

# ANNUAL REPORT

ON THE ENVIRONMENT  
IN JAPAN 2020





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# THE PROBLEM OF CLIMATE CHANGE AND OTHER GLOBAL ENVIRONMENTAL CRISES

Our modern lifestyles and economic and social systems have been established on the foundation of a stable, rich environment. However, the expansion of human activities has placed a great burden on the global environment and has led to global environmental crises in a variety of forms, such as the problem of climate change, marine plastic pollution, and loss of biodiversity.

# 1

# CLIMATE CHANGE AND EXTREME PHENOMENA

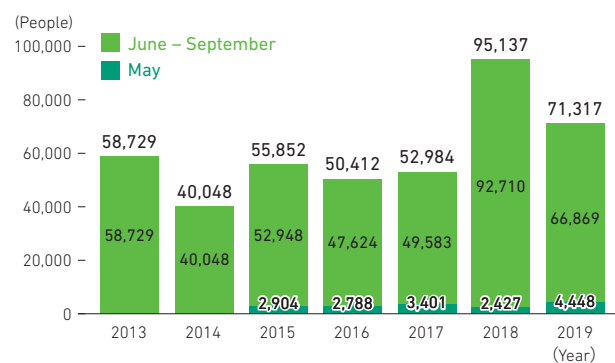
In recent years, disasters and extreme weather phenomena such as heat waves and heavy rainfall have been occurring all over the world.

Japan also has suffered such calamities as Typhoon Faxai in September 2019 and Typhoon Hagibis in October 2019, causing widespread damage due to major power outages and flooding throughout the country. Also, in the summer of 2018, Japan experienced record high temperatures throughout the country, and from May through September the total number of people requiring ambulance transportation due to heat illness reached 95,137, the highest number ever recorded, and the number of deaths reached 1,581, the second highest on record.

Although the degree to which global warming contributes to individual events is not absolutely clear, the risk of extreme phenomena is predicted to increase in the future as global warming progresses. Because of the impact that global

warming could have on various areas such as agriculture, forestry, fisheries, natural ecosystems, aquatic environments, health, and economy, climate change is also referred to as the “climate crisis” that could shake the very foundations of survival for all life.

**Number of people requiring ambulance transportation due to heat illness by year**



Note: Survey period for 2013 and 2014 was June to September.  
Source: Fire and Disaster Management Agency

# MARINE PLASTIC POLLUTION AND LOSS OF BIODIVERSITY

In the area of resource circulation, marine plastic litter has become a global issue. Globally, approximately 8 million metric tons of plastic litter is flowing into the ocean every year, and a report indicates that, if we continue as we are now, plastic litter in the ocean will outweigh fish by 2050.

According to the monitoring survey of marine debris washed ashore in Japan, conducted by the Ministry of the Environment in 2017, plastic bottles bearing Japanese labels made up a considerable portion of debris, showing that Japan’s coasts are littered not just with debris from other countries, but also with garbage that we ourselves have produced.

In the area of biodiversity, an estimated 1 million species already face extinction, and the extinction of species is now dozens of times higher than the

average for the past 10 million years. In other words, the rate of extinction is now several hundred times faster.

Moreover, in Japan, the biodiversity crisis due to reduced or discontinued human engagement activities in nature has become a dire problem. The depopulation of hilly or mountainous rural areas, the decrease in people pursuing careers in agriculture and forestry, and the aging of Japan’s population has led to problems such as the increase in abandoned agricultural land and the decrease and aging of hunters. These factors have contributed to a significant increase in the number of Sika deer and boars and the expansion of their distribution, which has resulted in severe damage to agriculture and forestry and serious impact on ecosystems.



# ACTIONS BY THE NATIONAL GOVERNMENT, LOCAL GOVERNMENTS, BUSINESSES, ETC. TO BRING ABOUT SOCIAL CHANGE

As climate change increases the risk of meteorological disasters and other calamities, it may not only cause great damage to the economy and society, but could shake the very foundations of survival for humanity and all life on earth.

Below, as an especially important perspective on domestic trends regarding climate change, we present aspects of social change from the perspective of “climate action and DRR,” which incorporates the element of climate change into disaster prevention, and also actions in “climate change and digital” utilizing ICT and other elements that drive social change.

We also present an overview of actions and plans by the national government, beginning with the development of a decarbonized society, and introduce the efforts of various actors to bring about social change, such as pioneering efforts by local governments, businesses, financial institutions, etc., and actions and innovations for building a circular and ecological economy—that is, attractive regional development that can achieve decarbonization and sustainable development goals (SDGs).

# 2

# DOMESTIC TRENDS REGARDING CLIMATE CHANGE, ETC.

## Social change from the perspective of “climate action and DRR”

To handle the current situation, which may be called a climate crisis, requires us to make use of our knowledge as a country that has experienced many disasters, and to also implement social change from the perspective of “climate action and DRR,” which incorporates the element of climate change into disaster prevention. The “Strategy for Enhancing the Synergy between Climate Action and Disaster Risk Reduction in the Era of Climate Crisis”, which was compiled in June, proposes that

“climate action and DRR” be incorporated into policies for all fields and be made the mainstream of policies hereafter. Also, in regard to recovery from disasters, rather than being bound by the idea of restoring things to their original shape—that is, simply restoring areas to their former conditions—importance has been placed on implementing responses with the idea of “adaptive recovery” that promotes adaptation to climate change through responses that include land-use control.

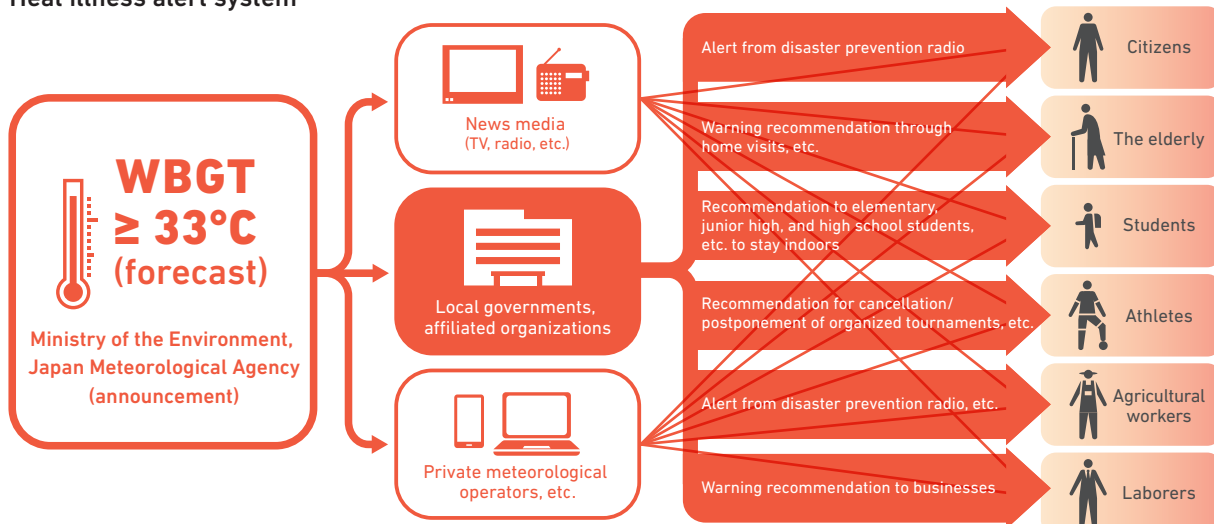
## Disposal of disaster waste and countermeasures against heat illness

In regard to debris produced by large-scale meteorological disasters, to deal with damages due to disasters such as Typhoon Faxai, the Ministry of the Environment dispatched disaster site support teams, comprising Ministry staff and experts, to carry out technical support for such things as the setting up, management, and operation of temporary storage spaces and the disposal of disaster waste. Also, to strengthen cooperation with the Ministry of Defense and the Self-Defense Forces regarding the disposal of disaster waste, the Ministry of the Environment is progressing with

the developing of a disaster waste disposal manual together with the Ministry of Defense.

To prevent the increase of heat illness due to global warming, the Government provides weather information during summer in the form of high temperature warning information from the Japan Meteorological Agency and the heat stress index (WBGT) from the Ministry of the Environment, which is increasing awareness of the danger of heat illness. Furthermore, the Ministry of the Environment and the Japan Meteorological Agency are cooperating to provide new information

### Heat illness alert system





on heat illness prevention in the form of a heat illness alert system, which has undergone preliminary implementation in some parts of

Japan (the Kanto-Koshin region) from July 2020 and is scheduled for full-scale implementation nation-wide from 2021.

## Construction of decentralized and self-reliant energy systems

It is essential to move forward with efforts to enable the use of regional renewable energy and other forms of self-reliant power supply in times of disaster, while promoting the construction of regional energy supply chains utilizing storage batteries, fuel cells, cogeneration, digital technology, etc., and to move toward the construction of decentralized energy systems, while considering such things as total system cost and stability.

The Ministry of Economy, Trade and Industry and the Ministry of the Environment have jointly hosted the Decentralized Energy Platform, bringing together businesses and local governments eager to achieve a decarbonized society and providing an opportunity to formulate new ideas for building regional business models that maximize the use of renewable energy.

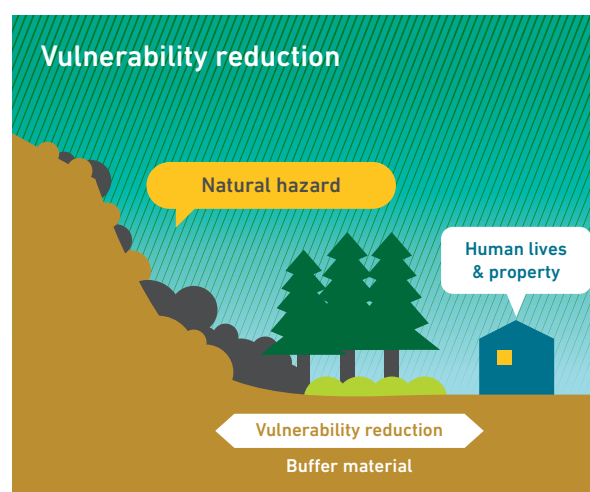
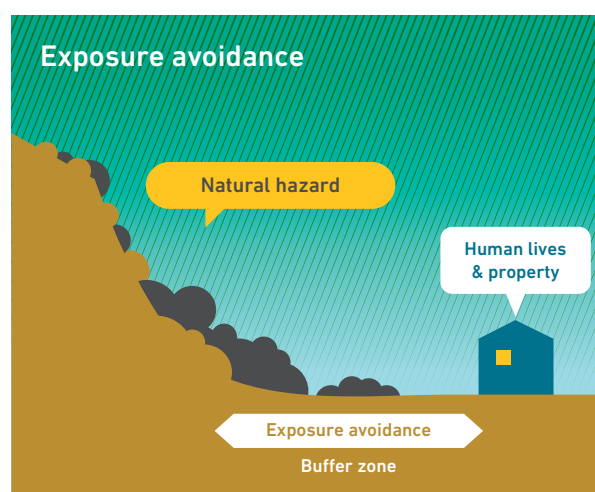
## Green infrastructure and ecosystem-based disaster risk reduction

As policies for forming a sustainable society that is both disaster resilient and in harmony with nature, while also solving socio-economic issues, attention is being given to “Green Infrastructure” and “Ecosystem-based Disaster Risk Reduction” (Eco-DRR), which actively utilize the functions of an ecosystem.

For example, the Watarase water retention area is a Ramsar-registered internationally important

wetland that is home to a wide variety of plants and animals, including more than 700 species of plants and about 140 species of birds. During Typhoon Hagibis, the Watarase water retention area and three other water retention areas held a total of about 250 million m<sup>3</sup> of floodwater, the most ever on record, greatly contributing to the prevention of flood damage in the metropolitan area.

### Eco-DRR approach



Source: Ministry of the Environment

## Social change through “Climate Change and Digital”

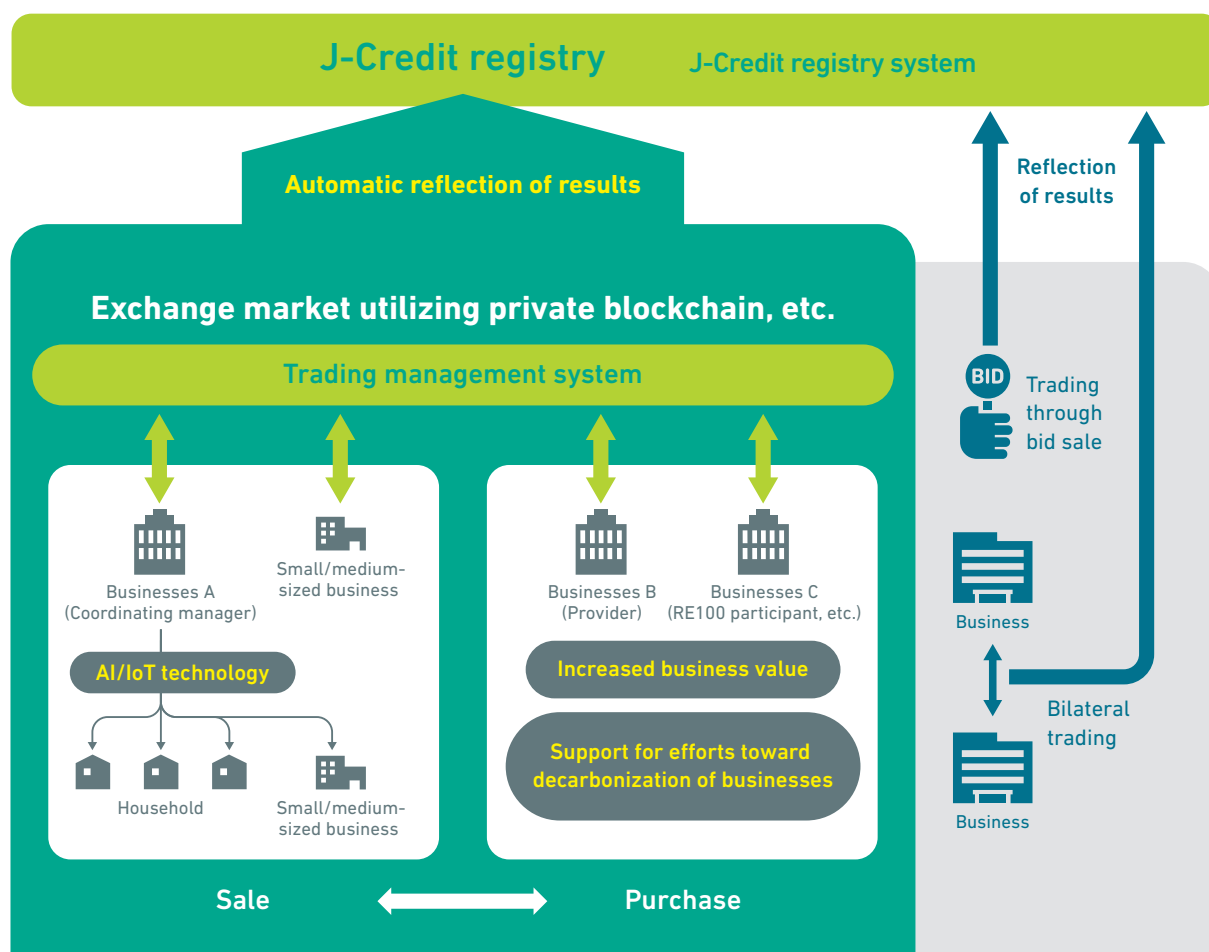
Information and communications technology (ICT), which is general-purpose technology applicable in a wide variety of fields, is also thought to be useful in climate change countermeasures. In this regard, promotion of pioneering climate change countermeasures through “Climate Change and Digital,” combining climate change with ICT and other digital elements, can be expected to bring about social change.

