

# An ABE Initiative Graduate Connecting Rwanda to a Japanese Company's Lightning Protection Technology



Rwanda, a landlocked country in East Africa, experiences many lightning strikes. Out of a population of about 13 million people, nearly 100 people are killed or injured each year, and electrical and communication infrastructure and equipment failures occur frequently, due to lightning strikes. Thus, lightning protection is one of the urgent issues for Rwanda, which focuses on science and technology education, including ICT, and promotes the ICT industry.

Otowa Electric Co., Ltd, headquartered in Hyogo Prefecture, operates businesses specializing in lightning protection solutions, including the development, manufacturing, and sale of lightning arresters and devices, as well as lightning countermeasure consulting, both in Japan and overseas. The company accepted trainees from Rwanda, who were studying at Kobe Institute of Computing, as interns under the ABE Initiative (African Business Education Initiative for Youth).<sup>\*1</sup> This led them to learn about lightning damage in Rwanda and start considering whether their technology could be utilized there.

Looking back on the situation at the time, Vice President Mr. YOSHIDA Atsushi says, "I heard from one of the trainees, Mr. Mugarura Amiri, about the situation of lightning damage in Rwanda, and together we began conducting field research. As a result, we found that there were lightning protection products made overseas available locally, but that sufficient countermeasures were not taken. Also, standardization for lightning protection solutions, which are usually based on international standards, had not been developed."

In 2016, Otowa Electric worked with local engineers in Rwanda on lightning protection solutions at Tumba College of Technology, a local engineer training school that Japan has supported for a long time, and provided the Rwanda Utilities Regulatory Authority (RURA) with the know-how to protect equipment from lightning through the proper installation and management of lightning arresters. After Otowa Electric conducted its own field research, the company applied for the SDGs Business Supporting Survey.<sup>\*2</sup> The reason was that the company considered the cooperation of JICA, with its local information and networks, essential in order to continue carrying out research, consultations, and construction on lightning protection solutions in Rwanda as a business, and

to spread the countermeasures. Following the acceptance of the SDGs Business Model Formulation Survey with the Private Sector in 2017, the "SDGs Business Verification Survey with the Private Sector for Lightning Protection Solution on Key Infrastructure of the ICT Industry in Rwanda" was approved in 2019. The company also set up an Africa business office within the company and works on lightning protection solutions in Rwanda. Local cooperating



Discussion with local cooperating staff about lightning protection solutions at a clinic (Photo: Otowa Electric Co., Ltd.)

staff acquire skills and knowledge in Japan and receive training in areas such as lightning arrester installation, maintenance, and consulting. At the same time, staff of Otowa Electric visit Rwanda from Japan two to three times a year for approximately one month to support local staff in conducting field research and construction work. Mr.

Amiri, the first intern who inspired Otowa Electric to launch this project and who

currently runs his own software company after returning to Rwanda, plays a central role as a partner of Otowa Electric's local activities through technical consulting services for lightning protection. Director Mr. YOSHIDA Syutarō, who is in charge of overseas business, explains, "When officials from RURA visited Japan, we gave them an in-house tour so they could actually see our technology and lightning protection solutions. Once they understood that lightning damage could be prevented through advanced technology, the Government of Rwanda began to promote enhanced countermeasures on its own."

Vice President Yoshida also feels the need for education on the mechanism of lightning and on how to protect oneself from lightning strikes. Otowa Electric, in cooperation with Kyoto University and with the help of some Japanese elementary school students, devised "Kaminari Onigokko (Lightning Tag)," a game through which you can learn evacuation behavior while playing, and promotes lightning protection education to children in Rwanda with Mr. Amiri's assistance. Vice President Yoshida expresses his hopes that, "Even if you introduce good technology, its true value will not be demonstrated unless people understand its necessity. By educating children about lightning protection, we would like them to create a future in which people can take appropriate actions to prevent damage by lightning."

