



Ministry of the Environment

ANNUAL REPORT

ON THE ENVIRONMENT
IN JAPAN 2022



TABLE OF CONTENTS



1 A MULTIFACETED APPROACH OF DECARBONIZATION, CIRCULAR ECONOMY, DECENTRALIZATION AND HARMONY WITH NATURE — 03

- 1 FY 2030 targets — 04
- 2 Approach from the perspective of decarbonization — 06
- 3 Approach from the perspective of circular economy — 10
- 4 Approach from the perspective of decentralization and harmony with nature — 12



2 LOCAL COMMUNITIES AND LIFESTYLES WHICH WE CAN MAKE SUSTAINABLE — 14

- 1 Further development of the Circular and Ecological Economy — 15
- 2 Lifestyle change for the realization of a green society — 18
- 3 Efforts to protect public health, which is the foundation of a sustainable society — 21



3 EFFORTS FOR RECONSTRUCTION AND REVITALIZATION AFTER THE GREAT EAST JAPAN EARTHQUAKE AND THE NUCLEAR POWER PLANT ACCIDENT — 22

- 1 Status of environmental restoration from radioactive contamination — 23
- 2 Initiatives for restoring the environment in the affected areas — 23
- 3 Promotion of risk communication related to radiation health effects — 25

ADDITIONAL MATERIALS

- GHG Emissions in Japan — 26
- Biodiversity — 28
- Sound material-cycle society — 30
- Atmospheric and water environments — 32
- Environmental risks of chemicals — 34

A MULTIFACETED APPROACH OF DECARBONIZATION, CIRCULAR ECONOMY, DECENTRALIZATION AND HARMONY WITH NATURE

As well as declaring its goal of reducing its greenhouse gas emissions to net-zero by 2050, Japan declared that it aims to reduce its greenhouse gas emissions by 46% in FY 2030 from its FY2013 levels, furthermore, it will continue strenuous efforts in its challenge to meet the lofty goal of cutting its emissions by 50%.

Taking on this challenge requires more than merely an extension of what has already been done thus far; it is necessary to provide further support for the efforts of all entities and implement lifestyle changes in order to bring about a transformation in the behavior of each citizen and society as a whole. Furthermore, by utilizing digital transformation (DX) and other initiatives, we will continue to work on the Sustainable Development Goals (SDGs) with a multifaceted approach of decarbonization, circular economy, and decentralization and harmony with nature, with the aim of creating a green society in which we and future generations can live with peace of mind.

1

1 FY 2030 TARGETS

Changing our Local Communities and Lifestyles for the Realization of a Green Society

As Japan works toward reducing its greenhouse gas emissions to net-zero by 2050, it aims to reduce its greenhouse gas emissions by 46% in FY 2030 from its FY2013 levels, furthermore, it will continue strenuous efforts in its challenge to meet the lofty goal of cutting its emissions by 50%, and thus, the 10-year period leading up to 2030 is regarded as the “critical decade.”

Japan has also set goals for 2030 for activities such as biodiversity conservation and resource recycling, which are closely related to climate change. Now is the time for government, businesses, and each and every citizen to confirm and share these goals for 2030, and to work toward achieving them by taking collective action that goes beyond the mere extension of what we have done so far.

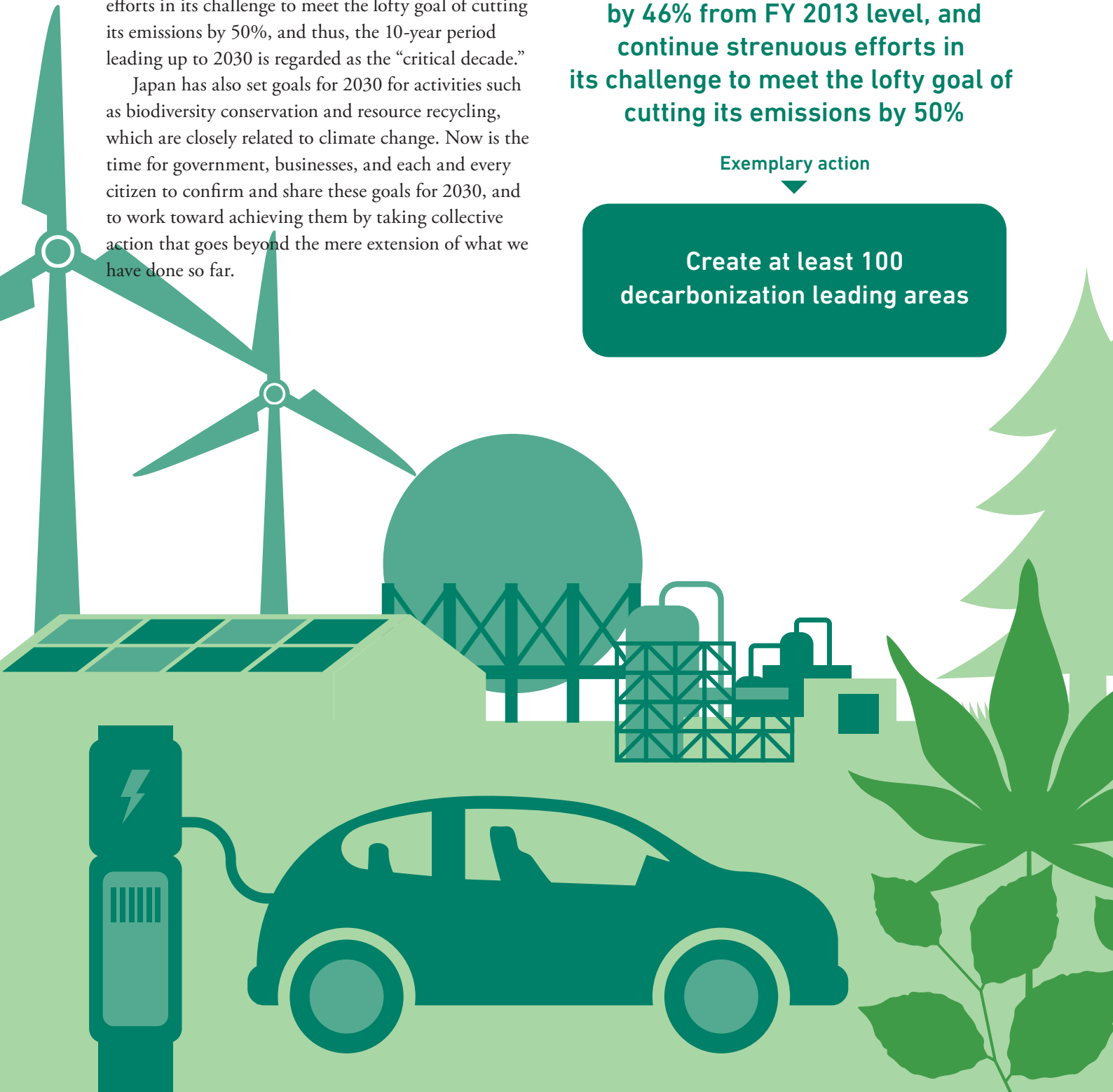
Decarbonization

46 %
reduction

Reduce greenhouse gas emissions by 46% from FY 2013 level, and continue strenuous efforts in its challenge to meet the lofty goal of cutting its emissions by 50%

Exemplary action

Create at least 100 decarbonization leading areas



Harmony with nature

30 by 30

Conserve at least 30%
of land and sea

Exemplary action



Expand protected areas such as
national parks and improve
quality of management

Certify at least 100 sites where
biodiversity conservation is being
promoted through private-sector
initiatives by the end of 2023

Resource recycling

At least **80** trillion
yen

Aim for a market size of
80 trillion yen or
more for businesses related
to circular economy

Exemplary action

Halve the amount of food loss
and waste compared to FY 2000

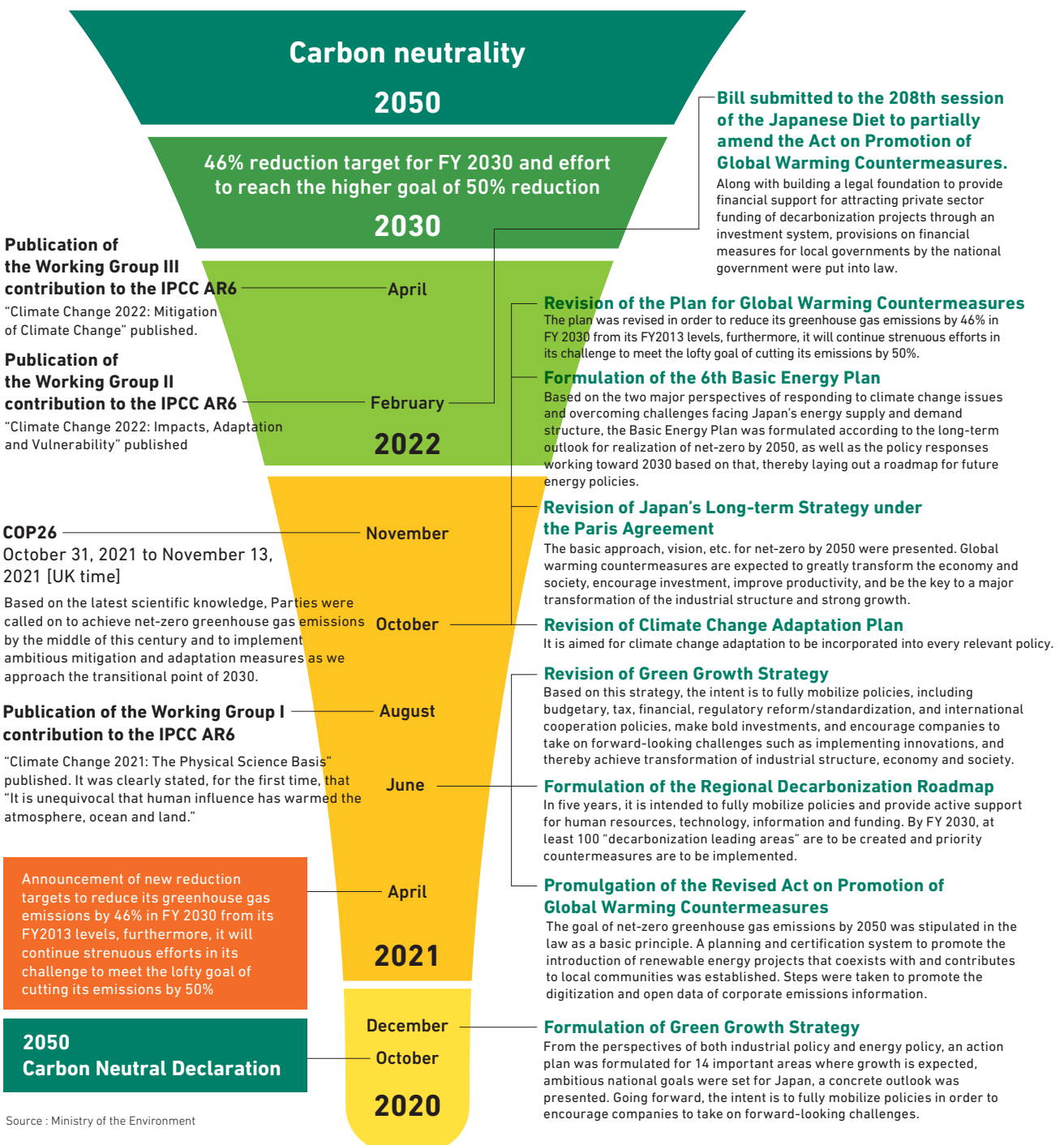


2 APPROACH FROM THE PERSPECTIVE OF DECARBONIZATION

Acceleration of Policies

Japan has already taken various measures toward decarbonization. In light of the recent major movement toward net-zero greenhouse gas emissions around the world, Japan has now declared that it will aim to reduce greenhouse gas emissions to net-zero by 2050 and has raised its goal for reducing greenhouse gas emissions by 2030. In order to realize these goals, further acceleration of measures is essential. Japan has been accelerating its efforts. In FY2021, Japan amended the Act on Promotion of Global Warming Countermeasures (Act No. 117 of 1998) and formulated Regional Decarbonization Roadmap.

