesium was not detected in total inspection of rice bags. A member of the organization says: “We would like to increase the cultivation area gradually, and in the future, change our status to an agricultural corporation to play a pivotal role in rice cultivation in this area.”



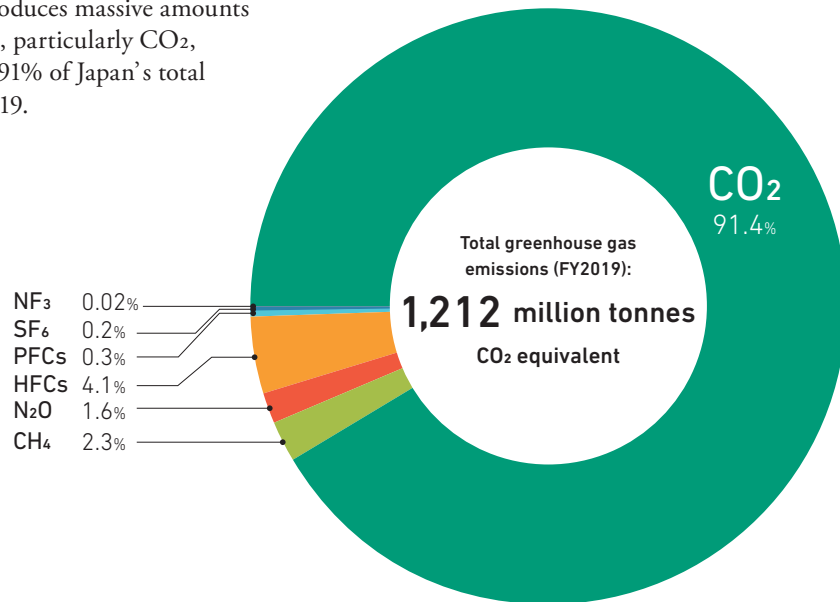
Harvesting rice in Kariyado area, Namie Town.

Source: Ministry of the Environment

ADDITIONAL MATERIALS FROM THE 2021 ANNUAL REPORT ON THE ENVIRONMENT

Breakdown of Greenhouse Gas Emissions in Japan (FY2019)

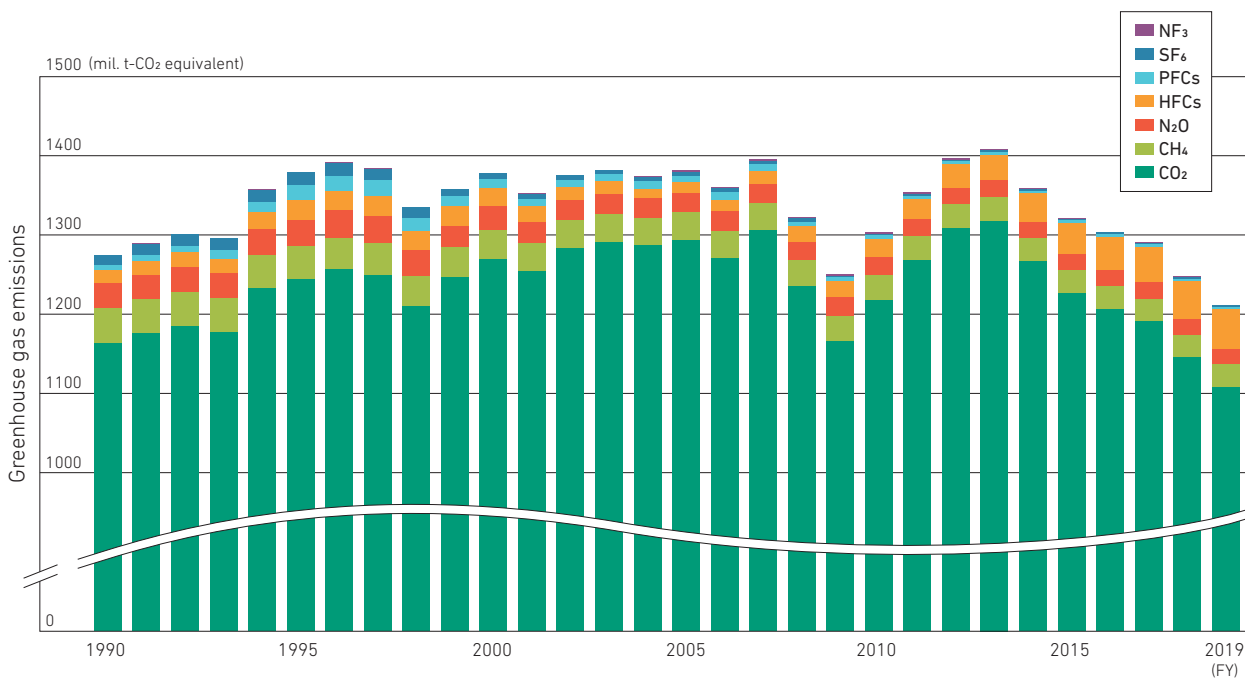
Globally, fossil fuel combustion produces massive amounts of anthropogenic greenhouse gases, particularly CO₂, which accounts for approximately 91% of Japan's total greenhouse gas emissions in FY 2019.



Source: Ministry of the Environment

Greenhouse Gas Emissions in Japan

Japan's total greenhouse gas emissions in FY 2019 were equivalent to approximately 1,212 million tonnes of CO₂, a 2.9% drop from the previous year. Two main factors for the decrease are the decrease in energy consumption due to reduced production in manufacturing industries, and the increase in the share of renewable energy within electricity supply.