For the “Climate Change and Digital” project, by utilizing digital technology in the J-Crediting Scheme and taking steps to promote an all-in effort including small and medium-sized businesses and

households, the Ministry of the Environment is raising awareness of activities for greenhouse gas reduction and pushing forward investigations to promote further action. Through this, the Ministry hopes to achieve a “virtuous cycle” of environmental protection and growth by promoting environmental investment in such things as solar power generation systems, storage batteries, and electric cars through the visualizing of latent environmental value within households and small and medium-sized businesses and boosting efforts by businesses and local governments toward decarbonization.

### Image of the future the “Climate Change and Digital” project aims for

Introduction of a mechanism in the J-Credit system to make trading in CO<sub>2</sub> reduction through implementation of renewable energy in households, small and medium-sized businesses, etc. easier, using digital technology such as blockchain and IoT





## 2

# ACTIONS BY THE NATIONAL GOVERNMENT FOCUSING ON CLIMATE CHANGE MITIGATION

## Japan's Long-term Strategy under the Paris Agreement

On June 26, 2019, the national government submitted the long-term strategy for low greenhouse gas emission development to the Secretariat of the United Nations Framework Convention on Climate Change.

Japan was the first member among G7 nations to proclaim a decarbonized society in its long-term

society as its ultimate goal. Japan aims to accomplish this as early as possible in the second half of this century, for which Japan makes bold efforts to achieve 80% reduction of greenhouse gas emissions by 2050.

## The Plan for Global Warming Countermeasures and Japan's Nationally Determined Contribution (NDC)

In response to the Paris Agreement, Japan has formulated its Plan for Global Warming Countermeasures. Within this plan, as a mid-term goal for FY 2030, Japan aims to reduce greenhouse gas emissions by 26% compared to FY 2013. Also, as a long-term goal, under a fair and practical international framework with participation of all principal countries, Japan aims to lead the way of the international community in efforts to reduce emissions, according to the abilities of each of the principal emitters, with Japan's goal being an 80% reduction of greenhouse gas emissions by 2050, while accomplishing both global warming countermeasures and economic growth.

Japan's nationally determined contribution (NDC) was decided by the Global Warming Prevention Headquarters on March 30, 2020, and submitted to the Secretariat of the United Nations Framework Convention on Climate Change on March 31. In the NDC, Japan has resolutely stated it will achieve the reduction target of 26% by FY 2030. In addition, Japan will pursue further efforts to reduce greenhouse gas emissions beyond this level. Based on this, a review of the Plan for Global Warming Countermeasures has begun, and additional information will be presented to the UN after the review is completed.

## Measures for controlling fluorocarbon emissions

In 2019, Japan strengthened regulations on fluorocarbons emission control in order to ensure that fluorocarbons in commercial equipment are properly recovered and the recovery rate is improved. The enhanced act requires each actor involved in the equipment disposal process to obtain a certificate of fluorocarbons recovery/destruction/recycling through designated examination.

In addition to the domestically-strengthened policy, Japan launched the Initiative on Fluorocarbons Life Cycle Management (IFL) at the

25th Conference of the Parties to the United Nations Framework Convention on Climate Change (COP25). It aims to promote better understanding of the life cycle management of fluorocarbons globally as well as to facilitate action towards the entire lifecycle of fluorocarbons. Japan, being a global leader in the management of fluorocarbons, remains steadfast as it continues to work towards climate change mitigation.

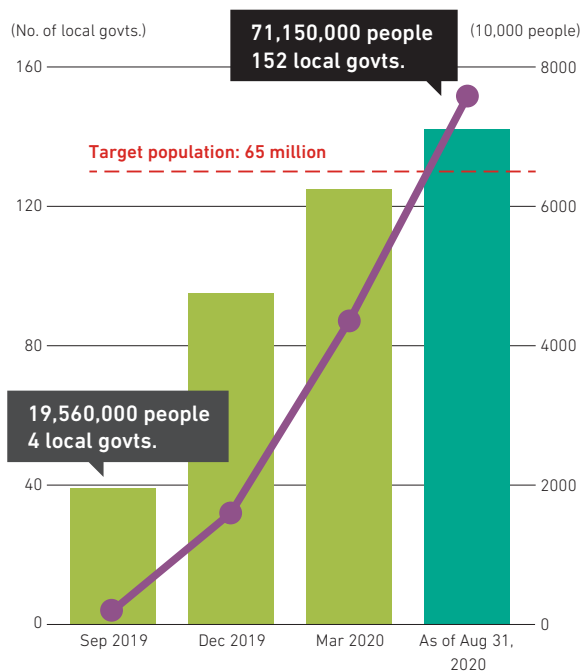
## ACTIONS BY NON-GOVERNMENT PLAYERS TOWARD DEVELOPMENT OF A DECARBONIZED SOCIETY

### Actions by local governments (zero-carbon cities)

Those local governments that have declared (or whose municipal leaders have declared) their intention to achieve virtually zero greenhouse gas or CO<sub>2</sub> emissions by 2050 are positioned as “zero-carbon cities.” The initiatives by the zero-carbon cities were announced at the COP25, and have received international acclaim. Moreover, as of August 31, 2020, the number of local governments that have made zero-carbon declarations reached 152 municipalities, comprising a population of approximately 71,150,000, a number that exceeds the goal of half of Japan’s total population (65 million).

To encourage zero-carbon initiatives of local governments, the Ministry of the Environment has begun to create places of learning to promote the horizontal expansion of effective and practical initiatives of local governments, such as expanding usage of renewable energy and development of decarbonized regional transportation models, and the implementation of new initiatives.

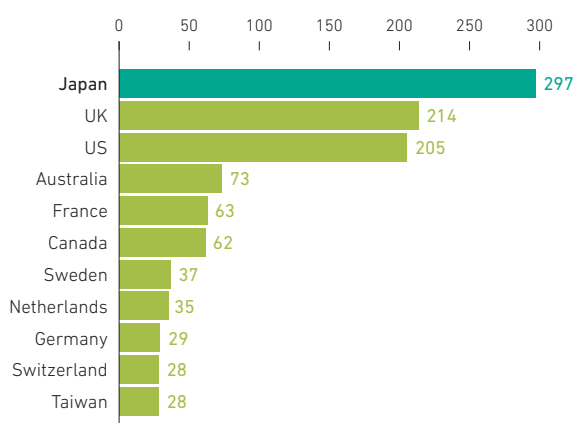
Changes in populations and number of local governments (zero-carbon cities)



Source: Ministry of the Environment

### Task Force on Climate-related Financial Disclosures (TCFD)

Number of TCFD-supporting businesses (top 11 countries and regions)



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

Expressing its agreement with the Task Force on Climate-related Financial Disclosures (TCFD), the Ministry of the Environment is providing support to business implementing initiatives based on the task force’s recommendations on voluntary information disclosure (TCFD report) issued in June 2017. Around the world, 1,388 institutions (including financial institutions, businesses, and national governments) have issued statements of agreement with the TCFD, and as of the end of August 2020, Japan ranked at the top, with 297 institutions having issued statements of agreement.



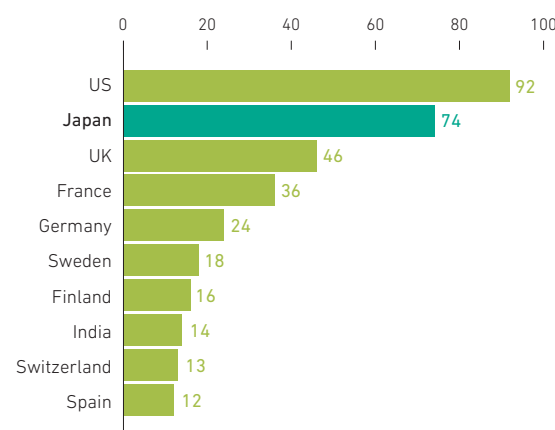
## Goal-setting in conformity with the Paris Agreement (SBT: science-based targets)

Around the world, much attention has been given to the initiative to certify businesses that establish mid-term and long-term greenhouse gas reduction targets based on scientific rationale (SBT) in conformity with the Paris Agreement.

The number of businesses around the world that have received certification as of the end of August 2020 is 454, of which 74 are Japanese businesses.

The Ministry of the Environment also provides support to businesses that incorporate decarbonization into their corporate management, to set ambitious targets in conformity with the Paris Agreement and effectively carry out reduction across the entire supply chain.

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



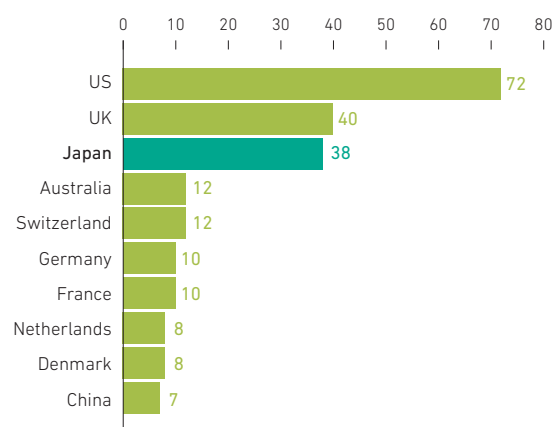
Source: Science Based Targets Website: Companies Take Action; produced by Ministry of the Environment

## International initiative “RE100”

The RE100 is an international initiative to encourage businesses to aim for 100% renewable energy for the power consumption in their own operations, and as of the end of August 2020, the number of businesses participating in the RE100 around the world is 254, of which 38 are Japanese businesses.

Taking the initiative to become a pioneer in adopting renewable energy as a main power supply, in June 2018, the Ministry of the Environment became the world's first public institution to participate as an ambassador of the RE100. Also, from 2020, power consumption of the Shinjuku Gyoen National Garden has been switched entirely to renewable energy, and initiatives have been implemented to achieve 100% power supply from renewable energy sources for power consumption within the jurisdiction of all regional environment offices.

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



Source: RE100 Website; produced by Ministry of the Environment

## ACTIONS BY THE NATIONAL GOVERNMENT REGARDING MARINE PLASTIC AND BIODIVERSITY

### Trends in major domestic policies regarding plastic resource circulation

Although Japan practices proper domestic disposal of plastic, is taking the initiative in practicing the 3Rs (reduce, reuse, recycle), and is making international contributions, it is also the world's 2nd largest producer of container and packaging waste, per capita. To deal with this problem, and to respond to the issue of import restrictions by other Asian countries, the Resource Circulation Strategy for Plastics was established on May 31, 2019. With

“3R + Renewable” as the basic response policy, this strategy was developed by setting ambitious, top-ranking milestones on an international level as the direction to aim for, and promoting the necessary investments and innovations to achieve those goals through collaboration and cooperation with people from all areas and all levels of society.

### Plastic shopping bag charging scheme

In the Resource Circulation Strategy for Plastics, thorough implementation of reduction has been positioned as one of the primary components, and as part of that effort, the plastic shopping bag charging scheme (e.g., abolishing of free distribution) has been implemented to encourage lifestyle change among consumers.

The uniform, nation-wide implementation of the shopping bag charging scheme commenced from July 1, 2020, to promote the reduction of plastic shopping bags by having retail-related businesses charge consumers for plastic shopping bags to carry their purchased products in.

### Initiatives for achieving and assessing Aichi Targets

In 2012, the cabinet decided on the National Strategy on Biological Diversity 2012-2020, which acts as a roadmap for Japan to achieve its Aichi Targets. In regard to national goals in response to the Aichi Targets within this national strategy, in the 6th National Report submitted to the Secretariat of the Convention on Biological Diversity in 2018, progress status was evaluated, the expectation of achieving part of the targets was described, and the overall need for ongoing effort was reported. Ongoing initiatives continue to be carried out to achieve the national goals.

For example, for Target 19 of the Aichi Targets, survey results on the current state and trends of ecosystems representative of Japan obtained through the Monitoring Sites 1000 project were summarized and published in a Summary Report Outline in November 2019, made to be

understandable even to people without expert knowledge, which was widely distributed to local governments and environmental conservation groups. In the same report, for example, it was reported that in community-based forest areas and the surrounding countryside (in those areas surveyed), decreases in butterfly population have been confirmed for approximately 40% of butterfly species surveyed.



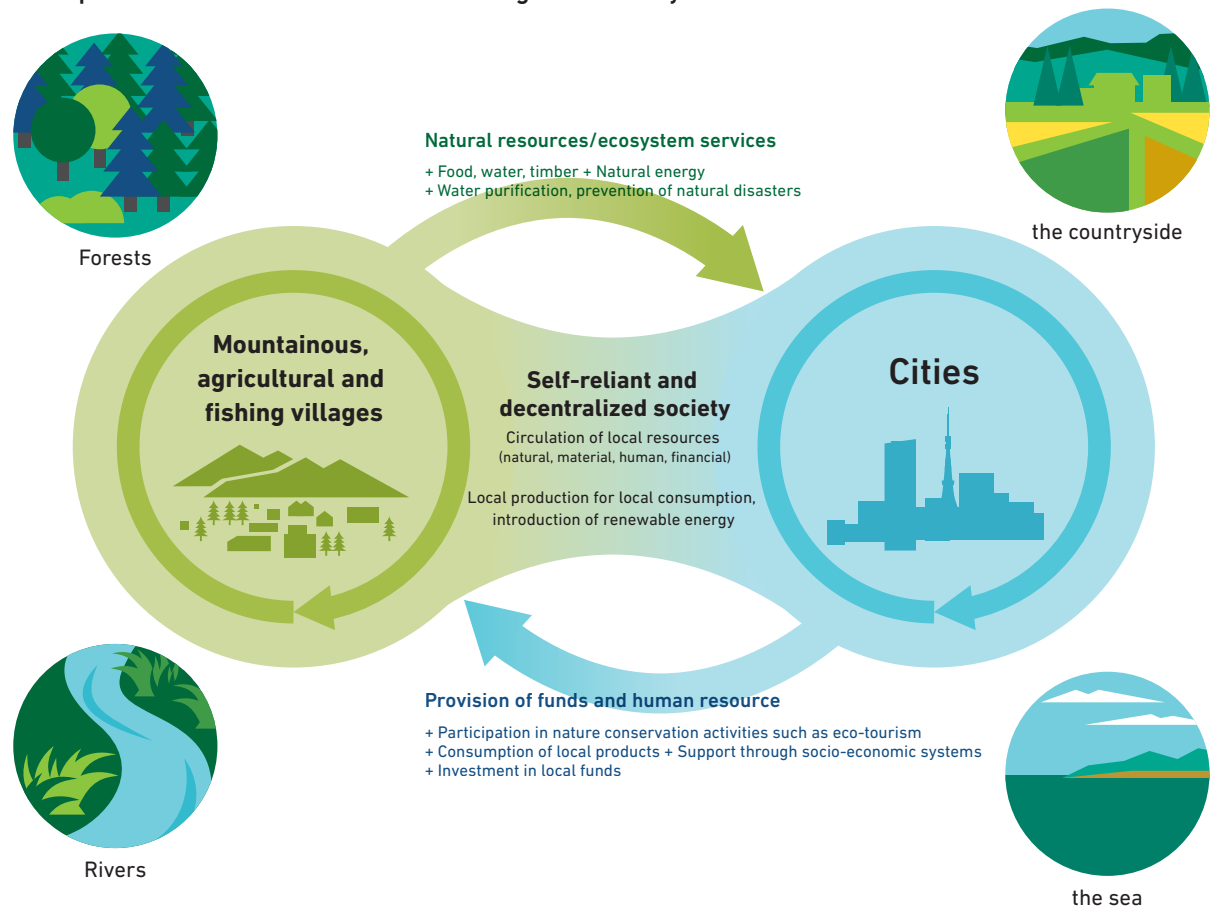
5

# SUSTAINABLE, DECARBONIZED REGIONAL DEVELOPMENT – CREATING A CIRCULAR AND ECOLOGICAL ECONOMY

Based on the critical state of the global environment, the local communities in which we live must also shift to sustainable, decarbonized regional development. In order to create a sustainable society, each region needs to be sustainable. The Fifth Basic Environment Plan proposes a “Circular and Ecological Economy” as a new concept for accomplishing the integrated improvement of environment, economy and society at a regional level, the generation of business that utilizes local resources, and new growth that improves quality of life.