Alteration of laws, strategies, plans, etc. related to climate change and decarbonization

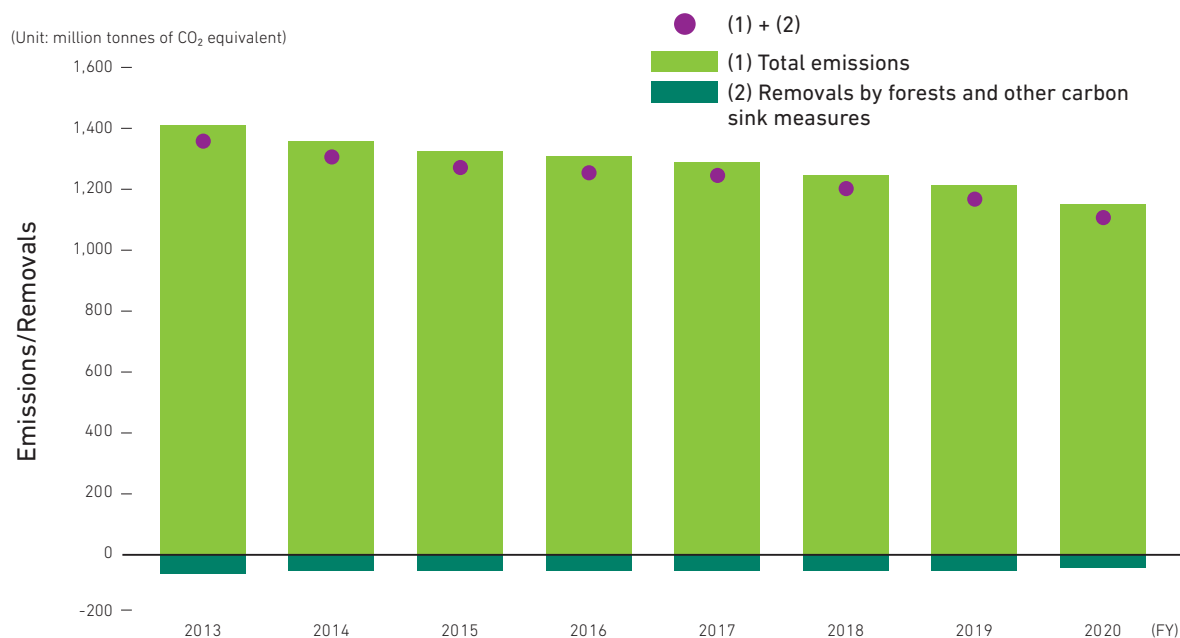


Source : Ministry of the Environment

Japan's greenhouse gas emissions

Japan's total greenhouse gas emissions in FY 2020 (final figures) were 1,150 million tonnes of carbon dioxide equivalent (Mt CO₂ eq.), and the amount has been decreasing for seven consecutive years since FY 2014. Factors behind this include a decrease in energy consumption (energy efficiency, etc.) and a shift to low-carbon electricity (expansion of renewable energy, restarting of nuclear power plants), etc. Moreover, compared to the total emissions of the previous fiscal year (1,212 Mt CO₂ eq.), the amount decreased by 5.1% (62 Mt CO₂ eq.), and a possible reason for this is the decrease in energy consumption due to the COVID-19 pandemic. The amount of CO₂ absorbed by forests and other carbon sinks in FY 2020 was approximately 44.5 Mt CO₂ eq. Excluding this amount, the amount of CO₂ emissions was 1,106 Mt CO₂ eq., which is a 21.5% reduction compared to the total emissions for FY 2013 (1,409 Mt CO₂ eq.).

Japan's greenhouse gas emissions, which have been declining for 7 years straight



Source: Ministry of the Environment

Simultaneous realization of renewable energy as a main power source and decarbonization of transportation

Because electric vehicles (EVs) and fuel cell vehicles (FCVs) [1] can simultaneously achieve decarbonization of the transportation sector and establishment of renewable energy as a main power source while acting as mobile storage batteries, [2] have batteries that can be reused, and [3] can supply electricity in the event of a disaster and act as components of decentralized and self-reliant energy systems, these vehicles are a key to promoting decarbonization, circular economy, and decentralization in an integrated manner.

In addition, Japan is supporting the construction of a decarbonized regional transportation model designed to meet new lifestyles by utilizing EV sharing services, and providing support for building decentralized and self-reliant energy systems with the aim of simultaneously realizing renewable energy as a main power source and strengthening system resilience through the combination of local renewable energy and use of EVs as mobile storage batteries.

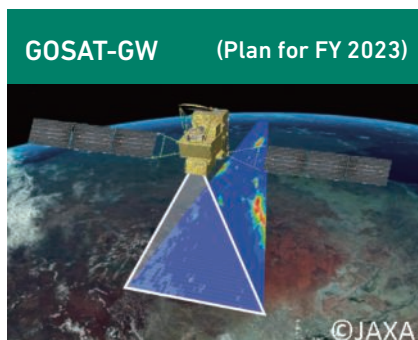
Promotion of green innovation

In order to promote green innovation, it is important to support startups that are making pioneering efforts in new environmental business (hereinafter referred to as “environmental startups”) and support the technological development of entrepreneurial candidates. Such support is expected to contribute to the creation of new environmental businesses in the post-COVID era and to an increase in employment. The Ministry of the Environment will continue to support the research, development, and commercialization activities of environmental startups for the creation of green innovation by providing support for specialized R&D for environmental startups, creating business opportunities through pitch events and awards, and granting credit based on performance verification of environmental technologies.

Examples

Green Innovation

Through observations by the Greenhouse gases Observing SATellite (GOSAT) series, the Ministry of the Environment has clarified the situation of global CO₂ and CH₄ concentrations increasing year by year. The successor model satellite GOSAT-GW, currently under development, will carry on and expand upon the mission of its predecessor, aiming to improve the ability to identify large-scale emission sources and the accuracy of emissions estimations.



From point observation to area observation

Source: JAXA, Ministry of the Environment



Electric vehicles utilizing GaN technology
(All GaN Vehicle)

Source: Ministry of the Environment

The AC/DC converters used for power conversion in home appliances, EVs, and power plants, etc. normally utilize silicon (Si) power devices; however, switching to gallium nitride (GaN) semiconductors can greatly reduce energy loss. In order to reduce CO₂ emissions, as well as accelerate digital society and strengthen the semiconductor supply chain, the Ministry of the Environment is carrying out development and demonstration of elements for the commercialization of ultra-energy-saving products that utilize GaN power devices from the manufacture of high-quality GaN substrates, and is also developing technology to achieve cost reduction.

The 26th session of the Conference of the Parties to the United Nations Framework Convention on Climate Change (COP26)

At COP26 held in Glasgow, UK from October to November 2021, a World Leaders Summit was held. This was the first summit-level meeting to be held at a COP session since COP21 in 2015, when the Paris Agreement was adopted. The Prime Minister of Japan, Mr. Fumio Kishida, attended the summit and delivered a speech.

The Prime Minister stated that the period up to 2030 as the “critical decade” and called on all parties to take ambitious climate change measures. He also announced Japan’s efforts in the area of climate change, including the new 2030 greenhouse gas reduction target, the preparation of up to 10 billion dollars in additional support for developing countries over the next five years, the commitment to doubling support for adaptation to climate change, and the promotion of green innovation.



Prime Minister Fumio Kishida delivering a speech at the COP26 World Leaders Summit

Source: Prime Minister’s official residence website

Towards expanded implementation of Article 6 of the Paris Agreement (Market Mechanism)

As Japan has implemented the Joint Crediting Mechanism (JCM) ahead of the rest of the world, the Ministry of the Environment will undertake three actions based on the conclusion of the Rulebook for Article 6 of the Paris Agreement.

The first of these is to expand JCM partner countries and strengthen project development and implementation in collaboration with international organizations such as the Asian Development Bank, the World Bank, and the United Nations Industrial Development Organization (UNIDO).

The second is to scale up the JCM by mobilizing further private finance.

The third is to contribute to the global operationalization of market mechanisms.

In relation to this, in February and March 2022, Japan hosted the “International Conference for Implementing Article 6 of the Paris Agreement” to promote understanding and capacity building for the implementation of the market mechanisms under Article 6 of the Paris Agreement. Tsuyoshi Yamaguchi, the then Minister of the Environment, participated online, and together with approximately 1,000 participants from more than 100 countries, engaged in discussions based on the sharing of experiences of the JCM and other



Tsuyoshi Yamaguchi, the then Minister of the Environment, giving opening remarks at the 1st International Conference for Implementing Article 6 of the Paris Agreement

Source: Ministry of the Environment

existing initiatives and advanced efforts related to the use of market mechanisms, in order to promote the development of specific institutional and governance frameworks and capacity building among government officials and related business sectors of each country. Based on the results of these discussions, Japan will offer support in the forms of capacity building for governments and business sectors in the Asian-Pacific region and training including Corresponding Adjustments for the Article 6 report.

3 APPROACH FROM THE PERSPECTIVE OF CIRCULAR ECONOMY

2nd inspection of the 4th Fundamental Plan for Establishing a Sound Material-Cycle Society and formulation of a circular economy roadmap

As one of the initiatives for waste disposal among the measures to reduce greenhouse gas emissions in the “Plan for Global Warming Countermeasures,” it was decided to conduct a detailed investigation into the formulation of a roadmap for accelerating the transition to a circular economy. As part of the efforts in response to this, the evaluation and inspection results of the “4th Fundamental Plan for Establishing a Sound Material-Cycle Society” (approved by the Cabinet in June 2018) scheduled for FY 2022 will be compiled as a circular economy roadmap, with the aim of promoting decarbonization initiatives based on whole-life-cycle resource recycling.

Circular economy partnerships

In March 2021, the Ministry of the Environment, the Ministry of Economy, Trade and Industry, and Ippan Shadan Hojin Nippon Keizai Dantai Rengokai KEIDANREN (Japan Business Federation) launched the Circular Economy Partnership (Japan Partnership for Circular Economy, J4CE), a public-private partnership aimed at promoting circular economy initiatives. J4CE compiled 131 examples of advanced circular economy initiatives by Japanese companies and published them on its website in September. Additionally, J4CE has also published a collection of 28 case studies that are particularly noteworthy from various perspectives, including proven technologies and business models and R&D and collaborative efforts for the future.



Japan Partnership for Circular Economy and featured cases

Source: Ministry of the Environment, Ministry of Economy, Trade and Industry, Ippan Shadan Hojin Nippon Keizai Dantai Rengokai KEIDANREN (Japan Business Federation)

“Japan Partnership for Circular Economy (J4CE) Featured Cases”

The Act on Promotion of Resource Circulation for Plastics

The Act on Promotion of Resource Circulation for Plastics (Act No. 60 of 2021) was enacted at the 204th session of the Japanese Diet and came into effect on April 1, 2022. This law aims to promote plastic resource circulation by all entities in accordance with the principle of the 3R +Renewable throughout the life cycle, from product design to waste disposal of plastic products. Specifically, it includes the following measures.

- [1] At the “design and manufacturing” stage, formulating design guidelines for plastic products (e.g., reduction of plastic usage, reuse of parts, use of recycled plastic) and establishing scheme in which designs that comply with those guidelines are certified by the government.
- [2] At the “sales and supply” stage, establishing criteria regarding measures to be taken by suppliers of specified plastic products, and reducing plastic waste by rationally using of specified plastic products.
- [3] At the “discharge” stage, promoting efforts such as sorted collection and recycling by municipalities, voluntary collection and recycling by manufacturers, and waste reduction and recycling by waste generators.

Image design for the specially made website for “Plastic Resource Circulation”



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

Decarbonization in the waste and resource circulation sector

In the waste and resource circulation sector also, it is essential to expedite investigations into emission reduction measures to achieve net-zero greenhouse gas emissions by 2050. Therefore, in August 2021, the Committee on Sound Material-cycle Society of the Central Environment Council presented the “Medium- to long-term scenario for achieving net-zero greenhouse gas emissions in the waste and resource recycling sector by 2050 (draft).”

Going forward, while working to collaborate and coordinate with efforts toward decarbonization in other sectors such as the materials industry and manufacturing industry, and with consideration of the progress of technological development in waste treatment, the Committee will continue deepening and refining investigations into measures to reduce greenhouse gas emissions.

4 APPROACH FROM THE PERSPECTIVE OF DECENTRALIZATION AND HARMONY WITH NATURE

30by30 roadmap

At the G7 Cornwall Summit in June 2021, the “G7 2030 Nature Compact” was adopted, which states that G7 leaders commit to the global mission to halt and reverse biodiversity loss by 2030. This agreement stipulates that the G7 nations will lead by example, conserving or protecting at least 30% of their land and coastal and marine areas by 2030 (30by30), according to their national circumstances and approaches.

In Japan, about 20.5% of the land and 13.3% of the sea is currently designated as protected areas such as national parks. In order to meet the 30by30, establishing Other Effective area-based Conservation Measures (OECMs) is as important as expanding such protected areas. Hence in 2022, the Ministry of the Environment plans to trial a scheme in which the national government certifies sites where biodiversity conservation is being promoted through private-sector initiatives as OECMs. One of the quantitative indicators is to certify at least 100 sites by the end of 2023. To promote the further expansion of protected areas and establishment of OECMs in this way, the “30by30 Roadmap” was published in April 2022 as a roadmap for ensuring and restoring a healthy ecosystem which is fundamental for everyday life and socioeconomic prosperity.

Approaching global trends in biodiversity and the next National Biodiversity Strategy

International negotiations are currently underway with the aim of adopting the Post-2020 Global Biodiversity Framework, a set of new global biodiversity goals, at COP15 Part 2 scheduled to be held in Montreal, Canada in 2022. After the adoption of the Post-2020 Global Biodiversity Framework, in order to promote its prompt implementation in Japan, the National Biodiversity Strategy Subcommittee was established within the Committee on Natural Environment of the Central Environment Council from August 2021, ahead of the COP15, and the Subcommittee has begun consideration of the next National Biodiversity Strategy. The next National Biodiversity Strategy will be the domestic strategy and action plan for achieving the Post-2020 Global Biodiversity Framework. Its aim will be to realize a society in harmony with nature by 2050 and it will incorporate goals to be achieved and measures to be taken by 2030. The next National Biodiversity Strategy will focus on Nature-based Solutions (NbS) to various social issues, including countermeasures against climate change and the loss of biodiversity, which is an important global issue along with climate change, and will also present proposals for the mainstreaming of biodiversity in socioeconomic activities. In addition, the goals and indicators to promote the participation of various entities will be set, and the structure of the overall strategy will be reviewed.



