

CREATING A SUSTAINABLE SOCIETY AT COMMUNITY AND PERSONAL LEVELS



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



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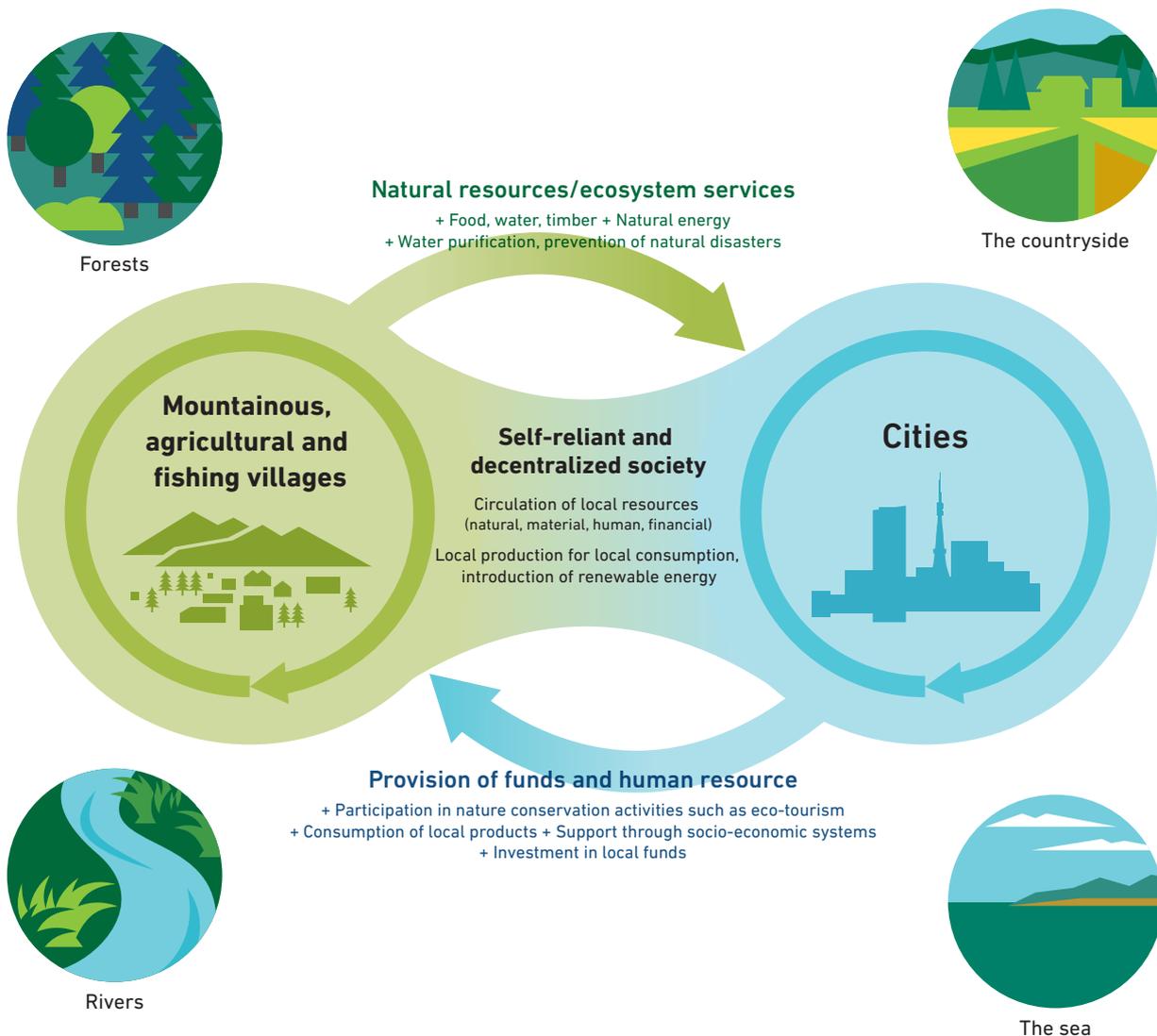
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MAKING COMMUNITIES MORE SUSTAINABLE AND RESILIENT: CIRCULAR AND ECOLOGICAL ECONOMY

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

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

Conceptual Illustration of Circular and Ecological Economy



Source : Ministry of the Environment

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

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

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

Introduction of renewable energy

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

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

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

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

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

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

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



Mutsuzawa Smart Wellness Town

Source: CHIBA Mutsuzawa Energy Co., Ltd.



