

KIZUNA

Spring
2021

Linking Japan and the World



JAPANGOV
THE GOVERNMENT OF JAPAN



Welcome to KIZUNA, the official magazine of the Government of Japan.

This bold work of calligraphy is 絆 (*kizuna*) written in Japanese. *Kizuna* means the enduring bonds between people—close relationships forged through mutual trust and support.

Originally describing the rope used to tether domestic animals such as horses and dogs, the meaning of *kizuna* has evolved over the years. A passage in *The Tale of the Heike*, compiled in the 13th century, uses the term to refer to the bonds of love between a father and his children. More recently, *kizuna* has gone beyond bonds tying together family and close acquaintances; it is now used in a broader sense of human ties and connections. Of particular note is the *kizuna* born among people during natural calamities, which fosters feelings of solidarity and serves as the underlying strength to overcome hardships.

Similarly, the *kizuna* cultivated among the countries of the world has the power to deepen cooperation for a better future. By reporting on a wide variety of topics concerning Japan, we hope that this magazine will provide opportunities for Japan and the rest of the world to connect and build strong *kizuna*.



KANAZAWA SHOKO
Calligraphy Artist

Born in Tokyo in 1985, she started learning calligraphy from her mother when she was five years old. One of the notable young calligraphers of today, her solo exhibitions have been held throughout the world, in cities such as New York, Singapore, and Prague. She was selected as one of the official poster artists for Tokyo 2020.

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KIZUNA

Spring 2021

COVER

Children run gleefully under a school of blue carp swimming in the skies above Higashimatsushima City in Miyagi Prefecture. In celebration of Children’s Day on May 5, it is a traditional custom in Japan to put up these carp-shaped streamers, called *koinobori*, to wish for the healthy growth and development of children. In Higashimatsushima, which was devastated by the 2011 Great East Japan Earthquake, these blue *koinobori* are displayed every year to commemorate the children who lost their lives in this tragedy. The streamers have now become a symbol of the city’s recovery from the disaster.

SAKURA

CELEBRATE THE REJUVENATED TOHOKU

As news of blooming sakura (cherry blossoms) in different regions reaches across the country, spring comes to the hearts of Japanese people. Cities in the Tohoku region, devastated by a major catastrophe on a spring day ten years ago, are once again graced by sakura this year.



The Great East Japan Earthquake and Tsunami of March 11, 2011, followed by the nuclear power plant accident, overwhelmed Fukushima. Aizuwakamatsu City, in the inland western part of the prefecture, is the site of a castle—Tsurugajo—famous for having been impregnable. Every spring, 1,000 cherry trees blossom gloriously, symbolizing the indomitable spirit of Fukushima's citizens.



IWATE 岩手

As an icon of spring in Japan, *sakura* is joined by *koinobori* (carp streamers). Carp is a traditional symbol of social success for Japanese people, and *koinobori* are displayed on May 5, Children's Day, as prayers for the health and growth of children. Flowing through Iwate Prefecture, the Kitakami River is festooned with about 300 carp swimming through the air, lifting up prayers for a peaceful world.

MIYAGI

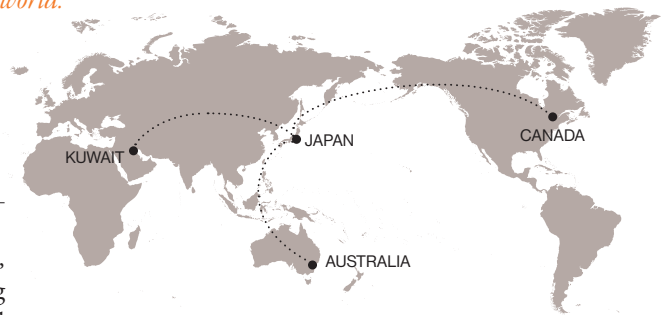
宮城

Long famous as one of the most scenic spots in Japan, Matsushima comprises a unique seascape of about 260 interlacing islets on the coast of Miyagi Prefecture. Although damaged by the massive tsunami caused by the Great East Japan Earthquake, its beautiful scenery has miraculously endured. Among the various affected areas in Tohoku, tourism first recovered here, driving the revitalization of the region.



“ARIGATO” FROM JAPAN FOR SUPPORTING RECONSTRUCTION

After the disastrous Great East Japan Earthquake on March 11, 2011, which triggered a tsunami along the coast, many countries across the globe responded by donating generous amounts of aid. Now, one decade later, the time has come once again for Japan to give thanks to the world.



Natori City was hit hard by the huge tsunami, which caused unprecedented damage mainly along the Pacific coastline where Sendai International Airport is situated. Canada—no stranger to international exchange with the city—launched the Canada-Tohoku Reconstruction Project, providing aid for the reconstruction of community facilities in Natori in partnership with the provincial governments of British Columbia and Alberta, and the timber group Canada Wood.

In 2013, the project finished building the Donguri Anne Public Library, followed by the Maple-kan

morning market facility. Serving as a symbol for post-disaster recovery, the Maple-kan pavilion was constructed with Canadian timber on the site of the Yuriage Harbor Morning Market—a famous attraction in pre-disaster days—which was completely obliterated by the tsunami and since rebuilt. Local residents continually give thanks for Canada’s support, making such comments as,

“Having lost everything, we treat it as a gift from heaven,” and “Now that this Maple-kan has been built we feel inspired to give life another go.”

At present, Natori’s fishing port has succeeded in building back up the local population of blood clams, reputed to be the finest in Japan. In addition, the Natori Cycle Sports Center—which had operated a roughly 4 km cycling route along the coast before it was completely destroyed—has also been rebuilt, giving cycling enthusiasts and families a renewed chance to enjoy the coastline. ●



Left: The Maple-kan, which has given so much hope and energy to residents.
Right: The Donguri Anne Public Library offers a place of peace and tranquility to the people of Natori.



KUWAIT

Sanriku Railway, Iwate Prefecture
Nihonmatsu City, Fukushima Prefecture



To honor the country, eight railcars bought with the aid have been inscribed in Arabic with the words “We greatly appreciate the support from the State of Kuwait” and decorated with Kuwait’s national emblem.

Following the giant earthquake, Kuwait gave five million barrels of crude oil (equivalent to \$500 million) to Japan free of charge, with the monetary proceeds donated to Iwate, Miyagi, and Fukushima prefectures. A portion of the aid was used for the restoration of the Sanriku Railway, an important lifeline connecting heavily damaged areas along the whole 107.6 km length of the Iwate coastline. When service was finally restored after more than three years of reconstruction work, local residents flocked to the stations waving Kuwaiti flags.

Aid from Kuwait was also being used to support the reconstruction of affected businesses and schools. Nihonmatsu City, which received the aid, wanted to repay this kindness. Knowing that Kuwait had previously won several Olympic shooting medals, the city announced that it would host Kuwait’s Olympic and Paralympic shooting teams for Tokyo 2020, utilizing the city’s clay and rifle shooting ranges. The city, along with students from the local Adachi Higashi High School, has prepared a special menu for the team based on Kuwait’s national dish, biryani, using ingredients cultivated by the students through the application of GAP.* Local residents are looking forward to welcoming the Kuwaiti team.



The students have created a vegetable-packed biryani-style curry and a consommé julienne with onions grown at the school “to help the Kuwaiti team relax in Japan.”



AUSTRALIA

Kamaishi City,
Iwate Prefecture

Tsunami waves as tall as 9.3 m devastated Kamaishi City, the birthplace of modern steelmaking that drove the Japanese economy, which is also famous as a fishing and rugby town. Ten years ago, when the disaster struck, the Australian Scott Fardy, then-member of the Kamaishi Seawaves rugby club (and later, member of the Australian national team), refused to be airlifted out of Japan against the advice from his country’s embassy in Tokyo, and instead remained in Kamaishi with his teammates to continue assisting with heavy work such as moving vital relief supplies.



At the “Welcome Back Fardy!” meeting, Scott Fardy had fun mingling with the local residents.

In 2018, the city invited Fardy and his teammates back to show them how the recovery efforts had progressed in what was dubbed a “Welcome Back Fardy!” meeting. The players from Australia toured the construction site of a rugby stadium destined to be a symbol of post-disaster recovery in the most heavily damaged area of Unosumai, and had some rugby fun with local residents. The following year saw Kamaishi successfully become one of the host venues for the Rugby World Cup 2019 in Japan, during which time the city became a bustling hub of activity.

“We live in appreciation of the support we have received, and want to say that we are working hard each and every day to rebuild the area,” say the local residents. Even now, a full decade after the earthquake struck, memories of the generous aid received still support the people of Kamaishi.



The Kamaishi Unosumai Memorial Stadium hosted a match during the Rugby World Cup 2019. It was the Sanriku Railway, rebuilt with aid from Kuwait, that brought spectators to watch rugby here.

*GAP (Good Agricultural Practices) are a set of principles, regulations, and technical recommendations applicable to production, processing, and food transport, addressing human health care, environment protection, and improvement of worker conditions. (Food and Agriculture Organization of the United Nations (FAO), 2007, “the guidelines of Good Agricultural Practices for family agriculture”)

PLANT-DERIVED MATERIAL

WILL CHANGE THE FUTURE OF AUTOMOBILES

Lightweight and super-strong, cellulose nanofiber is an innovative material based on cellulose—a renewable resource from trees and plants—promising a wide spectrum of potential applications in various fields, including the automobile industry.