This is an approach for each region to accomplish self-reliant, decentralized regional development with sustainable circulation of the resources that differ according to regional characteristics, while making use of the diverse resources specific to each region, including renewable resources such as water, renewable energy, and timber and artificial stock such as transportation and buildings.

## Conceptual illustration of Circular and Ecological Economy



## DEVELOPMENT OF A CIRCULAR AND ECOLOGICAL ECONOMY NOW UNDERWAY

### Initiatives for dealing with social issues using regional renewable energy

Circular and Ecological Economy initiatives utilizing renewable energy and other resources are being implemented in various regions. In addition to electrical power from regional renewable energy sources being sold within those regions, it can also be utilized for decarbonization of transportation by supplying it for use in electric cars, light rail transit

(LRT), etc., and can enable self-reliant energy supply, even in times of disaster, through the installation of private distribution lines. Moreover, the profit made from selling electrical power generated from renewable energy sources can be put back into the community to help solve regional social issues.

#### A regional comprehensive energy operation centered on waste incineration plants (Smart Energy Kumamoto Co., Ltd.)

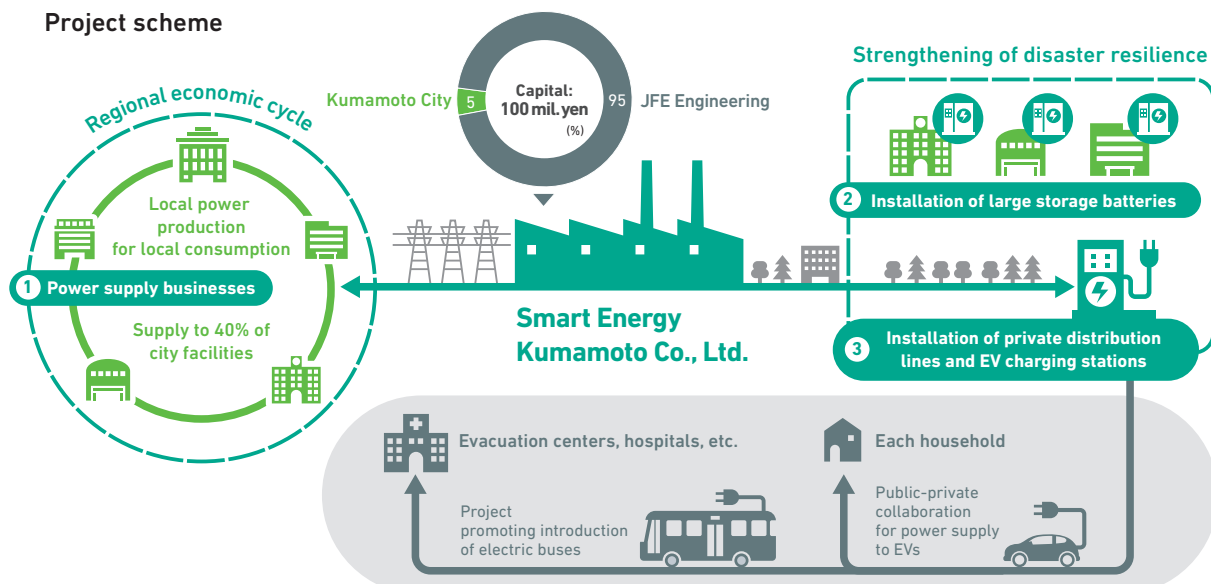
Smart Energy Kumamoto Co., Ltd. is taking action to support city-wide energy-saving project of Kumamoto City through the installation and operation of facilities to contribute to electrical power supply, optimization of the supply and demand of electrical power, and strengthening of disaster resilience through renewable energy sources, with a focus on surplus power from waste incineration plants.

Since May 2019, Smart Energy Kumamoto Co., Ltd. has collected over 10,000 kW of surplus power from two waste incineration plants—Kumamoto City Seibu Incineration Plant operated by JFE Engineering Corporation and Tobu Incineration Plant built, owned

and operated by Kumamoto City—and has supplied that power to approximately 220 public facilities in Kumamoto City, accomplishing local production of electrical power for local consumption.

Through this, Kumamoto City has been able to reduce its annual spending on electricity by approximately 160 million yen, and has pooled half that amount (80 million yen) as energy-saving funds, which it returns to the public as funds to support the purchases of energy-saving household electrical appliances (e.g., zero-energy houses (ZEH) and electric vehicles (EV)).

#### Project scheme



Source: Smart Energy Kumamoto Co., Ltd.

## Regional initiatives for use of circulating resources

Livestock waste, food waste, sewage sludge, plastic, metal, and other recyclable resources, as well as infrastructure like waste treatment facilities, are all local resources that can be used for the creation of a circular and ecological economy.

If recyclable resources are circulated on a scale appropriately adjusted according to each region

and each type of resource (e.g., items appropriate for small-region recycling are circulated within those small regions, as much as possible, and items appropriate for wide-region recycling are circulated with a broad scope), this can generate interactions between diverse people and contribute to solving regional welfare issues.

### Creating gathering places for diverse people in the region through “community station” resource-collection points (Ikoma City, Nara Prefecture)

Ikoma City, in Nara Prefecture, has conducted a model project to demonstrate the usefulness of “resource-recycling community stations,” setting up collection points for recyclable waste, thereby creating opportunities for citizens to gather when putting out garbage, which can be linked to various community projects such as shopping assistance for senior citizens, health promotion, and preventive care.

Community stations have permanent staff on hand and are operated with a system to always provide support for proper separation of garbage. Through this, the 3Rs (Reduce, Reuse, Recycle) initiative has become something close and familiar to local residents, and this has greatly facilitated the separation of garbage. Also, local residents bringing

in unneeded household tableware and books, uneaten canned foods and snack foods, and kitchen scraps and recyclable garbage promote resource-recycling initiatives such as composting kitchen scraps, conducting food drives, and running tableware and clothing reuse markets, and the profit from the sale of resources also leads to profit for neighborhood associations.

Using the every-day activity of taking out the garbage as an opening, this resource-recycling initiative has become an opportunity to change local residents’ way of thinking and encourage concrete actions, such as promoting interactions with people who previously did not have any point of contact with their local communities.

#### Vision of community stations



Source: Ikoma City, Nara Prefecture



## PROMOTION OF ESG FINANCING FOR BUILDING A CIRCULAR AND ECOLOGICAL ECONOMY

To build a circular and ecological economy, it is important to establish profitable, self-reliant operations, and it is essential to have not only public funding but also private sector financing.


In recent years, the expansion and spread of ESG financing (investment and lending with consideration of environmental, social, and corporate governance factors) has been progressing globally, and in Japan too, there has been a rapid expansion, with the ESG investment balance having increased approximately 6-fold in the previous 3 years, from 2016 to 2019, and the portion of global ESG investment balance made up by Japan having risen from 2% in 2016 to approximately 7% of the global total in 2018.

From the High Level Meeting on ESG Finance, set up with the initiative of the Minister of the Environment, a collection of recommendations entitled “Toward becoming a big power in ESG finance” was compiled and released in July 2018.


Based on these recommendations, since 2019, the Japanese government and the leaders of each industry in the fields of finance and investment have cooperated in holding the ESG Finance High Level Panel to hold discussions and implement actions to promote awareness and initiatives regarding ESG finance.

To encourage ESG financing among regional financial institutions, the Ministry of the Environment has produced the “Practical Guide for ESG Regional Finance.” Also, since 2019, the Ministry of the Environment has established the ESG Finance Awards Japan to facilitate the spread and expansion of ESG finance by evaluating and commending the disclosure efforts of the organizations responsible for implementing advanced ESG finance initiatives and those companies that incorporate environmental factors into their corporate management, and widely sharing those efforts with the public.

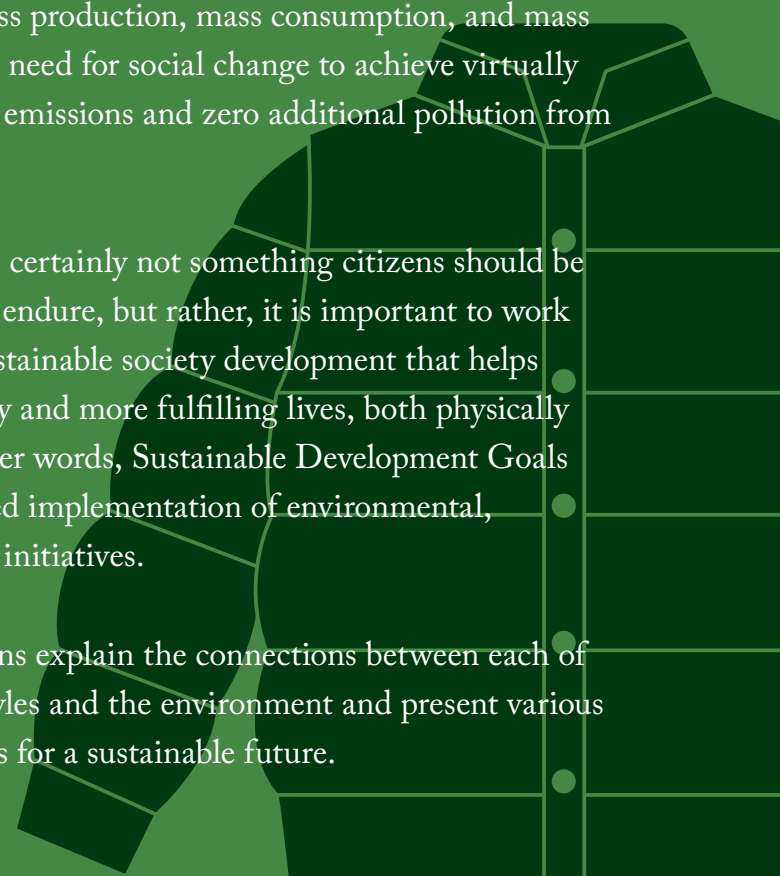
# EFFORTS TO BRING ABOUT SOCIAL CHANGE THAT BEGIN WITH INDIVIDUALS



It is important that we recognize that the crisis conditions such as climate change, marine plastic pollution, and loss of biodiversity stem from our economic and social systems and, at the same time, that these are inseparably connected to our own lifestyles of pursuing convenient living in terms of material aspects and so on.



There is a need for re-evaluation of the current economic and social systems of mass production, mass consumption, and mass disposal, as well as a need for social change to achieve virtually zero greenhouse gas emissions and zero additional pollution from marine plastic litter.



This social change is certainly not something citizens should be forced to reluctantly endure, but rather, it is important to work toward achieving sustainable society development that helps people to live healthy and more fulfilling lives, both physically and mentally; in other words, Sustainable Development Goals (SDGs) for integrated implementation of environmental, economic and social initiatives.

The following sections explain the connections between each of our individual lifestyles and the environment and present various examples of lifestyles for a sustainable future.



3

# LIFESTYLE INNOVATIONS FOR DEVELOPING A SUSTAINABLE, DECARBONIZED SOCIETY

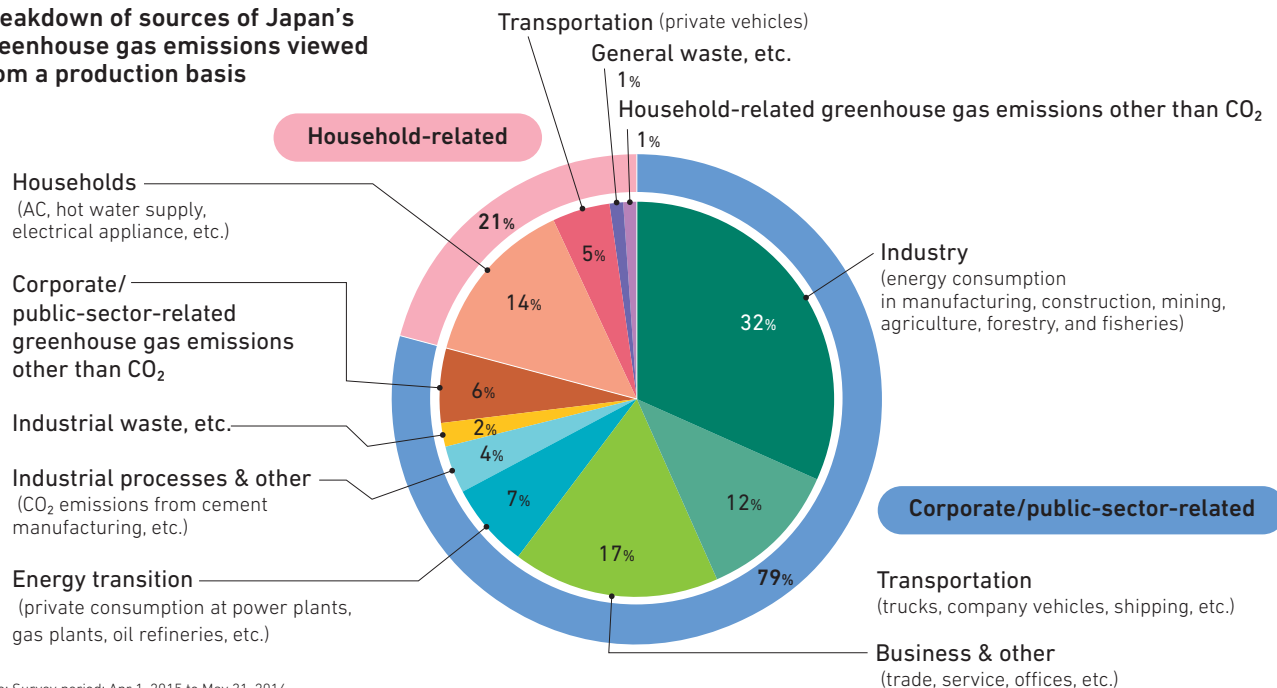
In the process of manufacturing, distribution, service provision, and garbage processing for the products that we purchase and consume in our day-to-day lives, CO<sub>2</sub> and other greenhouse gasses are emitted.

When Japan's greenhouse gas emissions are viewed from a production basis, household-related emissions (which come mainly from household energy consumption through air conditioning, hot water supply, and use of electrical appliances, etc.) account for only a small portion of the total.

On the other hand, when viewed from a consumption basis (i.e., carbon footprint), household consumption has been reported to account for approximately 60% of the total.

Although we cannot make a blanket comparison because the target period of each analysis is different, simply by changing our perspective in such a way, we can begin to see that our lifestyles have a huge influence on climate change and other environmental issues.

