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MOTTAINAI: CREATING A SOUND
MATERIAL-CYCLE SOCIETY

CONTENTS

Features

6

Towards the Realization of a Sound Material-Cycle Society

An interview with Sakita Yuko, journalist and member of the Ministry of the Environment's Central Environment Council.



12

A Luxury Hotel Recycling Food Waste

For more than twenty years, a famous hotel in Tokyo has been turning food waste from within the hotel into a resource.



8

An Eco-Town Where Resources Are Reused and Recycled

Kawasaki's coastal area has become a leading Japanese "eco-town," attracting attention both inside and outside Japan.



14

Protecting the Pacific Islands from Waste

Japan has been supporting Pacific island countries in Oceania for many years through activities to improve waste management.



10

New Technology for Recycling Used Clothes

A Japanese venture company has developed proprietary recycling technology for discarded clothes.

Also

4

PRIME MINISTER'S DIARY

22

POLICY-RELATED NEWS

A Smart Relationship with Plastic

24

SCIENCE & TECHNOLOGY

New Technology for the Processing of Marine Plastic Waste

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16

Mottainai Grandma Active Around the World

Mottainai Grandma is a popular picture book series with a protagonist who communicates the importance of taking care of things.



18

Kintsugi: The Healing Power of Pottery Repair

A traditional repair method for pottery known as kintsugi is growing in popularity in Japan and overseas.



20

The Joy of Fixing Toys

The Japan Toy Hospital Association is an organization made up of volunteers who repair broken toys mostly for free.



THEME FOR **AUGUST:**

MOTTAINAI: CREATING A SOUND MATERIAL-CYCLE SOCIETY

The 4th Fundamental Plan for Establishing a Sound Material-Cycle Society was announced by Japan's Ministry of the Environment in 2018, and initiatives under the plan are continuing apace. In this month's issue, we spotlight a few examples and reveal how the traditional Japanese trait of treasuring things, captured in the phrase *mottainai*, is always to the fore.

26

MY WAY

New Ways to Wear Kimono

28

ENJOY DRINKING

The Sake of Fushimi, Made with Famous Waters

30

ARCHITECTURAL TREASURES

The Keep of Matsue Castle

PRODUCTION The Japan Journal
MANAGING EDITOR Sawaji Osamu
EDITORS Alex Hendy, Chiba Hitoshi, Fujita Mao
EDITORIAL SUPPORT Kiura Eriko
CONTRIBUTORS Kato Kyoko, Sasaki Takashi, Sato Kumiko, Umezawa Akira
DESIGN Imai Mei, Okadome Hirofumi

ON THE COVER

Illustration from the *Mottainai Grandma* series of books by Shinju Mariko. In the accompanying text, the grandmother character tells the boy that the water would say "Mottainai" (What a waste!) if he left the tap running. Courtesy of KODANSHA

EDITORS' NOTE

Japanese names in this publication are written in Japanese order: family name first, personal name last.

JAPAN-GERMANY LEADERS VIDEO TELECONFERENCE MEETING

On July 16, 2020, Prime Minister of Japan Abe Shinzo held a Japan-Germany leaders video teleconference meeting with H.E. Dr. Angela Merkel, Federal Chancellor of the Federal Republic of Germany.

In his opening remarks, Prime Minister Abe paid tribute to Germany's success in containing the spread of the novel coronavirus disease (COVID-19), adding that "the international order is facing serious challenges as a result of the spread of COVID-19, and the responsibility of Japan and Europe, with their shared universal values, is greater than ever."

In response, Chancellor Merkel began by expressing her sympathy for the disastrous torrential rain in Japan, adding that "the international community is being challenged as never before by COVID-19, and I hope that Japan and Germany will cooperate with each other. Japan's efforts to combat COVID-19 have been very successful, and I hope that Germany can learn from Japan's methods."

Prime Minister Abe expressed his intent to contribute to the development and distribution of vaccines by means of the Access to COVID-19 Tools (ACT) Accelerator, while Chancellor Merkel stated that Germany, as holder of the EU Presidency, would work to secure vaccines and therapeutic



Japan-Germany Leaders Video Teleconference Meeting

drugs. The two leaders confirmed that they will also work together on support for developing countries, including the Sahel region in Africa, and agreed on the importance of moving forward with the process of investigating and reforming the WHO. The two leaders also discussed the impact of the COVID-19 outbreak on the global economy, mutually explained their countries' respective economic measures, and exchanged views on the importance of increasing investment in innovation in terms of developing a highly secure and reliable information and communications infrastructure.

In relation to Germany's assumption of the Presidency of the EU, Prime Minister Abe expressed his expectations for Germany's leadership in holding the EU Presidency, suggesting that Europe is stronger united, and the two leaders agreed to work together for the success of the G7 Summit. The two leaders also exchanged views on coopera-

tion in the Indo-Pacific region and agreed to work together to revitalize German-Japanese relations, as next year will mark not only the hosting of the Tokyo Olympics and Paralympics, but also the 160th anniversary of Japan-Germany relations.

The two leaders also discussed various regional situations. On the matter of North Korea, Prime Minister Abe sought understanding and cooperation for the swift resolution of the abductions issue, which is a top priority for Japan and obtained Chancellor Merkel's support. Both leaders affirmed that they would continue to work together closely on the issue. They also exchanged views on the global implications of the US-Russia dialogue on arms control. The two leaders expressed concern about the enactment of the national security law in Hong Kong, stating that it undermines Hong Kong's autonomy under the "One Country, Two Systems" framework.



MOTTAINAI: CREATING A SOUND MATERIAL-CYCLE SOCIETY

The 4th Fundamental Plan for Establishing a Sound Material-Cycle Society was announced by the Ministry of the Environment, Japan in 2018, outlining integrated measures toward a sustainable society focusing on the 3Rs of reduce, reuse and recycle, as well as waste management, environmental restoration and international resource circulation. In this month's issue, we take a look at a variety of public and private initiatives contributing to the realization of a sound material-cycle society. At the same time, we reveal the influence of the traditional Japanese trait of treasuring things, captured in the phrase *mottainai*, an expression of regret at the full value of something not being put to good use.

Towards the Realization of a Sound Material-Cycle Society

Sakita Yuko,
journalist



JAPAN is now accelerating its work towards achieving a sound material-cycle society. Sakita Yuko is a journalist who has led various NGO activities related to environmental issues and who serves as a member of the Central Environment Council, the Ministry of the Environment, Japan. We spoke to her about Japan's work in this area.

As a member of the Central Environment Council, you were involved in the drafting of the 4th Fundamental Plan for Establishing a Sound Material-Cycle Society (2018 Cabinet Decision). Could you please tell us about the plan's key points and Japan's moves towards implementing a sound material-cycle society?

A key point of the fundamental plan is the establishment of “Regional Circular and Ecological Spheres.” Regional Circular and Ecological Spheres is a concept by which regions can make use of their local resources, such as renewable resources and circulative resources, while taking into account regional characteristics and aiming for sustainable and active regional development. Although as far as possible, resources are circulated within individual regions, when that is difficult they are circulated in a wider area and regions supplement and support each other.

Japan is currently going through a process of great change towards the realization of a sound material-cycle society. For example, from July this year charges were applied to plastic shopping bags across Japan. This is a chance for us citizens to reform our single-use lifestyle and carefully think about recycling and reducing plastic waste. Companies, including large manufacturers and small retailers, are also enthusiastically working on these efforts. One large beverages producer is cooperating with small retailers that put bottle collection boxes outside their stores to make new PET bottles using the bottles collected.

In the energy field too, to date large electric power companies have supplied electricity to every corner of Japan, but in recent years, for example, there are movements leading to regional vitalization by selling electricity created by power generation from biomass such as thinned wood, and waste products.

I feel that now there is a far greater awareness of citizens, local governments, companies and

central government working together towards a sustainable sound material-cycle society.

Could you give some examples of that increased awareness, please?

In one project, the approximately 5,000 gold, silver and bronze medals for the Olympics and Paralympics scheduled for Tokyo next summer will be made with metals recovered from various small used electrical appliances and devices, such as mobile phones. The various usable metals contained in discarded electrical devices are valuable, and because it is possible to collect and reclaim them as a resource, the discarded devices have been described as “urban mines.” The devices have been collected by local governments, companies, schools and others across Japan since April 2017. It took two years for the metals needed for the medals to be successfully acquired. This will be the first time in the history of the Olympics and Paralympics that all the medals are made from recycled metal.