To achieve carbon neutrality by the year 2050—a goal declared by the Suga administration last October—technological innovation is imperative. One case illustrative of that effort is the development of cellulose nanofiber (CNF), a new ultra-fine material derived from the cellulose found in trees and other plants. Disentangled on the nano level from natural cellulose, each CNF strand ranges from just four to 20 nanometers thick (1 nm equaling one-billionth of a meter). Compared to steel of the same volume, CNF weighs one-fifth and is eight times stronger. Due to these properties, resin can be reinforced with CNF to produce

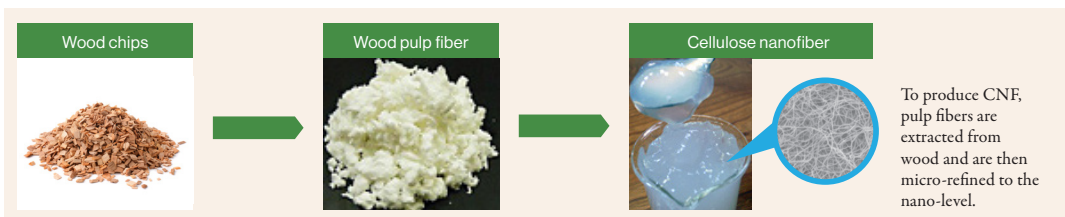
a high-performance compound material.

Japan has developed various technologies to render CNF-resin production processes more efficient. Research is underway on a multitude of applications for the material, with those for automobiles appearing particularly promising. In 2016, Japan's Ministry of the Environment launched the Nano Cellulose Vehicle (NCV) project, attracting the involvement of 22 research institutes and companies. In autumn 2019, the project generated buzz by exhibiting a wooden concept car at the Tokyo Motor Show. Thirteen parts of the car (including the hood) were

made from CNF resin, reducing the vehicle's total weight by 16%, while a simulation showed a significant 11% improvement in fuel economy.

Leading the NCV project is Kyoto University Professor USUKI Arimitsu, who has devoted more than three decades of his career to researching and developing compound materials at Toyota Central R&D Labs., Inc. He says, "A great advantage of CNF is that it is recyclable. Using the material should contribute to vastly reducing the environmental impact of a vehicle over its life cycle, from raw-material procurement to manufacture and disposal."

Toyota Boshoku Corporation, which has been using plant-derived kenaf fibers in auto parts for many years, was in charge of developing the outer panels and door trim of the NCV concept





Professor Usuki, who led the NCV project, says, “As there is little activity by researchers overseas to mix CNF with resin to make new compounds, Japan could lead in this field.”

car. Speaking about the potential of CNF, TSUGE Motoki of the company’s New Value Creation Center says, “You can produce CNF resin with existing manufacturing equipment, avoiding the need to develop new machinery, which is a key benefit of the resin. A wider recognition of CNF’s contribution to cutting CO₂ emissions, as well as to

reducing costs of production, ought to lead to its more widespread adoption.”

Products employing CNF are already being marketed in other sectors, including such products as sports shoes and home appliances, where light weight and durability are musts. Owing to its excellent thermal resistance, moreover, CNF is highly suited to use in housing, such as in the production of window sashes and glass. Applying the knowledge gained in the NCV project, the Ministry of the Environment is endeavoring to introduce the technology to a wide variety of firms through its Nano Cellulose Matching project.

In order to introduce CNF into automobile manufacturing, further tests are needed to verify its long-term durability and performance in related areas. Nevertheless, the material holds

great promise toward achieving a carbon-free society. Professor Usuki says, “The performance of resin can be substantially improved simply by mixing the substance with a small amount of CNF. Moreover, its primary base material—trees—grows all over Japan. Although the realization of lower vehicle weights and low carbonization are perennial issues for automobile manufacturers, I think that CNF is an amazing material that has the potential to achieve both.” ●



CNF has been utilized in various products already on the market, such as for cushioning in running-shoe soles and the bodies of stick vacuum cleaners. Resin for housing materials is also in development.



The NCV project concept car exhibited at the Tokyo Motor Show. Thirteen parts, including the door trim and floor parts, were made with CNF.



REFORMING THE SOCIAL SECURITY
SYSTEM TO CREATE
**FAIRNESS AMONG
GENERATIONS**

“Social Security Reform for All Generations” to contain the increased burden of an aging society and address the declining birthrate.

The combination of a declining birthrate and an aging population is a major issue in developed countries. In Japan, where the two trends arose sooner than elsewhere, social security is an area urgently in need of reform. While Japan boasts a world-acclaimed system that includes universal healthcare, by which all citizens gain reliable access to medical care, the number of the system's beneficiaries has grown in recent years due to the graying of society. By contrast, the number of contributors to the system has decreased, thus steadily increasing the burden on younger generations.

In response to the issue, in December 2020, three months after the Suga administration's inauguration, the government released its final report on "Social Security Reform for All Generations," spelling out reforms that show its determination to address challenging issues that have thus far proven too difficult to overcome. By reforming the current social security structure, under which the benefits are provided mainly to the elderly, with the working generation taking on the burden, the government aims to create a system where people of all generations support each other equally.

Gakushuin University Professor of Economics ENDO Hisao, an expert involved in formulating the reform policy, says, "It's very significant that the final report clearly demonstrates that the government—while asking people with the financial wherewithal to bear the burden—is responsible for offering security to those people who are truly struggling, regardless of their generation." The healthcare reforms will raise the patient's copayment ratio for medical care expenses borne by seniors of 75 or older, and who earn above a certain level of income, from the current 10% of the total to 20%, in the aim of reducing the



Professor ENDO Hisao in the faculty of economics at Gakushuin University (Tokyo), and a specialist in social security and health economics. He has held various key public positions, including president of the Japan Health Economics Association, president of the National Institute of Population and Social Security Research, and chairman of the Social Security Council. Since 2019, he has served as a member of the Council on Social Security Reform for All Generations.

national medical care expenditures devoted to the elderly.

The reforms will also involve reducing the concentration of patients at large hospitals, and such measures will help create a system that optimizes medical resources. As for measures dealing with the declining birthrate and childcare assistance, the reforms incorporate a number of actions, such as expanding insurance coverage include fertility treatment, establishing more day nurseries and childcare facilities, and encouraging men to take paternity leave.

Above all, measures to deal with the declining birthrate are of great importance, since they form the basis for not only maintaining the social security system but also keeping the economy growing. Professor Endo says, "We absolutely must avoid producing an atmosphere that may coerce people to have children. We should continue with policies that create an environment where young people who want children can fulfill their hopes." The government's assistance in funding fertility treatment has gradually led to an increase in the number of children born thereby. According to the Japan Society of Obstetrics and Gynecology, approximately 6% of all births nationwide were assisted by in-vitro fertilization in 2018.

With the treatment to be covered by insurance, not only will the financial burden be further reduced, but more medical institutions will offer fertility treatment, thus making it more accessible. The resulting benefits will be numerous, including progress in developing more effective and safer technology. The policy of insurance coverage for fertility treatment symbolizes the Japanese government's commitment to fully supporting young people who want to have and raise children.

Professor Endo says, "Two decades from now, the children who were born today will be supporting our society. Though we need to be patient enough to wait until we see the outcome of those policies, we must implement them now." Having worked out forward-looking reforms, Japan will continue to review and enhance them while moving ahead to guide the country into becoming a truly affluent society in the future. ●

BRINGING HAPPINESS

TO WOMEN WITH DISABILITIES IN LAOS

*Enabling aid to reach those who are often overlooked:
A Japanese woman creates a workplace for Laotian people
with disabilities to help them on their way to self-reliance.*



It began with a simple question in her mind: why weren't there any children with disabilities in Laotian schools? ISHIHARA Yurina had been an active volunteer from her student years, participating in programs to help people in developing countries. After graduation, she helped to build schools in Nepal and Laos. She noticed, however, that it was rare to see people with disabilities in Laotian society. There were children with disabilities, but they were tucked away in their homes. "No matter how many facilities we built, with the country's welfare system still in progress, some children remained out of

reach. It was disheartening," sighs Ishihara.

Turning her eyes to the existence of people with disabilities, Ishihara began to think not just about disabled children, but disabled adults, too. There were people who had grown up without ever having gone to school, and it troubled her particularly that women with disabilities were especially likely to remain hidden away in their homes. There were other groups providing support for children, so Ishihara decided to extend support to disabled adults, as they were less likely to receive aid. Helping them to find work



These embroidered-ball earrings are the fruit of a cross-border collaboration between workshops for disabled persons in Laos and Japan.

and learn to speak out would also lead to the creation of a better future for disabled children, she reasoned.

Ishihara began by visiting welfare facilities in Laos and calling on disabled people in their homes, offering daily life support. In 2017, she launched an organization in Japan called Support for Women's Happiness, and opened a workshop in the Laotian capital of Vientiane with the collaboration of local participants. The workshop provides employment for women

ISHIHARA YURINA

She leads the nonprofit organization Support for Woman's Happiness. After helping to build schools in Nepal and Laos, she co-established XonPhao, a workshop in Laos that employs disabled women—a group of people previously kept away from the eyes of society. Workshop members produce handicraft items, and Ishihara hopes to see the women gain confidence and happiness at XonPhao and win a way to self-reliance.