Regarding future prospects, Director Yoshida says, "My top priority is to increase the number of people who understand the importance of lightning protection, and to continue to support Rwanda's efforts to solve problems, even if it takes time. Together with our local partner Mr. Amiri and trained local engineers, our goal is to create a new industry and enrich the lives of local people, and hopefully we would like to develop our business along the way."



Mr. Amiri (on the right) learning about Japanese technology as an intern at the company's headquarters in Hyogo Prefecture (Photo: Otowa Electric Co., Ltd.)

\*1 See the glossary on page 145.

\*2 See the glossary on page 130.

## Japan's Efforts on Disaster Risk Reduction Education in Türkiye, an Earthquake-Prone Country

### – Spreading Knowledge through the Turkish Version of “Bosai Koshien” –



Türkiye has many active fault lines, and like Japan, it is one of the most earthquake-prone countries in the world. Türkiye has experienced large-scale earthquakes in 2011 and 2020, in addition to the Izmit earthquake in August 1999 with its epicenter in northwestern Türkiye, and the Düzce earthquake in November of the same year. In February 2023, an earthquake centered in southeastern Türkiye caused severe damage, claiming nearly 50,000 casualties. Densely populated areas including Istanbul, the center of economic development, are said to be at great risk, and further efforts are required for disaster risk reduction.

Japan, also a disaster-prone country, has utilized its experience and knowledge to provide Türkiye with yen loans to contribute to strengthening seismic reinforcement and earthquake reconstruction, promote joint research on seismic observation and earthquake engineering, and provide technical cooperation to formulate disaster risk reduction plans and improve disaster risk management capabilities. After the 1999 Izmit earthquake, efforts were put into disaster risk reduction education, and the “School-Based Disaster Education Project” was implemented in two phases from 2010 to 2014 and from 2017 to 2020. In Phase 1, Japan targeted 80 basic schools in 10 provinces with large economic scales and conducted disaster risk reduction training with three teachers from each school as master teachers. In Phase 2, activities to disseminate and expand the disaster education were carried out nationwide. Dr. Emin Özdamar, a former staff engaged in the disaster risk reduction education at the JICA Türkiye Office and currently the Vice-Chairman at the Turkish Japanese Foundation, looks back at their initial efforts and says, “With the cooperation of Hyogo Prefecture, an area affected by the Great Hanshin-Awaji Earthquake, we compared Hyogo Prefecture’s educational curriculum with Türkiye’s curriculum and incorporated parts that could be applied to Türkiye. We also worked with teachers to come up with a game so that children could learn disaster risk reduction knowledge while having fun. In addition, we worked to help children acquire knowledge naturally without being bound by the framework of disaster risk reduction, such as by incorporating disaster risk reduction content into math and other courses.”

Since the implementation of the project, master teachers who have completed their training have passed on their disaster risk reduction knowledge to teachers at other schools, trying to create an environment in which each school has at least one teacher with disaster risk reduction knowledge. Regarding the ripple effects of disaster risk reduction education, Dr. Özdamar says, “When we provide disaster risk reduction education to children, they pass on that knowledge to their families and classmates.



School-Based Disaster Education Project (Photo: JICA)

Basic knowledge, such as placing beds in safe places and securing furniture, is being shared by trained teachers with children and their families. During the earthquake in February 2023, some teachers and students did what they had learned and crouched next to their beds to protect themselves.”

From 2021, the Turkish-Japanese Foundation Culture Center and JICA co-host the “Disaster Education Materials Development Contest” (the Turkish version of “Bosai Koshien”<sup>\*1</sup>) in order to ensure the continuing effects of the School-Based Disaster Education Project. “When I visited Miyagi Prefectural Tagajo High School, where the Disaster Science Course was established, I learned about ‘Bosai Koshien.’ In order to spread the achievements of the School-Based Disaster Education Project, I thought we would need to involve young people, so we took action to hold a Turkish version of ‘Bosai Koshien.’” says Dr. Özdamar. The first competition was held for teachers, and the organizers received 40 entries from 21 provinces. The target audience was later expanded to include students, and in 2023, 156 applications were received from 29 provinces, including tabletop games related to disaster risk reduction and disaster risk reduction simulation devices using models. In addition, in the university student category, there were 86 projects from universities with departments related to disaster risk reduction.