The Tokyo Olympics and Paralympics are also planning to make use of renewable energy such as solar power and hydrogen while implementing the 3Rs (reduce, reuse and recycle). Some examples include reducing food loss and waste; reusing or recycling 99% of goods procured for the games; and recycling 100% of the paper utensils that are used in restaurants in the Athletes’ Village, which for safety reasons are disposable. I expect holding the Olympics and Paralympics in Japan to be an opportunity to spread our efforts towards a sound material-cycle society both inside Japan and abroad. I am also involved in drawing up the sustainability plan of the games.

How do you think Japanese culture and customs can be of benefit when working to realize a sound material-cycle society?

In Japanese there is a word, *mottainai*, that expresses our feeling of regret when we waste gifts

of nature such as food or useful items. From long ago Japan has had a culture of carefully taking care of things. An example of something that typifies that culture, you might say, is the *furoshiki*, a single cloth that can be used to wrap various items.

Also, in order to make recycling widespread, it is important that when individual consumers throw garbage away they first separate it into different resources as carefully as possible. That behavior is well established in Japan and highly praised around the world. I think that this behavior by Japanese people is deeply rooted in an awareness of *mottainai*.

How can Japan contribute to the global realization of sound material-cycle societies?

As Asian countries experience rapid economic development, the amount of waste is increasing and there is a need to quickly establish 3R technology, systems and culture. I believe that Japan can contribute to that in a wide variety of fields, from cutting-edge science and technology, to activities that are rooted in people’s lifestyle, such as separating garbage or composting food waste.

In 2009 the Regional 3R Forum in Asia was set up: a Japanese government initiative to cooperate with UN organizations on promoting 3R in Asia, and involving governments, international organizations, NGOs and others. It has now expanded to become the Regional 3R Forum in Asia and the Pacific and intergovernmental meetings are held almost every year. I am involved in a side event called the Asia 3R Citizen’s Forum. NGOs from various countries present the situation and work being done in their countries and hold workshops to learn from each other’s efforts. Looking forward, I believe it will be ever more important for the citizens of different countries to share their wisdom and experience. 

Interview by SAWAJI OSAMU

An Eco-Town Where Resources Are Reused and Recycled

The area covered by
Kawasaki City's Eco-town

A side effect of the rapid economic growth in Japan following World War II was a worsening of pollution problems. In Kawasaki City, one of Japan's leading industrial cities, severe pollution issues developed, including air and water pollution. However, companies, citizens and the municipality cooperated to work on overcoming the pollution. In recent years, Kawasaki's coastal area has become a leading Japanese "eco-town," attracting attention both inside and outside Japan.ⁱ

UMEZAWA AKIRA

KAWASAKI City is an industrial city in the prefecture of Kanagawa, which adjoins the Tokyo metropolitan area. It has a population of approximately 1.5 million. During Japan's period of rapid economic growth from the 1950s to the 1970s, Kawasaki City became a core city in the Keihin Industrial Area, which is mainly focused on industries such as oil, chemicals and steel. The Keihin Industrial Area led Japan's growth and development, but at the same time rapid industrialization brought about a severe degradation of the environment, such as air and

water pollution.

To deal with these pollution issues, from the 1980s, companies, citizens and the Kawasaki City authorities have cooperated on projects to improve the environment. Companies actively invested in anti-pollution measures, developed technology to prevent pollution, and trained technicians in relevant fields. Citizens promoted environmental awareness. Meanwhile, Kawasaki City's efforts included putting in place a relief system for victims of pollution, signing agreements with companies to prevent air pollution, and enacting pollution

prevention ordinances. Thanks to these efforts, Kawasaki City was able gradually to overcome its pollution issues. As a consequence, Kawasaki steadily acquired expertise in environmental technologies, mainly in the fields of air purification and waste disposal/resource recovery. Now, the city hosts a cluster of around 400 research organizations and, alongside traditional manufacturing, areas such as medical and welfare, scientific research, and information technology are turning into significant growth industries.

Having started with pollution issues, Kawasaki City's efforts to deal with environmental problems are still evolving and developing. Among these, the Eco-Town initiative is attracting attention domestically and abroad.

In 1997, Kawasaki City drew up a plan called the "Eco-Town Project: Environment-Conscious Town Building" that applied to 2,800 hectares of coastal land. It aimed for urban regeneration through harmony between environmental

ⁱ A town that reduces waste to zero by making use of all waste materials as raw materials in other fields

All photos: Courtesy of Kawasaki City



The results of work to overcome pollution issues (photos from 1967 and 2010)

and industrial activities, and the Japanese government designated it the nation's first Eco-Town region. From 1998, Kawasaki started full-fledged efforts to make the Eco-Town a reality.

A spokesperson for the Kawasaki International Economic Development Office describes the background to drawing up the Kawasaki Eco-Town Project.

“The change of industrial structure from heavy industry to information and service industries caused serious industrial hollowing out, and there were global environmental problems too. While facing these issues, we conceived an idea to try and minimize environmental protection costs through using the environmental technology and expertise we had accumulated, and also switch to being a world-leading industrial area.”

Kawasaki Eco-Town aims to build an economy and society based on circulating resources by taking advantage of its local characteristics and expertise in promoting environmental industries and the recycling of waste products. The Japanese government is supporting the initiative through grants to the Kawasaki Eco-Town project. Companies have moved ahead with setting up leading resource recycling facilities and research and development bases.

Kawasaki City, meanwhile, is actively promoting the Kawasaki Eco-Town project within Japan and abroad.

Today, the plan has been realized and the Kawasaki coastal area has become a leading Japanese eco-town. One of its most distinctive features is the building of relationships between companies located in the area through which they make mutual use of waste products and secondary products from their business activities. This really is an ideal zero-emission structure. Notable among these is the Kawasaki Zero-Emission Industrial Complex, which is based on resource circulation and saving resources. This leading model facility for the Kawasaki Eco-Town is doing all it can to restrict waste and secondary products, while at the same time promoting reuse, resource recovery and circulatory use of energy. It attempts to minimize environmental burden; for example, by recycling types of paper such as waterproof and thermal paper that are said to be difficult to recycle, reusing water within the industrial complex, and making effective use of resources and energy.

Also, these resource recovery and circulatory reuse efforts are not limited to the Kawasaki Zero-Emission Industrial Complex

but also take place in facilities throughout the Eco-Town. These work to recycle and effectively use resources through cooperation between neighboring facilities, including recycling facilities set up based on the Eco-Town plan, such as cement manufacture that uses stainless steel waste products as raw material and ammonia manufacture that employs used plastic as a raw material.

Around 1,000 observers from Japan and abroad visit the Kawasaki Eco-Town each year.

“Many of the foreign visitors come from Asia,” says the spokesperson. “Some of the observers are leaders from regional cities in South Asia. They say that when they set up industrial zones themselves, they intend to refer in particular to the Kawasaki City example. There are many similar cases among observers from other countries too. I think that the technology and expertise collected by Kawasaki City will be helpful to countries and regions that enter periods of economic growth in the future.”

Kawasaki City is speeding up its efforts as an environmentally advanced city. In February 2020, the City issued a decarbonization declaration, which aims to achieve zero carbon emissions by 2050. Moreover, it has held the Kawasaki International Eco-Tech Fair in order to spread the word of the Eco-Town's achievements. In these ways and more, Kawasaki City continues to strive to make a global contribution. 



Discarded clothing (left) and a new T-shirt (right) made using the polyester recycled from it

New Technology for Recycling Used Clothes

All around the world, large quantities of clothes are discarded every year. However, efforts to recycle these clothes into resources have advanced poorly. A Japanese venture company has developed proprietary recycling technology for discarded clothes, and is expanding its operations by successfully producing bioethanol that can be used to fuel automobiles and recycled polyester that can be used for making clothes.

SASAKI TAKASHI

IN Japan, nearly 1.7 million tons of fiber products are discarded annually. Reportedly, most of them are clothes. Few of these clothes are recycled into anything else, such as raw materials for felt. Most of the discarded fiber products are incinerated or put into landfills. The situation is similar in Western countries. It is estimated that more than 90 million tons of waste is generated annually by the global apparel industry. The figure is nearly twice as large as the total amount of waste discarded annually in Japan, about 43 million tons according to the Ministry of the Environment in March 2020. With its

All images: Courtesy of JEPLAN, INC.

proprietary technology and original ideas, JEPLAN is committed to the recycling of the large amount of fiber products that would otherwise be destined to be incinerated or put into a landfill.

When the venture company started in 2007, it was very small with two staff members only. They started by pursuing technology to create bioethanol from collected used clothes. Bioethanol is plant-derived ethyl alcohol that is normally made from sugar cane, corn, waste wood and other biomass resources (biological resources). Mixed with gasoline, bioethanol is mainly used as fuel for automobiles. JEPLAN conducted research in collaboration with Osaka University, and by glycosylating and fermenting the cotton fibers of used clothes, successfully recycled them into a fuel which can be used as an alternative to heavy oil. Furthermore, in 2017, JEPLAN developed a technology for recycling the polyester fibers in used clothes. By applying a chemical method for recycling, JEPLAN succeeded in recycling used polyester in a way that enabled it to be qualitatively equivalent to a brand-new product.