ISHIHARA Yurina (right) and two women of the workshop.



Members of XonPhao. Some had suffered leg amputations as a result of polio at a young age; others struggle with paralysis in their fingers. Whatever their disabilities are, they do what they can and share the work in a spirit of helpfulness.

with disabilities so that they can work toward greater self-reliance. During a home visit, a woman with disabilities told Ishihara, “I want you to make a workplace where disabled people and poor women can work—where we can be assured of a minimum wage.” Those words motivated her to begin the project.

The name of the workshop is XonPhao Disabled People Working Group. *Xonphao* means “people or ethnic group” in the Laotian language, and the workshop also accepts disabled men, including some of the women’s brothers and husbands. About 30 people work there today, many of them in their 20s.

The work at XonPhao centers on the manufacture of handicraft products. The workshop develops gift items that draw on traditional Laotian weaving techniques, and it also collaborates across borders by co-producing items with Japanese workshops. One product that has proved to be popular is an embroidered ball that is first sewn at the XonPhao workshop, then sent to another workshop in Gotemba City in Japan, where a metal clasp is attached to the ball so that it can be worn as an item of jewelry.

Ishihara recalls that, in the beginning, no profit was made in certain months, and how concerned she was about the

difficulties in teaching the workers the intricacies of these crafts. She was encouraged, however, by the strong determination of the workers themselves to turn their lives around. Those women had been dependent on their families to support them, but the workshop now made it possible for them to earn money on their own and send some of it home. The joy of helping others was enormous, allowing them to feel a burgeoning sense of responsibility and motivation. In the future, the women may well become fully self-reliant and capable of leaving the workshop altogether.

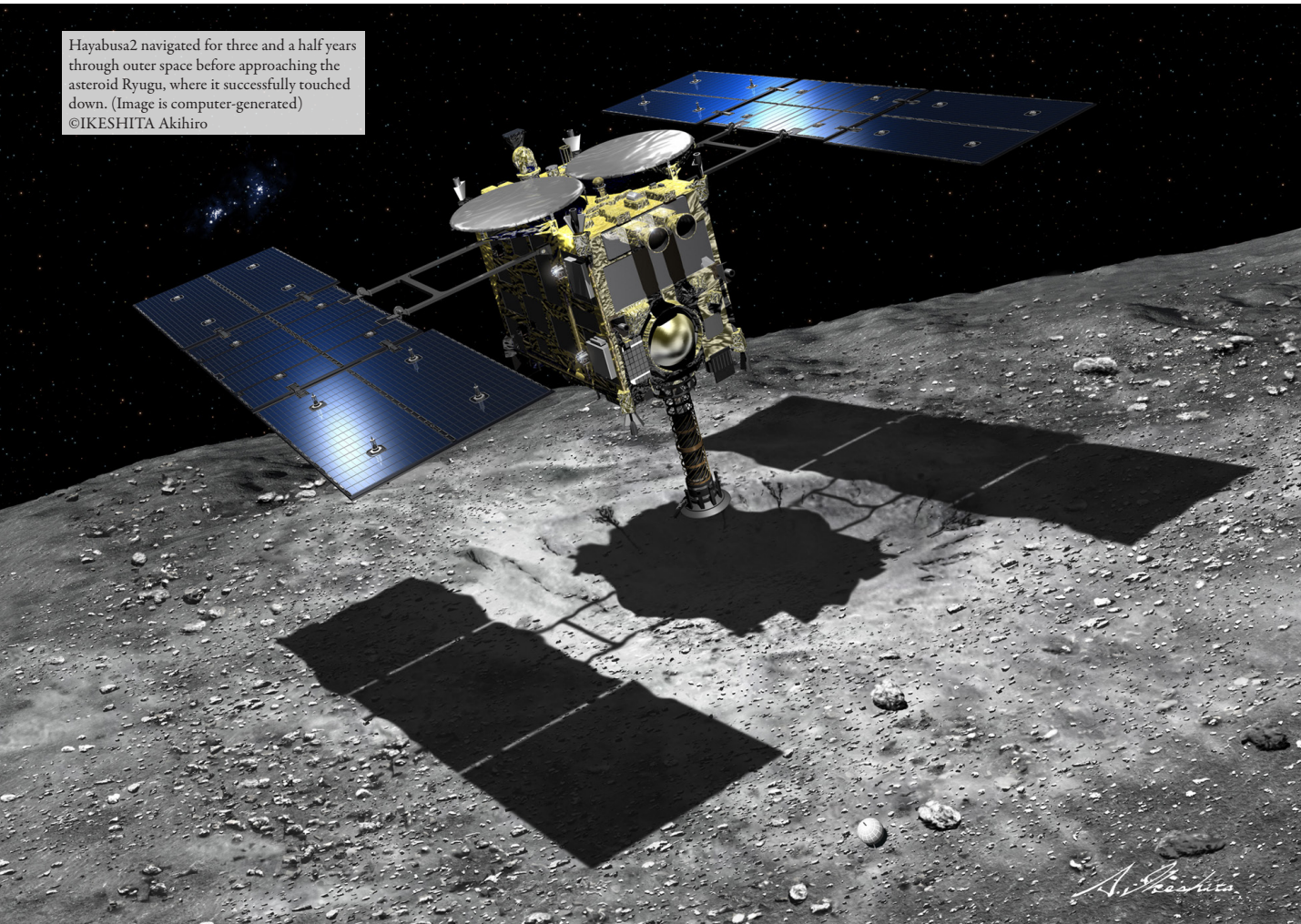
“I look forward to that more than anything,” says Ishihara. “I’ll miss them, but leaving means that they have made true progress.”

The self-reliance and self-respect instilled in people at XonPhao will reach beyond the workshop and pave the way for other disabled adults and children to help them realize their full potential and live happy lives. ●



Left: The woman who is cutting fabric lost her fingers when she was quite young, but practice has enabled her to use both scissors and sewing machines with great dexterity. Right: Women working at sewing machines.

Hayabusa2 navigated for three and a half years through outer space before approaching the asteroid Ryugu, where it successfully touched down. (Image is computer-generated)
©IKESHITA Akihiro



ASTEROID EXPLORER HAYABUSA2

REVEALS THE ORIGIN OF THE SOLAR SYSTEM

A Japanese probe succeeded in bringing to Earth asteroid samples that scientists hope will provide a key to unlock the secrets behind the origin of life.

In December 2020, Hayabusa2, a probe launched by the Japan Aerospace Exploration Agency (JAXA), after a journey of six years, brought back to Earth samples collected from the asteroid Ryugu. The probe was also the first ever to achieve the feat of extracting a substance from below the surface of an asteroid by

Left: The project would never have taken place without international cooperation. The capsule carrying the samples landed in Australia, which had pledged an agreement to participate in the project.

© JAXA

Right: A container taken from the retrieved capsule was weighed, confirming that it had returned with a sample of 5.4 grams, or 54 times the original goal of 0.1 grams. Tsuda said jovially, "The analysis will be a tough job because we collected so much."

© JAXA



creating an artificial crater.

The mission's success demonstrated that Japan both possesses advanced asteroid exploration technology and can be expected to contribute to greater understanding of the origin of the universe. Analyses of the material from Ryugu, which scientists believe contains evidence from the time of the solar system's formation some 4.6 billion years ago, could yield hints about how our planetary system came to be. In addition, as Ryugu is thought to contain a copious amount of organic material and water, such analysis could validate the hypothesis that the organic material essential to life was carried to Earth by similar asteroids crashing into our planet. TSUDA Yuichi, project manager at the JAXA Space Science Laboratory and the mission's leader, said, "The Hayabusa2 mission sought to find the secrets behind how the Earth and life were created."

The probe's predecessor, Hayabusa, completed the first-ever successful sample return mission in 2010 by bringing material back to Earth from the asteroid Itokawa. Despite facing several difficulties, including

a fuel leak and engine failure, the probe miraculously made it back home.

The frame and engine of Hayabusa2 were upgraded from the original model, while the JAXA team personnel conducted drills to deal with various conceivable scenarios. These preparations were fully utilized during the eventual mission. With touchdown being an incredibly high-risk operation, the most difficult decision faced was whether to collect a second sample from a different location. A failed second landing would risk the loss of the surface materials that had been collected on the first landing. "However," Tsuda said, "in addition to providing the opportunity to extract material from below the asteroid's surface, the second touchdown would be scientifically significant since obtaining material from multiple locations would enable us to conduct a comparative analysis. After reconfirming the significance of an additional touchdown with scientists from around the world, we chose to make this difficult second attempt." With the support of scientists who believed in the technology carried by Hayabusa2, the team was able to complete the second landing successfully.

The enthusiasm and meticulousness of all the project members bore fruit, enabling Hayabusa2 to bring samples back to Earth in a way that exceeded expectations. Looking back on the mission, Tsuda said, "Every single rock has its own unique surface. When I saw the actual samples, I was moved to tears."