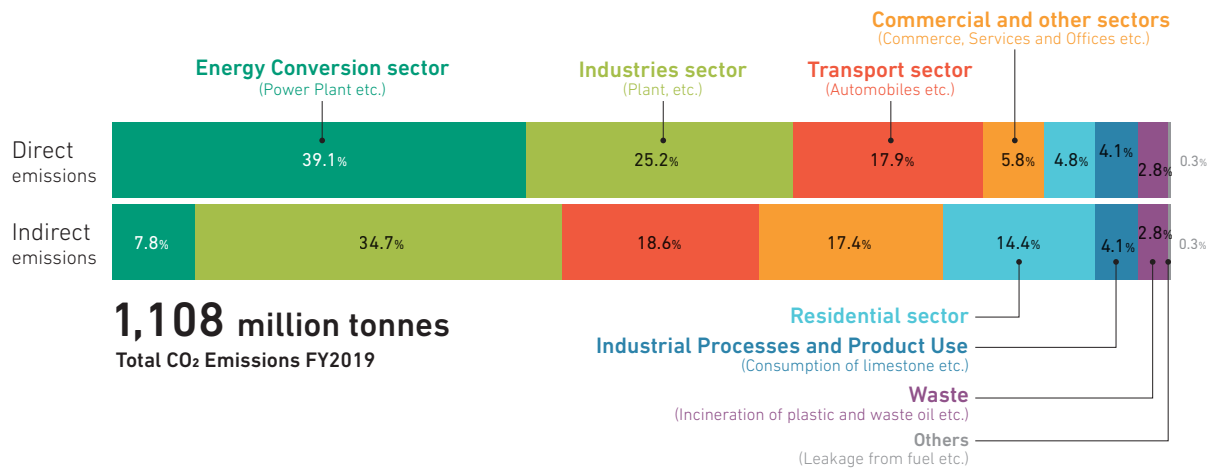
Source: Ministry of the Environment

GHG Emissions in Japan

Additional materials provide more details about the GHG Emissions in Japan.

Breakdown of CO₂ Emissions by Sector

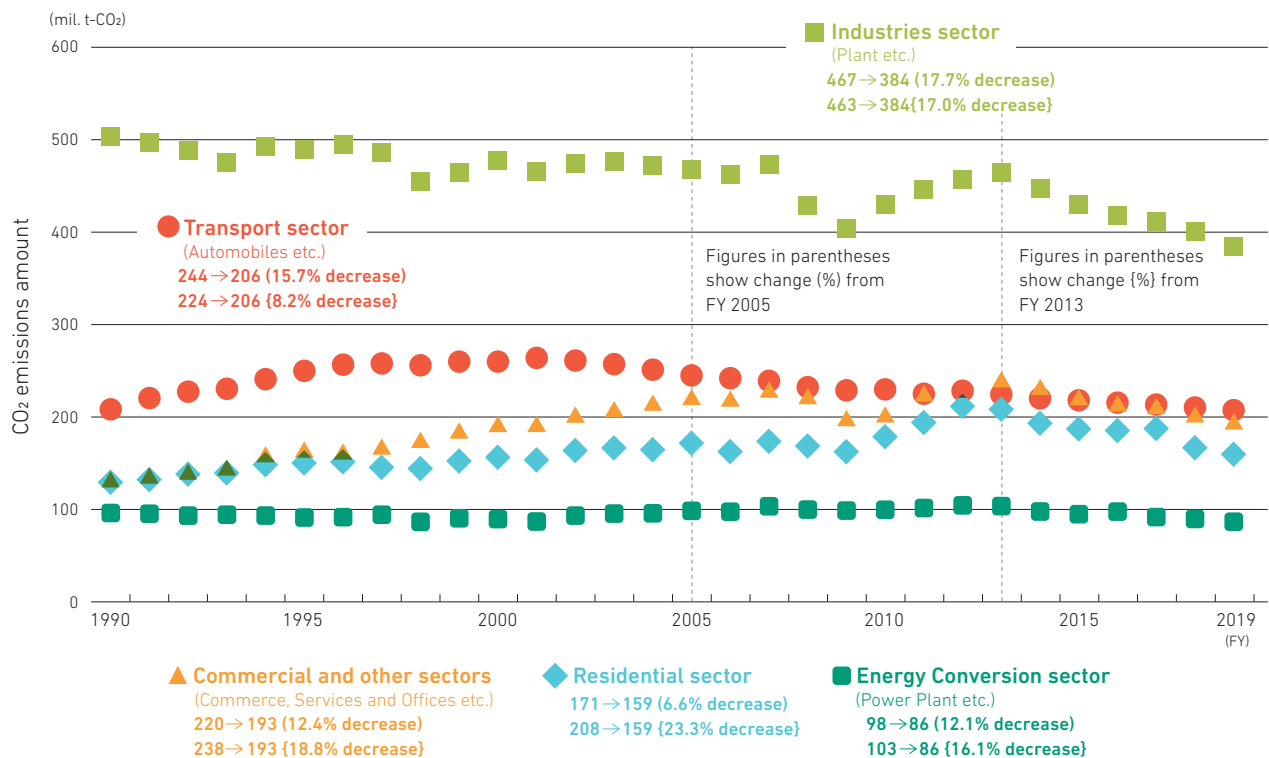
The sector with the largest CO₂ emissions in indirect emissions in FY 2019 was industries sector, accounting for approximately 34.7% of Japan's total.



Source: Ministry of the Environment

Energy-related CO₂ Emissions by Sector (Indirect Emissions)

Plotting energy-related CO₂ emissions by sector reveals that emissions in every sector decreased from FY 2013.



Source: Ministry of the Environment

ADDITIONAL MATERIALS FROM THE 2021 ANNUAL REPORT ON THE ENVIRONMENT

Threatened Species in Japan

With an increasing number of species being put on the Red List, which publicizes threatened species, it is clear that the circumstances of wild fauna and flora in Japan continue to be severe.