Power supply during blackout

Source: CHIBA Mutsuzawa Energy Co., Ltd.

Solving environmental and social issues by sale of local specialties

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

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

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

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

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

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

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

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



Organic cosmetics "MURASAKI no ORGANIC"

Source: Minnano Okueigenji Co., Ltd.



Root of purple gromwell

Source: Minnano Okueigenji Co., Ltd.

Putting values on unused regional resources

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

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

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

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

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

Four characteristics of greenbiz

Four characteristics of greenbiz

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

Source: Komatsu Matere Co., Ltd.

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

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

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

Deepening of the circular and ecological economy

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

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

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

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

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POST-COVID WORK STYLE AND LIFESTYLE

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

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

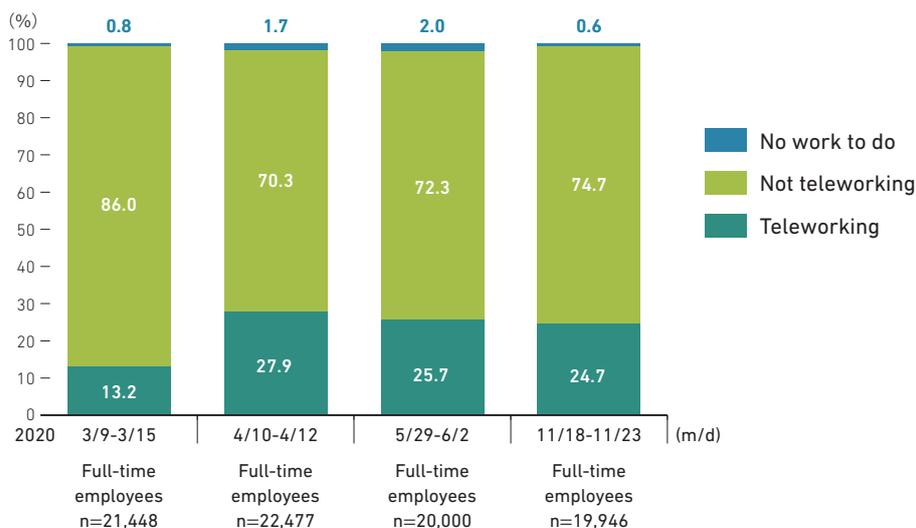
Work style

Expanding the use of telework

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

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

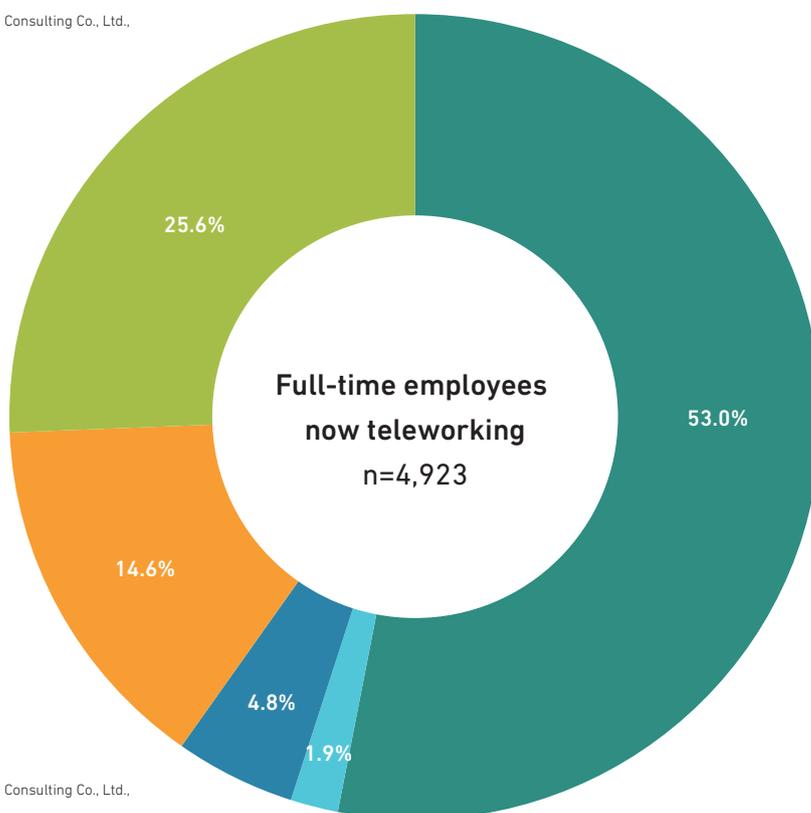
Changes of teleworking ratio (national average)