Currently, JEPLAN is operating the project “BRING,” a recycling business. This project invited

clothing distributors and other apparel companies to participate. Thanks to their cooperation, JEPLAN set up about 2,000 collection points around the country collecting used clothes and other cast-off fiber products. The polyester in the clothes collected from consumers is recycled and then used to manufacture products such as the T-shirts that are sold under the BRING brand, and to supply apparel manufacturers with the recycled polyester. In the past, there was nothing that could be done with used clothes other than reusing them as clothes. However, the introduction of this recycling technology makes it possible for used clothes to be recycled into new clothes and be worn again and again. “Used clothes can be transformed into new clothes.” That means, used clothes have been transformed into new recycling resources.

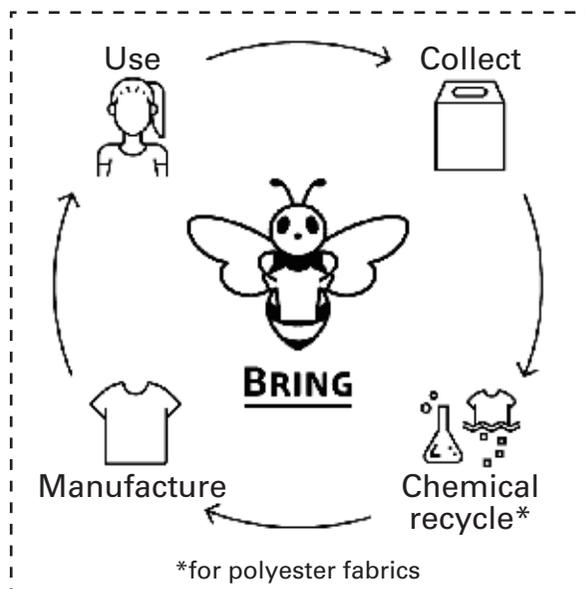
According to Okita Aiko, a public relations representative of JEPLAN, the BRING brand takes its name from consumers’ bringing goods for recycling.

“A sound material-cycle society cannot be achieved by a single company alone. Cooperation from many distributors and manufacturers is indispensable. Gaining the involvement of consumers is the key to realizing a sound material-cycle society,” says Okita.

The project BRING organizes many different events with the goal of engaging consumers and increasing their interest in recycling. “Go! DeLorean” was held in 2015 to accomplish this. The DeLorean is the car that was used to make the time machine in the *Back to the Future* movies, that is fueled by raw garbage and runs around space and time. On October 21, 2015, to imitate the movies, it was decided to run



The “Go! DeLorean” event in 2015



the car on bioethanol obtained from the clothes collected from event participants beforehand. The idea for the event came from Iwamoto Michihiko, one of the cofounders of JEPLAN and the current chairperson of the company. He watched the movie as a student and had been very impressed by it, so he cherished the idea of running a DeLorean on recycled biofuel since the company started up.

Go! DeLorean became a reality partly because of cooperation from film distributors. The event was covered by the media both domestically and internationally, drew interest from many people, and in the three-month period running up to the event collected more than 20 tons of clothes for recycling, which is the amount of clothes normally collected by the company in one year.

JEPLAN pursues overseas expansion of BRING through licensing, as well as by increasing the number of clothes collection points in Japan. For example, JEPLAN tested the project BRING operations in Lyon, the city at the heart of the fiber industry in France, in an effort to facilitate the project in collaboration with a local fiber organization.

“Used clothes can be transformed into new clothes.” This new circle of clothes recycling is expected to spread all over the world from Japan. 

A Luxury Hotel Recycling Food Waste

Large-scale hotels are locations where vast quantities of food are prepared and consumed every day. For more than twenty years, one large hotel in Tokyo has continued its on-site initiatives to turn food waste from within the hotel into a resource.

The Main, the 40-story Garden Tower, and the Garden Court office building at Hotel New Otani Tokyo

KATO KYOKO

THE Hotel New Otani (Tokyo), which opened in 1964, is known as a luxury hotel representing Japan. Three buildings - The Main, the 40-story Garden Tower, and the Garden Court office building - have been built on the approximately 70,000 m² grounds, formerly the site of a feudal lord's mansion, while preserving the large Japanese garden. With 1,479 rooms, the hotel welcomes many guests from within Japan and abroad.

Within the expansive buildings are 37 bars and restaurants, featuring French, Japanese, Chinese, and other cuisines, and guests can

enjoy various foods and drinks. However, 3,500 to 4,000 kilograms of food waste are produced per day on average in the kitchens of these restaurants and bars within the hotel. At first, disposal of this food waste was the only option, but hotel employees suggested the food waste might be reused as some sort of a resource, and this led the hotel to consider the idea. As a result, a compost plant was installed on the hotel grounds in 1999 that can process up to 5,000 kilograms of food waste per day, and since then, has created a system to reuse 100% of the food waste as a resource.

The food waste extracted from hotel kitchens is dried that day at the compost plant with high temperature vapors using exhaust

heat from hotel boilers, etc. More than 80% of food waste is water, and so the volume of dried food waste is about 1/5 to 1/6 of what it was before being dried. After letting it ferment in a fermenter for one week, the waste is then transported to a specialty compost center in Tochigi Prefecture that produces compost. There it is mixed with sawdust and left to ferment a second time, creating compost. The completed compost is delivered to cooperating farmers. When rice or vegetables that are organically grown or grown with reduced pesticide using this compost are ready, they are bought by the hotel and used mainly in the employee dining room.

Kumaki Yoshio, head of the hotel's Facility Management

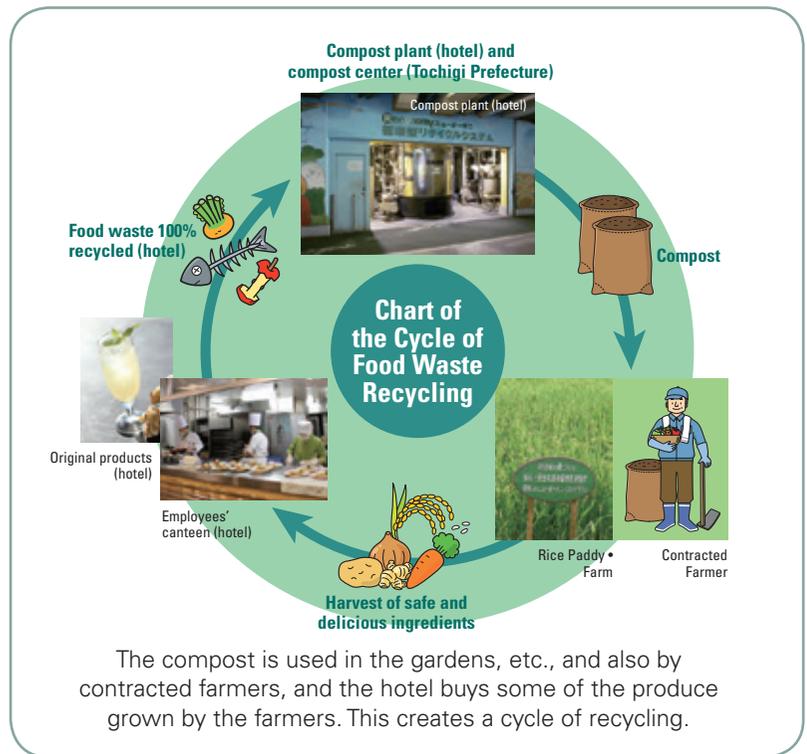
All photos and images: Courtesy of Hotel New Otani Tokyo

Department, says, “We have cooperating farmers from eight farms using this food waste compost to grow produce. The risk is low for farmers and the situation is reliable for us, as the volume of produce is determined by the yearly contract and is collected at a set price, even when the crop yield isn’t so good.”

Food waste recycling with a compost plant has been established as a cyclical model project that doesn’t create a deficit.

“Our hotel features a wide variety of functions, or put another way, it is a mini-city model,” says Kumaki. “In addition to food waste recycling, there are also facilities to create drinking water from underground water on the hotel grounds, creating a water supply for emergencies, for example. We are aiming to create a cyclical community together with our customers and also with our staff and nearby residents.”