(Reported in March 2020)

Taxon	Species Targeted for Evaluation	Extinct EX	Extinct in the Wild EW	Threatened Species			Near Threatened NT	Data Deficient DD	Total of listed species	Endangered Local Population LP	
				Endangered Class I		Endangered Class II VU					
				Class IA CR	Class IB EN						
Fauna	Mammals	160 (160)	7 (7)	0 (0)	34(33)			17 (18)	5 (5)	63 (63)	26 (23)
					25(24)		9(9)				
					12(12)	13(12)					
	Birds	Approx. 700 (Approx. 700)	15 (15)	0 (0)	98(98)			22 (21)	17 (17)	152 (151)	2 (2)
					55(55)		43(43)				
					24(24)	31(31)					
	Reptiles	100 (100)	0 (0)	0 (0)	37(37)			17 (17)	3 (4)	57 (58)	5 (5)
					14(14)		23(23)				
					5(5)	9(9)					
Amphibians	91 (76)	0 (0)	0 (0)	47(29)			19 (22)	1 (1)	67 (52)	0 (0)	
				25(17)		22(12)					
				5(4)	20(13)						
Brackish water and freshwater fish	Approx. 400 (Approx. 400)	3 (3)	1 (1)	169(169)			35 (35)	37 (37)	245 (245)	15 (15)	
				125(125)		44(44)					
				71(71)	54(54)						
Insects	Approx. 32,000 (Approx. 32,000)	4 (4)	0 (0)	367(363)			351 (350)	153 (153)	875 (870)	2 (2)	
				182(177)		185(186)					
				75(71)	107(106)						
Shellfish	Approx. 3,200 (Approx. 3,200)	19 (19)	0 (0)	629(616)			440 (445)	89 (89)	1177 (1169)	13 (13)	
				301(288)		328(328)					
				39(33)	28(16)						
Other invertebrates	Approx. 5,300 (Approx. 5,300)	1 (0)	0 (0)	65(65)			42 (42)	44 (44)	152 (151)	0 (0)	
				22(22)		43(43)					
				0(0)	2(2)						
Subtotal of Fauna		49 (48)	1 (1)	1446(1410)			943 (950)	349 (350)	2787 (2759)	63 (60)	
				749(722)		697(688)					
Flora	Vascular plants	Approx. 7,000 (Approx. 7,000)	28 (28)	11 (11)	1790(1786)			297 (297)	37 (37)	2163 (2159)	0 (0)
					1049(1045)		741(741)				
					529(525)	520(520)					
	Bryophytes	Approx. 1,800 (Approx. 1,800)	0 (0)	0 (0)	240(241)			21 (21)	21 (21)	282 (283)	0 (0)
					137(138)		103(103)				
	Algae	Approx. 3,000 (Approx. 3,000)	4 (4)	1 (1)	116(116)			41 (41)	40 (40)	202 (202)	0 (0)
					95(95)		21(21)				
Lichens	Approx. 1,600 (Approx. 1,600)	4 (4)	0 (0)	63(61)			41 (41)	46 (46)	154 (152)	0 (0)	
				43(41)		20(20)					
Fungi	Approx. 3,000 (Approx. 3,000)	25 (26)	1 (1)	61(62)			21 (21)	51 (50)	159 (160)	0 (0)	
				37(39)		24(23)					
Subtotal of Flora		61 (62)	13 (13)	2270(2266)			421 (421)	195 (194)	2961 (2956)	0 (0)	
				1361(1358)		909(908)					
Total of thirteen taxonomic groups		110 (110)	14 (14)	3716(3676)			1364 (1371)	544 (544)	5748 (5715)	63 (60)	
				2110(2080)		1606(1596)					

* Numerals within parentheses indicate the respective numbers of species (including subspecies, variety (only for flora) and form (only for algae and fungi)) from the Red List 2019. The numbers in the LP column are the numbers of local population. ** The number of species excluding those that cannot be evaluated by the naked eye.

The categories are considered as follows:

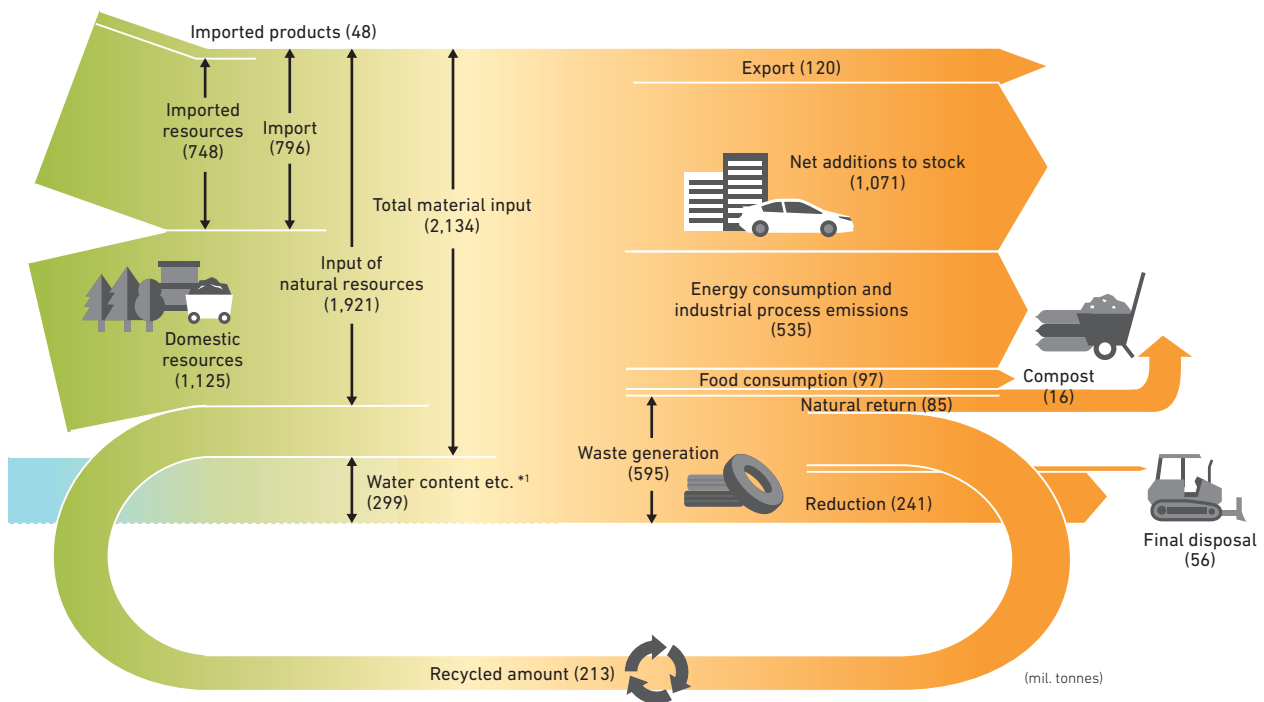
Extinct [EX]: Species that are likely to already be extinct / Extinct in the Wild [EW]: Species that exist only in captivity or as a naturalized population outside its natural habitat / Endangered Class I (Critically Endangered + Endangered) [CR+EN]: Species that are threatened to extinction / Endangered Class I A (Critically Endangered) [CR]: Species that are facing an extremely high risk of extinction in the wild in the near future / Endangered Class I B (Endangered) [EN]: Species that are facing a high risk of extinction in the wild in the near future / Endangered Class II (Vulnerable) [VU]: Species with and increasing risk of extinction / Near Threatened [NT]: Species that are not currently endangered, but may possibly qualify for "endangered" status with changes in their habitat conditions / Data Deficient [DD]: Species with data insufficient for adequate evaluation / Endangered Local Population [LP]: Species with a population isolated regionally, and face a high risk of extinction