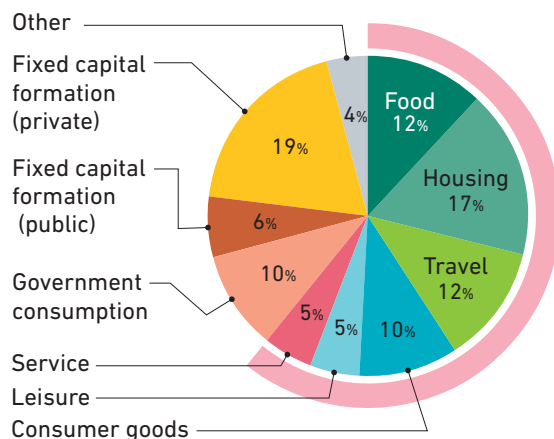
**Breakdown of sources of Japan's greenhouse gas emissions viewed from a production basis**



Note: Survey period: Apr 1, 2015 to May 31, 2016

Note 2: Greenhouse gasses other than CO<sub>2</sub> are CH<sub>4</sub>, N<sub>2</sub>O, HFCs, PFCs, SF<sub>6</sub>, and NF<sub>3</sub>

Source: Ministry of the Environment



**Breakdown of sources of Japan's greenhouse gas emissions viewed from a consumption basis (carbon footprint)**

**Household consumption ≥ 60%**

Note: Survey period: Jan 1, 2015 to Dec 31, 2015

Source: Keisuke Nansai, "Embodied Energy and Emission Intensity Data for Japan Using Input-Output Tables" (provided by National Institute for Environmental Studies); Ministry of Internal Affairs and Communications, "Input-output Table 2015"; produced by Institute for Global Environmental Strategies (IGES)



## 2

## CLOTHES, FOOD, AND HOUSING

### Housing

From the construction stage to usage and eventual demolition, housing has various influences on the environment via CO<sub>2</sub> emission, use of chemical substances, construction waste, etc. As housing-related initiatives, it is important to reduce the amount of energy needed for heating and cooling by constructing houses with high insulation efficiency, improving the insulation of existing houses, and installing energy-saving equipment.

Through initiatives for facilitating the shift toward energy-conservation lifestyles by utilizing knowledge of the behavioral science concept of “nudging,” and through the promotion of regional power producers and suppliers, etc., the Ministry of the Environment is carrying out efforts to encourage consumers to choose power from renewable energy sources.

### Food

The lifecycle of foodstuffs, from production to processing to disposal, has the potential to cause various environmental problems, including emission of CO<sub>2</sub> and waste water, environmental burden from use of agricultural chemicals and chemical fertilizers, and environmental burden from forestry development for conversion to farmland. Moreover, in 2017, an estimated 6,120,000 tons of food was wasted in Japan through needless disposal of still edible foodstuff,

of which 2,840,000 tons came from households.

By buying locally grown fruits and vegetables and locally processed food products, and by buying environmentally-friendly food products such as organic farm products, we can lend support to the efforts of food producers. It is also important to reduce the amount of food waste by completely using up food products in meal preparations, without wasting any, and by reducing the amount of leftovers.

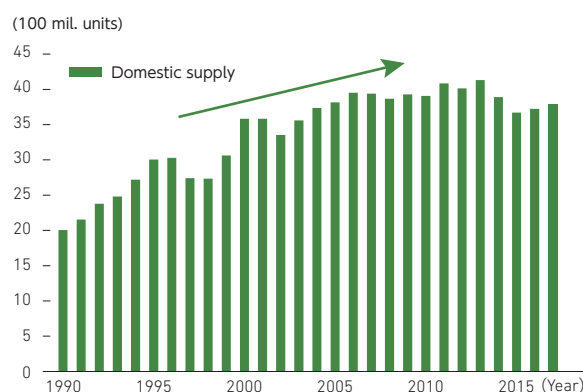
### Clothing

The supply chains of clothing-related industries have various effects on the environment, including producing 20% of global waste water emissions and 10% of global CO<sub>2</sub> emissions. With such things as the fast fashion business model, business practices that assume a large stock of apparel, and the incineration of unused products by manufacturers to avoid loss of brand value, the clothing disposal problem is becoming apparent worldwide.

The market size of the apparel industry is expanding every year. In Japan, although the domestic market size has been shrinking since 1990, the scale of domestic supply has almost doubled, while household purchase and import prices have declined.

Through such actions as selecting environmentally-friendly clothing and participating in initiatives for

#### Changes in domestic apparel supply

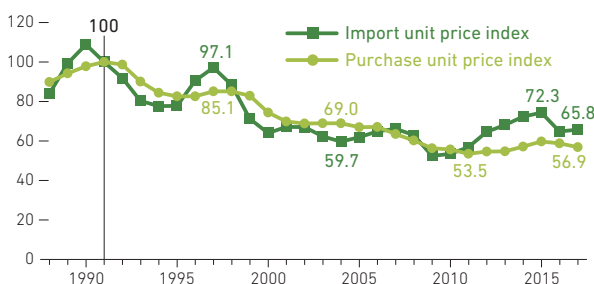


Source: Ministry of Economy, Trade and Industry, “Current Survey of Production” ; Ministry of Finance, “Trade Statistics”

reusing and recycling clothing, individuals can support environmentally-conscious efforts throughout the clothing lifecycle. Such lifecycle-spanning

efforts require collaboration and cooperation between various businesses and communities. Also, if clothing manufacturers carry out manufacturing and sale in collaboration with local agriculture and other businesses from the production stage of thread and fabric, this could contribute to the creation of a circular and ecological economy that can help to solve local issues through the production and sale of clothing.

### Changes in clothing purchase and import prices



Note: 1991 unit prices are set as 100.

Source: Ministry of Public Management, Home Affairs, Posts and Telecommunications, "Family Income and Expenditure Survey" ; Ministry of Finance, "Trade Statistics"

### Recycling of feather products (Green Down Project)

In a world-first initiative, the Green Down Project (general incorporated association) is carrying out recovery and recycling of feather products that have become unneeded, with the aim of realizing a feather-recycling system that provides stable supply of safe and clean feathers through collaboration with more than 100 member companies and organizations, removing feathers from feather products and recycling them as GREEN DOWN.

Unneeded feather products are collected from individuals, organizations, and companies at sites such as clothing stores operated by Green Down Project members. The recovered feather products are taken apart and separated into feathers and other materials, the feathers are cleaned, and the recycled

feathers are used in various products sold as GREEN DOWN products.

The feather removal and cleaning work is performed with a division of labor system, as regional contribution and employment support for people with disabilities.

### Image of a feather-recycling society

Source: Green Down Project (general incorporated association)



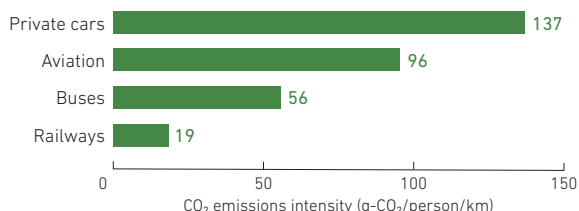
## 3

# TRAVEL, TRAFFIC, AND TRANSPORTATION

The amount of CO<sub>2</sub> emission per kilometer traveled for a single person varies greatly depending on the mode of transport. In Japan, motorization has led to many people using private vehicles to get about. Also, while the number of parcels handled by delivery services is increasing, approximately 20% of those require redelivery.

There are a number of possibilities for adopting environmentally friendly transportation methods according to the characteristics of each region, such as increasing the use of public transport for daily travel in regions with easy access to public transport, or switching to use of eco cars in regions where public transport is difficult to access. As the next-generation of mobility services,

### CO<sub>2</sub> emissions per volume of transport (passengers)



Source: Ministry of Land, Infrastructure and Transport

Mobility-as-a-Service (MaaS) initiatives utilizing ICT to improve the convenience of public transport and use of electric, low-speed Green Slow Mobility are gaining popularity.

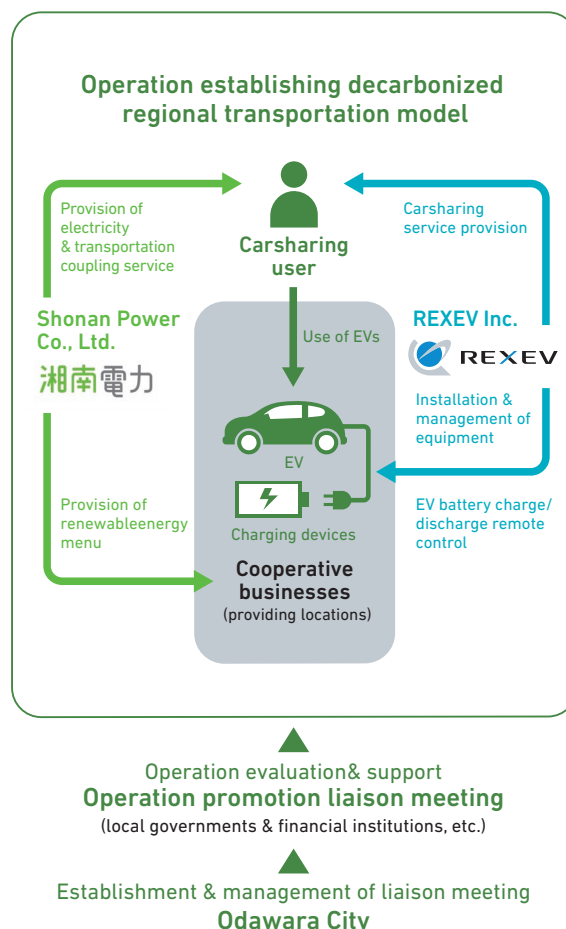
## Carsharing service specializing in electric cars (REXEV, Odawara City, and Shonan Power)

In a collaborative initiative, REXEV, Odawara City, and Shonan Power Co., Ltd. began demonstrating a carsharing service using electric cars within Odawara City in June 2020.

By putting electric cars and charging stations in front of train stations within Odawara City and carrying out stepwise introduction at private establishments, the city office, and other facilities, the operation of a carsharing service for use by the general public and tourists will be implemented. In addition to the electric cars being powered with electricity from renewable energy supplied by Shonan Power, it is expected that the storage batteries used in the electric cars will also be used to help regulate the supply and demand of electricity through charge-discharge control.

By creating demand for renewable energy in the region, this effort will encourage further implementation of renewable energy facilities. It is also expected to have a ripple effect on regional economic stimulation by creating a flow of people through the area via carsharing. Furthermore, as the power stored in the storage batteries used for electric cars can be used in times of disaster, this is expected to strengthen local disaster protection capabilities.

### Carsharing operation image



Source: REXEV Inc.

## 4

## WORK

From the perspective of risk response for problems such as meteorological disasters and infectious diseases, it is advisable to adopt flexible work styles such as telework, which offers the ability to work without being bound by the restraints of time and place. Telework is expected to have an effect in environmental conservation through reduction of CO<sub>2</sub> emissions due to commuting, reduction of paper usage through paperless operations, and so on.

Another initiative is the practice of workations, which combine work with vacation time in places removed from a city office, such as nature-rich resort areas, and include telework using information and communication devices, etc.

The Ministry of the Environment is carrying out efforts to promote workations in national parks and other locations. Working in a different environment from the usual and taking time off on different days or time periods can improve personal motivation in one's work and lead to increased creativity and productivity.

### New ways of working in business regions (Unilever Japan K.K.)

As a new way of working, Unilever Japan K.K. has introduced the practice of "Work from Anywhere and Anytime" (WAA), in which company members can choose for themselves the location and time of their work.

As a further expansion of this system, the company also began "Regional WAA" in 2019. Local governments provide Unilever Japan's company members with coworking spaces (spaces where they can work with internet connection) and accommodation. They also present regional issues and work that they would like the company members to become involved in, and if the company members contribute to solving the issues of local governments, then the local governments will cover the cost of accommodation.

Such new ways of working with cooperation between businesses and communities, while enabling mutual utilization of resources between city and regional areas, can be considered to lead to regional development for a circular and ecological economy that contributes to solving issues on both sides.



**Holding training in the woods in Kakegawa**

Source: Unilever Japan Holdings K.K.

## 5

## LEISURE

Activities such as mountain climbing, hiking, camping, snorkeling, bird watching, and nature observation help us to enjoy the rich blessings of nature, and the absence of such benefits robs people of opportunities to enjoy nature. In recent years, there have been increases in environmentally-friendly initiatives and lodging facilities that make use of a regional natural resources, etc., and travel to places taking initiative for environmental conservation may well contribute to sustainable regional development and the maintenance of natural resources.

The Ministry of the Environment is conducting and promoting the Project to Fully Enjoy National Parks. As an example of efforts for revitalization of regions that have national parks, with the goal of realizing a virtuous cycle of protection and utilization of the natural environment, in Aso-Kuju National Park, bike trekking and other kinds of tours led by registered guides have been opened in pasture land (grassland) during the agricultural off-season, in an initiative that uses part of the money from guide fees to compensate grassland maintenance costs.

### The shape of a sustainable future experienced at KURKKU FIELDS

In November 2019, on a vast tract of land of about 30 ha in Kisarazu City, Chiba Prefecture, KURKKU Co., Ltd. opened the Sustainable farm & Park "KURKKU FIELDS," which includes farms, a meat processing plant, restaurants, outdoor art works, and more.

KURKKU FIELDS offers a variety of attractions for visitors to experience what a sustainable future could be like. For example, the vegetable farm sells JAS-certified organic vegetables and the ham and sausage factory sells processed meats, including meat from wild boars culled in efforts to prevent damage from harmful animals. In such ways, the project creates a place where visitors can understand

the narrative of resources that integrates production, processing, and consumption.

The purpose of KURKKU FIELDS is to give visitors a firsthand experience of their connection with nature that they were not aware of in their normal lives, and help them realize that sustainable practices will lead to a better future.



**Overall image of KURKKU FIELDS**

Source: KURKKU Co., Ltd.



# ACTIVITIES FOR RECONSTRUCTION AND ENVIRONMENTAL REMEDIATION AFTER 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 (TEPCO) Fukushima Daiichi Nuclear Power Plant 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 done to reconstruct and revitalize the disaster areas.

# 4

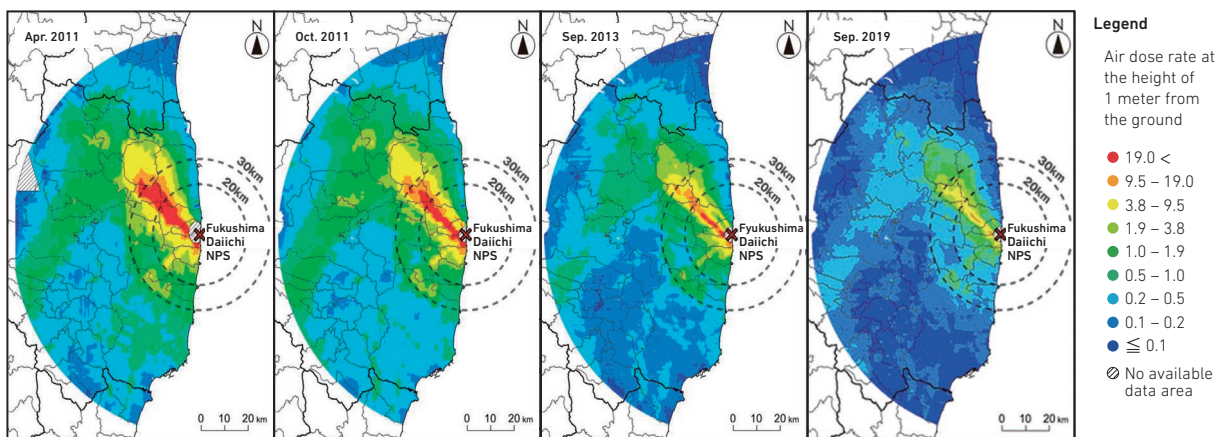
## 1

## AIR DOSE RATES

According to airborne monitoring data, as of November 2019, the air dose rate of radioactivity at a height of 1 m above the ground within the 80-km zone around the Fukushima Daiichi power plant had declined by about 78% vs. the rate in November 2011. The radioactive materials released in the Fukushima Daiichi nuclear disaster included mainly iodine-131, caesium-134, and caesium-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 RESTORING THE ENVIRONMENT IN DISASTER STRICKEN AREAS

### Decontamination measures for soil, etc. 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 designated Difficult-to-Return Zones (DRZ).