Award ceremony for the Turkish version of “Bosai Koshien” (The person on the right in the photo is Dr. Özdamar) (Photo: JICA)

However, even if people in Türkiye receive disaster risk reduction education, if they do not comply with building standards and strengthen the ground, the effectiveness of the education will be halved. Chief Representative of JICA Türkiye Office Ms. TANAKA Yuko describes the prospects as follows. “In response to the earthquake damage in February 2023, we are also reviewing disaster risk reduction cooperation in Türkiye based on the recommendations of the expert team. We will continue to cooperate in building cities that are resilient to disasters, using the disaster-stricken cities as model cities.”

Currently, through a student exchange project connecting high schools in Hyogo and Miyagi Prefectures with Turkish students, young people learn about each other’s experiences in disaster-affected areas. It is expected that the achievements of Japan in the field of disaster risk reduction will be further utilized for disaster risk reduction in Türkiye.

<sup>\*1</sup> This nationwide competition honors children and students who are engaged in disaster risk reduction education and activities in their schools and local communities in order to pass on the experiences and lessons learned from the Great Hanshin-Awaji Earthquake that occurred on January 17, 1995, to the future. It is held every year by the Hyogo Earthquake Memorial 21st Century Research Institute (Disaster Reduction and Human Renovation Institution), based in Kobe City.

## The University of Tokyo Cooperates on the Design of the Indian Institute of Technology Hyderabad (IITH) – Establishing a Base for the Development of Highly Skilled Human Resources in Science –



A panoramic view of IITH. Among the buildings that the University of Tokyo cooperated in designing, from left: International Guest House, Convention Center, Technology Research Park, Technology Incubation Park, and Knowledge Center (library). (Photo: KAWAZOE Yoshiyuki)

In India, while the labor force is increasing with the population growth, the percentage of people who have received skill training remains at around 10% of the population, causing a shortage of highly skilled human resources required by industry. Human resources development is an urgent issue to promote the manufacturing industry, which requires technological innovation, in order to lead to further job creation. The Government of India provides international-level education and research opportunities through the Indian Institutes of Technology (IITs) founded in 1951, regarding higher education in science and engineering, which is important for developing human resources that support Indian industry. As there was a need for further expansion of the institution in order to meet the human resources needs of the industry, the Government of India requested Japan's cooperation in establishing a new institution of IITs in Hyderabad (IITH). Following the Japan-India Summit Meeting in October 2008, the two countries agreed to cooperate with the aim of establishing a world-class educational institution that would become a symbol of Japan-India cooperation by introducing Japanese-style management and engineering education to India and strengthening human and academic exchanges between the two countries.

Dr. FUJINO Yozo, Professor of the University of Tokyo at the time and the team leader for the IITH design, looks back and says, "Multiple Japanese universities collaborated in the establishment of IITH. I served as a leader on urban engineering in the working group, which was established in response to a request for cooperation from then Prime Minister Singh of India in 2007, consisting of industry, government, and academia officials from both countries, and led the discussion on how Japan could contribute to the establishment of IITH. The University of Tokyo was highly recognized for its design skills, and was asked to cooperate on the design." From 2011, Dr. OHNO Hidetoshi, then professor at the University of Tokyo, and Dr. KAWAZOE Yoshiyuki, associate professor at the same university, joined the team, and the University of Tokyo cooperated in designing a total of six buildings\*1 that symbolize IITH, including the Technology Incubation Park, Convention Center, and International Guest House.