ADDITIONAL MATERIALS FROM THE 2021 ANNUAL REPORT ON THE ENVIRONMENT

Material Flow in Japan

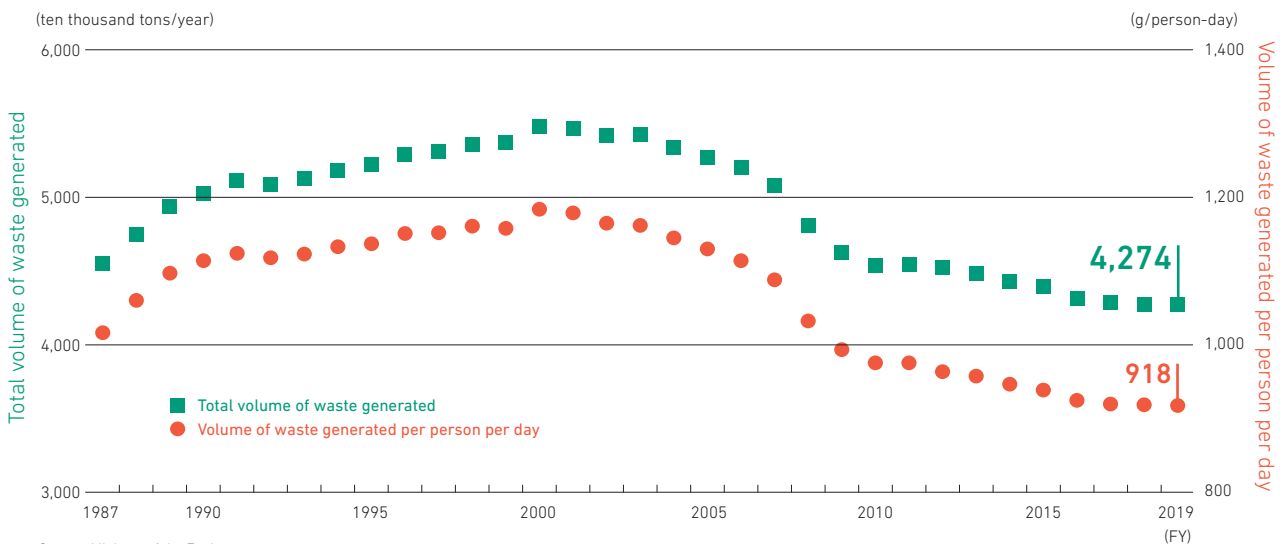
In order to establish a sound material-cycle society, it is necessary to comprehend material flows (or substance flows) to understand the extent of material extraction, consumption, and disposal in Japan. Japan uses material flows to determine targets for the four indicators of resource productivity, cyclical use rate(resource base), cyclical use rate (waste base), and final disposal amount.

FY2000 (for reference)



Total Volume of Waste Generation and Waste Volume Per Person Per Day

Total generated waste and waste generated per person per day are declining year by year.