Currently, the recycling rate of garbage at all buildings of the Hotel New Otani Tokyo is about 75 to 76%, including the food waste recycling through the compost plant. Kumaki says that the next



issues in improving the recycling rate and decreasing garbage are paper and waste plastic. He says that they have begun experimenting with dissolving shredded paper waste and reprocessing it into cardboard. Also, since July 2019, they have changed from plastic-made straws to paper ones at all bars and restaurants within the hotel, and they no longer provide straws unless necessary after checking with guests. Kumaki

continues, saying that it is important to widely communicate these initiatives moving forward.

“Protecting a garden of abundant greenery and 400 years of history, our hotel has made consideration for the environment a principle since it opened. Moving forward, we think it is important to communicate these efforts in a way that is easy to understand and to connect with the next generation.”



Protecting the Pacific Islands from Waste

The waste problem in Pacific island countries in Oceania is becoming ever more serious. Japan has been supporting these islands for many years through activities to improve waste management.

SAWAJI OSAMU

OCEANIA, an area of the Pacific Ocean dotted by many small and large islands, is a region bursting with beautiful nature and diverse cultures. However, in recent years, the type of waste has diversified and the amount of waste has continued to increase in Pacific island countries due to an increase in populations and changes in residents' lifestyles, such as the popularization of plastic bags and bottles. The growth of tourism has exacerbated the problem of waste disposal. The waste is transported to landfills, but securing new disposal sites is difficult for these small island countries. How to process the increasing amount of waste has become a major common problem for these countries.

The Japan International Cooperation Agency (JICA) has been implementing initiatives to solve the waste problem for approximately twenty years in Pacific island countries. One of these initiatives is the support for disposal site improvements. In Pacific island countries, open dumping, where collected

waste is simply thrown into disposal sites without separating waste by type, was common. However, by this disposal method, problems emerged with an increase in waste, such as the occurrence of foul smells and methane gas, and the leakage of contaminated water (leachate) from waste into rivers and the ocean. JICA has been working on spreading the technology of the Semi-aerobic Landfill System, a method for managing waste that has been widely implemented in Japan. These landfills, which employ a technology known as the "Fukuoka Method" as it was jointly developed in the 1970s by the city of Fukuoka and Fukuoka University in Japan, have pipes throughout the disposal site, and through those pipes, waste water that seeps out from waste can be extracted. At the same time, outside air can be introduced into the landfill, activating the microorganisms inside the waste and promoting its decomposition.

Nakamaru Shunsuke from Global Environment Department, JICA says, "The Fukuoka Method can reduce the occurrence of foul smells and methane gas, and improve the quality of leachate through the acceleration of decomposition of waste. Moreover, by improving the structure of disposal sites and conducting the appropriate management, the lifespan of the disposal site is extended. Also, materials that can be obtained locally, such as oil drums or old tires, are

All photos: Courtesy of JICA

used for the pipes, and the fact that they can be constructed and maintained at a relatively low cost is a big advantage.”

Since introducing a Fukuoka Method disposal site in 2003 in the Independent State of Samoa as the first in a Pacific island country, this type of disposal site has spread to other countries including the Republic of Vanuatu and the Republic of Palau.

Furthermore, JICA has been implementing the technical cooperation project “Promotion of Regional Initiative on Solid Waste Management in Pacific Island Countries” (J-PRISM) since 2011 (Phase 2 ongoing from 2017) in cooperation with the Secretariat of the Pacific Regional Environment Programme (SPREP), a regional international organization participated in by twenty-two countries and regions in Oceania. J-PRISM fosters human resources, and creates and strengthens systems to solve the waste problem. Based on geographical characteristics unique to island countries and the concept of “3R (reduce, reuse and recycle) + return,” which aims to control inflow of products to the island countries, increase recycling in the island countries as much as possible, and maximize the return of waste to recycling markets outside the island countries, J-PRISM is working to minimize the amount of final waste disposal. For example, as part of the fostering of human resources, J-PRISM carries out training in Japan and the island countries for administrative officers of waste management and employees of recycling companies of each country to learn about waste management systems and initiatives for the 3Rs in the communities. The capacity of waste management of each country is thus improved by sharing good practices and the lessons between counterparts in each country.

J-PRISM also supports the introduction of

Container Deposit Legislation (CDL), where a deposit is paid by consumers when buying drinks and other goods in cans and plastic bottles, and then a part of the deposit is returned to consumers or waste collection companies when the used containers are brought to a designated place. CDL was implemented in the Republic of the Marshall Islands (population: approx. 58,000) in 2018, following its introduction in the Republic of Kiribati, the Federated States of Micronesia and the Republic of Palau. Many people including children and adults participated, and approximately 16 million cans, glass bottles and plastic bottles were collected in the span of a year in 2019.

Drones have also been used for the project lately to take surveys of disposal sites for analysis. Previously, a site could only be observed from the ground, and it was difficult to grasp the complete picture of the site. But with aerial photography, it has become possible to visualize the current state of a site and to more accurately analyze how many more years a site can be used for.

Nakamaru says, “I’m glad that the cooperation with Japan over about twenty years has contributed to the development of human resources for waste management and the improvement in people’s awareness. Lately, a database of human resources working for the waste management in each Pacific island country has been developed by J-PRISM, so I’m sure that cooperation between countries will further progress as well.”

Japan’s cooperation is connecting islands scattered across the ocean. 



- 1 Aluminum cans collected through CDL in the Marshall Islands
- 2 The Baruni Dump Site in the Independent State of Papua New Guinea where the Fukuoka Method is used
- 3 A waste management training course for Pacific islands-based experts in Okinawa, Japan

The JICA-backed *Mottainai Grandma* mobile showroom at a school in India



MOTTAINAI GRANDMA ACTIVE AROUND THE WORLD

Mottainai Grandma is a picture book with an elderly protagonist who communicates the importance of things. The stories are being enjoyed across the globe, with an anime dubbed into multiple languages currently being broadcast online.

SATO KUMIKO

WHEN a small child leaves food unfinished or goes to throw away something that can still be used, an elderly woman appears, granting wisdom by saying, “Mottainai!” (“What a waste!”). That picture book is *Mottainai Grandma*.

Picture book author Shinju Mariko created the story to try and teach her own son about the meaning of “mottainai” and the importance of taking care of things. This caught the attention of a publishing company, and the story was published as a picture book in 2004. The grandmother character (*Mottainai Baasan* in Japanese), who at first glance seems scary but is actually kind and full of love, became popular among children, and there have been over one million copies published from among the seventeen books in the series. The picture books, which have

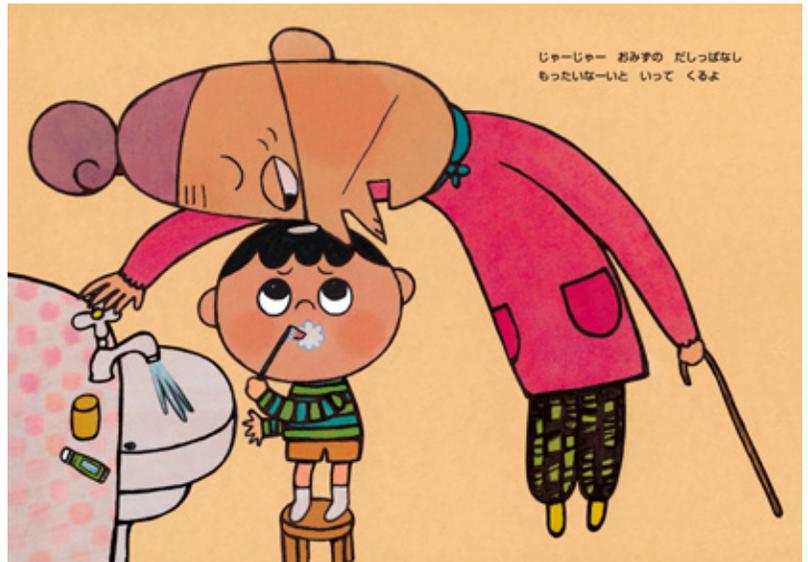
All photos and illustrations: Courtesy of KODANSHA

been translated and published in multiple languages, are read by children in countries all over the world.

In 2020, this *Mottainai Grandma* was jointly produced into an anime by Kodansha and the Ministry of the Environment, Japan. The four episodes, dubbed in Japanese, English, French, Spanish, Chinese and Hindi, began streaming online on YouTube on June 5 - World Environment Day.

Doi Kentaro of the General Administration Division, Environment Regeneration and Resources Recycling Bureau, the Ministry of the Environment, Japan, says that, “The *Mottainai Grandma* picture books communicate the importance of limited resources and the grandeur of abundant nature while also featuring stories that are friendly and easy to understand. We made the books into an anime so that even more people could see them today, as environmental pollution becomes more serious all over the world.”