Conceptual diagram of Nature-based Solutions (NbS)

Source: IUCN (2021). Global Standard for Nature-based Solutions.
A user-friendly framework for the verification, design and scaling up of NbS.
First edition. Gland, Switzerland: IUCN

Countermeasures against invasive species

In order to deal with the threat of alien species, based on the Act on the Prevention of Adverse Ecological Impacts Caused by Designated Invasive Alien Species (Act No. 78 of 2004; hereinafter referred to as the “Invasive Alien Species Act”), invasive alien species that may cause damage to Japan's ecosystems are designated as “designated invasive alien species,” and their import and raising are regulated. As more than five years have passed since the Revised Invasive Alien Species Act came into effect in 2014, in January 2022, the Central Environment Council issued a report on measures to be taken in the future based on the status of enforcement of the Invasive Alien Species Act. Based on this, in March 2022, the Cabinet decided the Bill for Partial Amendment of the Act on the Prevention of Adverse Ecological Impacts Caused by Designated Invasive Alien Species, and submitted it to the 208th session of the Japanese Diet. The reform bill covers various matters related



Red swamp crayfish
(alien species)

Source: Ministry of the Environment

to strengthening pest control systems, such as strengthening measures against alien species that are unintentionally introduced to Japan, such as fire ants, improving control methods for alien species that are not currently regulated but are widely bred, such as red swamp crayfish, and clarifying the sharing of pest-control roles with each entity, such as local governments. When implementing countermeasures against alien species, it is also important to respond to changes in the possible areas of their distribution due to climate change.

The virtuous cycle of protecting and utilizing national parks

There are 34 national parks that have been designated as representative of Japan's natural environments. Due to Japan's widely varied topography shaped by volcanic activity, the long north-south stretch of the land, and the wide variety of climatic zones, it is possible to observe diverse landscapes, flora and fauna, as well as experience the lifestyles and culture of people living in harmony with nature.

From 2021 onwards, as new developments of the Project to Fully Enjoy National Parks, the aim is for the realization and branding of high-quality tourism that allows visitors to fully enjoy nature, as well as the recovery of park use by domestic and overseas visitors to levels before the impact of the COVID-19 pandemic. To these ends, efforts are being expanded to all national parks, with work being carried out to achieve sustainable tourism by promoting various measures such as strengthening domestic tourism attraction, providing new utility value of national parks such as workcations, registering zero-carbon parks with the aim of promoting decarbonization initiatives in national parks, and decarbonization of park facilities. The achievements made thus far will be further extended and refined, leading to the revitalization of local economies and the conservation of the natural environment.

Furthermore, in 2021, the Natural Parks Act (Act No. 161 of 1957) was revised with the aim of expanding the outcome of the Project to Fully Enjoy National Parks nationwide. In this revision, in order to realize a “virtuous cycle of protection and utilization” by strengthening measures for park utilization in addition to environmental protection, and to also contribute to regional revitalization, the following main measures are implemented.

- [1] Establish a nature experience activity promotion planning system to promote high-quality nature experience activities that make use of local natural environments.
- [2] Establish a visitor facilities maintenance and improvement planning system to improve the quality of national parks and other visitor facilities.
- [3] Establish new regulations on feeding wild animals such as brown bears and increase penalties for violations in Special Zone.



**LOCAL COMMUNITIES
AND LIFESTYLES
WHICH WE CAN
MAKE SUSTAINABLE**

2

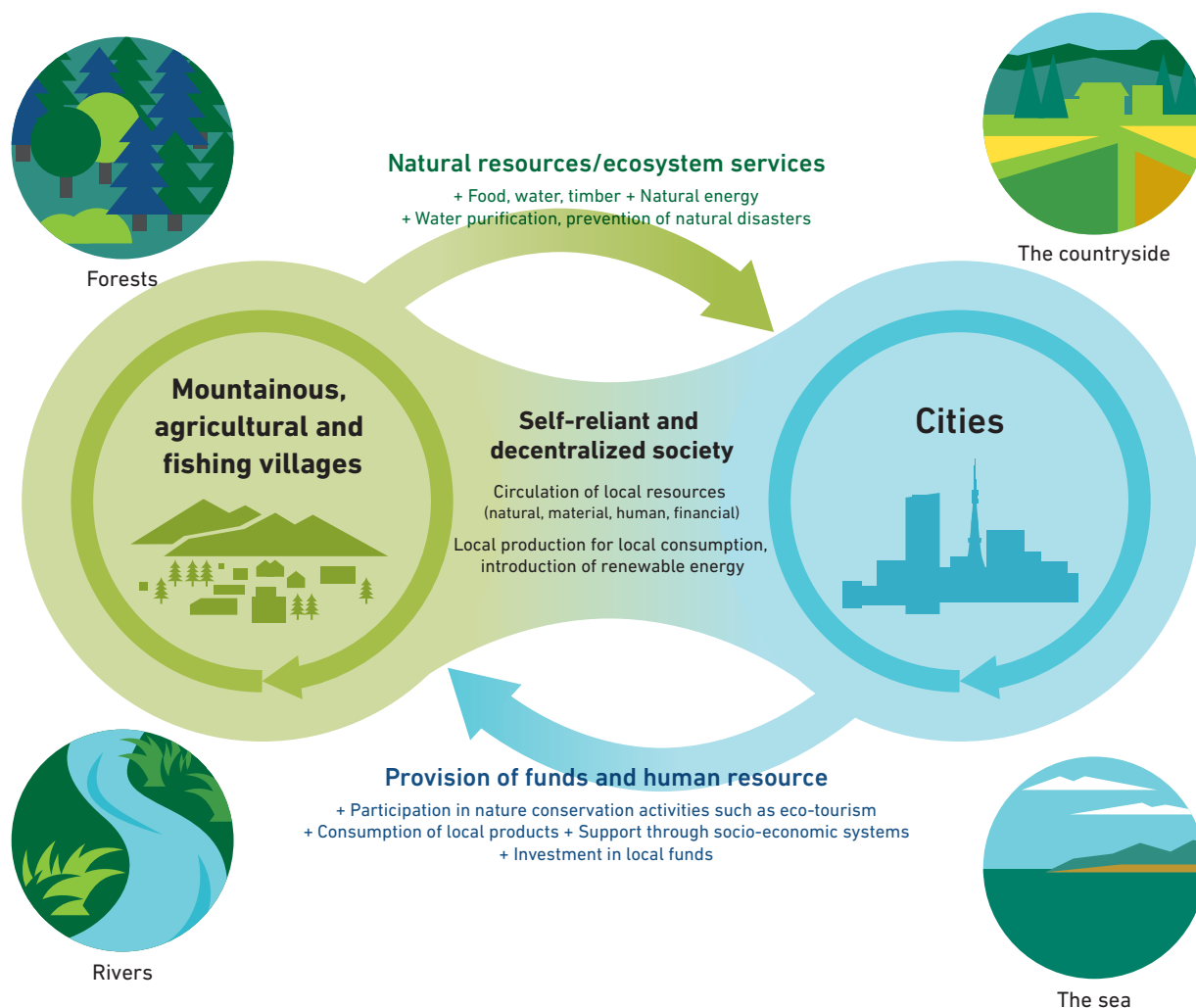


1 FURTHER DEVELOPMENT OF THE CIRCULAR AND ECOLOGICAL ECONOMY

The Circular and Ecological Economy is a concept of “self-reliant and decentralized society” that involves continuing creation of businesses that utilize local resources to improve the environment, economy, and society in an integrated manner, and also involves utilizing the individual characteristics of each region, such as cities and farming villages, to form a network of mutual support between regions. This concept can also be called local Sustainable Development Goals (SDGs), because it aims to comprehensively solve the various issues local communities facing through partnerships, starting with the environmental viewpoint.

Since 2019, the Ministry of the Environment has been implementing the “Platform for the Creation of a Circular and Ecological Economy to Revitalize Local Communities from Environmental Aspect” project, and is engaged in “environmental improvement” that supports the organization of stakeholders and “commercialization support” that supports the creation of project plans.

Conceptual Illustration of Circular and Ecological Economy



Source : Ministry of the Environment

Considering recent global circumstances, it is expected that production of renewable energy in particular in local communities will contribute to energy security, and also contribute to the environmental aspect which means decarbonization and the economic aspect which means money flow in local communities, and will thereby help to build self-reliant communities.

Introduction of rooftop solar power generation, which is not harmful to nature and realization of energy circulation by using green-tech (i GRID SOLUTIONS)

By introducing decentralized solar power plants utilizing the rooftops of existing facilities such as commercial and logistics facilities, i GRID SOLUTIONS has realized the use of renewable energy without placing a burden on the natural environment. By building an energy management system via its own AI and a platform that enables cyclical use of electric power, and supplying surplus power to other users, the company is making efficient use of renewable energy.



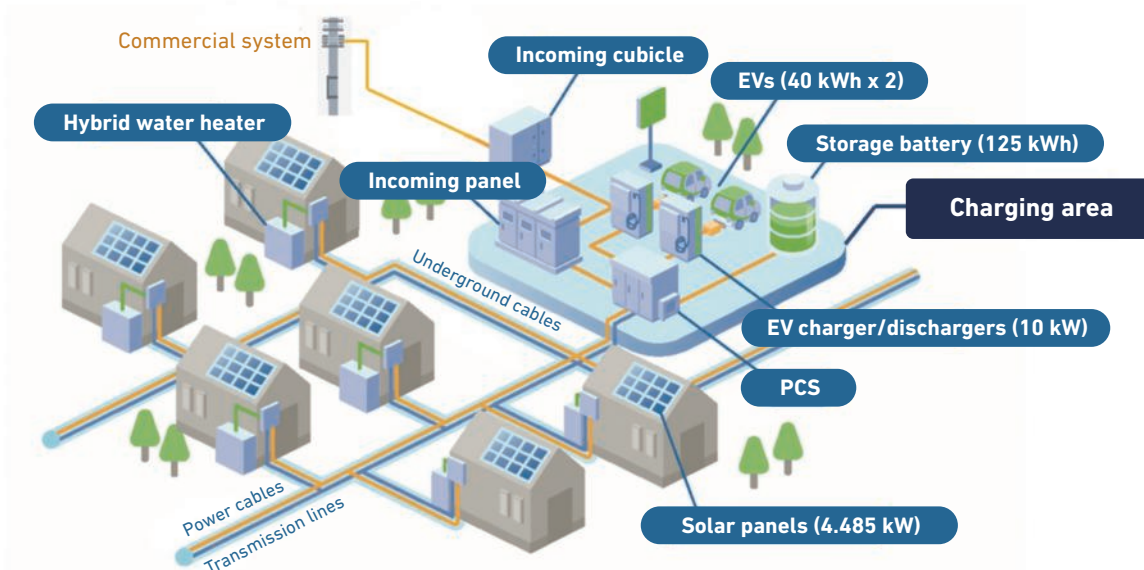
Commercial facility with solar power generation system
Source: i GRID SOLUTIONS

Realization of the Smart City Saitama model with Urawa Misono District 3 as its core (Saitama City, Loop, Chuo Jutaku, Takasago Kensetsu, AQURAHOME)

In Saitama City, Saitama Prefecture, in order to realize the Smart City Saitama model that will lead to achieving the Sustainable Development Goals (SDGs), since 2015 various measures are being carried out within the "Urawa Misono E-Forest" in the Misono district of the city, such as the creation of shared spaces, the implementation of high insulation in houses, and the introduction of a next-generation electric power community and other advanced technologies, in an effort to connect nature, towns, and people in various ways and promote urban

development that fosters a virtuous circle for the future. Within this "Urawa Misono E-Forest," District 3 has been jointly developed by Saitama City, Loop, Chuo Jutaku, Takasago Kensetsu, and AQURAHOME. This is a 51-unit subdivision that has been open for occupancy since December 2021. More than 60% of the yearly electrical energy needs of District 3 is covered by renewable energy generated within the district, and the shortfall is covered by non-fossil fuel certified sources, which means the district effectively achieves a 100% renewable energy supply.

District 3: Energy System Overview



Source: Loop

Using renewable energy as content for promoting regional tourism (Genki Up Tsuchiyu)

Genki Up Tsuchiyu is a company engaged in the urban development of the Tsuchiyu Onsen hot spring resort town, which is located about 30 minutes by car from Fukushima City. It was established in 2012 through the investments of the Tsuchiyu Onsen Tourism Association and the Yuyu Tsuchiyu Onsen Cooperative Association in order to overcome the drastic decrease in tourism caused by the Great East Japan Earthquake in 2011. As a result of considerations

into promotion utilizing the hot springs as a local resource, a binary geothermal power plant was put into operation in 2015, and the revenue from the sale of electricity is being used to pay for commuter bus passes for residents to commute to Fukushima City and to subsidize the use of vacant stores. The binary geothermal power plant also serves as an industrial tourism resource, helping to boost tourism and create jobs.