Japan continues to be at the forefront of asteroid sample return missions. Hayabusa2, which has already made a contribution to fundamental science, is presently on its way to explore another asteroid in an expanded mission. The probe is scheduled to arrive in 2031 and will surely lead to new discoveries. ●



The Hayabusa2 project involved 600 experts from Japan and elsewhere. The team's leader, TSUDA Yuichi of the JAXA Institute of Space and Astronautical Science, said that he respects the members' meticulous work. © JAXA



Jinya, where guests clearly sense Japan's history and traditions, has a Japanese garden covering some 33,000 m², offering abundant natural surroundings that change with each season.



DIGITAL TRANSFORMATION

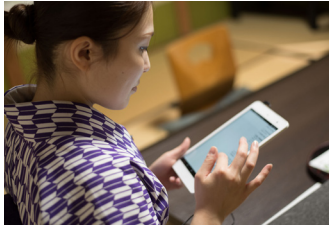
PROPELS TOURISM TOWARD THE FUTURE

Opportunity in the face of adversity: a venerable inn that revived its fortunes through digital transformation pushes Japan's tourism business into the future.

As the world reels from the COVID-19 pandemic, Japan is building a new post-coronavirus society by implementing bold regulatory reforms, especially the promotion of digital transformation. In December 2020, Prime Minister SUGA Yoshihide announced that the Japanese government would create a digital agency in September 2021, to serve as the control tower of digital transformation in the public and private sectors. In that way, the Suga Cabinet is accelerating its efforts towards digital transformation, which has been a key policy since the prime minister assumed office in September 2020.

Jinya, a hot-spring inn that has been in business for over a century, is one of the forerunners of Japan's digitalization. It is located an hour away from Tokyo in a quiet residential area of central Kanagawa Prefecture. While Japan's traditional tourism industry—best exemplified by hot-spring inns—earned its popularity by offering a high quality of service, it is heavily reliant upon human resources, making the business often more challenging to manage. This was also true of Jinya—which at one time was 1 billion yen in debt—but digital transformation turned its business around. Looking back, Jinya Representative Director and President MIYAZAKI Tomoko, who has been operating the inn with her husband for 11 years, says, “When we took over the inn, everything was managed in the old way: on paper. In order for the inn to survive, we needed to be resolute and switch everything over to digital technology.”

Jinya decided to make use of cloud services, which at the time had only recently become available, to manually build its own core systems. In addition to centralizing the management of bookings and guest information, the change allowed the staff from all the inn's departments, including those for cleaning and food-preparation, to share information instantly. Moreover, integrating all business administration, such as accounting procedures and staff attendance management, into one system, sped up,



The Jinya's in-house system is built on the inn's hospitality management expertise. As other inns across Japan adopt this system and offer their feedback, it has been further evolving.

and streamlined troublesome operations. The greatest benefit of all of that, according to Miyazaki, has been that staff members now have time to do more, allowing them to check all sorts of information and act on their own initiative to provide guests with even more attention. Thus, the digital transformation has raised the level of service, leading to more repeat guests for the inn,

while also considerably increasing both sales and profits. Miyazaki says that building such trust has kept Jinya an inn at which customers feel safe staying, even during the pandemic.

Jinya is also popularizing the system among similar enterprises, with nearly 400 establishments across Japan having since adopted it for their own business. Furthermore, Jinya has built a cooperative network of inn operators and has also launched a project in which inns can exchange resources such as food ingredients, equipment, and labor on a website. Those are all examples of how the company has worked to create a new tourism industry within a digital society. Miyazaki says, “All our staff want to provide *omotenashi* (good hospitality). If we can make good use of digital technology to provide a service that is enjoyable and of high quality, our guests will certainly visit us constantly.” Benefiting from its early digitalization efforts, Jinya's management has been solid enough to ride out the pandemic while spearheading Japan's tourism industry. The enthusiasm of the venerable inn has created a wave of digital transformation throughout the country. ●

MIYAZAKI Tomoko, who used to be an office worker, has made abundant use of that experience to manage Jinya. In the photo, she sits in the VIP room that was made to accommodate Emperor Meiji (the 122nd Emperor of Japan, who reigned from 1867 to 1912).



ROBOTS CARRY SUSHI ARTISANSHIP TO THE FUTURE

Compact robotic machines roll out rice balls in quick succession, made to perfection as if by the hands of skilled sushi chefs. These sushi robots have taken Japan's unrivaled sushi and rice culture onto the world stage.

Japan's reputation as a culture of cuisine and of exquisite foods has been on the rise around the globe. Numerous Japanese dishes and foods are now becoming more popular in many parts of the world, especially in Europe and America, where people are more concerned about their health,

as well as in the rapidly growing economies of Asia and elsewhere. As a result of this growing popularity, Japan's exports of agricultural, forestry, and fishery products and food have been increasing year by year. Wherever people go in the world today, they can find a restaurant serving

sushi—a food synonymous with Japan. Behind sushi's meteoric rise to fame are the not-so-well-known stars of the show, the robots.

Made as if by the hand of a skilled sushi chef, balls of rice pop out from a small machine in quick succession. In fact, up to

Sushi is a food seen in all corners of the world, and has been adapted to local tastes. The California Roll, dreamed up in America, is now a hugely popular type of sushi in Japan.





Suzumo Machinery's robots can produce perfect sushi rolls in an instant, a tricky task (right). Becoming more popular in recent years, such rice-serving machines also dish out rice in pre-measured quantities, helping to save on food.

4,800 of these beautifully shaped parcels of rice can be rolled out in an hour. With the creation of a revolutionary sushi robot, anybody can enjoy high-quality, mouthwatering sushi at an affordable price without the need for a trained sushi chef. Indeed, Suzumo Machinery Co., Ltd., a manufacturer of food-processing machines based in Tokyo, has developed just such robots, which are already being used in more than 80 countries worldwide.

There was a time even in Japan when sushi was regarded as an expensive and extravagant food. Having seen the demand for rice decreasing almost half century ago, Suzumo Machinery believed that the popularization of sushi

would be the key to passing on the joy of rice, a staple at the very heart of Japan's food culture. Over the course of five years, the company set out to develop a robot that could automatically produce little parcels of sushi rice, eventually launching the world's very first sushi robot in 1981.

Suzumo Machinery wanted to create sushi in the exact same way as trained sushi chefs would do in any high-end sushi restaurant. After much trial and error following advice from sushi chefs, the company succeeded in producing the perfect little parcel of sushi rice, which does not crumble when held in the hand, but still softly melts on the tongue. "While I want people to know what sushi really is and how good it tastes," says President SUZUKI Minako of Suzumo Machinery, "I also enjoy seeing sushi being adapted and amalgamated into local cuisines across the world." To keep up with such localized demands, as well as working to improve the safety and operability of their machines, the company set out to develop new products specifically for overseas markets where local tastes dictate a preference for variations in the size and firmness of the rice parcel.

Takeout sushi has become more of a regular feature in supermarkets around the world in recent years. As a consequence,



Suzumo Machinery's automatic sushi machine. It is widely used—not just in sushi restaurants, but also in many types of restaurants and supermarkets—due to its ability to preselect the size and firmness of rice balls for local tastes.

Suzumo Machinery has been taking more orders for its machines. Indeed, it is just these types of robots that make sushi such a ubiquitous culinary delight. "We are not just a manufacturer of machines, but have a mission to pass on our culture of food—something that is very close to us all—through the work we do in research and development in the culinary field," she explains.

The Japanese government is also striving to further boost exports of agriculture, forestry, and fishery products and foods, and as a result, Japanese cuisine will become an even more integral part of people's lives around the world. As a proponent of Japanese food, Suzumo Machinery and its robots are paving the way for the prosperous future of rice, albeit from behind the scenes. ●



"I want to convey the fantastic flavors of Japan to the world," enthuses SUZUKI Minako, president of Suzumo Machinery. She continues to explore new possibilities of more diverse ways to enjoy rice, with pride and passion for Japanese food culture.

SAKE FOR THE WORLD:

THE CHALLENGE OF AN AMERICAN SAKE BREWER

A former sports trainer from the United States has plunged into the world of Japanese sake brewing. Genuinely focused on the production of this traditional beverage, he proudly shares its appeal with the rest of the world.

Brailsford says that a prime attraction of Japanese sake is its abundant flavor. His dream is to brew a batch of sake that will one day be sipped by the president of the United States.



An old-fashioned city in Japan's landlocked Gifu Prefecture, Hida is surrounded by steep mountains and covered in deep snow during the winter. Working there as a sake brewer for the Watanabe Sake Brewery, a traditional brewery of long standing, is an American man: Darryl Cody Brailsford, a former sports trainer originally from the state of Utah. Fifteen years ago, upon moving to Hida—his wife's hometown—a sip of sake from the Watanabe





Left: The label of the “Cody’s Sake” series, brewed by Brailsford himself, is designed around kanji and ninja, which are popular in America.
 Right: With many streets lined with historical houses, the Hida area is a celebrated tourist attraction. The dignified brewing house of the Watanabe Sake Brewery is one chapter in that area’s history.

Sake Brewery utterly astounded him. Lo and behold, he fell in love with the taste of the beverage. Then, mustering his courage, he asked to become an apprentice brewer at the company, and when that request was accepted in good faith, his life was changed forever.