Impressed by the Japanese word “mottainai” when visiting Japan, the late Wangari Muta Maathai, a Kenyan ecological activist who won the Nobel Peace Prize in 2004, tried to spread this untranslated word across the globe. Maathai felt that “mottainai” was a word that not only expressed the 3Rs of environmental protection activities - reduce, reuse,



Images from the *Mottainai Grandma* series (Japanese version). The book has been translated into several languages.

recycle - but also a word that captured another R, respect for irreplaceable earth resources. Maathai then used the word as a slogan for the MOTTAINAI campaign that she herself advocated for.

The *Mottainai Grandma* series began in the first book by teaching about taking care of things. However, the word “mottainai” also implies an understanding of the importance of life, and the series went on to explore natural cycles and biodiversity, and has expanded to cover themes related to global problems such as climate change, the extinction of organisms, and food shortages.

In 2008, the *Mottainai Grandma’s World Report Exhibition* was held to consider the connection between our own lives and the various problems occurring across the globe, and from this series of exhibitions, “Earth’s Problems and Children of the World” and “Vanishing Organisms” were exhibited at venues such as at the Conference of the Parties to the Convention on Biological Diversity (COP10) in Nagoya or the UNICEF House in Tokyo. The exhibition introduced key messages of *Mottainai Grandma*, such as, “If we are not self-centered and share with each other, we can achieve world peace” and “All life is connected and each life is important.”

As part of a Japan International Cooperation Agency (JICA) project, people have been going around India in a mobile showroom and reading *Mottainai Grandma* to children as part of their environmental education since 2016. Doi says that,

“Through this project, the word ‘mottainai’ has infiltrated the children’s lives at the schools in India that we visited. I once again felt the word ‘mottainai’ has power and that the spirit of the word can be shared with the world.”

The Alliance to End Plastic Waste, a non-profit established jointly by global chemical manufacturers aiming to solve the problem of waste plastic, cooperated with the making of this anime, and seven companies within Japan became partner companies.

Environmental problems are issues on a global scale that are connected to all human activity, including corporate activities and individual lifestyles. *Mottainai Grandma* kindly asks about these problems. 7



Mottainai Grandma on tour in India

KINTSUGI

The Healing Power of Pottery Repair



A chawan bowl repaired using the *kintsugi* technique

IN the sixteenth century in Japan, Sen no Rikyu perfected the traditional tea ceremony known as *chanoyu* (or *chado*), a culture of hospitality, and items integral to the tea ceremony developed alongside it. One important item was the *chawan*, a bowl held in the hand in the tea ceremony for the drinking of matcha tea. Chawan were first imported from China and Korea, and came to be made in various regions in Japan. Some exquisite antique chawan survive and are designated as national treasures today. However, no matter how carefully these bowls were handled, over time some would break or chip. *Kintsugi* (literally, gold seams) is a traditional repair method that takes the broken or chipped parts of cherished vessels, glues them back together with a Japanese lacquer, and paints the seams with gold or silver powder. Nakamura Kunio, the owner of Rokujigen, a book café in Ogi-kubo, Tokyo, that offers *kintsugi* workshops and other educational activities, says this about the origins of the technique.

“Kintsugi has a beauty within the imperfection. This developed from a concept called *wabi sabi*

All photos: Courtesy of Nakamura Kunio

In Japan, there is a traditional repair method known as *kintsugi*, where broken pieces of pottery are stuck back together with a Japanese lacquer (*urushi*), the joints are painted and decorated with gold or silver powder, and the pottery continues to be used. Now efforts are underway to spread this technique not just within Japan but overseas, as well.

KATO KYOKO

which is treasured in the tea ceremony. It is an aesthetic sense unique to Japan that finds spiritual richness in simplicity.”

In the world of *chanoyu*, the tea ceremony, sometimes a perfect piece of pottery is even purposefully broken and repaired. Then the pattern from the cracks made through *kintsugi* is likened to a beautiful scene from nature and enjoyed.

“The cracks in the pottery form a dramatic landscape. When the gold color is added along the joins of the broken parts, the lines look like lightning brightening the darkness, a golden-colored river, or a branch reaching into the firmament. New scenes are thus born in the pottery.”

Nakamura, who has collected antiques since from when he was a child, encountered *kintsugi* in his 30s. He interviewed a number of *kintsugi* artisans in Japan as he was working as the director of a TV show at the time, and he learned about the techniques on his own.

After the Great East Japan Earthquake that occurred on March 11, 2011, demand for *kintsugi* increased. Nakamura hosted a workshop to repair

pottery that had been broken in disaster-stricken areas. The kintsugi technique, which beautifully brought back mementos of lost family members or pottery with special memories, also calmed the hearts of those who were wounded. Nakamura says he received a letter from a participant at one of his workshops that said of a repaired item, “It is not just the memento but also me myself that you healed.” While running the book café, Nakamura authors books related to kintsugi and old works of art and is involved in activities to popularize kintsugi both in Japan and abroad as well as in support activities in disaster-stricken areas.

However, the lacquer *urushi* used in the traditional kintsugi technique is an irritant to the skin, and as such it is quite difficult to use outside of Japan. So in Nakamura’s workshops, participated in even by enthusiasts from abroad, they use a different plant-based resin and other safe materials. Nakamura says that he will spread kintsugi techniques that use fair trade materials that can be imported at fair prices and that have a minimal burden on the natural environment, and also use brushes made without animal hair. There is a need to create a “new tradition,” he says.

“Last year, a short film entitled *Kintsugi* was shown at the Sundance Film Festival in the United States, and there have been more and more students attending kintsugi classes,” says Nakamura. “I feel like the boom in kintsugi will accelerate going forward.”

At the end of 2019, the Kintsugi Academy, based in Los Angeles, was opened in cooperation with a gallery in New York. Currently, lessons are offered online as a measure against COVID-19, but the Academy plans to hold workshops, exhibitions, and more to further demonstrate the healing power of kintsugi to the world. **V**



- 1 Nakamura Kunio at work on a *kintsugi* repair job
- 2 A *chawan* bowl repaired using the *kintsugi* technique
- 3 A *kintsugi* workshop hosted by Nakamura Kunio



The Joy of Fixing Toys

Doctors at work at the Tokyo Toy Hospital in the Tokyo Toy Museum

Toy Hospitals, places where volunteer staff repair broken toys, are found all over Japan. Here, new life is breathed into the toys, bringing happiness to all.

SAWAJI OSAMU

THE Japan Toy Hospital Association is an organization made up of volunteers who repair broken toys mostly for free. Currently, about 650 Toy Hospitals belong to the Association, which was set up in 1996 with hospitals in children's homes, libraries, toy stores and other facilities nationwide. The Association has about 1,700 "doctors" working on repairs.

"A country with organized toy repair specialist volunteers is quite rare in the world," says Miura Yasuo, the chairman of the Association. "The Japanese trait of 'taking care of things' may be behind that."

The toy doctors range in age from high school students in their teens up to 80 years old, but many are men in their 60s who repair toys as a hobby after retirement. To become a doctor, a person participates in a one-day to three-day Doctor Training

All photos: Courtesy of The Japan Toy Hospital Association

Course hosted by the Association across Japan to learn about the skills and techniques necessary for toy repair. These include how to use tools, measuring instruments and glue; damage diagnosis methods; and how to make repairs based on that diagnosis.

"When the broken toy works again, every doctor experiences a great sense of fulfillment," says

Miura. "We also receive heartfelt gratitude from the customer, so fixing toys quickly becomes very interesting."

Some hospitals can fix upwards of fifty toys each day. Many of the toys that are brought in are toy trains and plastic dress-up dolls. The repair methods for



Miura Yasuo, chairman of the Japan Toy Hospital Association



Toy Hospitals receive many requests for repairs of toy trains

these kinds of toys are well established, so repairs can be made in about one to two hours.

However, if parts have to be ordered or if the repairs will take some time, the toy is kept for a few days - in other words, it is “admitted” to the hospital. In addition to many toys being made overseas, high-tech toys, such as drones, have been increasing in recent years, and there are occasions when repairs take more time than expected, but the rate of “toys being played again” is more than 90%.

For repairs of toys with broken plastic parts, the doctors do not repair them by simply reattaching the parts with an adhesive. They drill several small holes near the ‘wound,’ the broken part, then pass fine, stainless steel wires through the holes and firmly “suture” the wound. They also apply adhesive to the wound and reinforce it.

“We use adhesive only for reinforcement,” says Miura. “If we just apply adhesive to a broken part, it will break again easily.”

The people who visit Toy Hospitals typically have a deep affection for their broken toys, such as those who bring in a toy they had bought when they were a child and let their grandchildren play with. Miura, who worked as an engineer at an automobile manufacturer, became a “doctor” more than twenty years

ago and has repaired many toys, but he says that it’s not just toys for children that are brought in for repairs. The repair that is especially memorable to Miura was the music box brought in by an elderly woman.