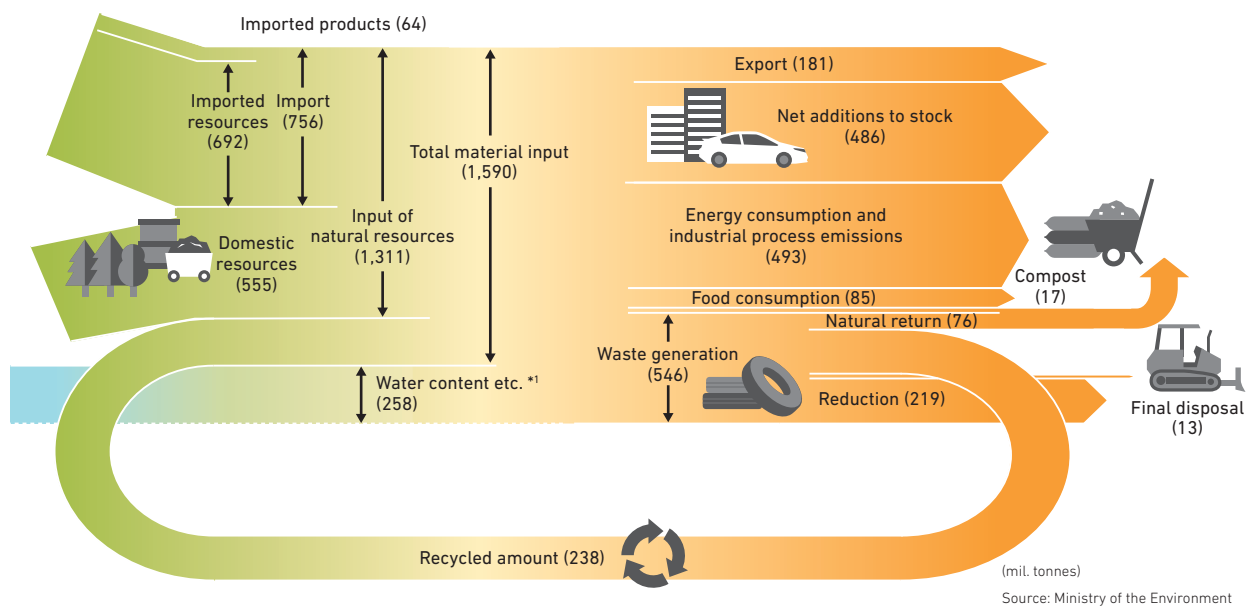


Sound material-cycle society

Additional materials provide more information about current efforts to form a sound material-cycle society.

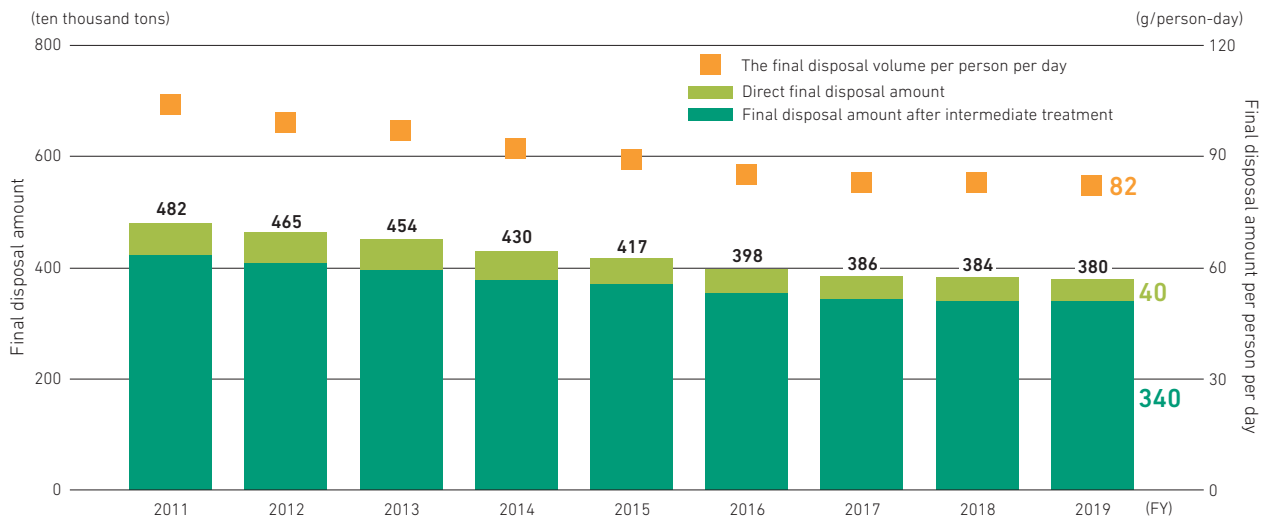
*1 Water content: water contents of wastes (sludge, livestock waste, night soil, waste acid, waste alkali) and sediments dumped in association with the process of economic activities (sludge in mining, construction and in waterworks as well as slag)

FY2018



Final Disposal Amount and Final Disposal Amount Per Person

Final disposal amount of waste and final disposal amount per person per day are trending downwards.



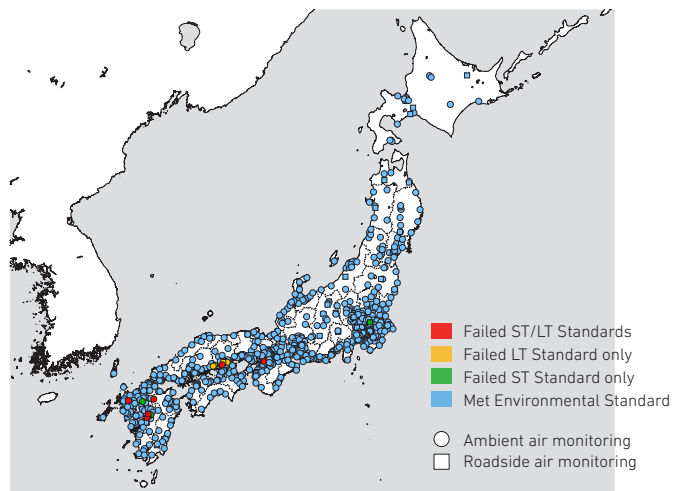
ADDITIONAL MATERIALS FROM THE 2021 ANNUAL REPORT ON THE ENVIRONMENT

Fine particulate matter

In FY2019, the rate of compliance with ambient air quality standards for fine particulate matter (PM 2.5) was 98.7% for ambient air pollution monitoring stations and 98.3% for roadside air pollution monitoring stations throughout Japan. The annual average was 9.8 $\mu\text{g}/\text{m}^3$ for ambient air pollution monitoring stations and 10.4 $\mu\text{g}/\text{m}^3$ for roadside air pollution monitoring stations. By region, the rate of compliance with environmental standards remains lower in mainly urban areas of the Kanto and Kansai regions, in parts of the Chugoku and Shikoku regions that face the Inland Sea, and in Kyushu.