Prepared from a mixture of rice, *koji* (malted rice), and exceptionally pure water, Japanese sake is characterized by a unique brewing process involving a highly refined approach to fermentation not seen elsewhere in the breweries of the world. Brailsford, having entered into a demanding world of craftsmanship, with plenty of strenuous labor and much specific instruction, proceeded to learn the art of brewing one step at a time. “Perfecting a marvelous batch of sake isn’t just the fruit of one person’s efforts, but that of a team of dedicated individuals who combine their skills. I have learned that brewing sake goes to

that depth.” Currently, he has been entrusted with the important role of assistant head brewer overseeing the temperature and process of fermentation.

Brailsford’s passion for Japanese sake having spread through the company, everyone at Watanabe Sake Brewery now burns with the ambition to propagate sake culture to the rest of the world. Even though awareness in his homeland of the United States has been gradually increasing, most people remain unfamiliar with sake. “Many people overseas have the misunderstanding that sake is only appropriate for Japanese cuisine,” says Brailsford. “But that’s not true. Sake can be enjoyed at ordinary times too—it goes equally well with pizza and barbecue.” True to his word, he holds exhibits at events in other countries to spread knowledge of the brewery’s products. In 2016, he began selling the “Cody’s Sake”

DARRYL CODY BRAILSFORD
 Originally a sports trainer from Utah in the United States, he came to Japan in 2006. He became the first American sake brewer in Japan, at the Watanabe Sake Brewery Co., Ltd., an established traditional brewery founded 150 years ago. He currently serves as assistant to the head brewer, and is also kept busy developing overseas markets for the brewery’s sake products.

series of Japanese sake designed for American tastes. The series, brewed by Brailsford himself, features a fruitiness that many Americans love. The label that he designed for it also received favorable reviews, having already garnered more than 50 prizes in Japan, Europe, and the United States.

With Japanese cuisine steadily increasing in popularity worldwide, sake has come to be appreciated in all corners of the globe. More and more brewers in Japan have started to aggressively pursue the export market, and that momentum will only increase further in the future. Meanwhile, still motivated by the culture shock of his first encounter, but now a qualified brewer and fervent evangelist for Japanese sake, Brailsford is set to continue, every day, his earnest promotion of the beverage. ●



Sake, brewed from rice, is truly a symbol of Japanese culture. Brailsford avidly reports, however, that people are free to enjoy it in a wide variety of ways.



THE ROLE OF CRIMINAL JUSTICE IN ACHIEVING THE SDGS

The United Nations Crime Congress, the largest UN conference in the field of crime prevention and criminal justice, held in March in Kyoto, will build momentum for the world to focus on the importance of public-private partnerships in achieving the SDGs.

The 14th United Nations Congress on Crime Prevention and Criminal Justice (the Kyoto Congress) will be held in Kyoto, Japan, from March 7 to 12 this year. The congress, which is the largest conference in the field, has been held every five years under the auspices of the United Nations Office on Drugs and Crime (UNODC). The Kyoto Congress—the first congress held since the UN Sustainable Development Summit of 2015, at which the 2030 Agenda for Sustainable Development was adopted—will discuss initiatives and efforts in the field of crime prevention and criminal justice

towards achieving the Sustainable Development Goals (SDGs).

Among the 17 goals, discussions at the congress are expected to refer not only to Goal 16, for “peace, justice, and strong institutions,” but also Goal 17, concerning “partnerships for the goals,” which is essential to achieving the previous goal. In preventing criminals from becoming recidivists (i.e., repeat offenders), which is one of the topics Japan will place particular emphasis on at this congress, public-private partnerships will be essential. In Japan, private-sector partners play an important role in

This will be the second time that the congress is held in Japan, the last time having been in 1970 with the 4th Congress, convened likewise at the Kyoto International Conference Center. The latest meeting will be notable for offering a hybrid format, with some participants attending physically at the venue, and others taking part online.
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THE KYOTO CONGRESS

The 14th United Nations Congress on
Crime Prevention and Criminal Justice

Overall Theme

Advancing crime prevention, criminal justice and the rule of law:
towards the achievement of the 2030 Agenda

Agenda Items

1. Comprehensive strategies for crime prevention towards social and economic development
2. Integrated approaches to challenges facing the criminal justice system
3. Multidimensional approaches by Governments to promoting the rule of law by, inter alia,
 - providing access to justice for all;
 - building effective, accountable, impartial and inclusive institutions;
 - and considering social, educational and other relevant measures, including fostering a culture of lawfulness while respecting cultural identities,in line with the Doha Declaration
4. International cooperation and technical assistance to prevent and address all forms of crime:
 - (a) Terrorism in all its forms and manifestations;
 - (b) New and emerging forms of crime



The Youth Forum—where young people from around the world will discuss actions they are taking to make society safer and achieve the SDGs—will be held on February 27 and 28, in advance of the Kyoto Congress, at which the youths will present their recommendations.



KITAZUME Katsuhiko (left) and TAKENAKA Ayano (right) of Japan's MOJ. They both strive for the realization of a peaceful and just society, taking advantage of their work experience at the Rehabilitation Bureau and in prisons, respectively.

various settings in reducing rates of re-offending.

This is exemplified by the fact that not only correction officers but also social workers provide advice to inmates with a view to facilitating social reintegration upon release. Meanwhile, NPOs assist with learning support at correctional facilities for juveniles. The overall approach is intended to help former inmates and juveniles return to society smoothly, while preventing them from becoming criminals again. TAKENAKA Ayano, a Ministry of Justice (MOJ) official with experience as a correction officer, says, “For many inmates, I think that external factors, such as their family environment, had helped propel them toward crime. Citizens’ support is especially important to give such inmates an avenue to lead their lives without re-offending.”

Across the country, approximately 46,000 *hogoshi* (volunteer probation officers) are working to help criminals and delinquents reintegrate into

local communities, supervising and supporting probationers and parolees with government probation officers. According to KITAZUME Katsuhiko, formerly with the MOJ Rehabilitation Bureau, some countries have partially modeled their own volunteer probation officer systems on Japan's *hogoshi* system, adding, “Japan is known as a safe country, and one foundation for that is the system of support provided by public-private partnerships, such as probation officers and *hogoshi*. At the Kyoto Congress, we want to share Japan's initiatives with the world and make the world more peaceful and just.”

Japan's efforts illustrate how public-private cooperation is essential for crime prevention. At the Kyoto Congress in March, justice ministers from a multitude of countries will be joined by an array of stakeholders—including experts, NGOs, and companies—who will participate in deliberations, exhibitions, and other events. It will be an opportunity to remind the world about the importance of multi-stakeholder partnerships in crime prevention. ●



Hogoshi (volunteer probation officers) meet with probationers and parolees to help their reintegration into society and also provide emotional support.

SELF-RELIANT ENERGY

ENHANCES LOCAL RESILIENCE

A small town in Chiba Prefecture has created a microgrid—a decentralized electric power system—utilizing locally produced natural gas and solar energy. This innovation exemplifies how regional energy diversification can enhance the resilience of local communities throughout Japan.



With Japan frequently suffering natural disasters, an accelerating shift is occurring regionally toward the creation of a society where energy is decentralized. The Great East Japan Earthquake of 2011 triggered power blackouts all over northeast Japan, exposing the weakness of an electric power system relying exclusively on macro-scale power networks.

“Japanese expertise in small-scale microgrids can be applied in other countries,” says President Gouzu of Pacific Power Co., Ltd.

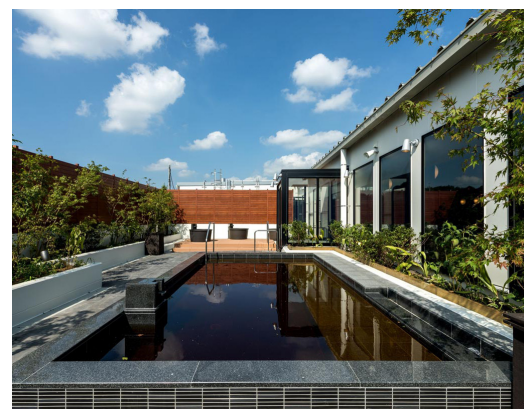


To safeguard essential utilities in times of need, evacuation and rescue areas equipped with decentralized and self-reliant energy systems are being established in many parts of the country.

Mutsuzawa Smart Wellness Town is exemplary of this trend. Located in Mutsuzawa, a small town of 7,000 inhabitants in southeastern Chiba Prefecture, which neighbors Tokyo, Mutsuzawa Smart Wellness Town comprises 33 homes and a roadside station with restrooms and a market. The zone was conceived to attract new residents from other areas, as well as to promote the health and fitness of local inhabitants. In collaboration with a private company, Mutsuzawa town operates an energy business within the zone in the form of a self-reliant power system.