In the DRZ, communities in those areas have drawn up Plans for Specified Reconstruction and

Revitalization Bases, 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 waste disposal, including demolition work, in all Specified Reconstruction and Revitalization Bases: Futaba, Okuma, Namie, Tomioka, Iitate, and Katsurao. In regard to DRZ, in accordance with the complete reopening of the

JR Joban railway line, for some parts of the Specified Reconstruction and Revitalization Bases set up within the DRZ of Futaba, Okuma, and Tomioka, the evacuation order has now been lifted for the first time.

## Establishment of Interim Storage Facility

An Interim Storage Facility is established to enable safe and centralized storage of soil and waste removed in decontamination work, and for designated waste (radioactive waste that exceeds 100,000 Bq/kg\*) stored in Fukushima Prefecture, until the time of final disposal. Of the roughly 14 million m<sup>3</sup> of soil and waste scheduled to be transported from Temporary Storage Sites to the

Interim Storage Facility, about 6.68 million m<sup>3</sup> had been transported as of the end of FY2019. In continuation of this work, in accordance with the “Policy on Interim Storage Facility Project in FY2020” announced in January 2020, the transportation will be mostly completed (except for designated DRZ) by FY2021.

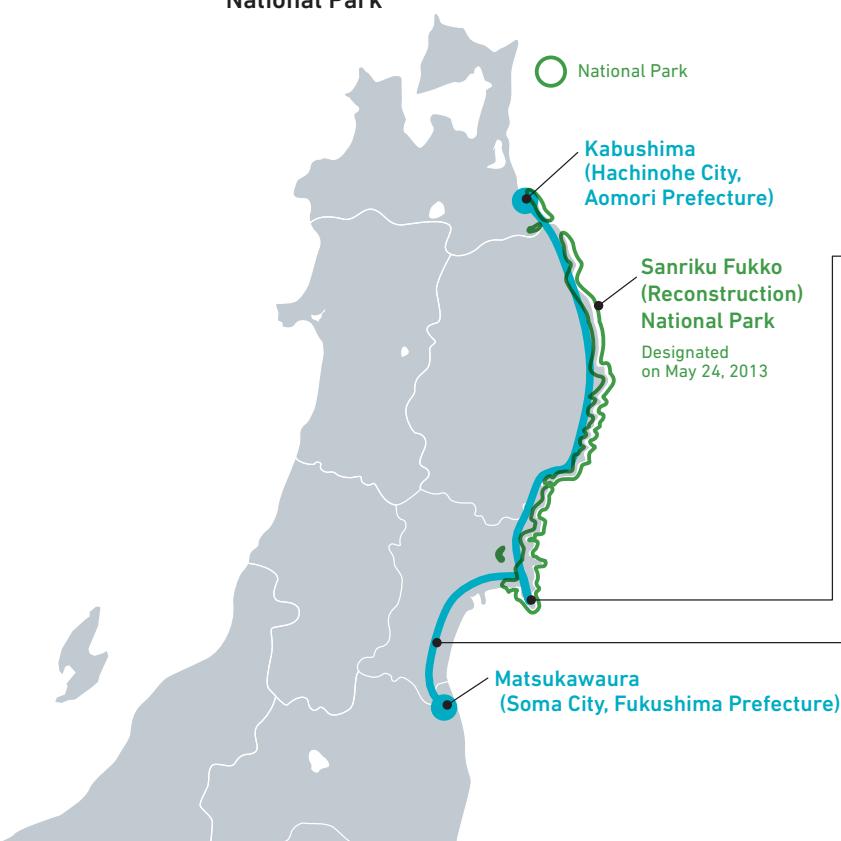
\*The sum of the radioactivity concentrations of caesium-134 and caesium-137.

## Green reconstruction

The Michinoku Coastal Trail is a long nature trail that follows the Pacific coastline from Hachinohe City in Aomori, through Sanriku Fukko (reconstruction) National Park, to Soma City in Fukushima Prefecture. With the help of local volunteers, the full trail covering over 1,000 km was opened in June 2019.

In October 2019, the Oshika Peninsula Visitors Center was opened in Ishinomaki City, Miyagi Prefecture, as part of the strengthening of local disaster protection capabilities, and as a regional eco-tourism promotion base to advance maintenance and repair work for reconstruction that contributes to the rebuilding of damaged park facilities and revitalization of tourist areas.

### Efforts in Sanriku Fukko (reconstruction) National Park



Oshika Peninsula Visitors Center  
(Ayukawahama)  
Opened October 2019

Michinoku Coastal Trail Fully  
Opened June 9, 2019



Source: Ministry of the Environment

# ENVIRONMENTAL ADMINISTRATION RESPONSE TO CORONAVIRUS DISEASE 2019 (COVID-19)

Since being verified in December 2019, COVID-19 has become a global pandemic, and the spread of the pandemic has exposed the risks of a global economy dependent on the mobility of people, property, and money across borders.

On April 7, 2020, the national government declared a state of emergency in Tokyo and six other prefectures, according to law, and on April 16, the government extended emergency measures to all prefectures. Furthermore, on May 4, the period for execution of emergency measures was extended to May 31.

With the measures implemented to prevent further spread of infection, such as closure of schools throughout Japan, avoidance of going outside, and self-imposed restriction of entertainment facilities and other types of self-restriction of businesses, the COVID-19 pandemic has had a huge impact on people's lives and socioeconomics.

Under such circumstances, on July 17, 2020 the national government determined the "Growth Strategy Action Plan," and as a basic principle for coexisting with coronavirus and operating in a post-coronavirus society, the government has recognized the need for designing the image of a sustainable society, including the realization of a decarbonized society and circulating economy, and has determined to conduct investigation into these matters.

The following sections present environmental administration response to COVID-19.

# 5



## 1

## ENVIRONMENTAL ADMINISTRATION ACTIONS REGARDING COVID-19 TO DATE

In order to maintain the medical activities that support society, and to continue our daily lives and socioeconomic activities, it is necessary to properly dispose of waste related to COVID-19 and ensure that the waste treatment system within the waste disposal industry is properly maintained. The Ministry of the Environment is putting its full effort into securing the waste treatment system and implementing on-site infection prevention measures, etc.

As measures to prevent the spread of infection in national parks and gardens under the Ministry's jurisdiction, in addition to displaying posters and placing hand sanitizer in rest areas and other

locations in national parks and other facilities for visitors to use, on February 28, 2020 the Ministry formulated a strategy for the opening and closing of park facilities. Later, in accordance with the declaration of a state of emergency, the Ministry closed 67 facilities (visitors centers and others) within national parks.

With regard to operations within the Ministry, also, non-essential and non-urgent operations were reduced or suspended, and the work system was changed to one in which most personnel (other than those who cannot perform their duties without going to the workplace) perform their work from home through telecommuting.

## 2

## ENVIRONMENTAL ADMINISTRATION RESPONSE REGARDING COVID-19 EMERGENCY ECONOMIC MEASURES

On April 7, 2020, to protect the lives and livelihoods of the nation's citizens and revitalize the economy, the National government newly established the "Environmental Administration Response Regarding COVID-19 Emergency Economic Measures."

To reduce the risk of large-scale outbreaks occurring through restaurants and other such establishments where an unspecified large number of people may gather, the Ministry of the Environment is providing support for the installation of high-performance ventilation equipment and other equipment designed to reduce loss of heating and cooling, save energy, and reduce CO<sub>2</sub> emissions. Furthermore, to promote the transition to a sustainable and resilient decarbonized society, the Ministry is supporting the installation of self-consumption solar power generation equipment and storage batteries for businesses attempting to develop domestic production bases and other domestic facilities,

which will contribute to the promotion of decarbonization and disaster prevention. Together with businesses' voluntary efforts against climate change, this support will aid the strengthening of business infrastructure.

In response to COVID-19, as in other countries, the use of telework, online education, and Web conference systems has progressed rapidly in Japan. These changes may well contribute to reduction in CO<sub>2</sub> emissions associated with travel and other activities and will also lead to reformation in ways of working and learning. For these reasons, it is important that these methods be fully utilized even after the COVID-19 pandemic has been overcome.

Utilizing the endeavors and knowledge of environmental administration up to this point, we will move forward with maximum effort to overcome the COVID-19 pandemic and to develop a sustainable, decentralized, self-reliant, and strong economic society after the pandemic.

# CIRCULAR and ECOLOGICAL ECONOMY (Ja)

- The life-based ecosystem draws potential of people and nature in

[Self-reliance & decentralization] × [Mutual cooperation] × [Circulation & symbiosis]

Ownership

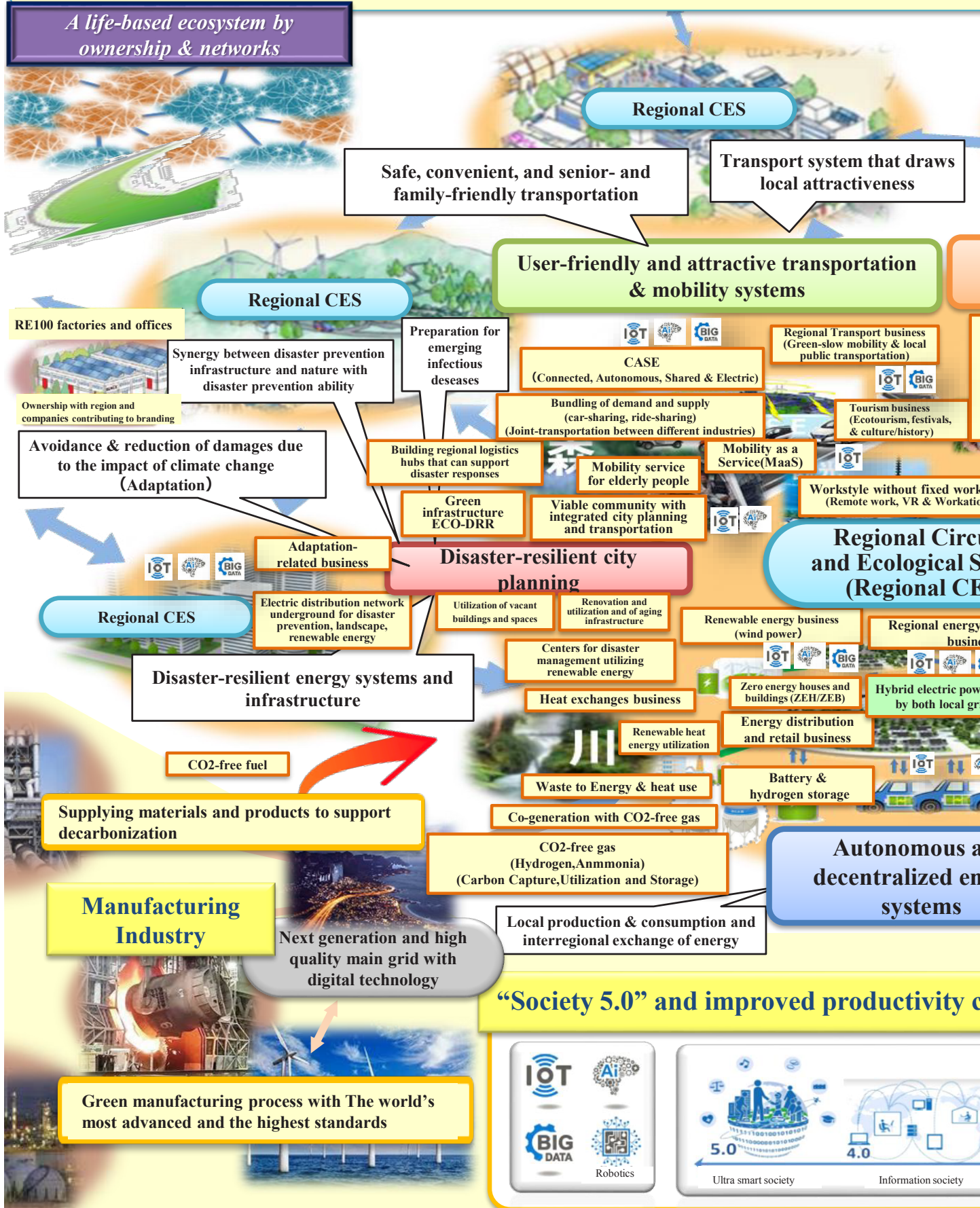
Networks

Sustainability

= Vital **Circular and Ecological Economy**

➔ The basis for local communities that leads growth by creating new values and business

*A life-based ecosystem by ownership & networks*





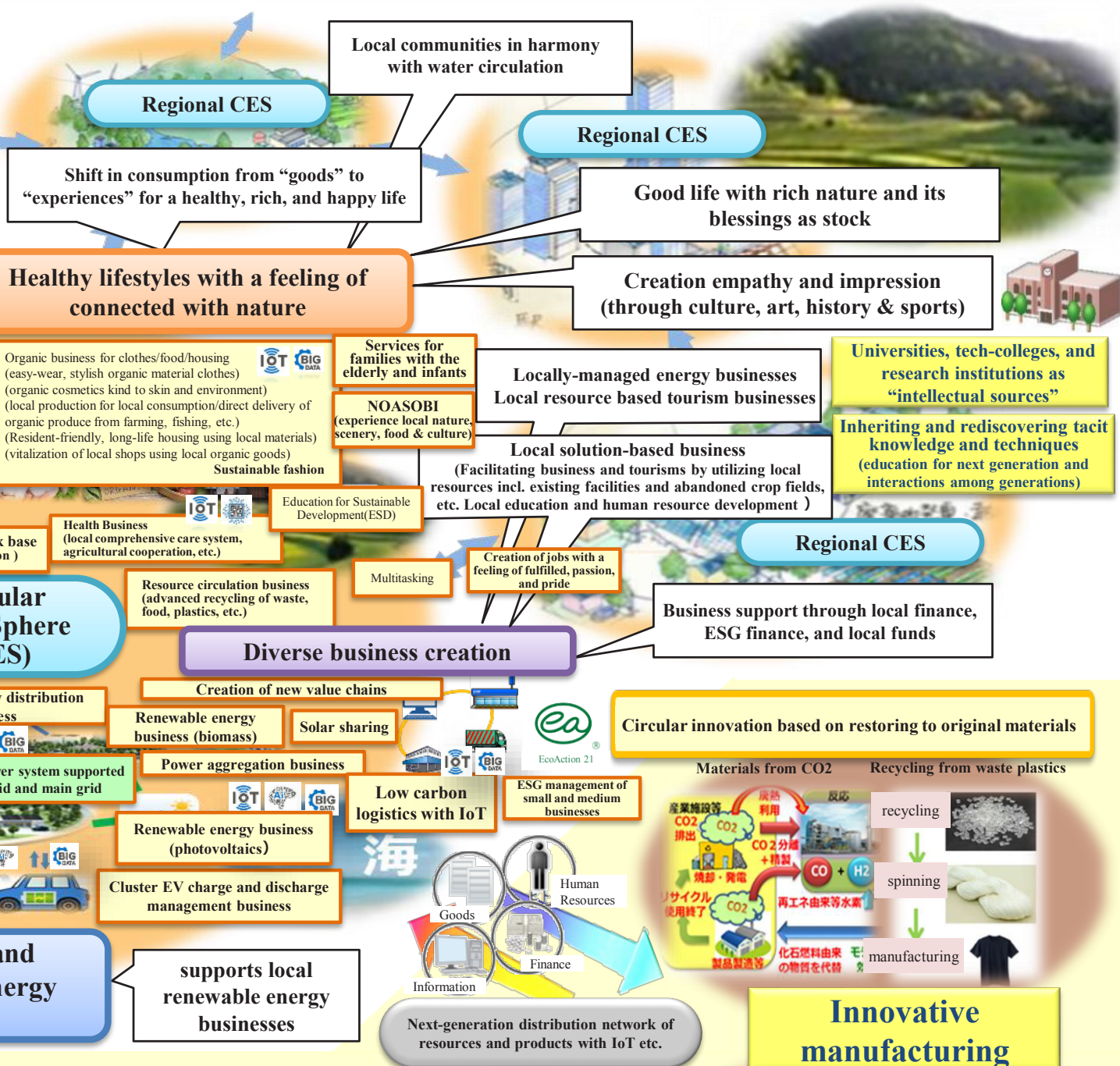
# Japan's vision to realize decarbonization and SDGs)