“She said it was a present from her late husband,” Miura explains. “The woman was overjoyed and wept when the repaired music box began working again. I also couldn’t help but cry at that moment.”

Because visitors often have an emotional attachment to the toys they bring in, the doctors do not easily give up on repairs. They create tools specially for repairs, search for parts online, and share ideas with one another to ensure a toy’s complete recovery through a variety of methods.

“There is a great need for people to repair treasured toys,” says Miura. “I will further improve the technical skills of doctors all over Japan, and supply them with specially made easy-to-use tools so that customers know that when they come to a Toy Hospital, they will always get their toy fixed.”

The toys that have had new life breathed into them at Toy Hospitals are sometimes returned to their original owners and sometimes passed on to new owners. The process of fixing toys helps children and adults foster a spirit of taking care of things. 7



The Association’s original toy repair tools



A SMART RELATIONSHIP WITH PLASTIC

Marine plastic litter has become a global problem in recent years. A variety of initiatives are being carried out through public-private cooperation in Japan to “smartly” reduce plastic litter.

SAWAJI OSAMU

Marine plastic pollution has become a serious international problem in recent years. The marine plastic litter that flows into the ocean causes a variety of problems such as degradation of the marine environment including ecosystems, loss in the functions of coasts, negative impacts on scenery, hindrance to ship navigation, and repercussions for the fishing industry and tourism. According to a report presented at the World Economic Forum (Davos Meeting) in January 2016, the amount of plastic produced globally over the 50 years from 1964 to 2014 rapidly grew to more than 20 times the amount in 1964, and approximately 8 million metric tons of plastic is flowing into the ocean every year. The report indicates that if effective measures are not taken and we continue as we

are now, plastic litter in the oceans will outweigh fish by 2050.

OSAKA BLUE OCEAN VISION

At the G20 Osaka Summit in June last year (2019), Japan took the lead in sharing the Osaka Blue Ocean Vision, which aims to reduce additional pollution by marine plastic litter to zero by 2050 as a common global vision. It is important for many more countries, including emerging and developing countries, to share a goal and steadily implement effective measures toward solving the problem of marine plastic pollution. Going beyond the G20, 86 countries and regions currently share this vision. And to realize this vision, the Japanese government has established an Implementation Framework that encourages the dissemination and sharing of best practices (experi-

ence, knowledge and techniques). Based on this framework, the first follow-up meeting was held in Tokyo last October with the participation of 17 countries, regions and international organizations. The meeting was greatly significant in starting a mutual enhancement of measures. Additionally, a portal site (<https://g20mpl.org>) was launched through a Japanese initiative so that each country could easily update their own initiatives. In cooperation with Saudi Arabia, which holds the G20 presidency this year, Japan will encourage efforts in line with this Implementation Framework.

PLASTICS SMART

Plastics Smart is a campaign implemented by the Ministry of the Environment, Japan aiming to create a national trend and advance initiatives to prevent the generation of marine litter, while encouraging proper understanding of the state

Marine litter collection by fishers
in Kagawa Prefecture

Photo: Courtesy of Kagawa Prefecture

of marine plastic pollution through public awareness activities and public information, with the key phrase, “a smart relationship with plastic.”

As of August 2020, over 1,200 initiatives have been registered to the Plastics Smart website, and information is spreading widely both in Japan and abroad through the campaign site and various events. (<http://plastics-smart.env.go.jp/en/>)

EXAMPLES OF INITIATIVES

- To reduce the 80 million plastic umbrellas consumed in a year in Japan, Nature Innovation Group Co., Ltd. has implemented the “i-kasa” (*ai-kasa*) sharing service, where umbrellas can be rented and returned at nearby “Umbrella Spots” when needed.
- The Kagawa Prefecture Litter Countermeasure Promotion Council is working with municipalities, the prefecture and fishers to collect and treat litter that has accumulated on the sea floor. Fishers bring back the litter salvaged during fishing to the port, and the transportation and disposal is done at the expense of the municipality.
- Using *kanten* (agar), which is made from *tengusa* (agar weed), Ina Food Industry Co., Ltd. produces film made only with ingredients that can be eaten. This film is used as a replacement for plastic in food packaging, etc.
- Pirika, Inc. has developed a social media platform that makes it possible for users to post photos and comment about litter they have picked up, thereby visualizing



■ Edible film made of *kanten*, developed by Ina Food Industry Co., Ltd.

Photo: ©Ina Food Industry Co., Ltd.

clean-up activities. More than 500,000 People have participated from more than 80 countries worldwide. The company is also developing a river litter distribution survey system that uses drones.

In Japan, 139 local governments, which cover more than half of the population, have already issued declarations and policies regarding measures against marine plastic litter. In addition, to promote the formulation of such declarations and policies by local governments, the Ministry of the Environment will continue to

promote interactions between corporations and concerned organizations tackling the problem of marine plastic litter. 📌



■ Litter distribution survey system that uses drones, developed by Pirika, Inc.

Photo: ©Pirika, Inc.

■ A feature of Urban Rig is its compact size and transportability

New Technology for the Processing of Marine Plastic Waste

It is said that each year between 10 and 20 million tons of trash are dumped into the oceans around the world, 80 percent of which consists of plastic waste. There are concerns about its adverse impact on the marine environment. Even if this plastic waste were collected, the difficulty of disposing of it safely poses a major challenge. We introduce a company that has successfully addressed this challenge through a novel technological development.

UMEZAWA AKIRA

In recent years, the damaging impact of marine plastic waste on ecosystems and the wider marine environment, the navigational hazard posed to vessels, and the impact on residential environments in coastal areas have generated worldwide concern. The problem is of such global proportions that it has become a matter for discussion at G7 and G20 summit meetings. In Japan's coastal areas too, large quantities of plastic bottles, styrene foam, plastic containers, and

other trash have been found drifting and washed up on the coast and are considered to have the potential to destroy the coastal marine ecosystem. Yet, even if this marine debris is collected, it is extremely difficult to dispose of. In particular, the incineration of untreated marine plastic waste that has been immersed in seawater and is covered in salt generates harmful substances such as chlorine and dioxin. In addition, the chlorine generated damages incinerators. The establishment of

a safe disposal method has therefore been a longstanding problem.

Oneworld Japan Corporation in Osaka Prefecture has developed a unique technology to solve this problem. The new device, called Urban Rig, uses pyrolysis to dispose of untreated marine debris containing plastics, stones, seaweed, metals and wood.

The key to this technology is superheated steam.

“Superheated steam is created by further heating high-temperature steam generated by boiling

water. Urban Rig renders the interior of a garbage decomposition furnace anoxic by filling it with superheated steam, thereby pyrolyzing the waste. In a regular incinerator, an oxygen reaction occurs, producing dioxins. When oxygen is absent, no oxygen reaction occurs, and neither dioxins nor carbon dioxide are produced. Chlorine is adsorbed by the catalytic converter, so it doesn't cause any damage to the device itself either," says Ito Tomoaki, Oneworld Japan Representative Director and CEO.

The device does not only decompose waste. It can also recover oil, charcoal and metals for recycling.

"Urban Rig is able to separate light diesel oil and other oil, methane gas, and so on from plastic, by cooling down gases that have been distilled in the pyrolysis process. In addition, since organic materials other than plastics disappear as water vapor or oxide gas, charcoal is the only solid matter that remains, and metals can be recovered unchanged. Of course, these too can be used as recycled materials," explains Ito.

In fact, 10,000 liters of light diesel oil and 50 cubic meters of charcoal can be recovered from 200 cubic meters (200,000 liters) of waste containing 10 percent plastic when processed by Urban Rig.

Another feature of Urban Rig is its mobility. The compact size of the device allows it to be transported on a 10-ton truck or large container for disposal at the refuse collection site. This does away with the need to transport the collected marine debris from the coast to the disposal facility, reducing the number of personnel required and



Each unit in the "continuous process" series of Urban Rig has a distinct temperature setting, enabling efficient extraction of light diesel oil and other products at different points along the line before cooling



The carbonized ash (charcoal) recovered after processing with Urban Rig can be used as fuel

the cost of disposal. What is more, since the light diesel oil, kerosene, fuel oil, and so on that is needed to run the equipment can be made from the waste collected, fuel costs too can be significantly reduced. And if mounted on a ship, the drifting trash collected at sea can be immediately processed on board.

"Our goal is to create a worldwide system through the spread of Urban Rig. Once we have a system in place to sell the recycled fuel and metals, the waste becomes a resource and creates jobs for those who work in recycling. By industrializing the cycle of recycling in this way, using waste to generate profit, we hope to create a sustainable business," says Ito.