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

Preference in teleworking continuation even after COVID-19

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



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

Workcation

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

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

Further changes in lifestyle.

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

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

Housing

Comfortable Home Campaign

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

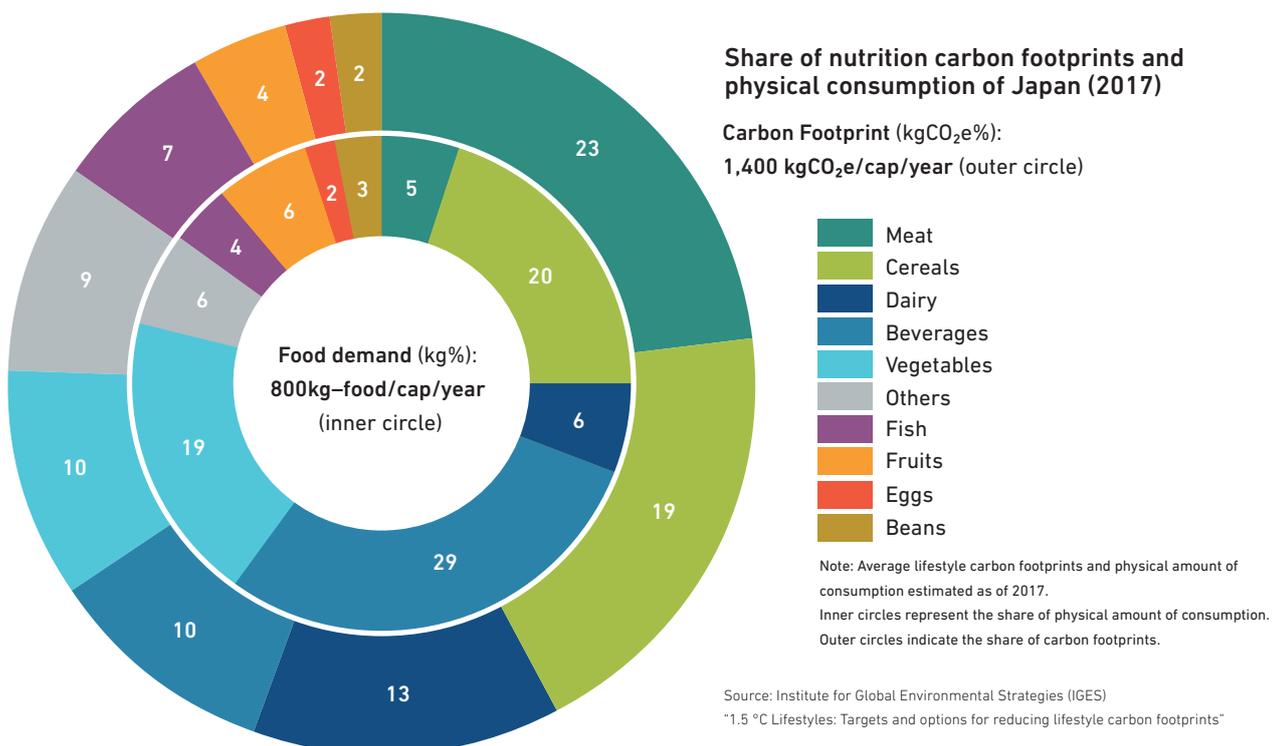
Choice of renewable energy power

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

Food

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

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



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

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