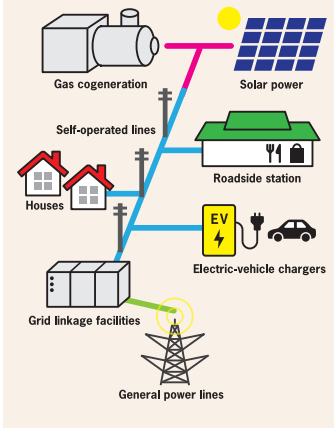
“The mainstay of a decentralized energy system is the presence of a microgrid, a self-standing network

that transmits and distributes energy to meet the needs of a community,” explains GOUZU Michiko, president of Pacific Power Co., Ltd., Mutsuzawa’s business partner in providing the town with electricity. Mutsuzawa Smart Wellness Town produces half the zone’s electricity using locally extracted natural gas and solar energy, and distributes it



Thermal baths at the roadside station are heated with waste heat from natural gas engines.

DIAGRAM OF A DECENTRALIZED ENERGY SYSTEM INTRODUCED BY MUTSUZAWA SMART WELLNESS TOWN



through its own power lines. Any energy deficiencies are supplemented by purchasing power from outside sources. The brine left over after the extraction of water-soluble natural gas is heated with waste heat from natural gas engine generators and used in the thermal bath facilities, which means that the local natural

gas is utilized 100%, without any waste.

Mutsuzawa Smart Wellness Town came into the limelight in September 2019, when one of the most powerful typhoons on record made landfall in Chiba Prefecture and triggered a widespread power failure.

Although the surrounding areas were plunged into darkness and took three days to restore regular power, the zone was able to fire up its gas-engine generators, providing electricity to the roadside station and homes in the town. The thermal bath facilities and restrooms of the roadside station were thrown open to residents living outside the zone. Mobile phones could also be recharged at no cost, and long lines formed to take advantage of the service.

Efforts to introduce self-reliant energy systems like that at Mutsuzawa have begun to take root in other areas of Japan as well. As climate change

has intensified certain natural disasters, microgrids are now seen as a way to enhance regional resilience.

President Gouzu adds that they can also serve as the driving force behind local revitalization. “Profits from an energy business can be funneled back into the region to improve its sustainability. Any industry, such as agriculture or tourism, needs energy to be powered. We believe that locally produced electricity will be a driving force toward regional development in the future,” she declares. ●



Top: The region was plunged into darkness by the 2019 typhoon, but the roadside station was able to turn on its lights and provided relief to neighboring residents.

Left: Mutsuzawa Smart Wellness Town established a cogeneration system using locally produced natural gas and a microgrid of locally operated power lines. The roadside station has also installed solar power generators.

NEW ID CARD SYSTEM

CREATES SOLUTIONS FOR REGIONAL CITY



Maebashi, about 90 minutes from Tokyo by train, is a major urban area of 300,000 people. Although an agreeable place to live—with warm weather and plenty of greenery—the city is dealing with an aging and shrinking population.

How is Maebashi City in Gunma Prefecture digitalizing public services with Individual Number Cards (“My Number Card”) to better residents’ lives?

As the world reels from the severe impact of COVID-19, the digitalization of government and society has become increasingly essential for communities to enhance the lives of their residents while creating new industries and expanding the economy. Prime Minister Suga’s administration considers this an issue of top priority, and has crafted policies to that end. In September of this year, the Japanese government will set up a digital agency to lead the digitalization of the entire country. At the heart of the initiative is the Individual Number Card, also known as “My Number Card,” on which a personal number assigned to all persons residing in Japan is displayed, along with their name, address,

and photo, and which contains an IC chip with digital certification. Due to its strict safeguards for personal data, the card can be used for processes that require highly confidential online verification, from governmental administration to the opening of bank accounts, leading to its applicability in various situations. Some local governments have already started some ambitious experiments with the card.

The local government of Maebashi City in Gunma Prefecture, located in the Kanto region, has been an early adopter of the My Number Card for use in public transit systems. For example, Maebashi has developed a city-specific initiative that supports individuals who may have limited mobility, such as



A city-specific initiative in Maebashi offers half-price taxi fares to passengers who may have limited mobility; they use it by simply scanning their My Number Card when getting in a taxi (top right). The city is also trialing autonomous buses that are linked to the cards and require only facial recognition to ride.



My Number Cards Improve Life in Maebashi

TRANSPORTATION

- Individuals who may have limited mobility, such as senior citizens, can easily receive half-price taxi fares.*
- The rechargeable transit cards synchronized with My Number Cards provide citizens with automatic fare discounts.
- The city can design more efficient public transport networks by analyzing passengers' individual traits and their usage patterns on public transit systems.



GOVERNMENT SERVICES

- Various municipal governmental procedures will be able to be performed online.
- Cards issued by various facilities, including libraries and sports complexes, will have their information integrated into My Number Cards. (On the national level, My Number Cards have also served as health insurance cards since March 2021, and will serve as driver's licenses by the end of fiscal year 2024)

HEALTH CARE

- Medical institutions can view citizens' medical images owned by other institutions.*
- Maternal and child health information such as vaccination records is provided to registered parents.*
- Necessary emergency information (health history, allergy information, etc.) is provided to paramedics and medical institutions.



DISASTER RESPONSE

- People can use their My Number Card to check in at evacuation shelters, making it easier for municipalities to confirm the safety of citizens.

*Already implemented

senior citizens, by offering them half-price taxi fares. To get the discount, all they have to do is place their My Number Card on a tablet inside the taxi. The system had used paper coupons when it was first created in 2016, but the current version utilizing the My Number Card was introduced in 2018 to lessen the heavy administrative burden on the city and taxi operators. After the updated system was launched, a survey of users revealed that 86% of them found it convenient. Around a total of 20,000 passengers now take advantage of it monthly.

The city is also piloting the use of the My Number Card as part of a MaaS (Mobility as a Service) project that combines buses, taxis, and other means of transportation into a single service. By synchronizing rechargeable transit cards and a facial recognition system with the data on My Number Cards, the project is experimenting with new services to provide city residents with automatic discounts and allow them to ride buses simply through facial recognition. The end goal is to create a community where people's day-to-day activities can be achieved more conveniently even without owning a car. Many rural areas in Japan commonly face the issues of an aging population along with a reliance on privately-owned vehicles, and that background provided the impetus for the experiment. In the past, given the limited financial resources and personnel in regional cities, it had been difficult for effective measures that

address these problems to be devised. MATSUDA Keita, head of the information policy department at Maebashi City Hall, says, "Most cities in outlying regions have a shortage of funds and a declining population. For such municipalities to survive in that situation, not only should municipal services be made more efficient, but value-added solutions must be brought about. In that sense, digitalization is a requirement. Such cities can indeed reduce the cost of the government services they provide while enhancing convenience for their citizens."

Maebashi also utilizes the My Number Card to provide maternal and child health information, including the status of vaccinations. In addition, it uses the cards to allow medical institutions to view scans and other such medical images owned by other institutions. The city is considering using the cards for emergency medical care and disaster response in the future as well. Those initiatives should usher in true well-being in a broad, well-rounded sense—something that sheer economic development tends to forgo. Matsuda says, "Besides streamlining government services, our goal with digitalization is to give people more leeway—additional time and freedom—to enjoy their lives more fully." The Maebashi Model could be the start of a new wave of revitalization in Japan's outlying regions, both socially and economically. ●

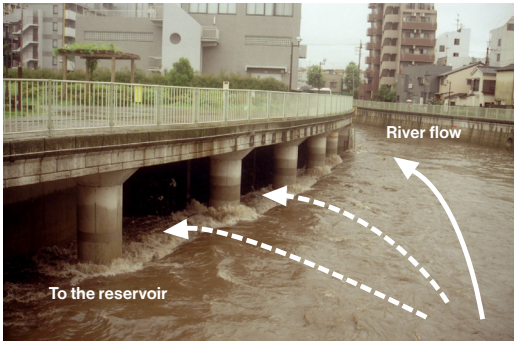
UTILIZING THE CITY'S UNDERGROUND SPACES

*Japan employs underground spaces to ready urban areas
for otherwise catastrophic flooding.*

TO PREVENT FLOOD DAMAGE



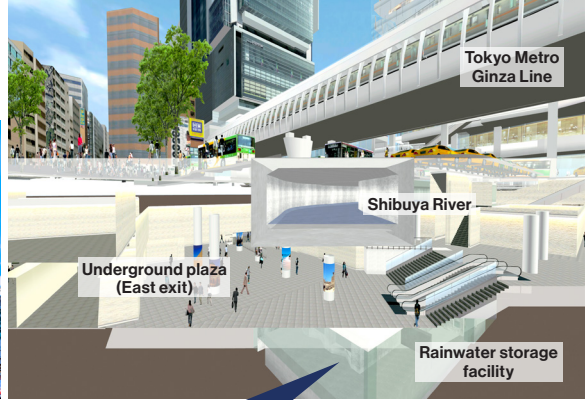
Massive underground spaces, such as this one, below the ring roads that run through major residential areas are critical elements of flood control in Tokyo.



Water from a rising river flows into an underground regulating reservoir instead of spilling over the banks of the levee.