Fiscal year	2014	2015	2016	2017	2018	2019
No. of vaild stations						
Ambient	672	765	785	814	818	835
Roadside	198	219	223	224	232	238
No. of vaild stations compliant with ambient air quality standards						
Ambient	254	570	696	732	765	824
	37.8%	74.5%	88.7%	89.9%	93.5%	98.7%
Roadside	51	128	197	193	216	234
	25.8%	58.4%	88.3%	86.2%	93.1%	98.3%

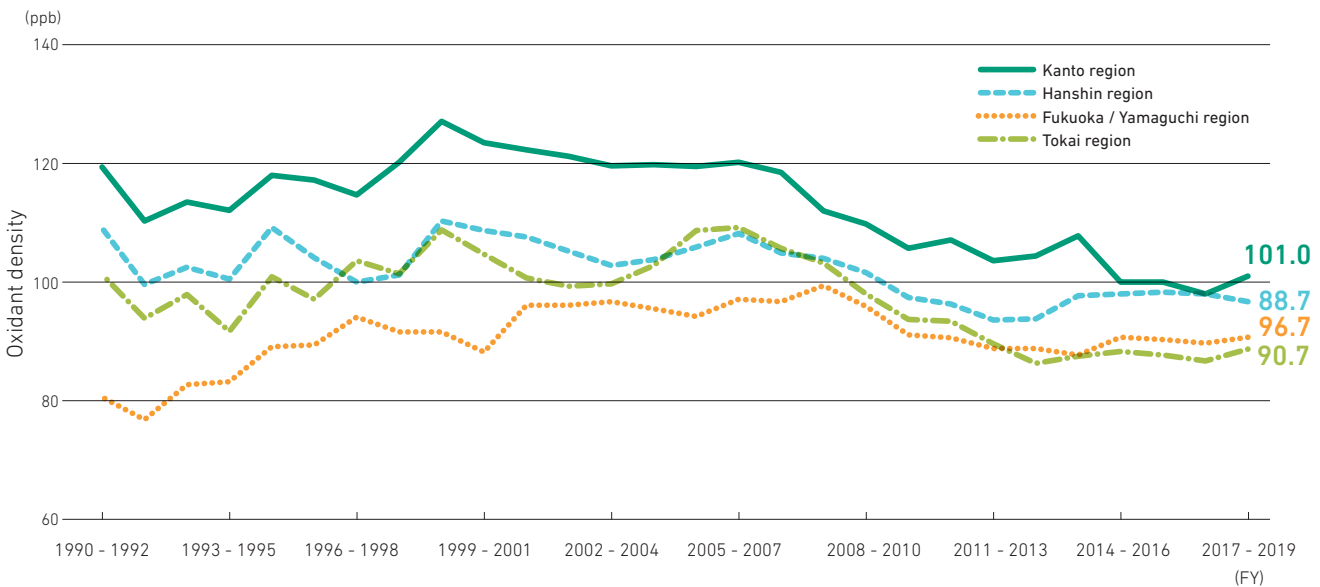
Source: Ministry of the Environment



Source: Ministry of the Environment

Photochemical oxidants

Photochemical oxidant densities (the highest value within a region of the 3-year average of the 99th percentile values of highest 8-hour daily values) had been tending to decline since around FY2006 to FY2008, but in recent years they have tended to be almost flat.



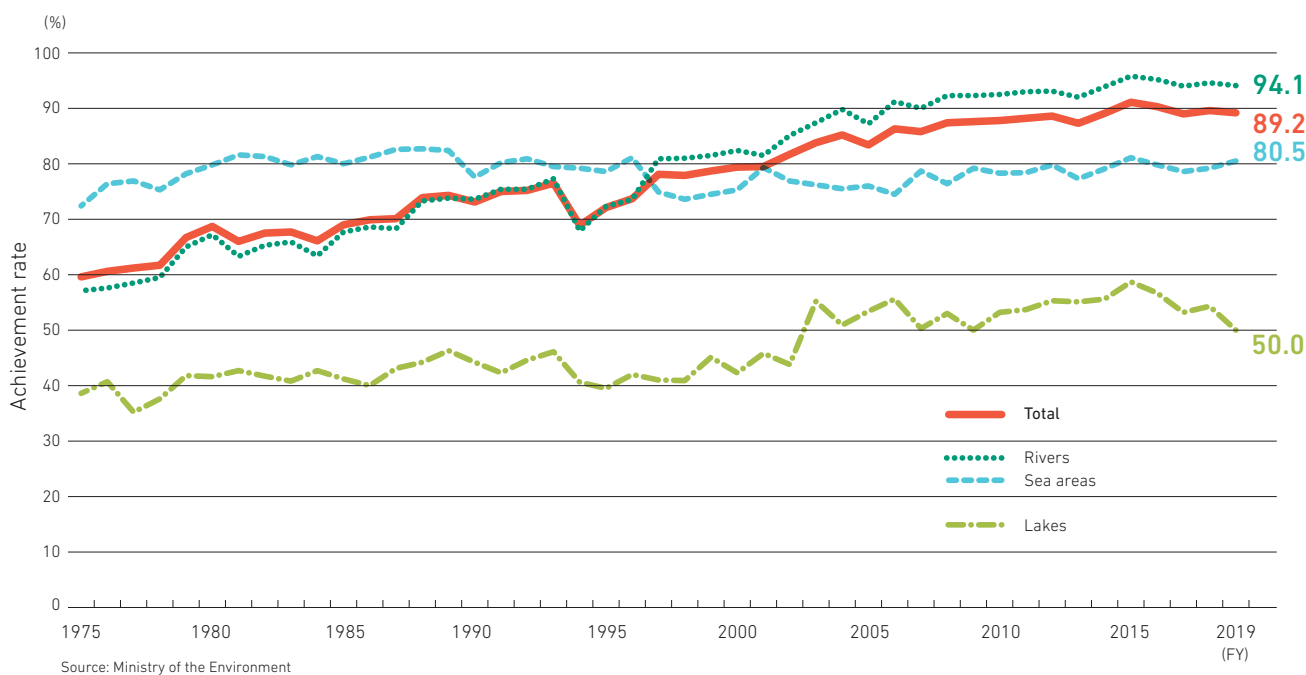
Source: Ministry of the Environment

Atmospheric and water environments

Additional materials provide more information about atmospheric and water environments.