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

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

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

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



MSC-C-57384

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

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

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



mottECO logomark

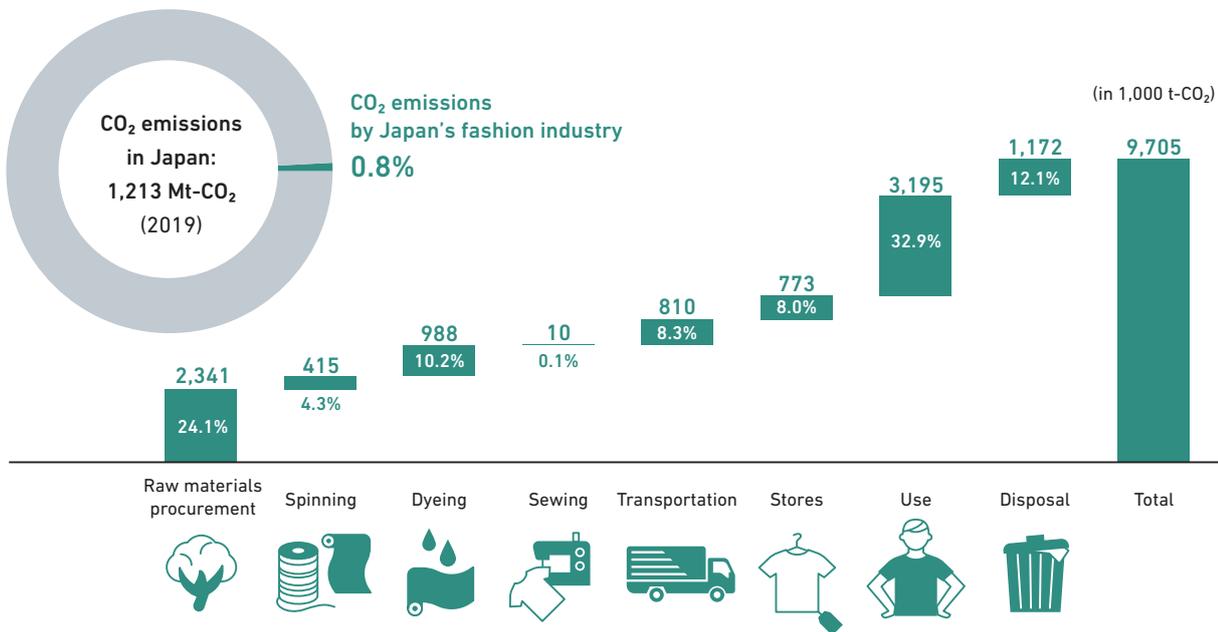
Source: Ministry of the Environment

Clothes

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

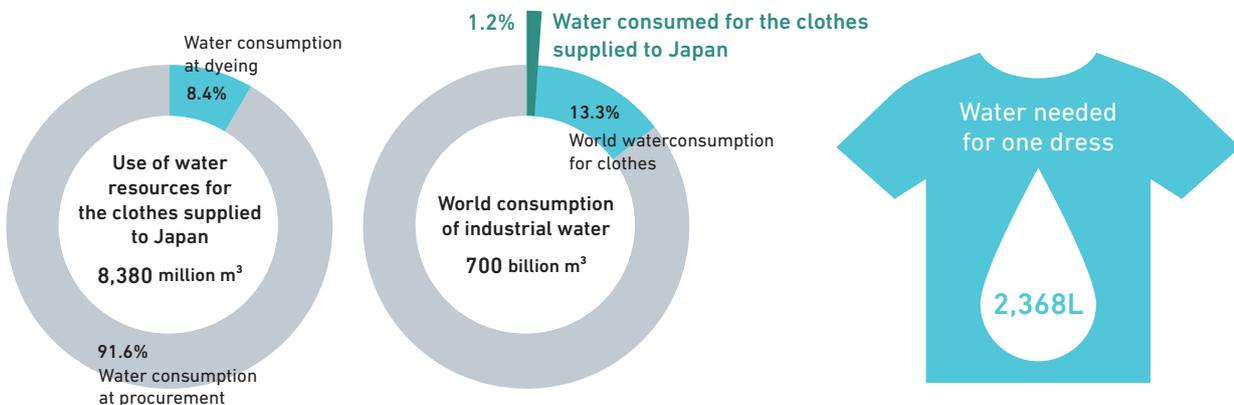
The water consumption for apparel supplied to Japan is estimated at 8.38 billion cubic meters, of which 91.6 % is said to be in the raw materials procurement stage. It is estimated that 9% of the water consumed by the fashion industry worldwide is consumed by apparel supplied to Japan. It is said that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