Binary geothermal power plant

Source: Genki Up Tsuchiyu



Raising shrimp with cooling water used during power generation

Source: Genki Up Tsuchiyu

Deepening of the Circular and Ecological Economy

The year 2022 has been dubbed “The first year of regional decarbonization.” In order to promote regional decarbonization, it is important that decarbonization projects bring benefits to local communities, namely, that they contribute to the regional economy, solve regional issues, and support regional revitalization. Such projects are made possible through the cooperation and voluntary involvement of people from various fields within the region, and the connections and mutual support of people outside the region.

Realizing decarbonization also means achieving resource circulation and harmony with nature at the same time. It also means shifting away from the conventional mass-production, mass-consumption, and mass-disposal economic society centered on the utilization of underground resources, toward a new economic society centered on the utilization of terrestrial resources such as renewable energy and natural capital.

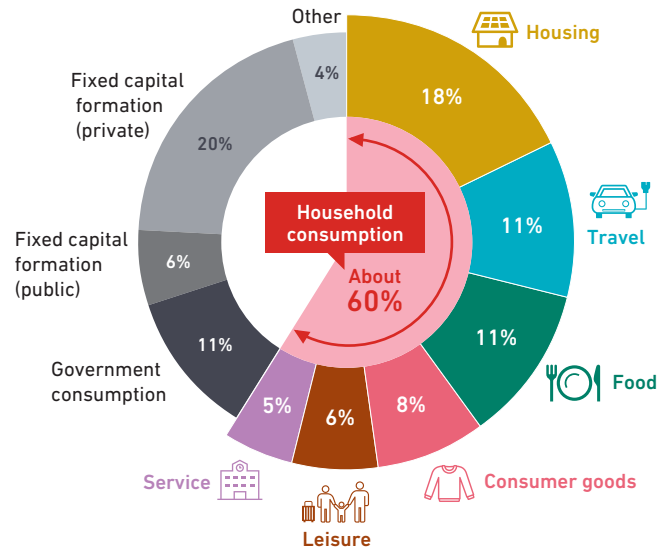
These ideas mean the creation of a circular and ecological economy centered on decarbonization. In conjunction with the creation of a circular and ecological economy, it is necessary to promote a shift in lifestyles. The reason being that by shifting to lifestyles based on the purpose and perspective of passing on the natural environment on which human economic society is based and the natural state of all living things to future generations and making them sustainable, the synergistic effect with the creation of a circular and ecological economy will bring about a truly cyclical and ecologically harmonious society in a new age in which the environment, life and living are the most important and fundamental values and in which people live healthy and fulfilling lives (i.e., a civilized society that values the environment and life). Major keys to realize such a society are transforming people’s sense of values, developing and securing human resources through promotion of environmental education, and digital transformation, which can achieve things that could not be done before by utilizing the digital technology that is evolving at an exponential speed.

2 LIFESTYLE CHANGE FOR THE REALIZATION OF A GREEN SOCIETY

Japan has declared that by 2050 it will realize carbon neutrality; that is, when the amount of removals by forests and other carbon sinks measures is subtracted from the amount of greenhouse gas emissions, the total amount of greenhouse gases will be net-zero. In order to realize net-zero, not only the national and local governments, companies, and other constituent units, but also all ordinary citizens need to change their familiar lifestyles. Looking at Japan's greenhouse gas emissions on a consumption basis, it has been reported that approximately 60% of the total is due to household economy, the need for which is obvious.

It is said that the conventional “mass-production, mass-consumption, mass-disposal” type of lifestyle is deteriorating “ecosystem services,” which are the various blessings that nature provides to support us with food, clothing, and shelter. In order to realize a green society, from the aspects of “food”, “housing”, “fashion”, and “travel”, we need to change our lifestyles with a view to reducing greenhouse gas emissions, reducing waste, and placing value on resource recycling and natural resources through the 3Rs +Renewable.

Life cycle greenhouse gas emissions in Japan on a consumption basis



Source: Estimated by National Institute for Environmental Studies and Institute for Global Environmental Strategies (IGES) based on: Keisuke Nansai, “Embodied Energy and Emission Intensity Data for Japan Using Input-Output Tables (3EID)” (National Institute for Environmental Studies, 2019); Nansai et al. Resources, Conservation & Recycling 152 104525 (2020); and Ministry of Internal Affairs and Communications, “Input-output Table 2015”
 *Each item represents the calculated total amount of greenhouse gas emissions (carbon footprint) throughout the life cycle (i.e., resource extraction, material processing, product manufacturing, distribution, retail, use, disposal) of each consumption/ fixed capital formation product or service in Japan (numbers do not match direct emissions based on domestic production).

Food

Organic agriculture, which promotes the reduction of chemical pesticides and chemical fertilizers, can be considered useful for maintaining the sustainability of so-called “natural capital” such as the land, water, and biological resources used in agriculture. The “Strategy for Sustainable Food Systems, MeaDRI” formulated by the Ministry of Agriculture, Forestry and Fisheries, states that the Ministry aims to “increase the ratio of organic agriculture to 25% (1 million ha) of cultivated land, while expanding the organic market, by 2050,” and efforts are being carried out in keeping with this goal.



Organic JAS mark

The organic JAS mark represents food produced by the power of nature based on the principle of not relying on the environmental risks of chemical substances such as pesticides and chemical fertilizers, and is placed on agricultural products, processed foods, animal feed, livestock products and algae products.

Source: Ministry of Agriculture, Forestry and Fisheries

Additionally, while most Sika deer and wild boars captured in efforts for damage prevention, etc. are currently buried or incinerated, and are thus underutilized except for cases of personal consumption, making effective use of these as gibier (game meat) is expected to lead to an increase in income for rural villages and a reduction in damage to crops and the living environment due to increased motivation to capture those animals. Moreover, as the meat continues to be used in various areas such as restaurants, retail, farm stays, tourism, school lunches, and even pet food, it is expected to not only revitalize local communities but also provide a means of utilizing resources that would otherwise have been discarded.

Popularization of gibier (game meat) products (MUJI)

MUJI has been earnest in promoting initiatives to expand the use of game meat, with the hope that it will lead to the conservation of agricultural land and the resource circulation of community-based forest areas, and that it will create an opportunity for people to learn about current circumstances in hilly and mountainous areas.

Since March 2020, MUJI has been selling gibier curry using wild boar meat at its Café & Meal MUJI restaurants around Japan, and in October 2021, it commercialized packeted gibier curry and began selling it from MUJI stores nationwide and online, increasing opportunities for people to easily purchase the product and contributing to an increase in the consumption of game meat.



"Gibier (Wild Game) Curry that makes the most of ingredients: Venison & Mushroom Curry" and "Gibier (Wild Game) Curry that makes the most of ingredients: Three-Bean Curry with Wild Boar Meat"

Source: Ryohin Keikaku

Housing

From April to August 2021, the Ministry of Land, Infrastructure, Transport and Tourism, the Ministry of Economy, Trade and Industry, and the Ministry of the Environment jointly held the "Study Group on Energy Efficiency Measures, etc. in Housing and Buildings toward a Decarbonized Society" to discuss the vision for housing and construction that should be pursued to realize carbon neutrality by 2050. In order to achieve the vision for 2050 (securing energy-saving performance at the level of ZEH/ZEB standards in the stock average, and popularization of the introduction of renewable energy such as solar power generation equipment in houses and buildings where it is reasonable) and the vision for 2030 (securing energy-saving performance at the level of ZEH/ZEB standards for new houses and buildings, and installation of solar power generation equipment in 60% of new detached houses), the study group compiled instructions on "How to proceed with efforts," including such things as making compliance with energy-saving standards mandatory for all buildings, including houses, and raising the energy-saving standards.

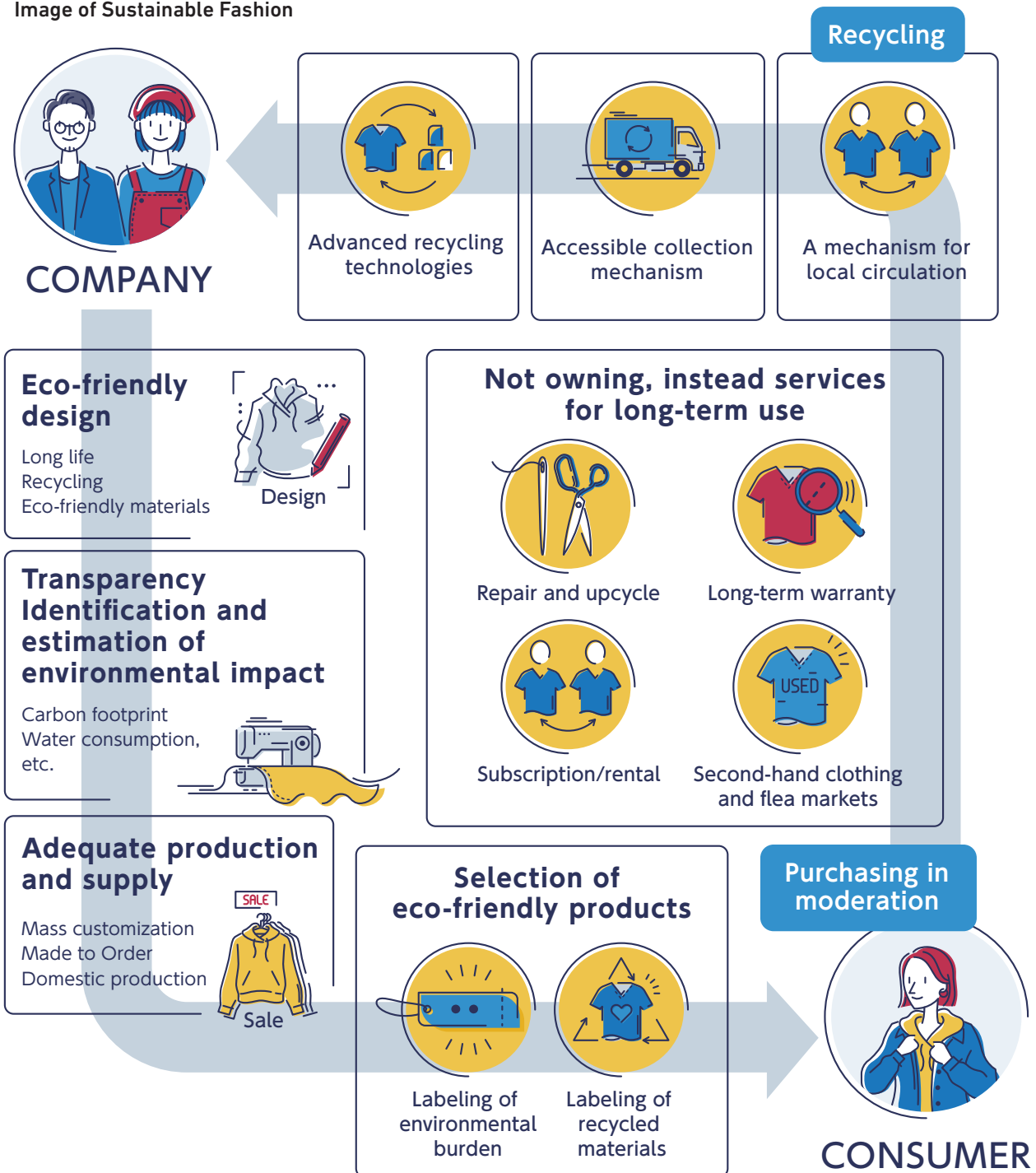
Travel

Modes of transport that are an essential part of our daily lives tend to become habitual and fixed. In particular, it is important to consider the degree of CO₂ emissions when using vehicles. The Ministry of the Environment has named driving that utilizes renewable power and electric vehicles (EV), etc. as "Zero Carbon Drive" and is supporting efforts to utilize Zero Carbon Drive among households, communities and companies.

Fashion

Approximately 98% of Japan’s clothing is imported, so most of the environmental burden is generated overseas. Our clothing is also indirectly related to overseas labor issues. According to a survey conducted by the Ministry of the Environment in FY 2020, approximately 96% of the clothing newly supplied to Japan in one year is given up after use, and about 62% is discarded without being reused or recycled. In order to change the current situation, there is a need to promote sustainable fashion, and efforts in this regard have begun, both by the industry (establishment of Japan Sustainable Fashion Alliance [JSFA]) and by the government (holding of the “Consortium of relevant ministries for the promotion of sustainable fashion”).

Image of Sustainable Fashion



Source : Ministry of the Environment

3 EFFORTS TO PROTECT PUBLIC HEALTH, WHICH IS THE FOUNDATION OF A SUSTAINABLE SOCIETY

Fundamental efforts to protect human life and the environment are the starting point and mission of the Ministry of the Environment, which was born as an organization dealing with nature and environmental conservation from regulations related to pollution. With that starting point remaining unchanged, the Ministry of the Environment is working on policies that respond to people's lifestyles, social changes, and changes in the times.