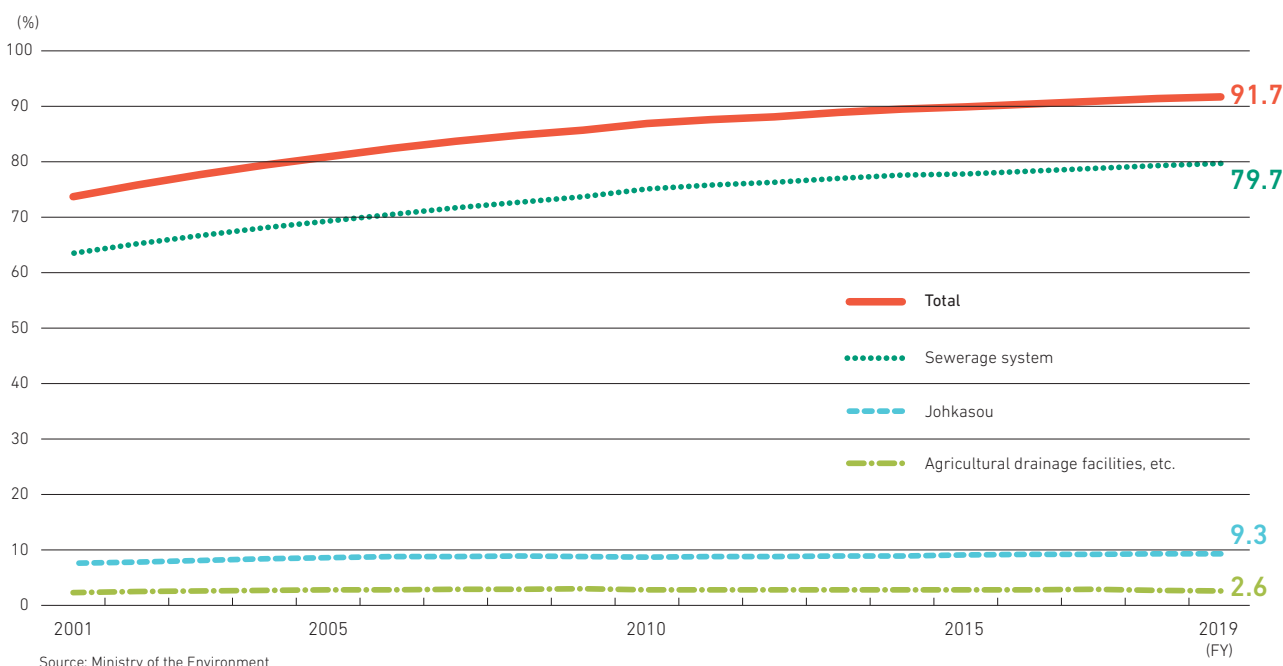
Achievement of Environmental Standards (BOD or COD)

An overall level of 89.2% has been achieved for the biochemical oxygen demand (BOD) and chemical oxygen demand (COD) environmental standards relating to the maintenance of living environments. BOD and COD are leading indicators of water quality in respect of organic pollution.



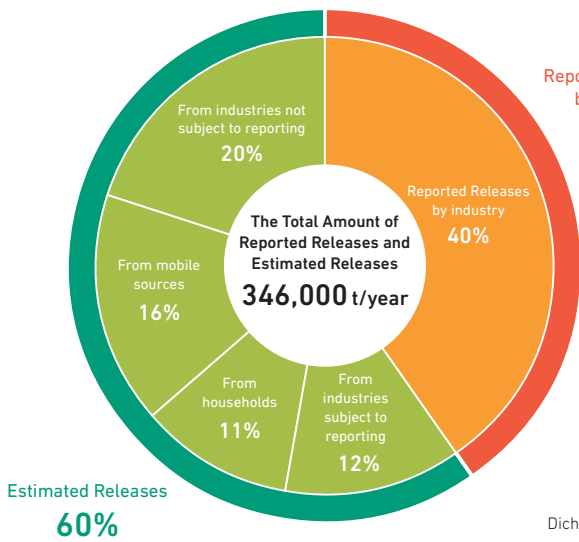
Coverage of Population Served by Wastewater Treatment System

The population coverage of wastewater treatment systems in Japan is 91.7%. Wastewater treatment facilities are being installed to cover the population not yet served by the wastewater treatment systems.



ADDITIONAL MATERIALS FROM THE 2021 ANNUAL REPORT ON THE ENVIRONMENT

Breakdown of Reported Releases by Industry and Estimated Releases of Chemical Substances in FY 2019

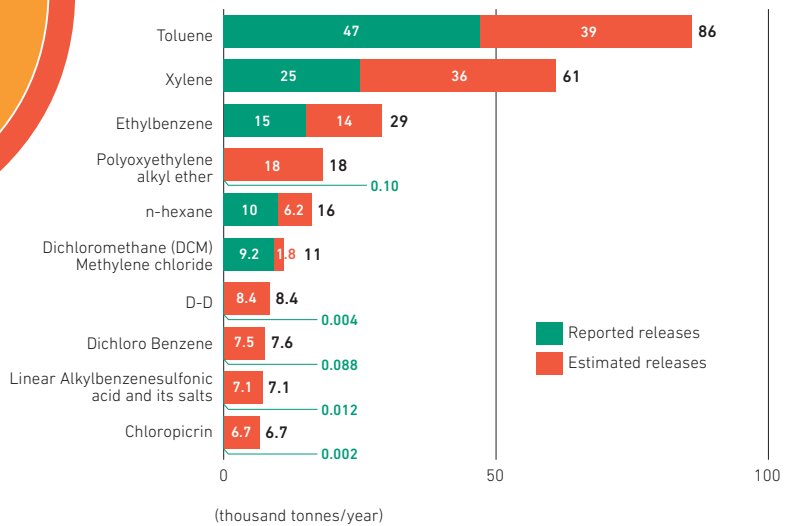


Notes: The reported releases are from the business entities categorized as subjected to reporting. Releases are estimated for businesses that do not meet the reporting requirements, such as number of employees, annual handling quantity, etc., and are exempted from reporting.