Annual rainfall totals have been increasing worldwide in recent years, given the growing frequency of localized torrential rain, typhoons, hurricanes, and other extreme weather phenomena. Not only does the inundation of buildings and underground structures represent a danger to people living in highly developed urban areas in particular, but it also poses a grave threat to urban functions in general. Therefore, developing measures against flood damage is a pressing issue. The Japanese government considers national resilience—including disaster

Left: Shibuya is a popular spot among international tourists. Over 3 million people use the station every day. Right: New rainwater retention facilities have been constructed below the Shibuya Station area's underground commercial complexes.



prevention and mitigation, such as flood control—a central element of its policy, and is moving ahead with both public and private initiatives.

Tokyo, one of the world's foremost metropolitan areas, is making use of underground spaces in the fight against flooding. One example is the underground regulating reservoir being constructed to prevent overflow from small and medium-sized rivers. When heavy rain causes a river's water level to rise, water flows from a weir built into a revetment down into the reservoir, thus reducing the amount of water flowing downstream. So far, 28 such facilities have been constructed, collectively holding a total of 2.56 million m³ of water.

One massive reservoir has been built under a major ring road that runs around central Tokyo. When a typhoon dropped record rainfall of up to 32 mm per hour on Tokyo in 2019, the reservoir retained about 490,000 m³ of water, or 90% of its total capacity. Estimates indicate that it lowered water levels downstream by up to 1.5 m. "We have systematically developed river facilities such as this reservoir, which have helped to prevent massive flood damage," says Director ODANAKA, from the Tokyo Metropolitan Government (TMG)'s Bureau of Construction, with conviction. The reservoir is currently undergoing expansion. Eventually, it will be able to compensate for localized heavy rainfall coming down at up to 100 mm per hour.

Life-saving flood control countermeasures are also being implemented in the area around Shibuya Station, one of Tokyo's most well-known and popular sightseeing spots. Since the land around the station is slightly lower than the surrounding area, the underground malls used to be prone to flooding. However, as part of a massive redevelopment project in the area that is currently underway, a new rainwater storage facility with a capacity of 4,000 m³



was completed underneath the station's east exit, and went into operation in August 2020. It temporarily retains rainwater if the rainfall exceeds a certain amount, and the water drains out through sewer pipes when the weather returns to normal. Director OKUDA, from the TMG's Bureau of Sewerage, said, "Combined with the facility previously built underneath the station's west exit, our storage system can now hold a total of 8,000 m³ of water. Shibuya has evolved into an even safer urban area."

Many other efforts to save lives from flooding are also being made across Japan, including the construction of levees and detention basins, as well as the refinement of heavy rain forecasts. A further example of Japan's inundation prevention measures is the use of dams for hydropower and irrigation to control flooding. To prepare for this year's Olympic and Paralympic Games Tokyo 2020 and beyond, Japan is advancing the development of national land infrastructure that is resilient to natural disasters. ●

In order to prevent floods in downstream areas when heavy rain is predicted, such as during typhoons, the national and prefectural governments have established a system to discharge a certain amount of dam water in advance.



YOUNG MINDS APPLY TRADITION TO SUPPORT GLOBAL FOOD PRODUCTION



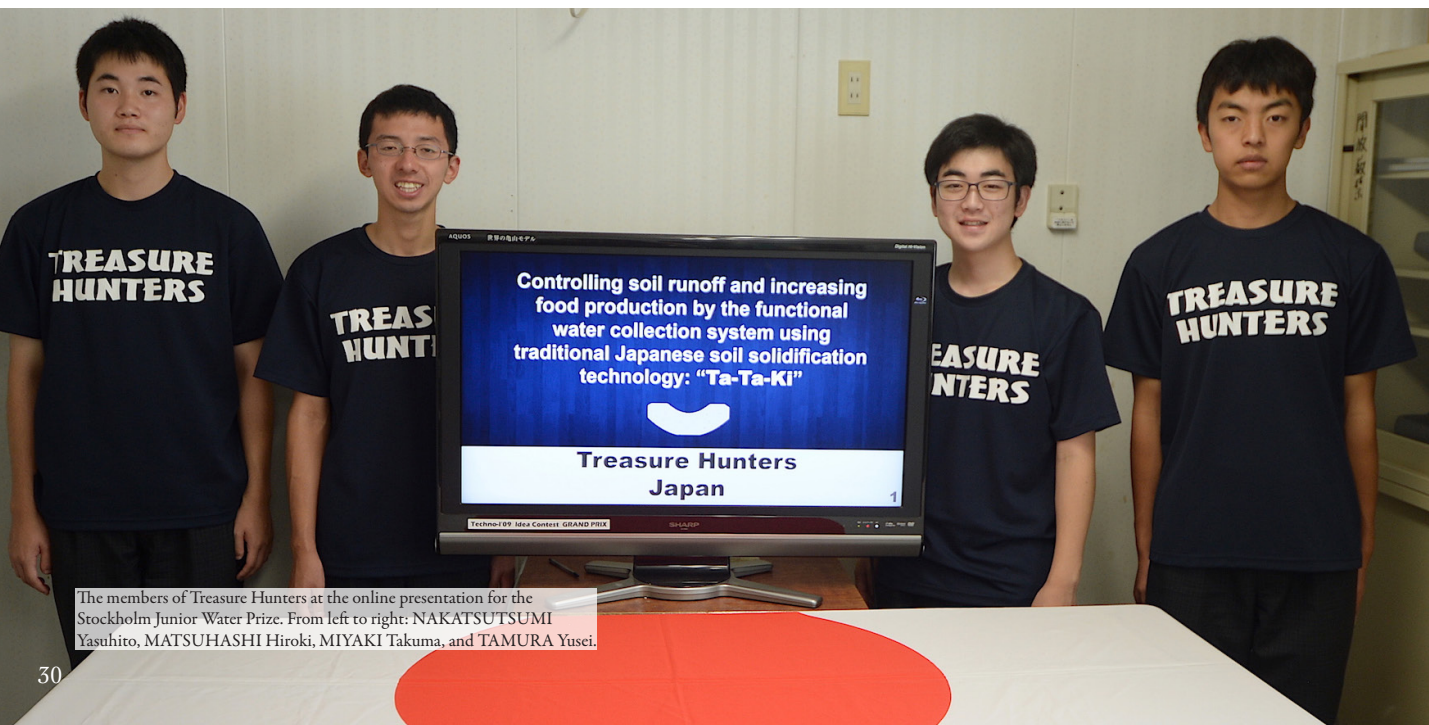
A team of high school students has devised a functional water-collection system that applies tatakai, a traditional Japanese technology for soil solidification, with hopes that it can help tackle food shortages in arid regions like those in Africa.

As indicated by the goal of “zero hunger” mentioned in the Sustainable Development Goals (SDGs), creating stable supplies of food is a global challenge. There are quite a few regions in the world experiencing difficulties in increasing food production, owing to the inability to secure water for agricultural use and soil degradation caused by surface runoff during the rainy season. West Africa is one such region.

A system developed by a team of high school students from Japan, however, might provide a solution to this problem. The students, part of the Environmental Research Team of Aomori Prefectural

Nakui Agricultural High School, devised a system to retain rainwater that applies *tatakai*, a traditional Japanese soil-solidification technology. *Tatakai* involves adding slaked lime and magnesium chloride to red clay and gravel, and then mixing, pounding, and hardening the compound. The resultant increase in viscosity and strength has led to the use of *tatakai* in a variety of venues, ranging from the earthen floors of traditional Japanese homes to irrigation channels and the floors of sumo rings.

West African farmers use a traditional system known as *zai*, in which they dig earthen pits to collect water. A drawback to the system, however, is



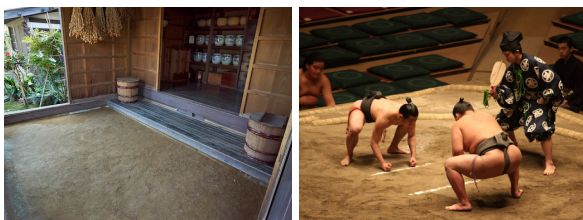
The members of Treasure Hunters at the online presentation for the Stockholm Junior Water Prize. From left to right: NAKATSUTSUMI Yasuhito, MATSUHASHI Hiroki, MIYAKI Takuma, and TAMURA Yusei.

its tendency toward soil erosion, as the pits are made simply by mounding soil. The Japanese students had learned in class about the challenges to *zai*, so they took the initiative to study ways to improve the system. The idea for using *tataki* came from the earthen floor at the home of one of the student's grandfathers. It was a suitable choice because it can be made from readily-available materials, while providing the needed durability.

The students searched for a design that could facilitate water retention, and after much trial and error, decided upon a wing shape. They also reproduced African soil and water quality conditions when conducting tests to confirm if *tataki* would work in Africa. In the process, they discovered that the nutrients mixed in during the *tataki* process gradually seeped out into the surrounding ground. Using that to their advantage, they modified the *tataki* mixture to include phosphoric acid, which is lacking in West African soil, in order to enrich the soil.

The students' project won the Grand Prix of the 2020 Stockholm Junior Water Prize, awarded to an outstanding water-environment project conducted by young people. Team member MIYAKI Takuma recalls, "I had been impressed by the other countries' excellent presentations, so I was totally overjoyed when the presenter, Crown Princess Victoria of Sweden, uttered the word 'Japan.'"