29

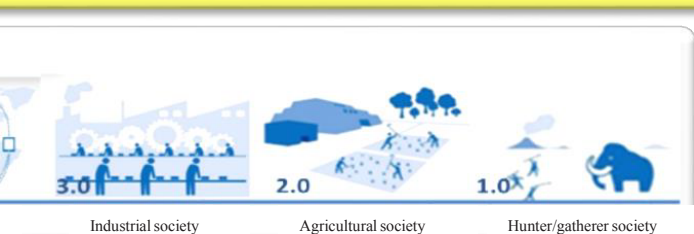
in local communities by integrating the cyber and physical space -

**and Ecological Economy** ⇒ Achieving decarbonization & SDGs, and to the world human security and youth & women's empowerment as a basis

**Businesses** (Richness can be spread out nationwide as a self-reliant region having organic linkages with other regions enables people to live a healthy and lively life with happiness and pride)



create "Circular and Ecological Economy"

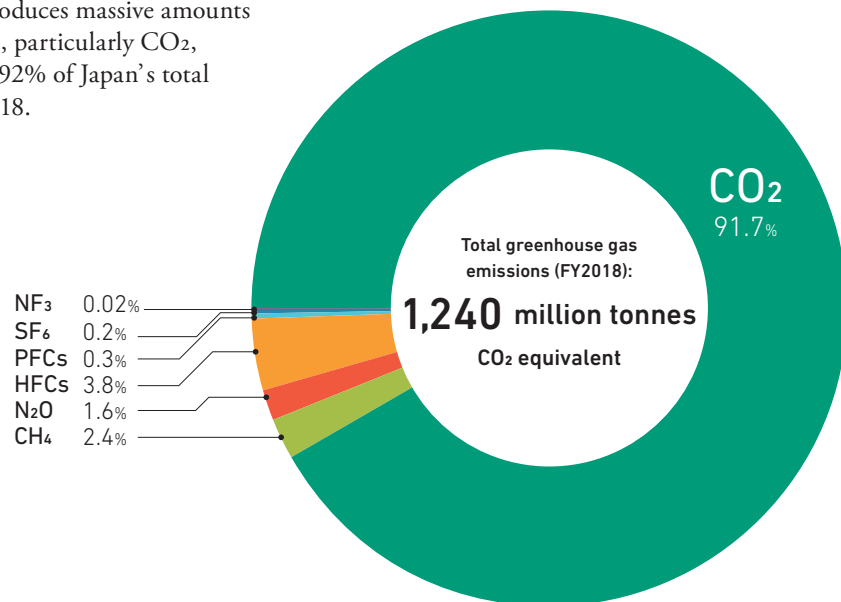


Material innovation based on organic materials

## ADDITIONAL MATERIALS FROM THE 2020 ANNUAL REPORT ON THE ENVIRONMENT

### Breakdown of Greenhouse Gas Emissions in Japan (FY2018)

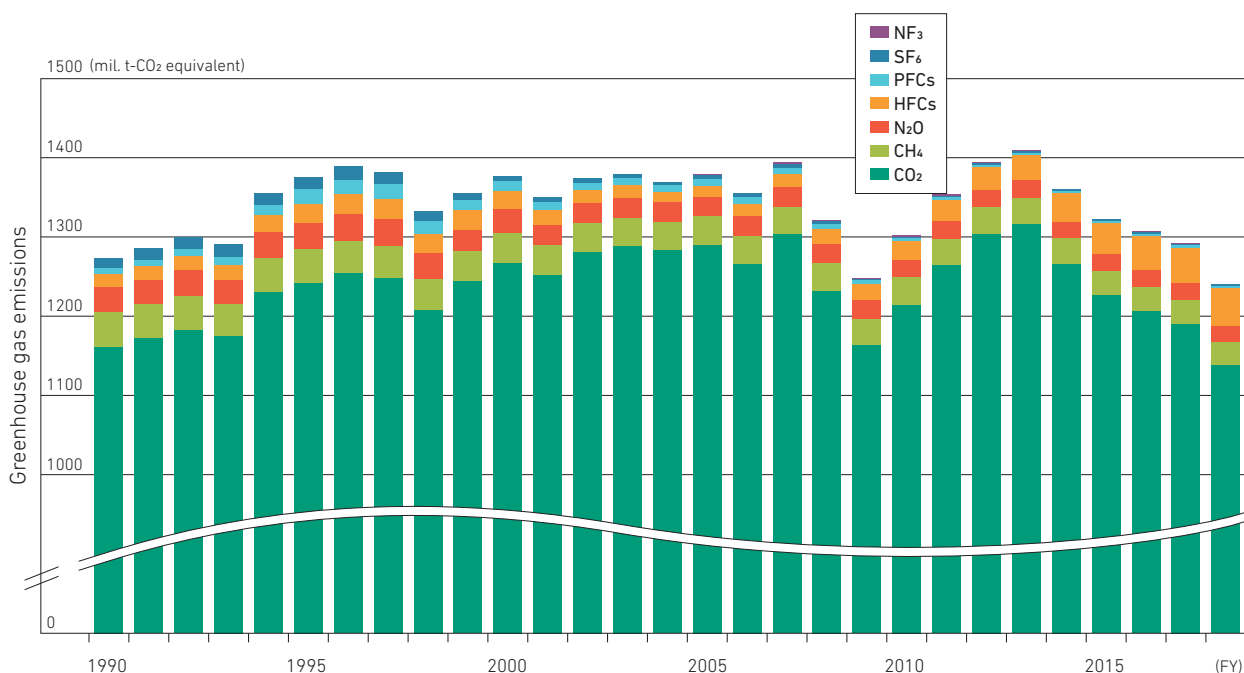
Globally, fossil fuel combustion produces massive amounts of anthropogenic greenhouse gases, particularly CO<sub>2</sub>, which accounts for approximately 92% of Japan's total greenhouse gas emissions in FY 2018.



Source: Ministry of the Environment

### Greenhouse Gas Emissions in Japan

Japan's total greenhouse gas emissions in FY 2018 were equivalent to approximately 1,240 million tonnes of CO<sub>2</sub>, a 3.9% drop from the previous year. This was due to the decrease in energy consumption through energy conservation, and the increase in the share of non-fossil fuels within the domestic energy supply.



Source: Ministry of the Environment

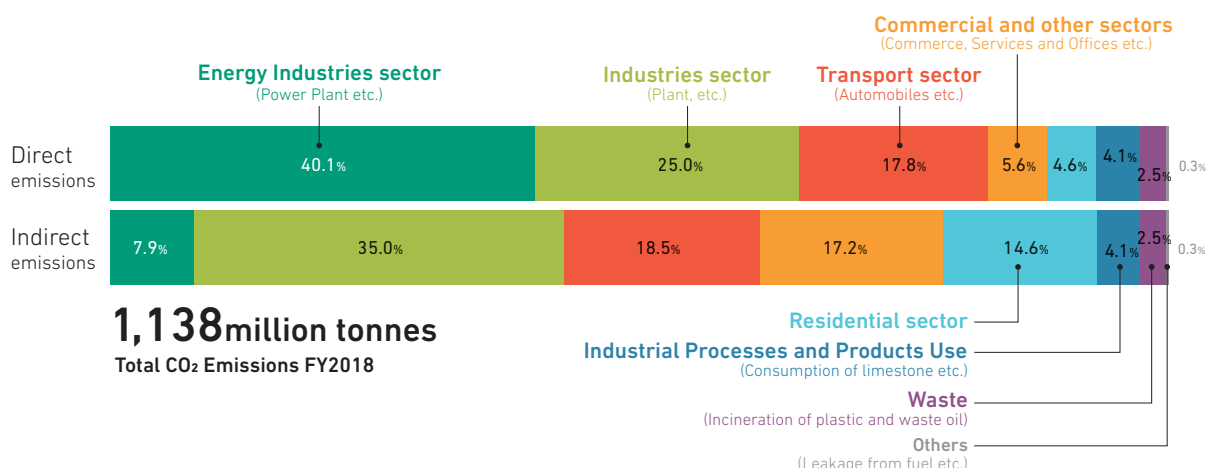


# GHG Emissions in Japan

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

## Breakdown of CO<sub>2</sub> Emissions by Sector

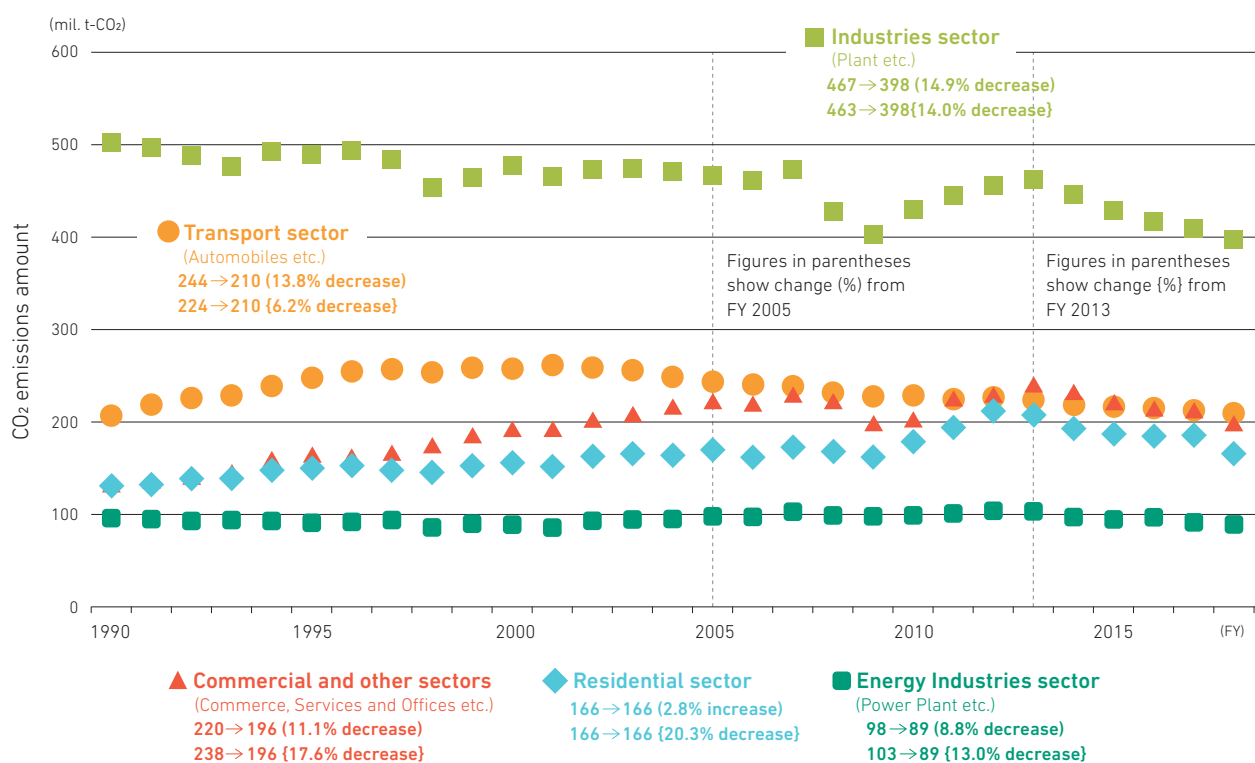
The sector with the largest CO<sub>2</sub> emissions in indirect emissions in FY 2018 was industries sector, accounting for approximately 35.0% of Japan's total.



Source: Ministry of the Environment

## Energy originated CO<sub>2</sub> Emissions by Sector (Indirect Emissions)

Plotting energy originated CO<sub>2</sub> emissions by sector reveals that emissions in every sector decreased from FY 2013.



Source: Ministry of the Environment

# ADDITIONAL MATERIALS FROM THE 2020 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	Extinct in the Wild	Threatened Species			Near Threatened	Data Deficient	Total of listed species	Endangered Local Population
					Endangered Class I		Endangered Class II				
					Class IA	Class IB					
					CR	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

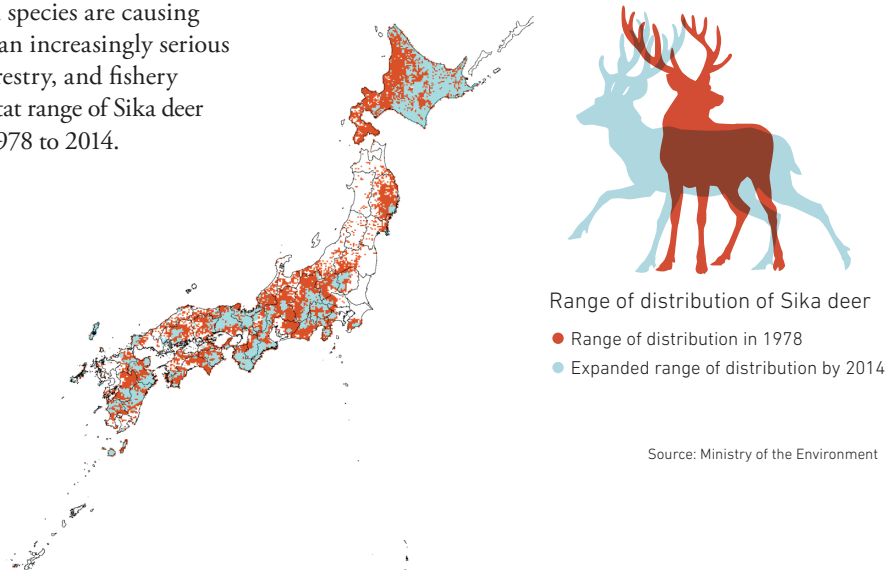
Source: Red List 2020 by the Ministry of the Environment

# Biodiversity

Additional materials provide more details about biodiversity in Japan.