During the design process, the team held a total of 15 on-site discussions with the Indian side. Dr. Ohno says, "While incorporating Indian culture and design, such as the distinctive roof shape used in traditional architecture in the Bengal region, we also incorporated elements of traditional Japanese patterns and rock gardens. The pond built in front of the International Guest House is inspired by the Indian stepwell remains, and it contributes to the greening of the campus." Dr. Kawazoe explains, "The University of Tokyo is promoting Japan's design skill overseas, with its plan to implement the College of Design concept, among others. India

stands out in the science field but will benefit from improvements in design skills and quality. I believe that through this cooperation, we were able to convey Japan's design skills. Furthermore, in the cooperation process, we did not simply hand over drawings, but continued discussions through video conferences and other means even during the spread of COVID-19 to ensure the completion of high-quality construction. This demonstrated the typical Japanese attitude of cooperation that conveyed a commitment to quality, going beyond the entrusted drawings to complete the construction with excellence."

Dr. Fujino describes future prospects; "The Technology Incubation Park that Japan was involved in designing has led to industry-academia cooperation, with a Japanese company opening a center for joint research with IITH. On the academic side, although IITH does not have a department comparable to the architecture department of Japanese universities, we as architects plan to give lectures locally as a result of our cooperation in the design." Japan also cooperates with IITH's human resources development. By 2020, 116 students from IITH had studied at Japanese universities using a scholarship provided by JICA through the project for future researchers at IITH (FRIENDSHIP Project), and some of them have joined the faculty at IITH after obtaining their doctorate in Japan. JICA and the Japan External Trade Organization (JETRO) co-sponsored with IITH a total of six career fairs by Japanese companies by 2023, and exchanges among industrial personnel are becoming more active. It is expected that exchanges between Japan and India based at the Hyderabad campus will thrive.



Discussion with the IITH side on site (From right in the photo: Dr. Kawazoe, Dr. Ohno, Dr. Fujino, and then Director of IITH Dr. Desai) (Photo: FUJINO Yozo)

\*1 Later, IITH additionally requested the construction of a Technology Research Park with the same design as the Technology Incubation Park, bringing the total number of buildings that Japan has helped design to seven.



## Contributing to Safe Water Supply in Cambodia with Kitakyushu City's Know-How on "Water Distribution Block Technology"



Public nomination

The civil war of Cambodia, which continued until the signing of the Peace Agreements in 1991, left its water supply facilities in ruins. In addition to water leakage due to deterioration, illegal connections of water pipes were also frequent, pushing the non-revenue water (NRW) rate, which indicates the percentage of unbilled fees due to water leakage and water theft, up to 70% in 1993. In response to a request from the Government of Cambodia, Japan began rebuilding water infrastructure in 1993 in collaboration with the World Bank, the Asian Development Bank (ADB), and other partners. In 1999, a Kitakyushu City official was dispatched as an individual expert, which led to the launch of a JICA technical cooperation project. Kitakyushu City personnel were dispatched to provide technical guidance on water leakage prevention, passing on the knowledge they had cultivated in water administration. Through this cooperation, Phnom Penh's NRW rate improved to 8%, on par with developed countries. As of 2006, on completion of the "Project on Capacity Building for Urban Water Supply System in Cambodia (Phase 1)", water services had dramatically improved and tap water had reached a potable level. This success became hailed as the "Miracle of Phnom Penh."

Mr. SASADA Kazuhiro, Deputy Director of the International Project Division of the Water and Sewer Bureau, Kitakyushu City, describes the effort at the time: "The know-how of 'water distribution block technology,' implemented in the water supply service in Kitakyushu City, brought great results in reducing the NRW rate in Cambodia. This method consists of dividing a water distribution area into several blocks and then investigating the water leakage rate in each block to identify the cause, thereby reducing water leakage and water theft. This led to improving the revenue of the water supply business of the Phnom Penh Water Supply Authority, which enabled them to implement measures to improve water quality, leading to the 'miracle.'"