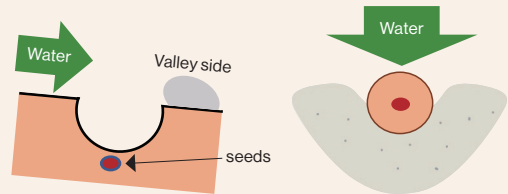
The team's name is Treasure Hunters. According to NAKATSUTSUMI Yasuhito, "We chose the name with the hope that our technologies would be treasured by people around the world." In 2018, their high school had come in as runner-up for the Stockholm Junior Water Prize, for a project employing a natural water-purification method



Tataki has been used from the days of old for earthen floors in traditional Japanese houses (left) and the floors of sumo rings (right).



It took the students a year and a half to conduct their research. Although they found it difficult to harden the materials sufficiently, they confirmed that *tataki* would remain durable even after one year.



Tataki arranged in a semicircular shape is installed on the valley side of the hole to catch the water runoff. The students devised an optimal shape to retain the water more fully and curb soil erosion.

combining plants with high transpiration rates and microorganisms. Having watched their seniors rack their brains to find a solution to a global problem inspired Treasure Hunters to do the same two years later, and their efforts were duly rewarded.

MATSUHASHI Hiroki analyzes the reason for their win: "Although *tataki*—a process of hardening soil by mixing it with water—is a traditional Japanese technology, it can be easily applied anywhere in the world. I think it got high marks for being an inexpensive and simple approach that can support sustainable agriculture." An increasing number of inquiries have come in regarding their study, and talks are also underway with a nonprofit organization active in Tanzania.

The members of Treasure Hunters will graduate from high school this spring. TAMURA Yusei, who will be going on to a vocational school for agriculture, speaks of his future aspirations ambitiously: "I am interested in the world's agricultural issues, and want to do my part in contributing to their solutions." Given how these young people devoted themselves to studying the local environment and adapting a Japanese method to suit West African conditions, they will undoubtedly continue to blaze new trails with their inquisitive minds in the future to find solutions to agricultural challenges.



Allan West paints on the flat surface of *tatami* mats to stop the thinner natural mineral pigments from running.

DRAWING NATURAL BEAUTY WITH TRADITIONAL JAPANESE PIGMENTS

Expressing the beauty and essence of the natural seasons, an American artist turned his back on the Western style of painting to learn about traditional Japanese painting techniques and materials.



Pigments are made from natural minerals such as lapis lazuli and malachite. Additionally, glue, which is hardened into a stick for longer storage, and gold leaf are used.



“I was shocked to learn that what I thought was my own technique of using animal glue has in fact been used in Japan for a very long time,” says Allan West. From an early age, West loved to capture scenes of nature, and aspired to be a painter. However, he found it difficult to portray the delicate lines of plants and flowers using oils, so he sought to make his own pigments and canvases from rabbit-protein glue and marble. After graduating from high school, West entered Carnegie Mellon University, one of the leading art colleges in the United States. There, he turned his back on the traditional thick brushstrokes of oil painting mainly taught in American colleges, instead showing his individualistic spirit by experimenting with other materials in his depiction of nature.

One day, seeing West’s artwork at an exhibition, a woman happened to mention that similar techniques could be found in Japanese painting. Wanting to find out more about those methods, West took a hiatus from his studies and headed to Japan, a country he knew nothing

ALLAN WEST

Born in Washington, D.C. While a high school student, West believed he pioneered the use of animal glues mixed with natural pigments, unaware that these are the same materials used in the *nihonga* technique. He studied art at Carnegie Mellon University’s College of Fine Arts in the United States. West settled in Japan after several visits, entering the Graduate School of Fine Arts at Tokyo University of the Arts in 1989. A decade later, he opened Art Sanctuary Allan West, a studio-cum-gallery, in Yanaka, Tokyo. The majority of his artwork is commissioned work consisting of plant and flower paintings on hanging scrolls, folding screens, and fans. He also serves as a trustee at The Yurabi Institute for the Study and Preservation of Japan’s Cultural Heritage.



about. There, he was impressed with his introduction to *nihonga* (traditional Japanese painting). He found the deer-protein glue used in *nihonga* to be far less odorous and cloudy than the rabbit glue he had previously used. West was also impressed with the countless colors of the natural mineral pigments made from powdered rock, as well as with the brushes that allow for more open and expressive lines. Pleasant to work with, these organic materials capture the beauty of nature and leave a lasting clear vibrancy for more than a thousand years. After graduating from university in the United States, West returned to Japan and entered the Graduate School of Japanese Painting at Tokyo University of the Arts. It was there, under the tutelage of KAYAMA Matazo, that he learned the techniques of *nihonga* in depth.

Not far from Tokyo University of the Arts is Yanaka, a temple neighborhood of Tokyo from the Edo period (1603-1867) with many old Japanese buildings still standing. West was fascinated by

that part of Tokyo, packed full of well-known stores specializing in *nihonga* materials. This fascination led him to renovate an old auto body garage so that he could open his own Japanese-style studio-cum-gallery in the neighborhood. Stepping inside, the visitor is transported into a magical world full of art painted with gold, silver, and copper leaf, as well as containers filled with finely powdered natural mineral pigments. It’s not unusual for neighbors to stop by for a glance of his artwork, which offers them a distinct sense of the changing seasons.

In recent years, West, along with followers of traditional performing arts such as Kabuki and Noh, has been focusing his attention on conveying the allure of Japanese culture through exhibitions and performances overseas. “Japanese culture carries with it a wisdom that cherishes the beauty of nature, a harmony with nature that is preserved in a sustainable way. It is that wisdom that I’d like to convey through my art,” remarks West softly. With such an artist capturing the beauty of nature unfettered by national boundaries in this traditional painting style, the potential of *nihonga* will further resonate around the world. ●



Top: Inside the Allan West studio-cum-gallery, the traditional latticed ceiling of which West has adorned with dragons, plants, and flowers.

Right: West opened his studio gallery after renovating an auto body garage in the downtown area of Yanaka, full of Buddhist temples and old houses.



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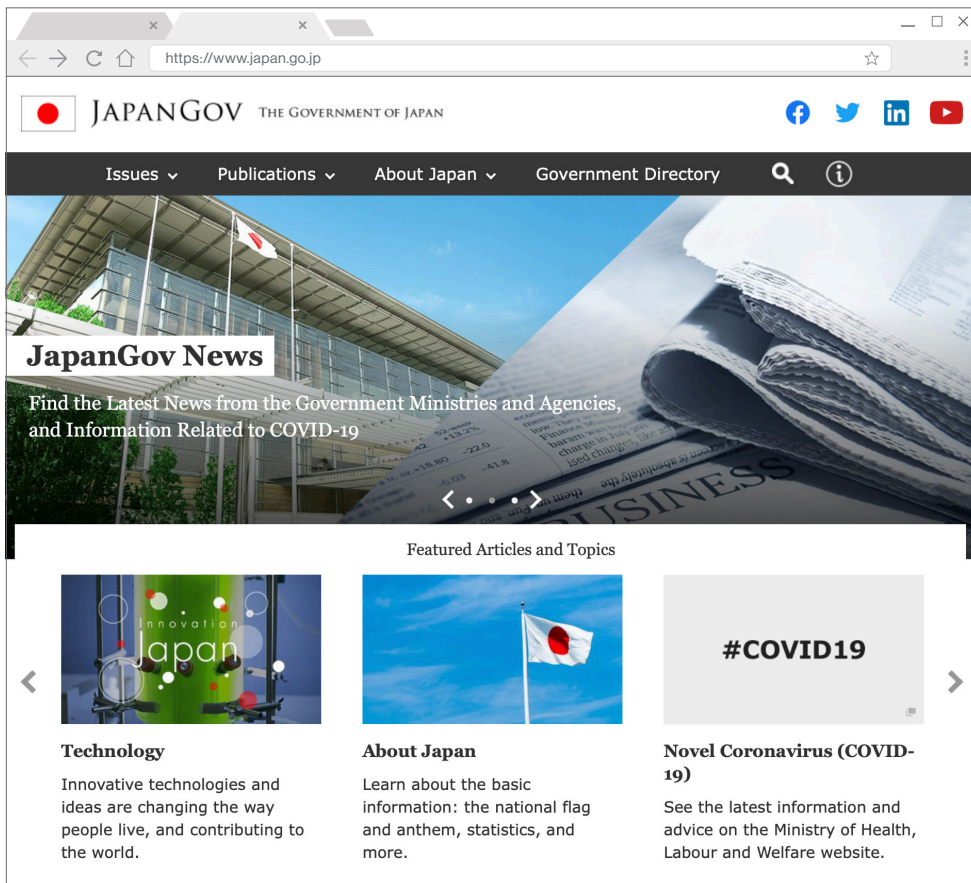
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The screenshot shows the JapanGov website homepage. At the top, there is a navigation bar with the JapanGov logo and the text "THE GOVERNMENT OF JAPAN". Below the navigation bar, there is a large banner image featuring a modern building and a newspaper. The banner text reads "JapanGov News" and "Find the Latest News from the Government Ministries and Agencies, and Information Related to COVID-19". Below the banner, there is a section titled "Featured Articles and Topics" with three featured articles: "Technology", "About Japan", and "Novel Coronavirus (COVID-19)".

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