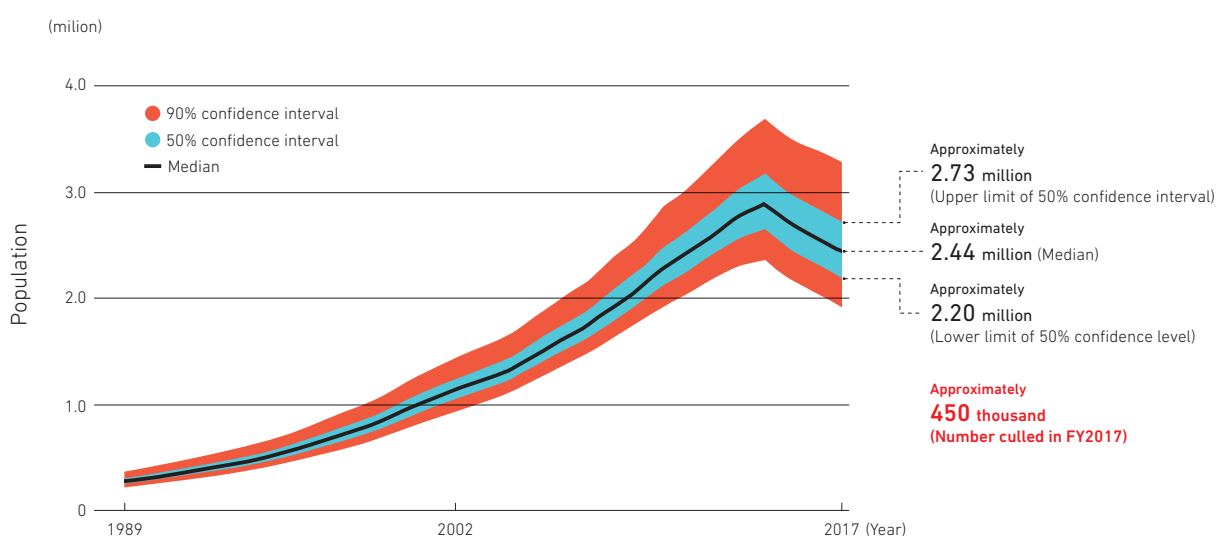
## Growing Range of Sika Deer

While certain flora and fauna are endangered, there are also issues with other species, such as Sika deer and wild boar, that are rapidly expanding their range of habitat and growing their populations. Such species are causing increasing damage, resulting in an increasingly serious situation for the agricultural, forestry, and fishery industries. For example, the habitat range of Sika deer expanded approx. 2.5 fold from 1978 to 2014.



## Estimated Number of Sika Deer in Japan (excluding Hokkaido prefecture\*)

By implementation of various approaches, the number of capturing of sika deer increases, and the estimated number of individuals tends to decrease.



\*: In FY 2016, estimated number in Hokkaido was approx. 450,000, and number culled was approx. 120,000 (Hokkaido data).

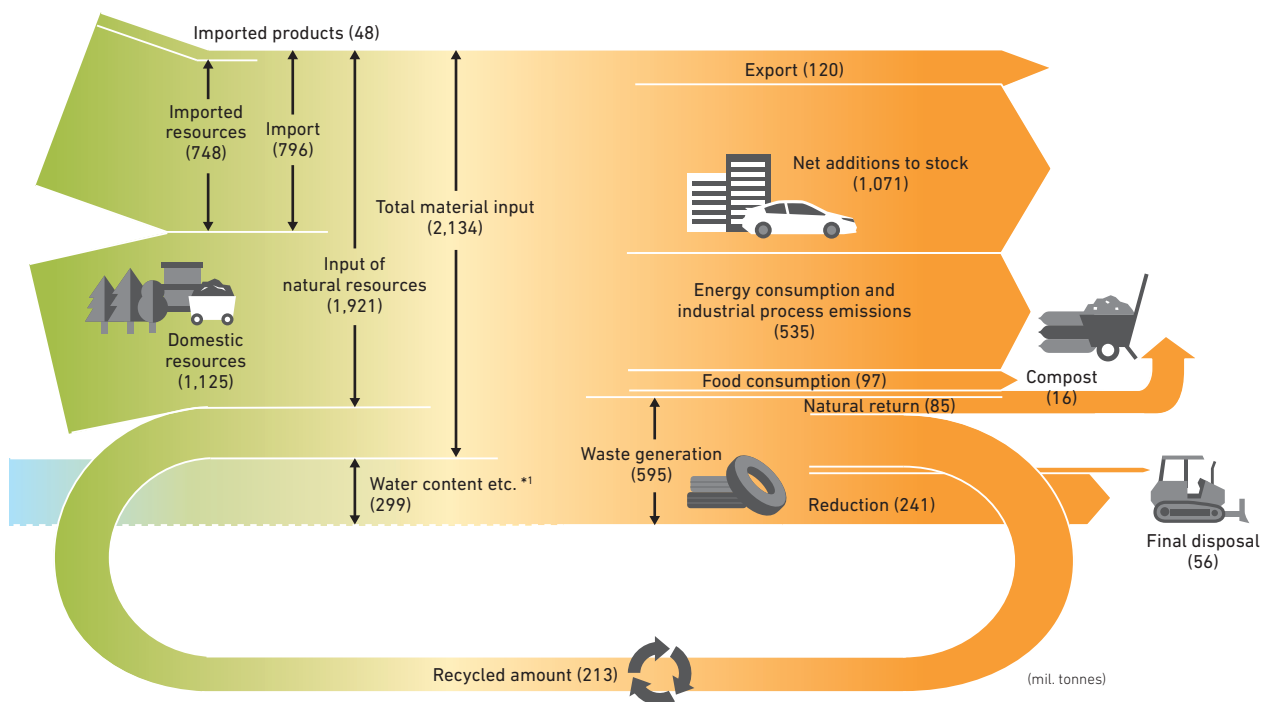
Source: Ministry of the Environment

## ADDITIONAL MATERIALS FROM THE 2020 ANNUAL REPORT ON THE ENVIRONMENT

### Material Flow in Japan

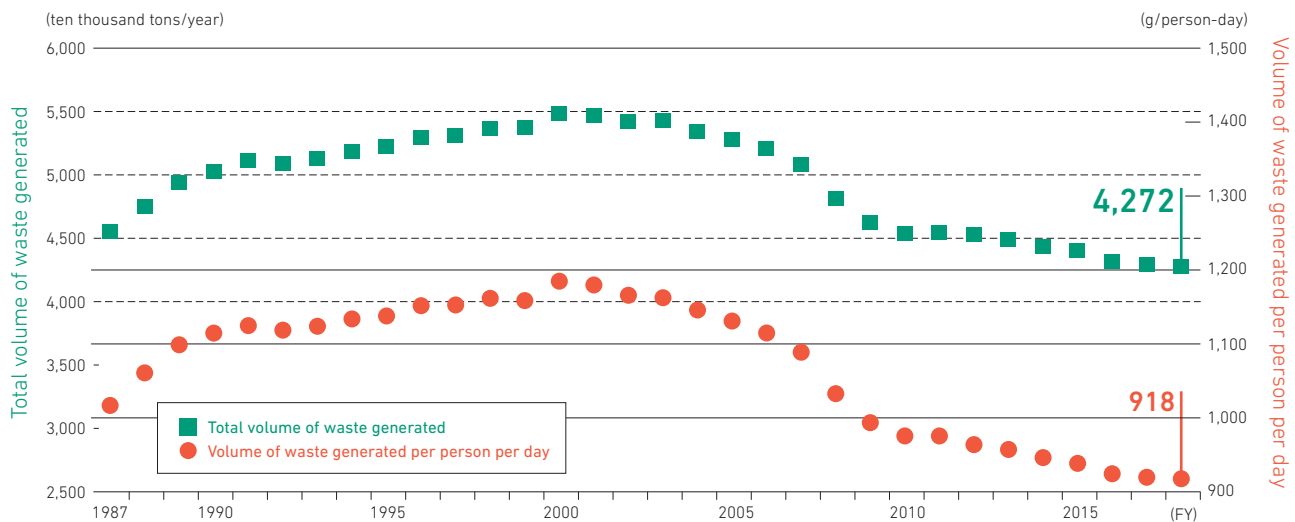
In order to establish a sound material-cycle society, it is necessary to comprehend material flows (or substance flows) to understand the extent of material extraction, consumption, and disposal in Japan. Japan uses material flows to determine targets for the four indicators of resource productivity,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



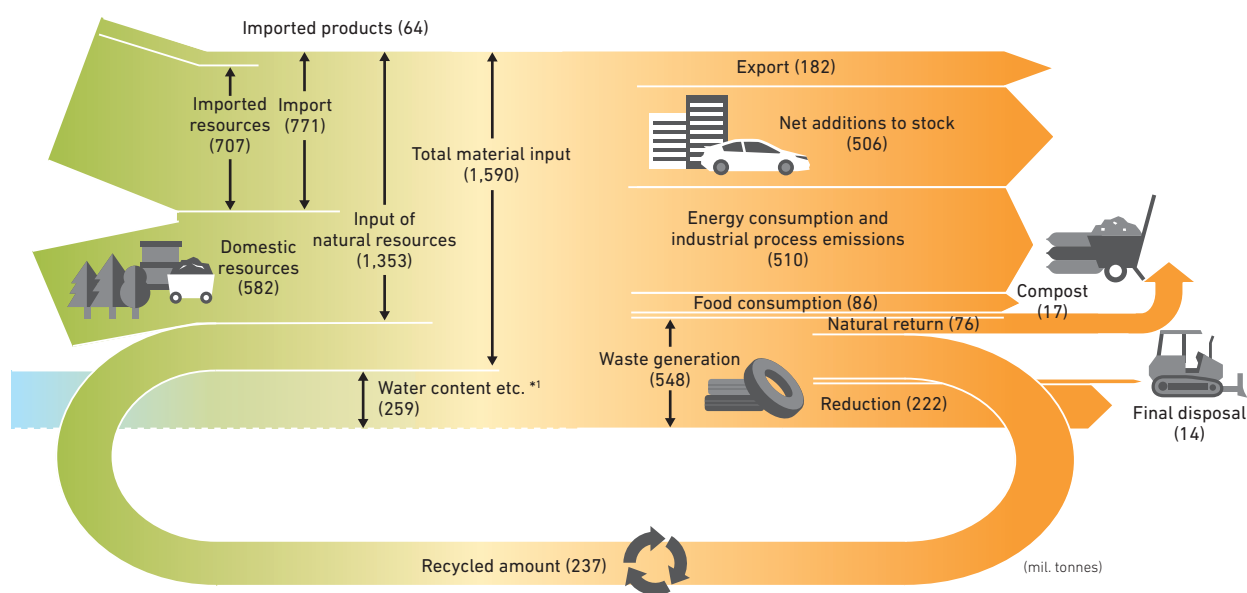


# Sound material-cycle society

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)

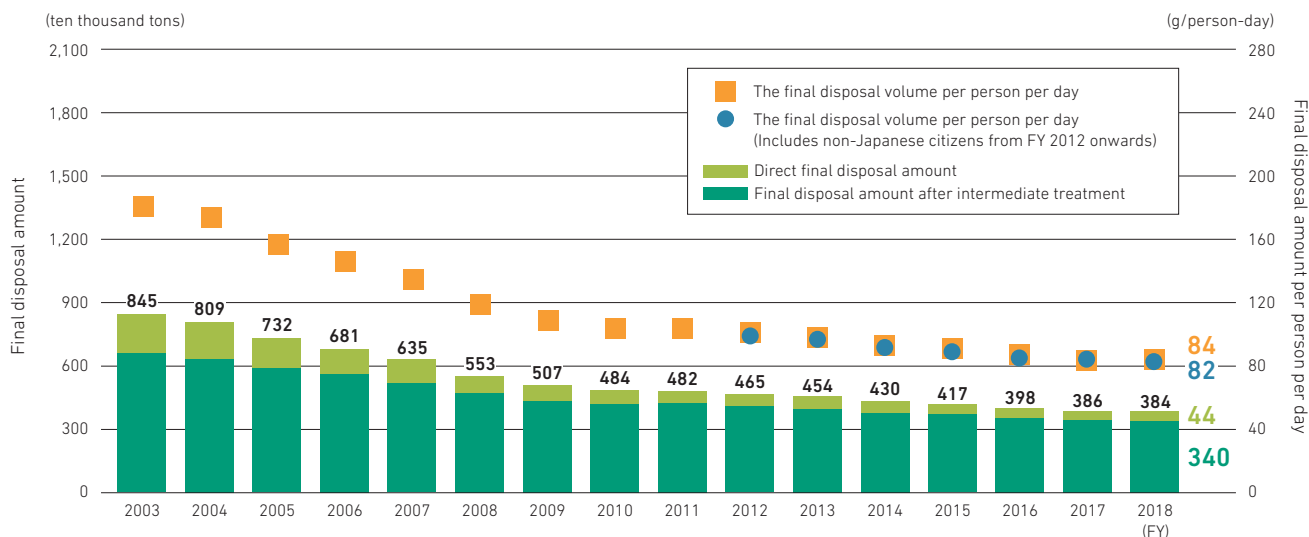
**FY2017**



Source: Ministry of the Environment

## 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.



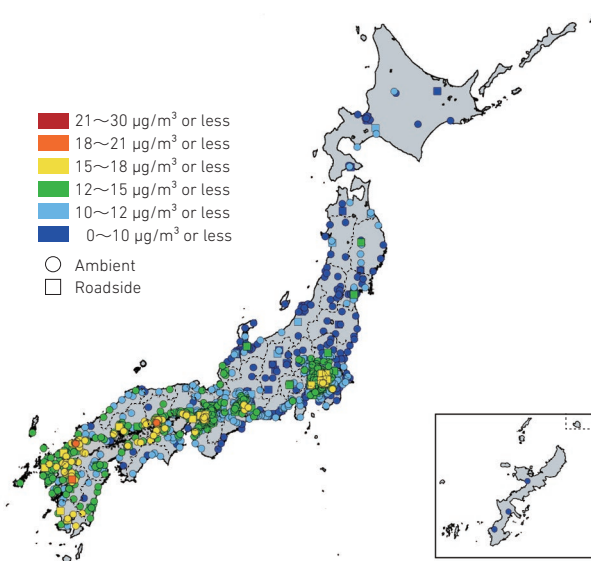
## ADDITIONAL MATERIALS FROM THE 2020 ANNUAL REPORT ON THE ENVIRONMENT

### Fine particulate matter

In FY2018, the rate of compliance with ambient air quality standards for fine particulate matter (PM 2.5) was 93.5% for ambient air pollution monitoring stations and 93.1% for roadside air pollution monitoring stations throughout Japan. The annual average was  $11.2 \mu\text{g}/\text{m}^3$  for ambient air pollution monitoring stations and  $12.0 \mu\text{g}/\text{m}^3$  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	2013	2014	2015	2016	2017	2018
No. of valid stations						
Ambient	492	672	765	785	814	818
Roadside	181	198	219	223	224	232
No. of valid stations compliant with ambient air quality standards						
Ambient	79	254	570	696	732	765
	16.1%	37.8%	74.5%	88.7%	89.9%	93.5%
Roadside	24	51	128	197	193	216
	13.3%	25.8%	58.4%	88.3%	86.2%	93.1%

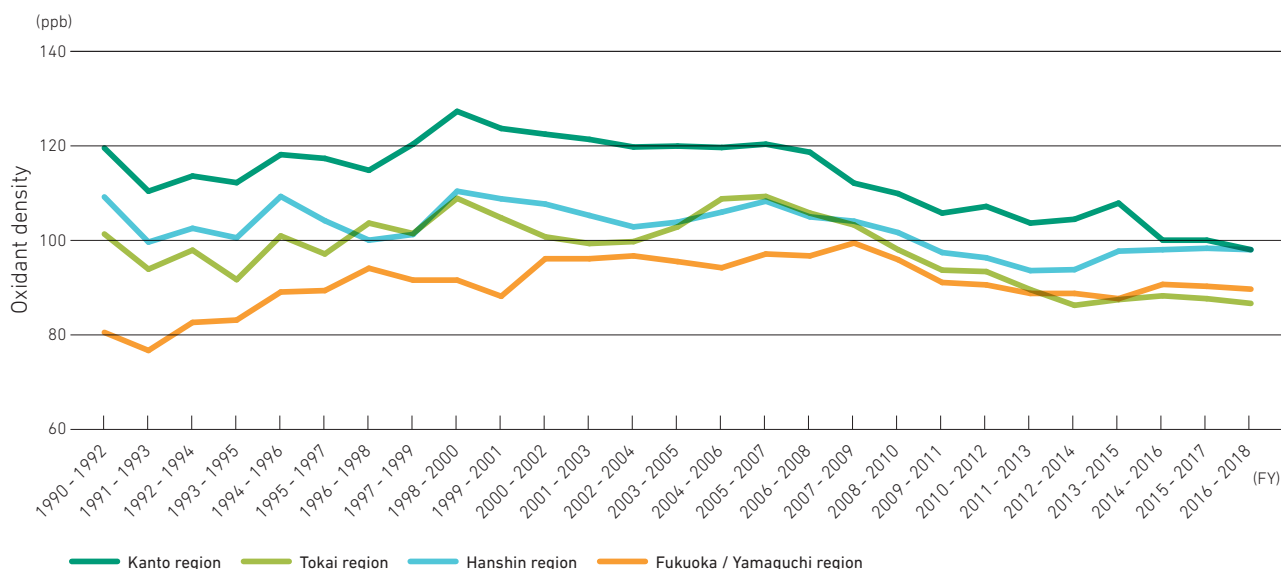
Source: Ministry of the Environment



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.