Heat illness countermeasures

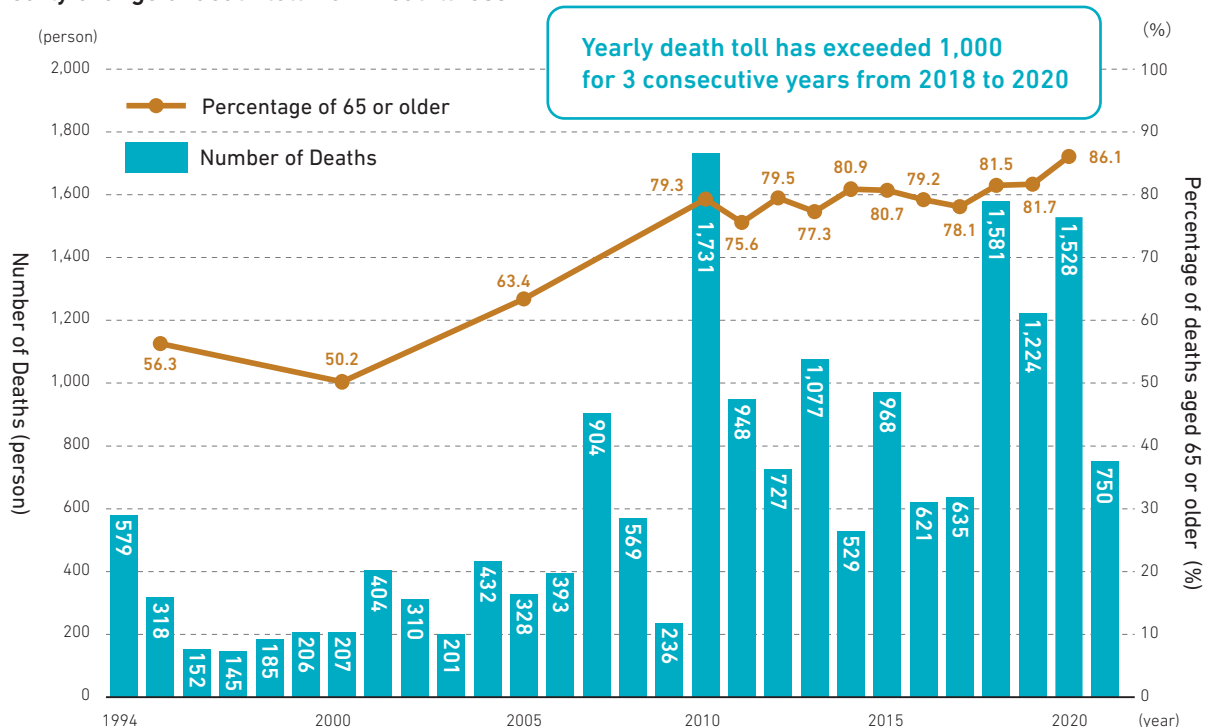
In light of the progression of climate change, the government promotes comprehensive measures to prevent heat illness at a local level and aims to ensure that the whole society works on heat illness countermeasures.

The national death toll due to heat illness has remained high, and according to data for the 23 wards of Tokyo in the summer of 2021, approximately 80% of those who died of heat illness were elderly citizens aged 65 or older, and of those who died of heat illness indoors, approximately 90% did not have or use air conditioners. As a measure to prevent heat illness in elderly households that do not have air conditioners installed, promoting the spread of air conditioners is urgent. Thus, in 2022, a model project that utilizes subscription method with no initial cost (flat-rate service) is being implemented.

Furthermore, based on the "Heat Illness Action Plan" (revised in April 2022), the government will continue to implement the "Heat Stroke Alert", which has been in operation nationwide since April 2021. In 2021, Heat Stroke Alerts were announced in 53 areas for a total of 75 days, and the total number of alerts nationwide was 613.

Nationwide awareness of the Heat Stroke Alert in FY 2021 was approximately 80%, showing a certain level of awareness. On the other hand, for example, the proportion of people who refrained from going out or engaging in outdoor activities upon the announcement of an alert was less than 40%. This is still not high enough, and so the government aims to further establish the practices to prevent heat illness.

Yearly change of death toll from Heat Illness



*Figures for 2021 are preliminary.

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

EFFORTS FOR RECONSTRUCTION AND REVITALIZATION AFTER THE GREAT EAST JAPAN EARTHQUAKE AND THE NUCLEAR POWER PLANT ACCIDENT

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, the accident at the Tokyo Electric Power Company (TEPCO) Fukushima Daiichi Nuclear Power Station released a large volume of radioactive materials into the environment, forcing many residents to evacuate to other areas.

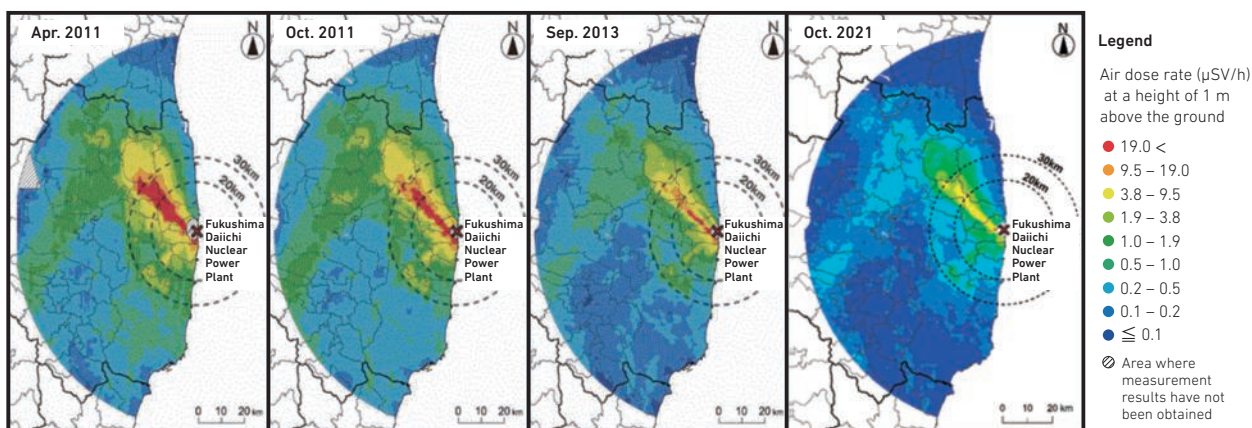
The following sections present the efforts being made toward the reconstruction and revitalization of the disaster areas.

3

1 STATUS OF ENVIRONMENTAL RESTORATION FROM RADIOACTIVE CONTAMINATION

Airborne monitoring within the 80-km zone around the Fukushima Daiichi Nuclear Power Station has shown that the average air dose rate of radioactivity at a height of 1 meter above the ground, as of October 2021, has declined by about 80% compared with the rate in November 2011. In addition, according to monitoring in Fukushima Prefecture and surrounding areas conducted by the Ministry of the Environment, radioactive cesium has not been detected in rivers, coastal area water quality, or groundwater in recent years, and in lakes, radioactive cesium has been detected in only 2 out of 163 spots in 2020.

Distribution of air dose rates of radiation within 80 km radius of TEPCO Fukushima Daiichi Nuclear Power Plant



Note: The April 2011 chart was mapped using a different method than is used now.
Source: Nuclear Regulation Agency

*These maps include air dose rates from natural radionuclides.

2 INITIATIVES FOR RESTORING THE ENVIRONMENT IN THE AFFECTED AREAS

Decontamination measures for soil contaminated by radioactive materials

By the end of March 2018, whole area decontamination of 100 cities, towns, and villages in eight prefectures was completed, excluding “Restricted area”. In addition, decontamination work and demolition of houses and other buildings in Specified Reconstruction and Revitalization Bases (SRRBs) have been progressing since December 2017. As of the end of February 2022, in SRRBs, the progress rate for decontamination is over 90%, and the progress rate for demolition (in relation to the number of applications received) is about 83%.

In Katsurao Village, Okuma Town, and Futaba Town, preparatory overnight stays (allowing evacuated residents to return and stay overnight in their homes or neighborhoods) in the SRRBs began on November 30, 2021, December 3, 2021, and January 20, 2022, respectively. The aim is to lift evacuation orders for the SRRBs of these three municipalities from the spring of 2022. Additionally, in Namie Town, Tomioka Town, and Iitate Village, decontamination and other projects are underway with the aim of lifting evacuation orders for SRRBs in the spring of 2023.

Furthermore, in areas outside the SRRBs, according to the “Consideration on the Lifting of Evacuation Orders to Facilitate Return to and Residence in Areas Outside Specified Reconstruction and Revitalization Bases” that was decided in August 2021, care is being taken to carry out decontamination of areas necessary for facilitating residents’ return, based on thorough understanding of the intentions of individual residents regarding their return.

Efforts toward final disposal of removed soil and waste within Fukushima Prefecture

Regarding removed soil and waste generated by decontamination work within Fukushima Prefecture, necessary measures are to be taken to complete the final disposal outside Fukushima Prefecture within 30 years from the start of transfer to the Interim Storage Facility.

In order to achieve final disposal outside the prefecture, it is important to reduce the amount of final disposal. To this end, removed soil has been converted into recycled soil, demonstration projects have been conducted to confirm its safety, and technology has been developed to facilitate volume reduction and recycling.

From FY 2021, there has been a fundamental strengthening of activities to foster understanding throughout Japan toward soil recycling and final disposal outside the prefecture, and various initiatives are being carried out, such as holding discussion forums around the country on the necessity and safety of volume reduction and recycling of soil, conducting field tours of demonstration projects for the general public, and presenting lectures on environmental restoration projects for university students.

Future-oriented initiatives for a new stage of reconstruction

In response to the needs within Fukushima Prefecture, the Ministry of the Environment is promoting the “Fukushima Regeneration/Future-oriented Project” to create and rediscover regional strengths from environmental perspectives such as decarbonization, resource recycling, and harmony with nature. Based on the “Cooperation Agreement on Promotion of Future-oriented Environmental Measures for the Reconstruction of Fukushima” concluded with Fukushima Prefecture in August 2020, the Ministry of the Environment is working with Fukushima Prefecture and relevant local governments to carry out measures from the three perspectives of decarbonization, countermeasures against rumors, and countermeasures against weathering.

Sea area monitoring and countermeasures against harmful rumors relating to ALPS treated water

At the Inter-Ministerial Council for Contaminated Water, Treated Water and Decommissioning Issues held in April 2021, in regard to the handling of water treated by Advanced Liquid Processing System (ALPS) and other methods, it was decided as a basic policy to aim for discharge of ALPS treated water into the ocean after a two-year period, on the provision of strict compliance with domestic regulatory standards.

Based on this basic policy, the national government’s “Comprehensive Radiation Monitoring Plan” was revised in March 2022 and the Ministry of the Environment commenced sea area monitoring from FY 2022 before discharge of ALPS treated water.

In addition, as a countermeasure against rumors about ALPS treated water, the Task Force for Countermeasures Against the Effects of the Nuclear Disaster, Including Harmful Rumors (Reconstruction Agency Secretariat), has compiled a “Package of Measures for Disseminating Information to Foster Understanding of ALPS treated Water,” and the national government is working in a united effort to promote these initiatives. Furthermore, explanations about ALPS treated water are being provided at public round-table discussions and seminars both inside and outside of Fukushima Prefecture.

3 PROMOTION OF RISK COMMUNICATION RELATED TO RADIATION HEALTH EFFECTS

As a countermeasure against anxieties regarding radiation in Fukushima Prefecture, technical support is being provided to counselors and local government staff to help them respond to consultations from residents, including provision of training and dispatching of experts. Additionally, for residents who have returned or are considering returning, risk communication is being carried out through roundtable discussions and so on, regarding on concerns and questions about radiation that may arise in life after returning. Workshops and seminars are also being carried out in response to requests from local governments and educational institutions outside of Fukushima Prefecture.

Regarding the health effects of the TEPCO Fukushima Daiichi Nuclear Power Plant accident, the assessment of the United Nations Scientific Committee on the Effects of Atomic Radiation (UNSCEAR) is that “No adverse health effects among Fukushima residents have been documented that are directly attributable to radiation exposure from the FDNPS (Fukushima Daiichi Nuclear Power Station) accident.” In addition, the assessment of the Prefectural Oversight Committee for the Fukushima Health Management Survey is that “As of this time, no correlation can be found between thyroid cancer cases detected through the Full-Scale Survey (second-round survey) and radiation exposure.” (In principle, the Thyroid Ultrasound Examination (TUE) program is conducted for each subject once every two years, and the first FFS (Full-Scale Surveys) (the second-round survey) was conducted from FY 2014 to FY 2015.)

The public ignorance of accurate scientific knowledge about the health effects of radiation may emerge anxiety and rumors, which in turn may lead to discrimination and prejudice. For this reason, the “GuGuRu Project” was launched in July 2021 to help people develop sound judgment and not be misled by rumors, and the project is promoting efforts to disseminate accurate information on the health effects of radiation throughout the country in an easy-to-understand manner.

Examples

Commencement of preparatory overnight stays within Specified Reconstruction and Revitalization Bases (SRRBs)

In three municipalities that aim to lift evacuation orders in SRRBs from the spring of 2022, preparatory overnight stays have commenced.