The technology won the Nippon Foundation Prize in the Innovation category of the 2019 UMIGOMI Zero (eliminate marine debris) Awards, sponsored by the Ministry of the Environment, Japan and the Nippon Foundation. The device is already operating in China, and its introduction is currently being considered by Miyako Island, Okinawa Prefecture.

Urban Rig has great potential to improve the increasingly serious problem of marine debris. Japan has contributed to the improvement of global environmental problems through a variety of environmental technologies and, with the introduction of Urban Rig, those contributions continue. 



New Ways to Wear Kimono

Sheila Cliffe from the UK is a researcher and lecturer on the history and culture of the kimono. Through her lectures, books, exhibitions and other means, Cliffe is not only helping to keep the kimono culture alive, but also leading it in new directions.

SATO KUMIKO

The kimono, the national dress of Japan, has a long and fascinating history. Sheila Cliffe, a professor at Jumonji Gakuen Women's University in Niiza City, Saitama Prefecture, is a kimono researcher known for her work exploring the history of the kimono and its rela-

tionship with Japanese culture.

Cliffe first encountered kimono on moving to Japan in 1985 to learn *shintaido*, a modern martial art. She became attracted to the possibilities in the energy of Tokyo, where old and new are mixed together, and soon made visiting antique markets a hobby,

■ Sheila Cliffe,
kimono researcher

having noticed there were often eye-catching kimono to be found there.

“The first thing I bought at an antique stall was a bright red *nagajuban*,” says Cliffe. “I was surprised when a Japanese friend later told me that it was an undergarment. What started my research was my increasing interest in kimono as I wondered why such a bright and beautiful thing would be worn under a kimono where it couldn’t be seen.”

Since then, Cliffe’s research has expanded to the history of kimono and its cultural background, kimono production areas, and the traditional craftsmanship of weaving and dyeing, while she also holds kimono shows and exhibitions both in Japan and abroad.

According to Cliffe, there are many kimono lovers outside of Japan and even some who purchase kimono through the Internet. However, people overseas have little opportunity to learn about the history of kimono or how they are made.

“I often say that kimono ‘have roots.’ The fabrics are woven and dyed using locally grown plants as the raw materials. Kimono have a very deep connection with the place they are made and the surrounding nature,” says Cliffe.

Currently, Cliffe is putting most of her effort into the Kimono Closet project, in which she interviews women about their kimono. Cliffe investigates the kimono and the human events surrounding them and records the information for the next generation.

Cliffe on the street wearing kimono



The level of skill involved in making kimono is very high, which is one reason why the garments are highly durable. A single kimono can be passed on and worn for more than three generations.

Japanese people started to wear Western clothing during the Meiji period (1868–1912), when modernization began, but it was not until after the Second World War that wearing Western clothing became mainstream. Nevertheless, many young women still own and wear a quality kimono for ceremonies.

According to Cliffe, these kimono are often inherited from mothers, grandmothers and great-grandmothers sometimes going back over 100 years.

“Kimono can throw light on a family’s history,” says Cliffe. “When a family member passes away and that person’s belongings are dealt with, many people cherish first and foremost the kimono from their mother’s closet. When I heard about this, my heart was filled with warm, yet sorrowful thoughts.”

It is true to say however that besides special ceremonies, such as Coming-of-Age ceremonies and weddings, there are few Japanese people in modern Japan who wear kimono on a daily basis, even though some young people do wear them as a fashion statement. Cliffe, who wears kimono every day on the street, argues this is because there is a belief that kimono cannot be worn in any way other than the traditional,

formal way. In an effort to change this, in 2018 she published *Sheila Kimono Style*, a style guide suggesting new ways to wear kimono that could be incorporated into everyday life in modern Japan. Cliffe herself was the model for the book, in which she introduces a style of wearing brightly-colored kimono with hats or other accessories that match the kimono’s colors or patterns.

“First you match the *obi* (belt), and then the *zori* (sandals), bags, and other small accessories, and then you put on the kimono,” Cliffe explains. “As you do this, you combine colors that match the season or decide on a thematic color for the day, and then decide how to coordinate everything while imagining your favorite story. This process is a sheer joy for fashion lovers.”

By suggesting new ways to wear and enjoy kimono, Cliffe is helping to bring Japan’s treasured national dress back into daily life. 



A kimono exhibition in England organized by Cliffe



■ A print from the stencil dye series *Sake Brewery in Fushimi* by Inagaki Toshijiro (1902-1963)

Image: Courtesy of Masuda Tokubee Shoten Co., Ltd.

tion thrived in this area in the latter half of the sixteenth century. Toyotomi Hideyoshi (1537-1598), Japan's *de facto* leader, built Fushimi Castle in the Momoyama Hills, and by making it one of his residences, people gathered here and the need for sake increased. Later, in the Edo period (1603-1867), Fushimi further developed as a key point on the water and land transportation routes that connected Kyoto and Osaka. There were more than a few sake breweries that moved here from other regions seeking Fushimi's geographical advantages and quality water. This is how Fushimi, together with Nada in the southeastern part of Hyogo Prefecture, came to be a prominent area for sake production in Japan.

One sake brewery in Fushimi with a long history is Masuda Tokubee Shoten Co., Ltd., which was founded in 1675. Masuda Tokubee, the 14th family head of the brewery, talks about the advantages of producing sake in Fushimi.

"The main reason why sake production flourished in Fushimi is the quality of the water. This area has abundant groundwater, and there are seven famous springs, called the Seven Wells of Fushimi, that have been gushing forth since ancient times. This is very well suited to producing sake."

The groundwater that springs up from the foot of the Momoyama Hills is a water of medium hardness full of moderate amounts of calcium and potassium, and it has a characteristic delicate flavor and mellow mouthfeel. The water that bubbles up in Gokounomiya Shrine, one

The Sake of Fushimi, Made with Famous Waters

Fushimi in Kyoto is one of Japan's representative sake producing areas. Delicious sake is brewed here, using high-quality groundwater that springs out from the base of nearby hills as an ingredient. We spoke with the 14th family head of one old sake brewery about the tradition of sake producing in Fushimi.

SASAKI TAKASHI

Fushimi, located on the southern edge of Kyoto City, is famous as a place where sake production flourishes. It has an undulat-

ing topography, with three rivers flowing around the gently-sloping Momoyama Hills: the Ujigawa River, the Kamogawa River and the Katsuragawa River. Sake produc-

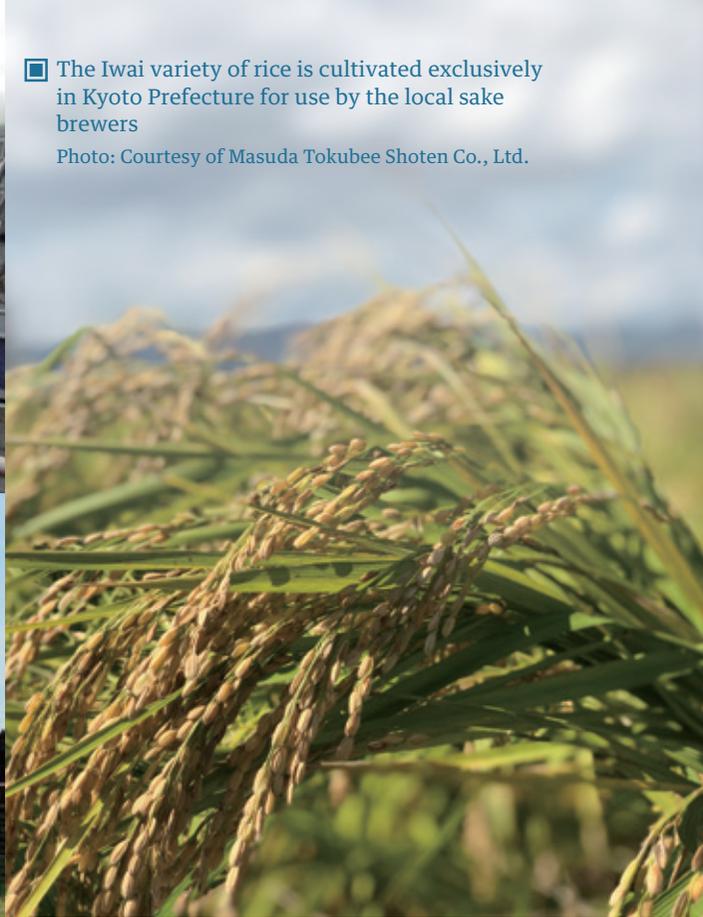


Steaming rice in the brewery

Photo: Courtesy of Masuda Tokubee Shoten Co., Ltd.