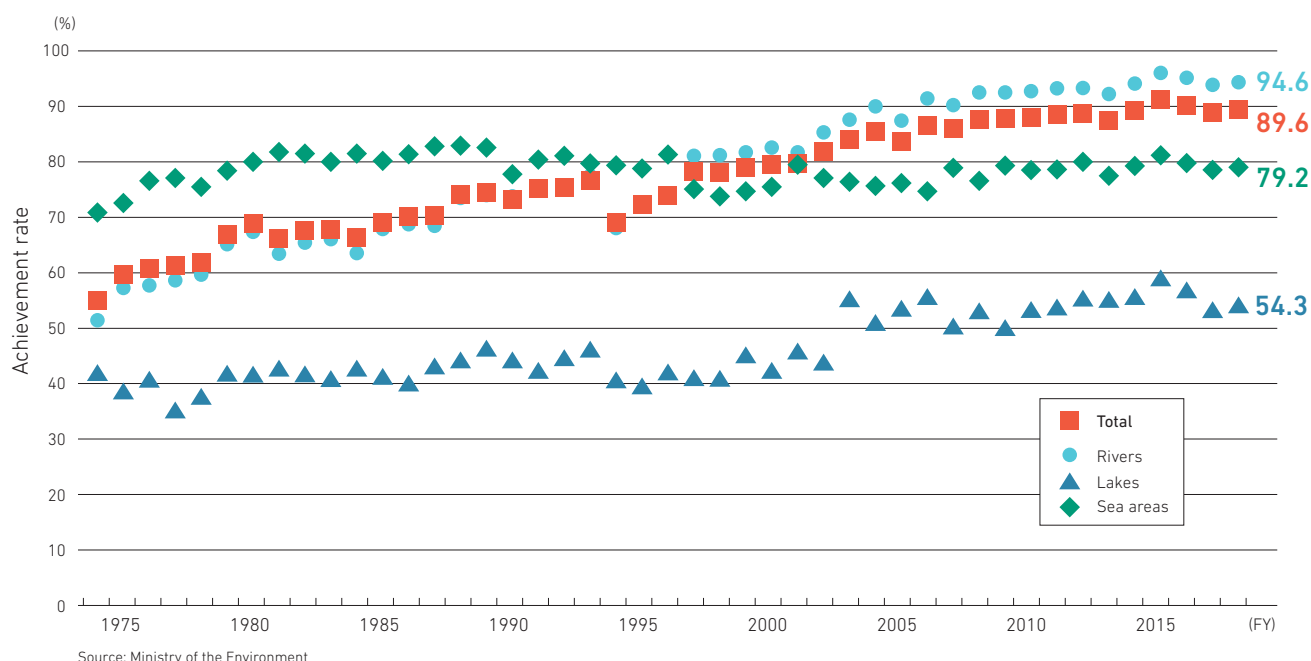
Source: Ministry of the Environment

# Atmospheric and water environments

Additional materials provide more information about atmospheric and water environments.

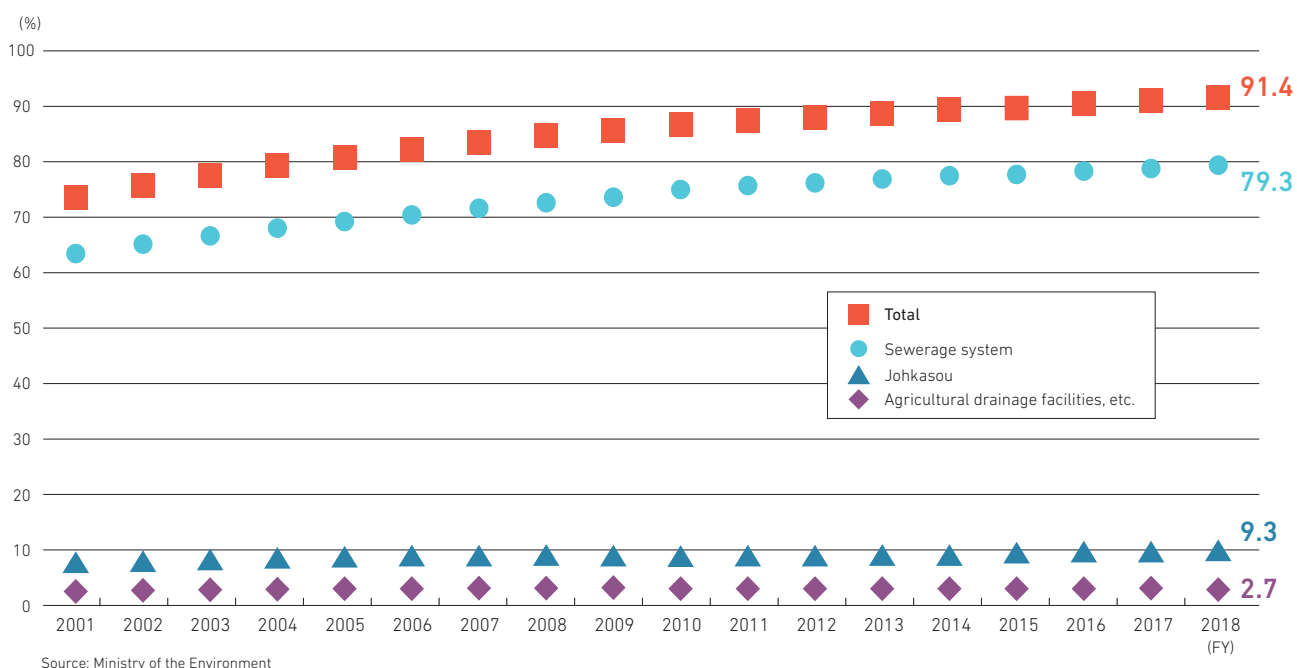
## Achievement of Environmental Standards (BOD or COD)

An overall level of 89.6% 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.



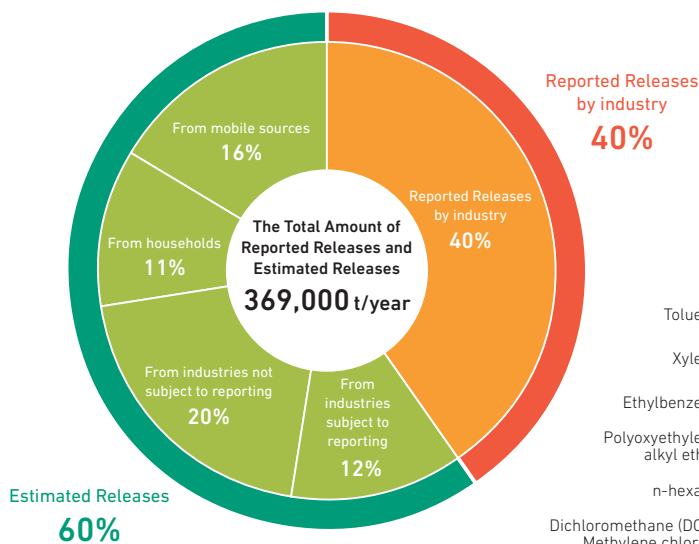
## Coverage of Population Served by Wastewater Treatment System

The population coverage of wastewater treatment systems in Japan is 91.4%. Wastewater treatment facilities are being installed to cover the population not yet served by the wastewater treatment systems.



## ADDITIONAL MATERIALS FROM THE 2020 ANNUAL REPORT ON THE ENVIRONMENT

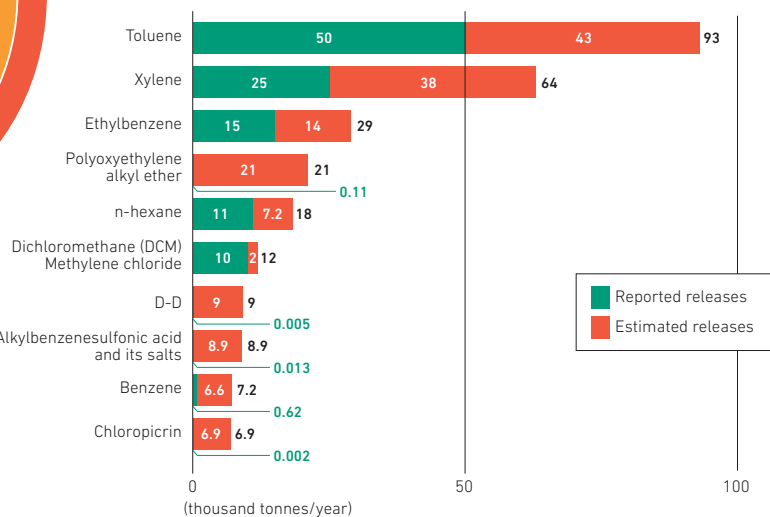
### Breakdown of Reported Releases by Industry and Estimated Releases of Chemical Substances in FY 2018



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 2018)



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

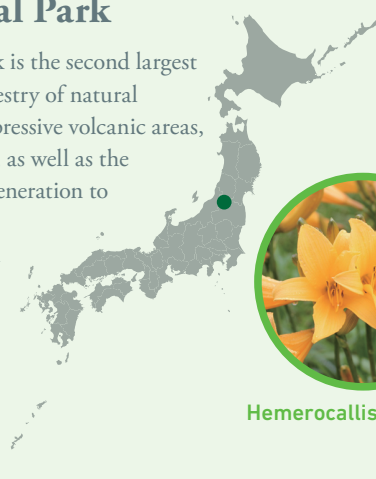
In March 2020, the government compiled data reported from businesses concerned on release and transfer of chemical substances complying with the Act on Confirmation, etc. of Release Amounts of Specific Chemical Substances in the Environment and Promotion of Improvements to the Management Thereof (PRTR Law). Releases that were not subject to reporting were estimated.



### Cover: Bandai-Asahi National Park

In terms of land area, Bandai-Asahi National Park is the second largest National Park in Japan. With its richly varied tapestry of natural beauty, including heavily wooded mountains, impressive volcanic areas, and lakes and marshes filled with abundant water, as well as the traditions of mountain worship carried on from generation to generation, the park is full of charm.

In the area of the colorful Goshiki-numa ponds, a 4 km nature trail allows visitors to enjoy more than 10 ponds and marshes, whose colors vary depending on the weather and the time of day, making this a place that people love to visit again and again.



*Hemerocallis dumortieri*



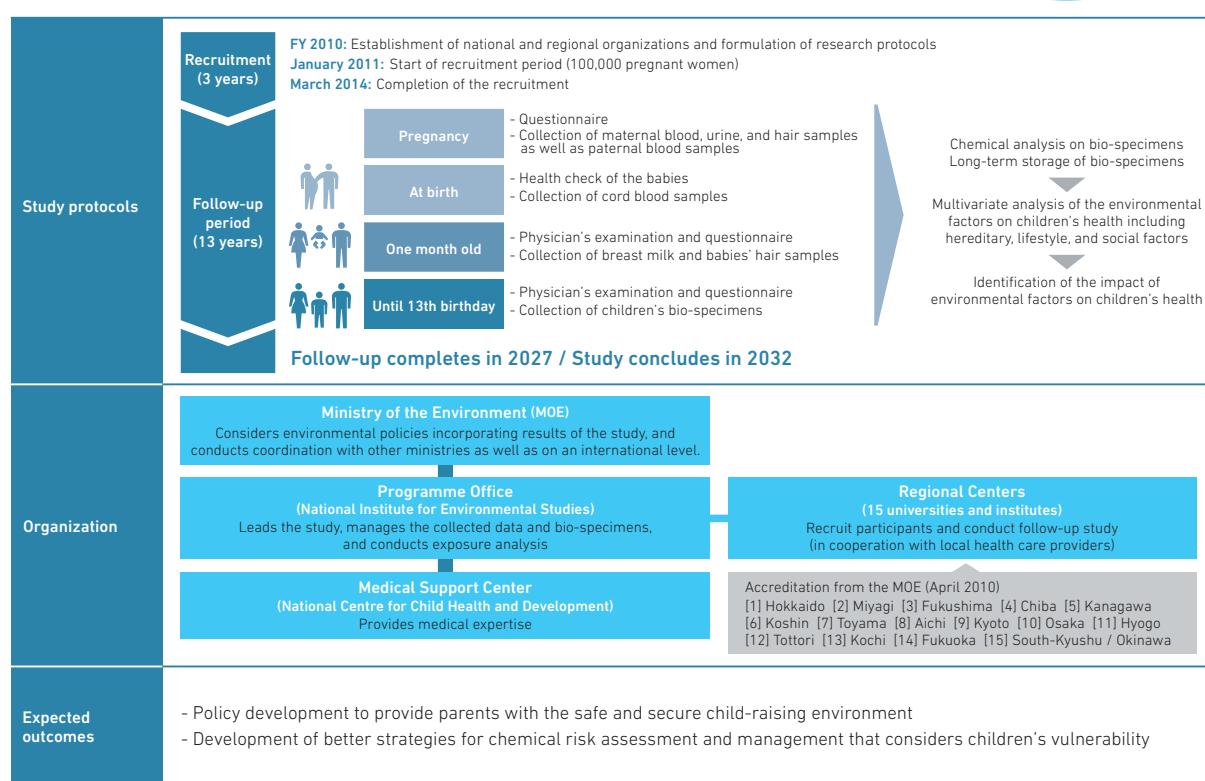
# Environmental risks of chemical substances

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 2020

Published by Ministry of the Environment  
Environmental Strategy Division  
Minister's Secretariat

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[www.env.go.jp/en/](http://www.env.go.jp/en/)

Published in December 2020  
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