Evacuees wishing to return and stay overnight at their own homes or neighborhoods have been able to do so since November 30, 2021 in Katsurao Village, since December 3, 2021 in Okuma Town, and since January 20, 2022 in Futaba Town. This became possible with the prospect of the lifting of evacuation orders as a result of the implementation of

decontamination and other measures. With priority on advancing development of infrastructure, etc., steady progress toward recovery is being made step by step, with the aim of enabling full-scale return of evacuees to their homes, starting with preparatory overnight stays. In addition, for “Restricted area” outside of the SRRBs, the policy is to carry out decontamination work so that people who wish to return to those areas can do so within this decade.



Decontamination work at Ono Kindergarten in Okuma Town

Source: Ministry of the Environment



Decontamination work in Futaba Town (aerial view)

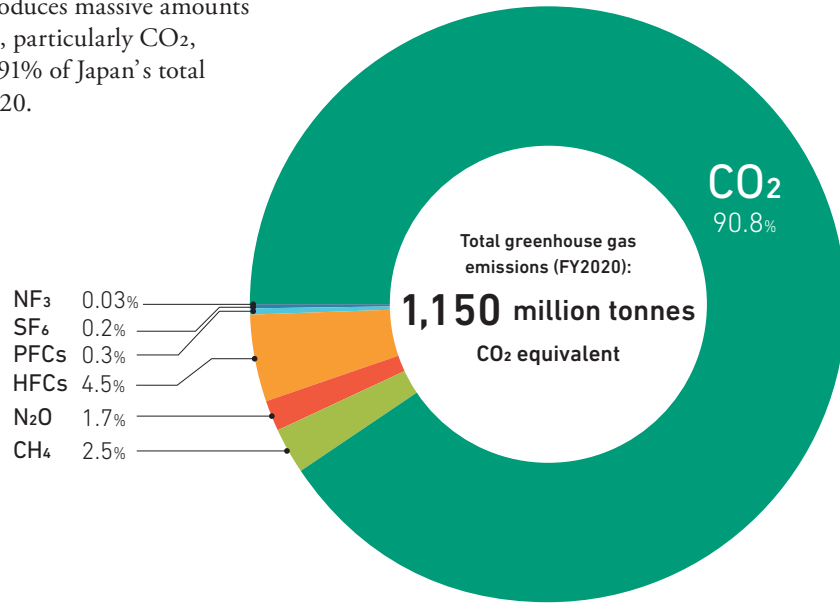
Source: Ministry of the Environment

ADDITIONAL MATERIALS

FROM THE ANNUAL REPORT ON THE ENVIRONMENT IN JAPAN 2022

Breakdown of Greenhouse Gas Emissions in Japan (FY2020)

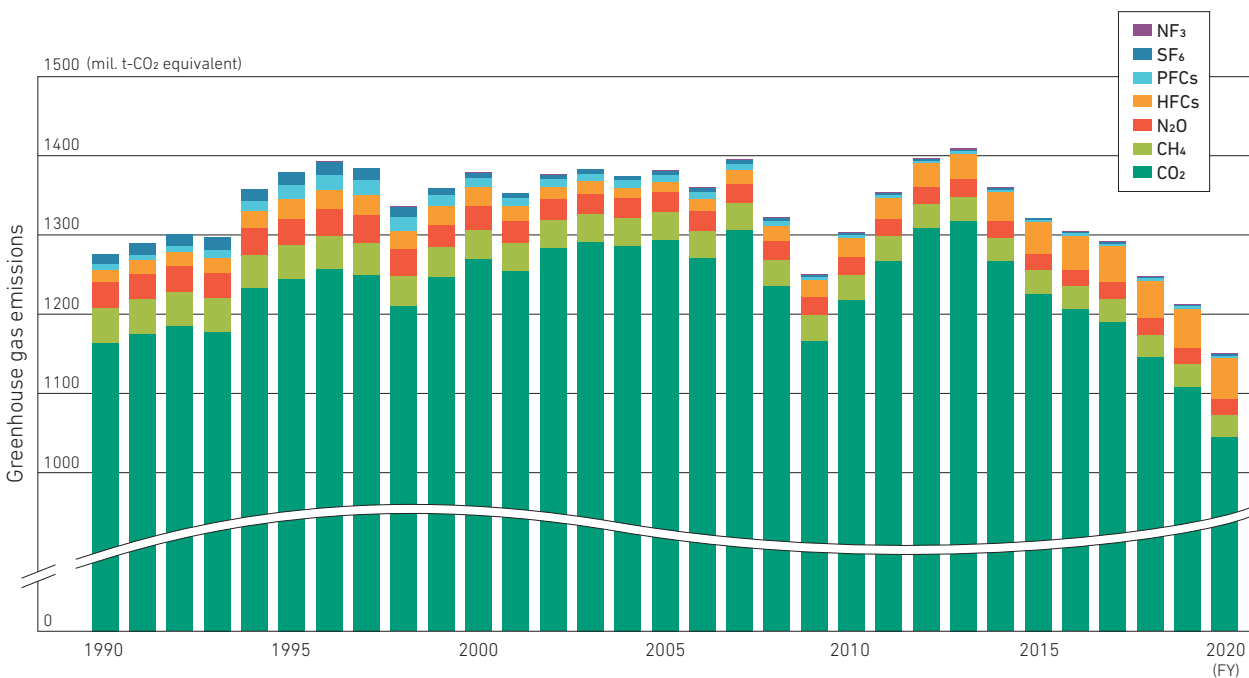
Globally, fossil fuel combustion produces massive amounts of anthropogenic greenhouse gases, particularly CO₂, which accounts for approximately 91% of Japan's total greenhouse gas emissions in FY 2020.



Source: Ministry of the Environment

Greenhouse Gas Emissions in Japan

Japan's total greenhouse gas emissions in FY 2020 were equivalent to approximately 1,150 million tonnes of CO₂, a 5.1% drop from the previous year. A possible cause of the decrease in emissions is the decrease in energy consumption due to the COVID-19 pandemic.



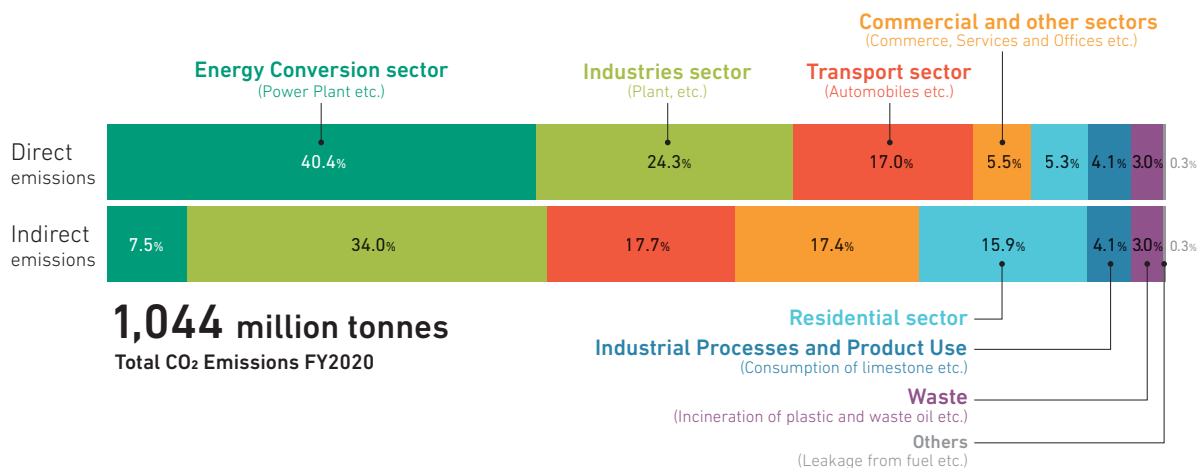
Source: Ministry of the Environment

GHG Emissions in Japan

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

Breakdown of CO₂ Emissions by Sector

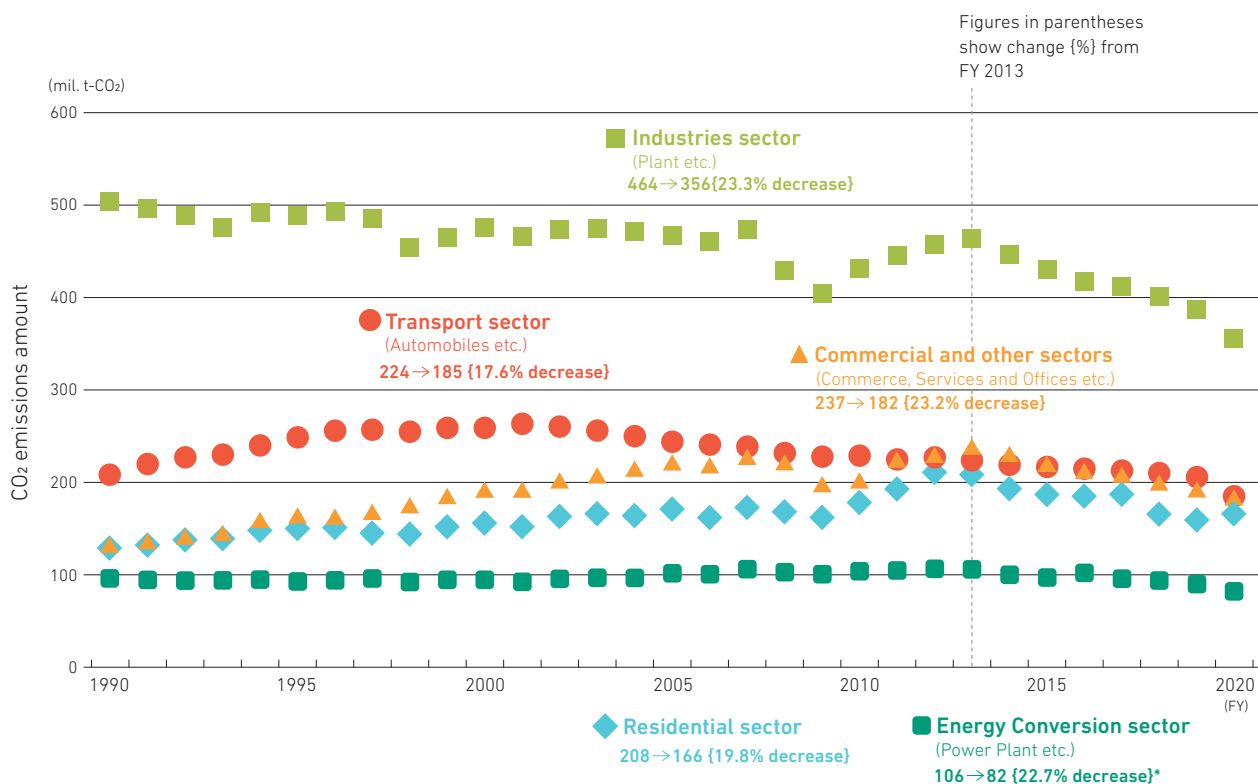
The sector with the largest CO₂ emissions in indirect emissions in FY 2020 was industries sector, accounting for approximately 34.0% of Japan's total.



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.



* Excluding statistical discrepancy from power and heat allocation.

Source: Ministry of the Environment

ADDITIONAL MATERIALS

FROM THE ANNUAL REPORT ON THE ENVIRONMENT IN JAPAN 2022

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:

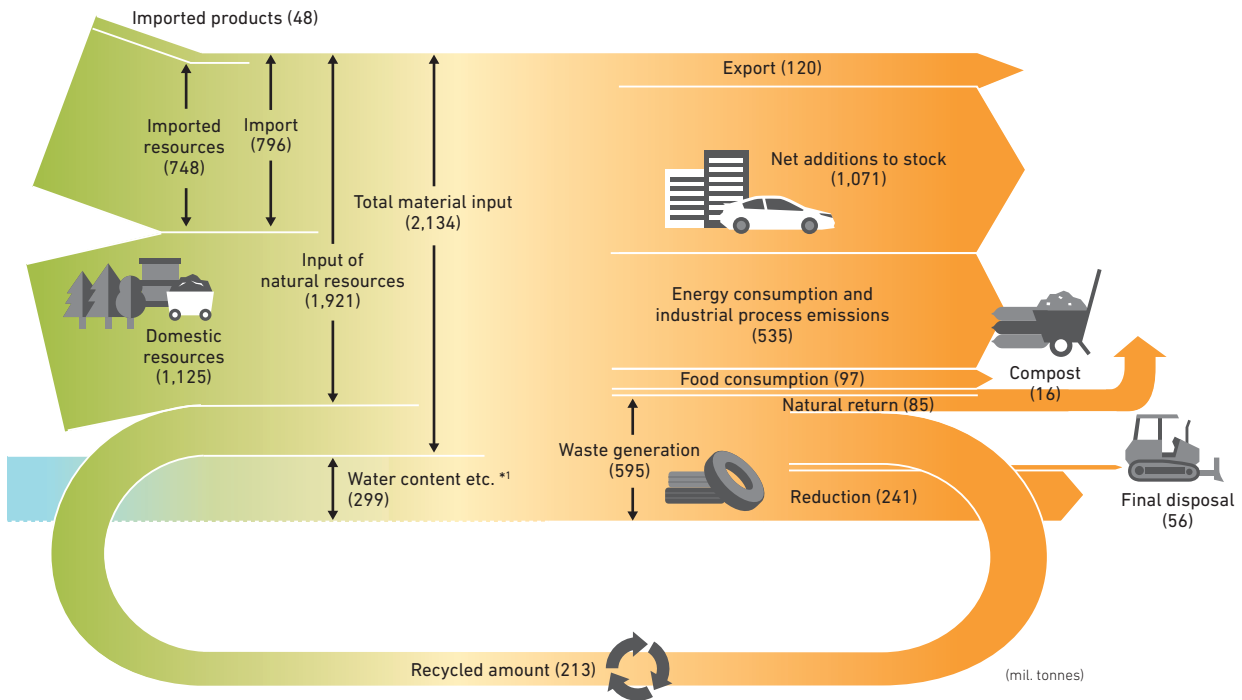
Extinct [EX]: Species that are likely to already be extinct / Extinct in the Wild [EW]: Species that exist only in captivity or as a naturalized population outside its natural habitat / Endangered Class I (Critically Endangered + Endangered) [CR+EN]: Species that are threatened to extinction / Endangered 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 ANNUAL REPORT ON THE ENVIRONMENT IN JAPAN 2022