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



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

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



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

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

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

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

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

Travel, traffic, and transportation

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

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

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

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

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

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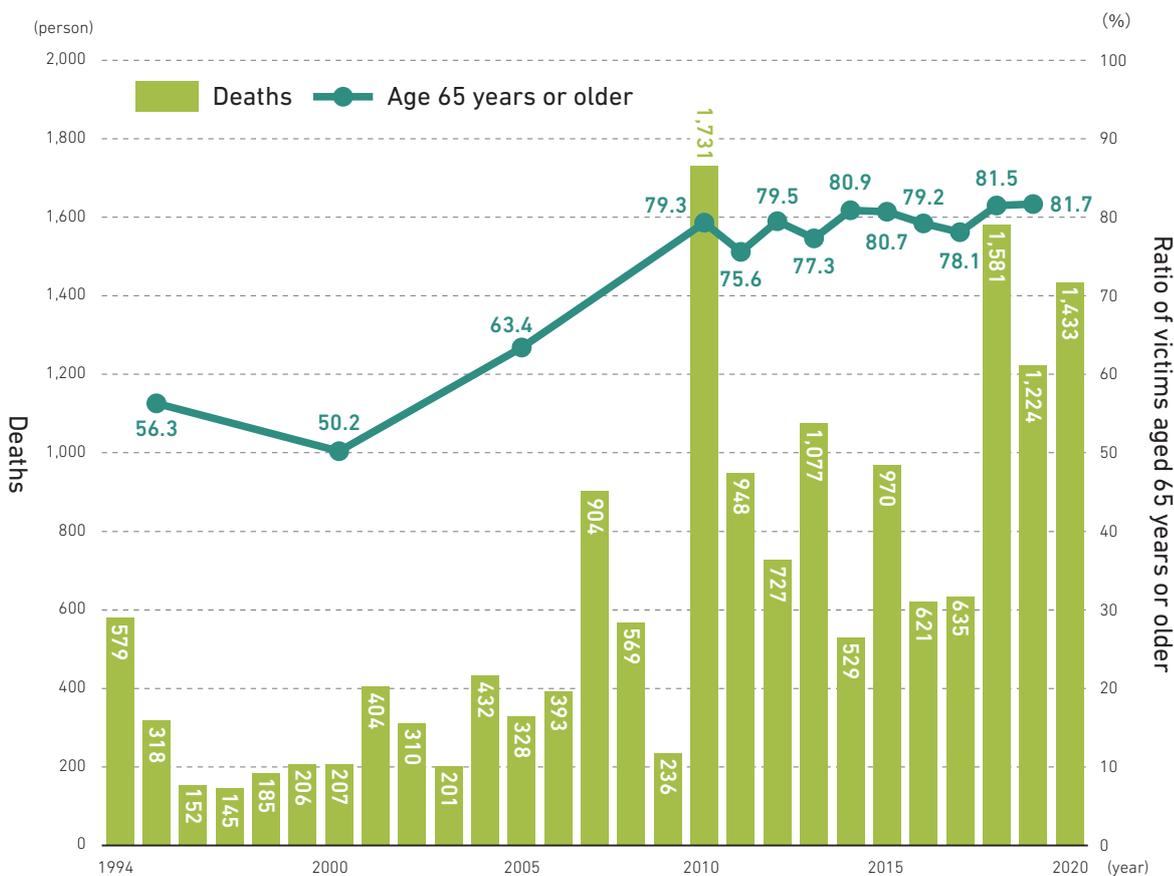
EFFORTS TO PROTECT PEOPLE'S HEALTH, A PREREQUISITE FOR SUSTAINABLE SOCIETY

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

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

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

Yearly change of death toll by heat illness



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

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

Heat stroke alert

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

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

Japan Environment and Children’s Study

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

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

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

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

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

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