Meanwhile, water services in regional cities other than Phnom Penh were inadequate, and there was an urgent



Mr. Sasada explaining the situation of water administration in Cambodia to water administration officials at a local seminar (Photo: Kitakyushu City Water and Sewer Bureau)

need to improve facilities and management capacity. For this reason, Japan provided grant aid to help build local water treatment plants, and implemented technical cooperation projects in the second phase from 2007 and the third phase from 2012. Accordingly, to support the sustainable water supply business in local cities in Cambodia, Kitakyushu City continued to dispatch its personnel as cooperation experts and provide technical cooperation to enhance the operation and maintenance capacities of water supply facilities at eight provincial waterworks, including Siem Reap Province. Looking back on Kitakyushu City's long-standing support, Mr. Sasada says, "At the beginning of the project, waterworks in seven of the eight cities were in a severe financial situation, with single fiscal years ending in deficit. By the end of the third phase in 2017, however, all eight cities had become able to end single fiscal years in surpluses. In other words, we were able to establish the foundation for a viable water supply business in a short period. Kitakyushu City also participated in the 'Project for Strengthening Administrative Capacity of Urban Water Supply in Cambodia' implemented by JICA from 2018 to March 2023. In this project, with the aim of strengthening the governance of water administration, we provided cooperation to the Ministry of Industry, Science, Technology & Innovation, which has jurisdiction over the water sector, in the strengthening of organizations, legal development, licensing services, management of water supply operators, and human resources development."

In Cambodia, many private water supply operators operate mainly in densely populated areas where business is relatively easy to become viable. However, the country lacks in showing a clear view or policy to ensure that all citizens receive safe and affordable water services. In response to this, a three-year project was launched in May 2023 to help formulate a development plan for urban water supply for the water sector across Cambodia. "Local people told me that thanks to Kitakyushu City the water quality was improved. It makes me proud to be a member of the water administration," says Mr. Sasada with a smile. Cooperation from Kitakyushu City in water supply services is expected to continue.



Kitakyushu City officials providing guidance to Cambodian waterworks officials on the operation and maintenance of a water treatment plant in Kampot Province built with the cooperation of Japan (Photo: Kitakyushu City Water and Sewer Bureau)

## Networking among JDS Alumni Returned from Japan – Fostering Young Mongolian Government Officials into Leaders who will Contribute to Solving Development Challenges –

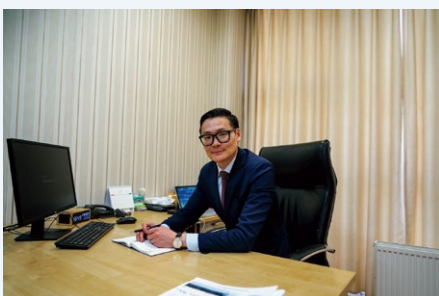
Mongolia, known as a friendly country with a strong affinity for Japan, is blessed with abundant underground resources. However, for medium- to long-term economic growth, the challenge it faces is channeling these resources into economic and further industrial development. For this reason, emphasis is placed on improving the administrative capacity of its governmental bodies for the development of an appropriate institutional structure, as well as for the formulation and implementation of sound financial plans, by training young government officials responsible for the future of the country.



A general meeting of the JDS Alumni Association held in Mongolia with the participation of faculty from the accepting Japanese universities (Photo: JICE)

Japan cooperates with Mongolia, through the grant aid “Project for Human Resource Development Scholarship (JDS),” to help young government officials study at graduate schools in Japan, aiming at fostering future policy makers of Mongolia. Since the country became a JDS recipient country in 2001, more than 400 young government officials have studied in Japan, 375 of whom have already obtained master’s or doctoral degrees. After returning to Mongolia, they are making great success in various fields, such as the Ministry of Finance, the Central Bank of Mongolia, and other central government agencies.