Material Flow in Japan

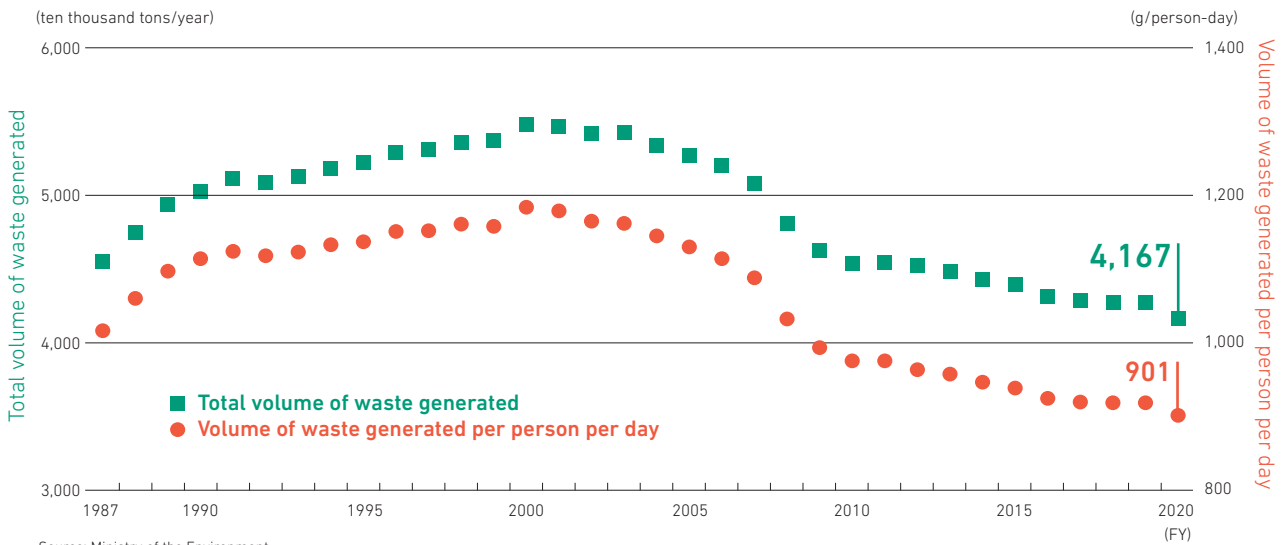
In order to establish a sound material-cycle society, it is necessary to comprehend material flows (or substance flows) to understand the extent of material extraction, consumption, and disposal in Japan. Japan uses material flows to determine targets for the four indicators of resource productivity,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

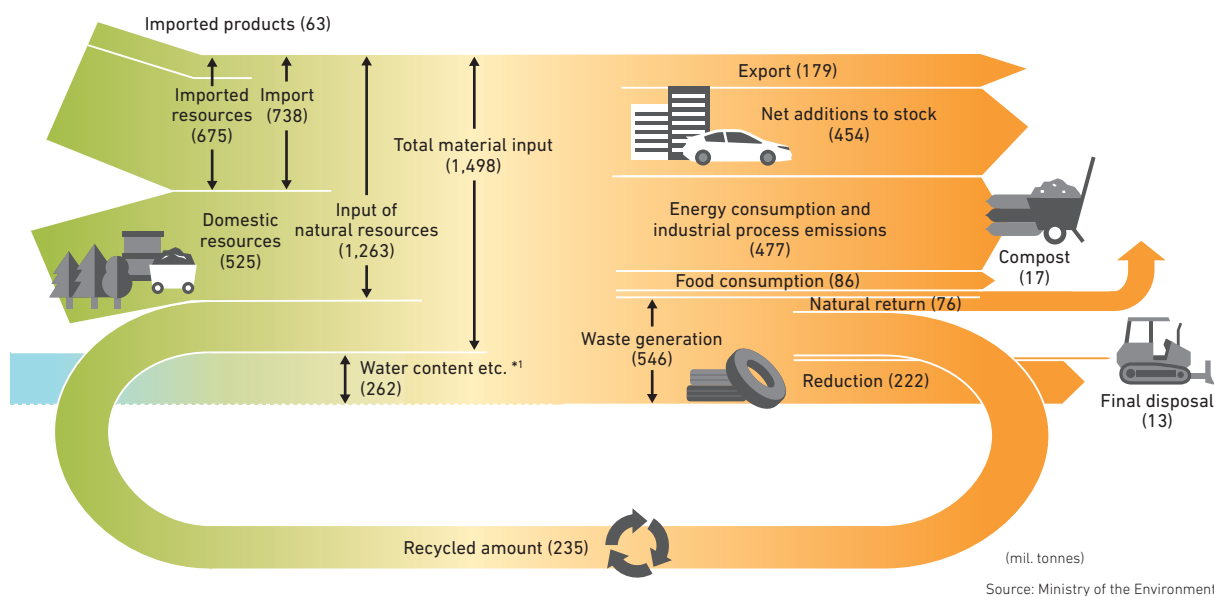


Sound material-cycle society

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

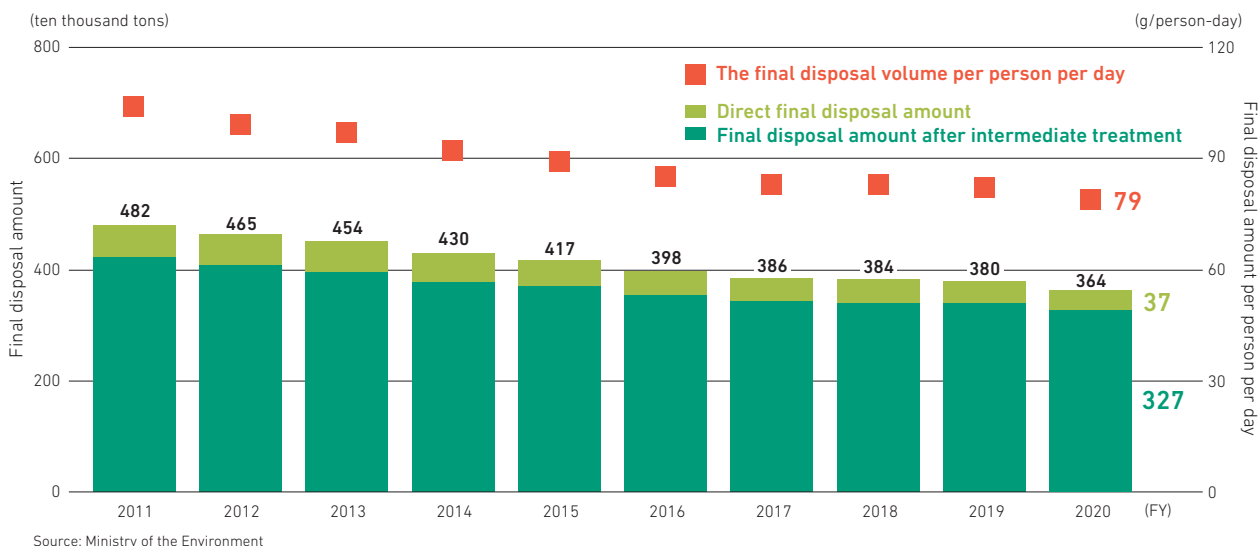
*1 Water content: water contents of wastes (sludge, livestock waste, night soil, waste acid, waste alkali) and sediments dumped in association with the process of economic activities (sludge in mining, construction and in waterworks as well as slag)

FY2019



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.



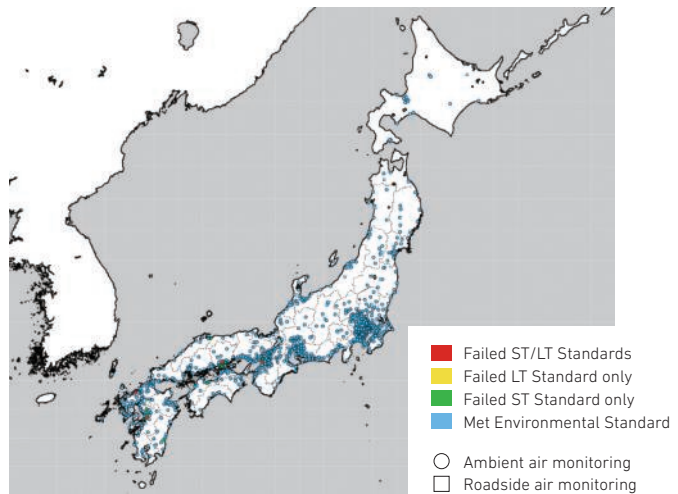
ADDITIONAL MATERIALS FROM THE ANNUAL REPORT ON THE ENVIRONMENT IN JAPAN 2022

Fine particulate matter

In FY2020, the rate of compliance with ambient air quality standards for fine particulate matter (PM_{2.5}) was 98.3% for ambient air pollution monitoring stations and 98.3% for roadside air pollution monitoring stations throughout Japan. The annual average was 9.5 µg/m³ for ambient air pollution monitoring stations and 10.0 µg/m³ 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 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 |
|--|-------|-------|-------|-------|-------|-------|
| No. of vaild stations | | | | | | |
| Ambient | 765 | 785 | 814 | 818 | 835 | 844 |
| Roadside | 219 | 223 | 224 | 232 | 238 | 237 |
| No. of vaild stations compliant with ambient air quality standards | | | | | | |
| Ambient | 570 | 696 | 732 | 765 | 824 | 830 |
| | 74.5% | 88.7% | 89.9% | 93.5% | 98.7% | 98.3% |
| Roadside | 128 | 197 | 193 | 216 | 234 | 233 |
| | 58.4% | 88.3% | 86.2% | 93.1% | 98.3% | 98.3% |

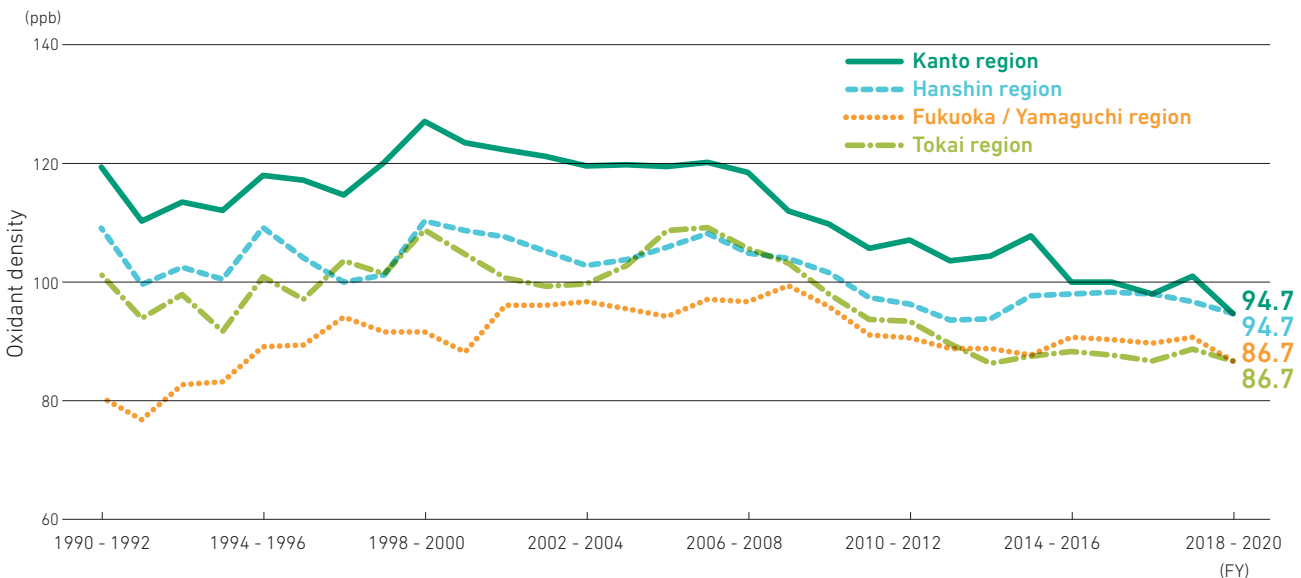
Source: Ministry of the Environment



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.