A sake brewery in Fushimi



The Iwai variety of rice is cultivated exclusively in Kyoto Prefecture for use by the local sake brewers

Photo: Courtesy of Masuda Tokubee Shoten Co., Ltd.

of the seven wells that still exists today, is said to have been carefully protected for over 1,000 years.

Masuda says that water with a medium hardness that includes a good balance of minerals advances fermentation slowly, allowing the harshness of the alcohol to be removed during the fermentation process to create a

sake with minimal sourness and a smooth taste. This is the reason why the sake from Fushimi is called *onna-zake* (woman sake), while the strong sake from Nada, with its dry taste due to the use of hard groundwater, is called *otoko-zake* (man sake).

Sake from Fushimi pairs very well with traditional Kyoto cuisine and its mild flavors, a type of Japanese food that utilizes the flavors of the ingredients. Masuda tells us that many of the finest restaurants in Kyoto recommend pairing Kyoto cuisine with Fushimi sake.

In January 2013, the “Let’s Make a Toast with Sake!” initiative (Official name: Regulation to Promote the Popularization of Kyoto City Sake) came into effect in the city of Kyoto. Masuda was central in establishing this unique and fun “regulation,” created through the

Fushimi Sake Brewers Association actively appealing to the mayor, city council and other entities.

Smiling, Masuda says that, “Even for us, when it is hot, we often made a toast first with beer, but because we have so much delicious sake in Kyoto, I thought that I would try and establish a custom of making a toast with sake.”

This movement has spread to various places in Japan, and 128 local governments across the country have established similar “regulations” for toasting not just with sake, but with locally-produced *shochu*, wine, specialty ingredients, and foods. Originating in Fushimi, these efforts to share the appeal of local traditional specialty products and to revitalize the local industry are trying to bring about great excitement in a way that is tailored to each region. 🍶



A spring water basin at Gokounomiya Shrine

Photo: Courtesy of Gokounomiya



□ The *tenshu*, or keep, of Matsue Castle

The Keep of Matsue Castle

Of the thousands of castles built in Japan over the centuries, there are only twelve that remain in more or less the same form as when they were originally constructed. One of those is Matsue Castle in Shimane Prefecture.

UMEZAWA AKIRA

Matsue Castle was built at the beginning of the seventeenth century in the center of what is currently Matsue City, Shimane Prefecture, by Horio Yoshiharu, the feudal lord of the area at the time. Later, the lord of the castle changed, and it became the castle residence for the lord of the Tokugawa Shogunate's Matsudaira clan, and this continued until feudal domains were abolished and prefectures were established in the early Meiji period, 1871.

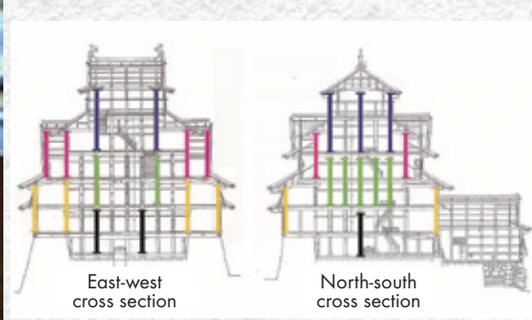
The *tenshu*, or keep, of Mat-

sue Castle was registered by the Japanese government in 1935 as a National Treasure, being one of the most important buildings or works of art in Japan, but the designation was changed from National Treasure to Important Cultural Property due to a change in the jurisdiction law in 1950. However, this change was perceived as a downgrade and a strong desire from city residents was expressed to have the castle, a symbol of Matsue, be reinstated as a National Treasure. Thereafter, patient scientific research, in coop-

eration with residents and the government, was undertaken to provide the additional information needed for the National Treasure redesignation. The results of this research were announced in 2012. Two talismans were found in a shrine on the castle grounds. These talismans were originally kept hidden in the castle keep, but were lost for hundreds of years. The talismans had the date 1611 inscribed on them, clarifying when the keep was completed. The keep's characteristic column structure was also explained,



□ Pillar reinforcement using the *tsutsumi-ita* technique



□ Cross section of through pillars



□ The column construction that was one of the deciding factors for National Treasure designation

and Matsue Castle was redesignated as a National Treasure in 2015, with the determining factors being that the castle was an example of the use of superior techniques in keep construction and that the year of its completion had been revealed.

Part of the characteristic column structure of the keep of Matsue Castle is a technique known as “through pillars.” It ensures the strength of the approximately 30-meter-tall keep, with its five floors above ground and one below ground, dispersing the load of the keep by supporting it with alternating pillars passing through every two floors. At the main keep at Himeji Castle, which was built several years before Matsue Castle, a single long and massive through pillar supported multiple floors, but when Matsue Castle was built, castle construction using enormous logs was going on all over Japan, and it is thought that Matsue Castle was constructed in this way as it was difficult to acquire such enormous logs.

Another technique that reflects the conditions of these times is *tsutsumi-ita*. This is a technique that covers the surface of the wood used for pillars with boards and fastens

them with *kasugai* (staple-like iron nails) or *kanawa* (metal bands). Of the 308 pillars supporting the keep, 130 were processed with the *tsutsumi-ita* reinforcement technique.

It can be said that Matsue Castle was a pioneering building at the time, as it made construction of a large-scale keep possible without using massive, long logs but instead using original techniques, such as the clever use of short pillars.

Even after being redesignated as a National Treasure, studies and research have progressed, and new facts have come to light.

Inata Makoto, head of the Matsue Castle Research Lab, Historical Survey Section, Historical Town Development Department in Matsue City, says, “We have found that when it was built, the roof of the keep was decorated, and it is now assumed that the keep originally had a vastly different exterior than it does today. Up until this new discovery, the common understanding even among castle researchers was that the Matsue Castle keep had entirely preserved its original appearance. The discovery that the keep was in fact different when it was first built has defied the

conventional wisdom.”

There has been an increase in opportunities for the castle to be showcased in the media since it was redesignated as a National Treasure, and as the number of tourists from both Japan and abroad has increased, Matsue City is aiming for Matsue Castle to be registered as a World Heritage Site.

Inata says, “In May 2020, the Matsue-jo wo Mamoru Kai (association for protecting Matsue Castle) was established as we entered our fifth year since the National Treasure designation. This association aims to protect Matsue Castle through local efforts and pass it on to the next generation. There are plans to create opportunities to widen the circle of people related to the castle and to carry out activities to promote the network of organizations involved in cleaning and other activities related to the castle. Through sharing and offering the results of our studies and research with city residents, we hope to further increase the value of Matsue Castle.”

It may not be long until we learn of the next discovery of historical facts about Matsue Castle. 7

JAPAN
HERITAGE

Koka City

Iga City

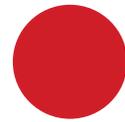
伊賀忍者特殊軍団
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知 技 心

Exploring the Birthplace of the Real Ninja



JAPAN HERITAGE

The word “ninja” generally conjures up an image of a covert warrior clad from head to toe in black, conducting secret missions with an array of skills, ingenious equipment, and seemingly superhuman maneuvers. Ninja are an iconic part of Japanese culture known around the world, but where did ninja originate and how did they train?

Answers to these and many more questions can be found in Iga City in Mie Prefecture and neighboring Koka City in Shiga Prefecture, two areas jointly considered to be the birthplace of ninja arts. Both cities were relatively close to the major centers of power at the time, yet their mountainous surroundings largely kept them out of the reach of feudal lords. Mercenary groups that emerged to maintain peace and coordinate rule in these remote areas developed techniques and strategies for unconventional combat, sabotage, and gathering intelligence during the Sengoku period (1467 to late 16th century). This was the heyday of the ninja.

Ninja culture is kept alive in Iga and Koka in museums, theme parks, temples, and castles that offer insights into ninja training, both physical and mental. Visitors to this ninja heartland can learn about their techniques and skills, and even give some of them a try. Throw *shuriken* stars (a ninja weapon), scale walls, and explore houses with contraptions to fool intruders, such as revolving walls, trapdoors, and hidden compartments. These hands-on experiences are a fun way to gauge how your skills measure up to those of a trained ninja.

Much of the modern-day perception of ninja is drawn from *Bansenshukai*, a once-secret document believed to have been written in 1676 that details ninja techniques from Iga and Koka. This document explained the physical and mental training that ninja underwent and has provided the framework for ninja-related demonstrations and activities conducted in Iga and Koka today. You probably will not meet a real ninja when you are walking down the street in Japan, but visitors to these cities will see ninja history come to life.

Visit the Japan Heritage Official Site at <https://www.japan.travel/japan-heritage/>

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