Source: Ministry of Economy, Trade and Industry and Ministry of the Environment

Reported Releases by industry
40%

Top 10 Chemicals with High-volume of Reported Releases and Estimated Releases (FY 2019)



Source: Ministry of Economy, Trade and Industry and Ministry of the Environment

In March 2021, the government compiled data reported from businesses concerned on release and transfer of chemical substances complying with the Act on Confirmation, etc. of Release Amounts of Specific Chemical Substances in the Environment and Promotion of Improvements to the Management Thereof (PRTR Law). Releases that were not subject to reporting were estimated.



Sanriku Fukko (Reconstruction) National Park

The Sanriku Fukko (Reconstruction) National Park was created in May 2013 to contribute to the reconstruction of the Sanriku coastal region that was devastated by the Great East Japan Earthquake of March 11, 2011. The park extends approximately 250 km in the north-south direction. Its northern portion is known as “Alps by the Sea” because of its dynamic cliffs, while the southern portion is topographically characterized by an elegant ria coastline formed by numerous capes and bays.

The coast is home to a diverse collection of maritime plants that have adapted to the unique environment; moreover, visitors can observe wildlife up-close. In the shallow waters, eelgrass beds and seaweed beds have formed, supporting the area’s biological diversity. The cover photo shows the precipitous cliffs of Kitayamazaki area in Tanohata Village, Iwate Prefecture, a leading dynamic scenic spot of the park. The dense fog is a result of Yamase, the cool and humid easterly wind typical of Tohoku Region in summer.

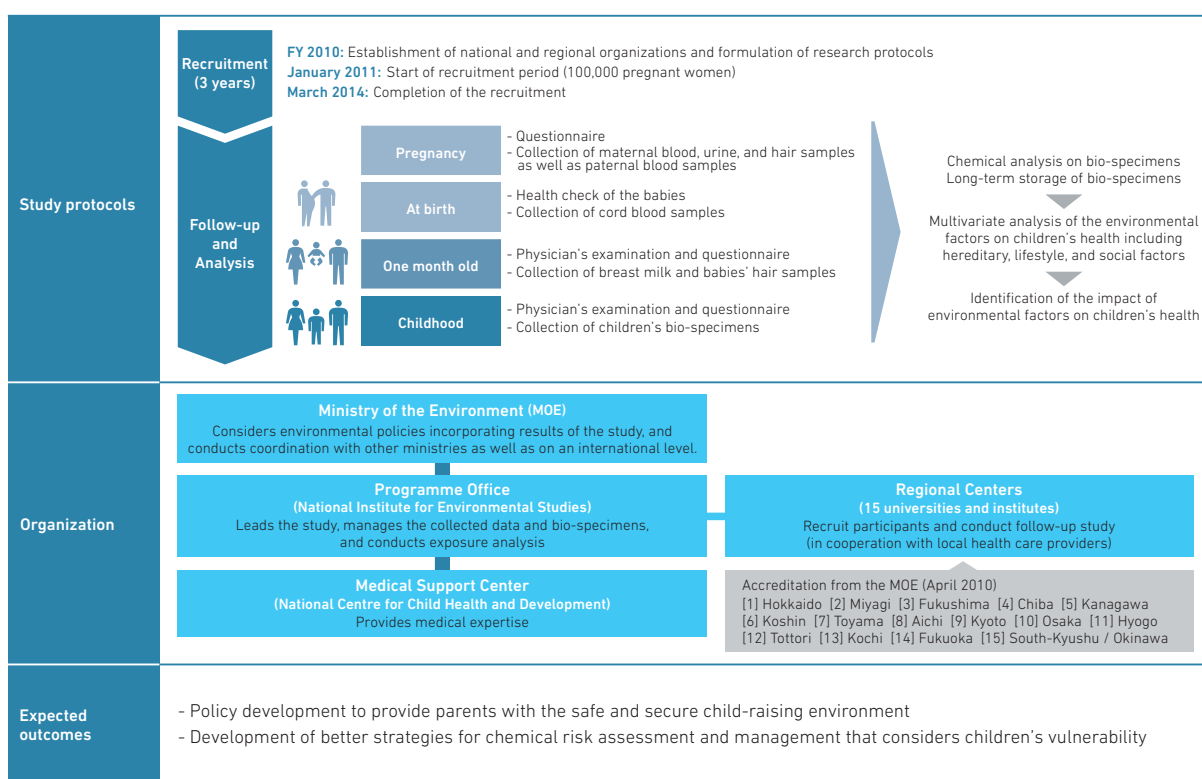
Environmental risks of chemicals

The following data provides information on action regarding chemical substance emissions into the environment and initiatives for children's environmental health.

The Japan Environment and Children's Study (JECS)

The Japan Environment and Children's Study (JECS), a large-scale, long-term national birth cohort study involving 100,000 mother-child pairs, was launched in FY 2010. The Sub-cohort study, which includes home visits for environmental measurements, medical examinations and children's bio-specimen collection, began in November 2014, involving 5,000 participants selected from the Main Study.

JECS is a large-scale, long-term prospective cohort study to examine the impact of the exposure to chemical substances during pregnancy and childhood on children's health.



Source: Ministry of the Environment



Black-tailed gull

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