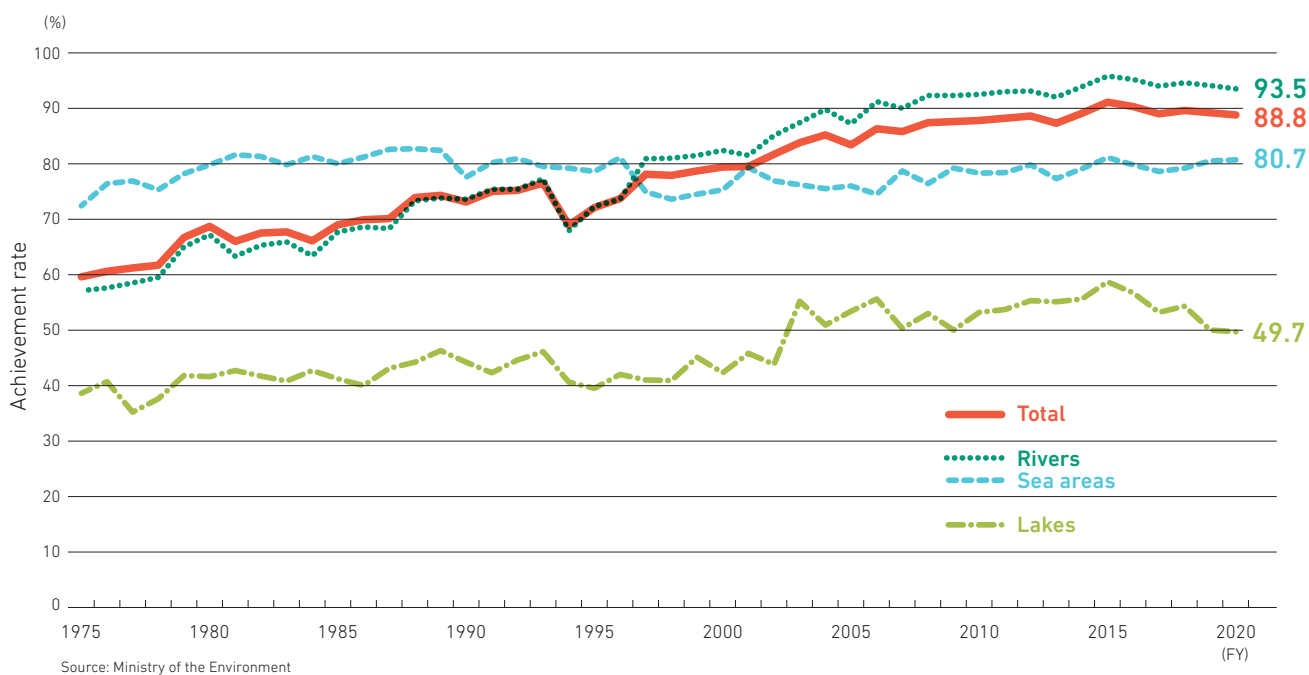
Source: Ministry of the Environment

Atmospheric and water environments

Additional materials provide more details about biodiversity in Japan.

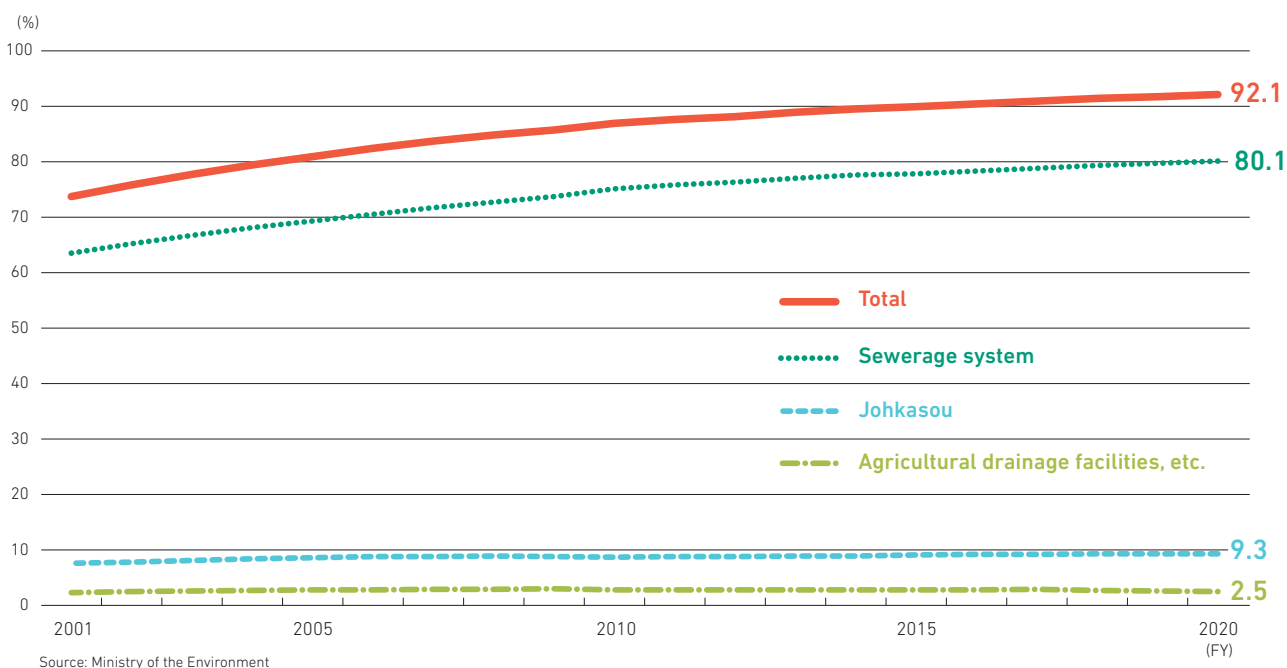
Achievement of Environmental Standards (BOD or COD)

An overall level of 88.8% 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.



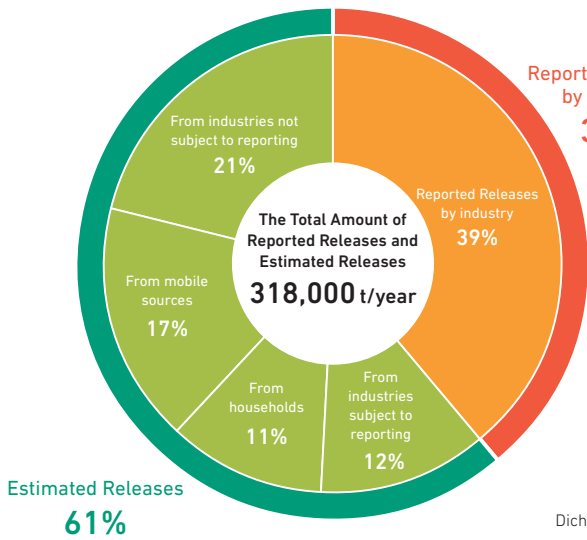
Coverage of Population Served by Wastewater Treatment System

The population coverage of wastewater treatment systems in Japan is 92.1%. Wastewater treatment facilities are being installed to cover the population not yet served by the wastewater treatment systems.



ADDITIONAL MATERIALS FROM THE ANNUAL REPORT ON THE ENVIRONMENT IN JAPAN 2022

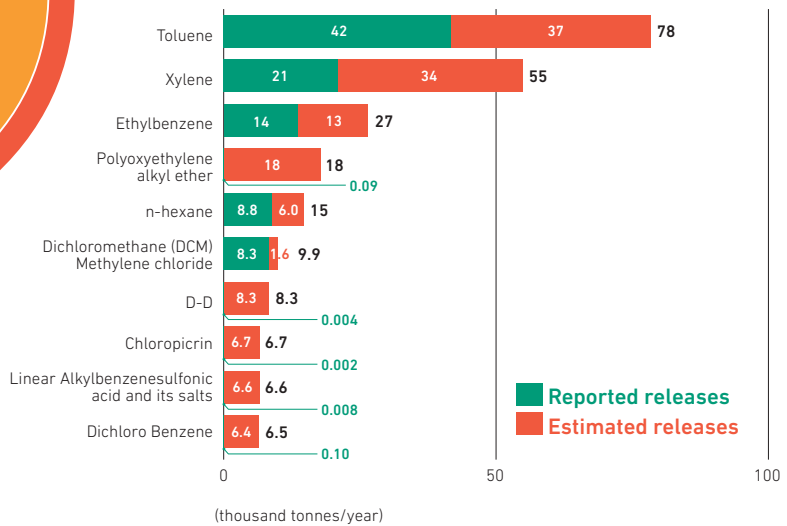
Breakdown of Reported Releases by Industry and Estimated Releases of Chemical Substances in FY 2020



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

Top 10 Chemicals with High-volume of Reported Releases and Estimated Releases (FY 2020)



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

In March 2022, 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.



Ogasawara National Park

Ogasawara National Park consists of subtropical islands located about 1,000 km south of the Japanese archipelago. These islands are oceanic islands that have never been connected to the mainland and thus uniquely evolved flora, fauna, and ecosystems can be found on the islands. Thanks to these advantages, Ogasawara National Park was registered as a World Heritage site in June 2011. In October 2022, the Ogasawara National Park celebrated the 50th anniversary of its designation as a national park.

The landscape includes unique coastal landforms such as pillow lava and submerged karst landforms that are rare in Japan, and the sea around the islands is home to an array of wildlife including marine mammals, green sea turtles, and many other creatures, forming a diverse underwater environment. The photo shows a coral reef and tropical fish off the Miyanoama Beach of Chichijima Island, which is designated as a marine park area. In June, when this photo was taken, many young fish can be seen swimming around the coral reef.

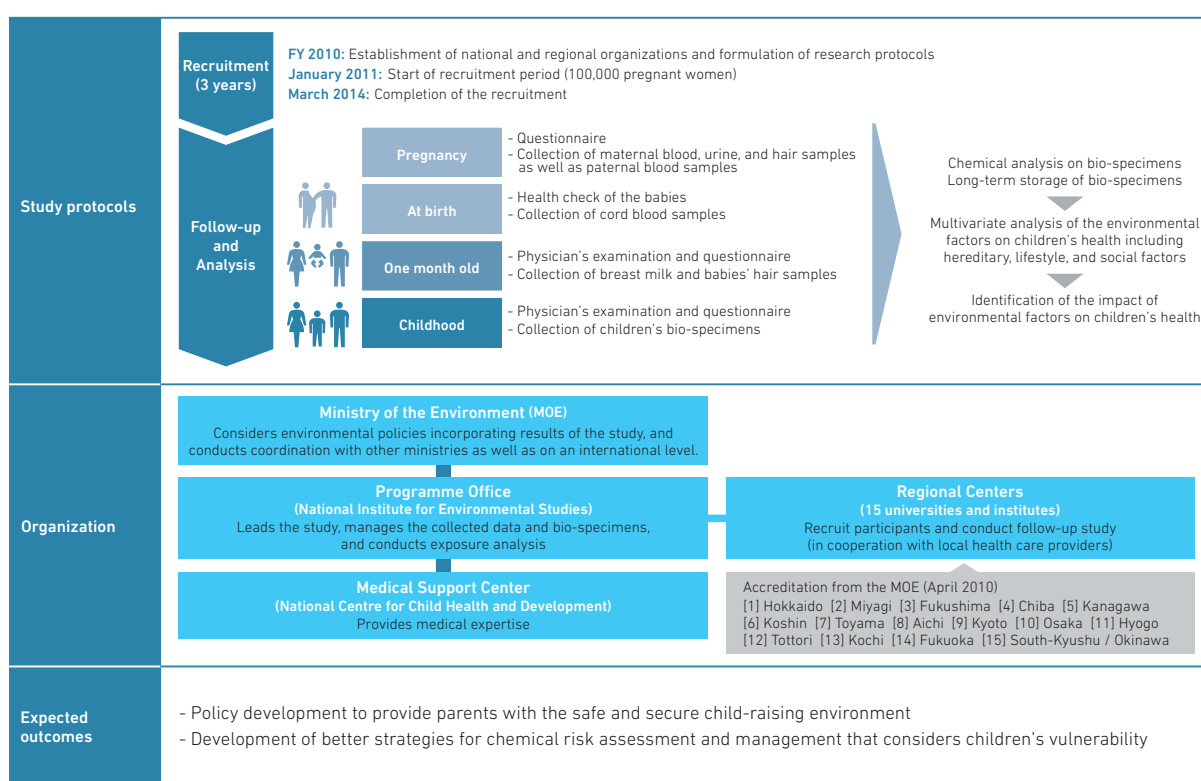
Environmental risks of chemicals

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

Annual Report on the Environment, the Sound Material-Cycle Society and Biodiversity in Japan 2022

Published by Ministry of the Environment
 General Policy Division
 Minister's Secretariat

hakusho@env.go.jp
www.env.go.jp/en/

Published in November 2022

Copyright©2022 Ministry of the Environment, Japan. All rights reserved.



● *Columba janthina nitens*



By accessing this QR code®, you can browse English White Papers in the past.

<https://www.env.go.jp/en/wpaper/index.html>