Mr. B. Ganzorig studied at Saitama University for two years from 2017 under the JDS project. After returning to Mongolia, he returned to his previous position at the Ministry of Finance and currently serves as Head of the Development Financing Division, Development Financing and Public Investment Department. Mr. Ganzorig says that the experience of studying in Japan helped advance his career, explaining, “In recognition of my master’s degree in economics obtained in Japan, I was promoted to the Head of the Development Financing Division, Development Financing and Public Investment Department, and became involved in policy finance.” He also explains the positive outcomes of his study in Japan, saying, “When making policy investments, I take what I learned in Japan as a guideline. That is to say, I have become



Mr. Ganzorig serving as Head of the Development Financing Division, Development Financing and Public Investment Department, Ministry of Finance



Ms. Naranchimeg, Head of the Payments and Settlements Division, Treasury Department, Ministry of Finance

capable of appropriately allocating the necessary funds for priority policies, keeping in mind that the profits from Mongolia’s mineral resources should contribute to national development.”

Similar to Mr. Ganzorig, Ms. L. Naranchimeg also took part in the JDS project from the Ministry of Finance of Mongolia and obtained her master’s degree in economics from Saitama University in 2020. Currently, she is Head of the Payments and Settlements Division, Treasury Department. Ms. Naranchimeg describes the outcomes of her study in Japan through the JDS and says, “What I learned in Japan is the importance of conducting analysis and planning in advance of starting a project. After returning to Mongolia, I became involved in the introduction of a government-led online payment system in response to the demand that increased with the rise of remote work amid the spread of COVID-19. We steadily advanced our projects with foresight and were able to provide services to a wide range of people across the country. I am happy to hear that the work style I learned in Japan serves as a role model for my colleagues and subordinates.”

As for other outcomes, besides academic accomplishments, Ms. Naranchimeg says, “The connections I made with JDS alumni are also significant outcomes that have helped me in my work since returning home.” Furthermore, Mr. Ganzorig explains, “I leverage my experience of studying in Japan to serve as a Mongolian counterpart for Japanese cooperation projects. I also serve as a liaison to the Embassy of Japan in Mongolia and to the JICA Mongolia Office.” In Mongolia, the “JDS Alumni Association Mongolia” has been established, through which a network is built among graduates returned from Japan, Japanese academic institutions, the Embassy of Japan, and JICA. Its members strengthen the bonds among alumni, who are back in Mongolia and work actively at Mongolian governmental bodies, through various opportunities such as follow-up seminars on fellows’ return home and farewell parties for new fellows departing to Japan. They also talk about using the knowledge and experience they cultivated in Japan to benefit Mongolia and the world.

In 2023, seven JDS alumni, including Mr. Ganzorig and Ms. Naranchimeg, published their co-authored book entitled “Challenges in Fiscal and Monetary Policies in Mongolia” with the cooperation of their academic advisers at Saitama University. This book presents analysis and economic models useful for policy making in Mongolia. It includes an analysis of the current state of Mongolia’s economy, suffering from the so-called “Dutch disease” in which the export of natural resources leads to a decline in the domestic manufacturing industry, its impact on financial management, and measures to enhance the governance capacity of sovereign wealth funds.

It is expected that Mongolia’s qualified young government officials who have gained knowledge and experience in Japan will demonstrate leadership and promote economic development in Mongolia, while promoting friendship and understanding with Japan.



## The Path to International Cooperation that Started with Agricultural Science

“Hunger and satiety” – it was this contradiction that I awoke to during my junior high and high school years that made me want to pursue international cooperation. I can eat whatever I want and as much as I want, but there are people in the world who die of hunger. Faced with this reality, I felt that it was my mission to help those suffering from hunger, having grown up in a privileged environment.

In order to eat, we must produce food. For this reason, I studied agronomy (crop science) at university and graduate school. While studying at the graduate school, I had the opportunity to study abroad for a year at the International Rice Research Institute (IRRI) in the Philippines, where I conducted research aimed at establishing rice cultivation techniques to adapt to droughts, which were becoming more severe due to the effects of climate change. With the cooperation of farmers, we assessed the technology in the actual rice fields of 30 farmers and had the opportunity to hear about their situation and challenges. What I realized during this experience was the obvious fact that meaningful agricultural technology would vary greatly depending on the environment and farmer's situation, and that neither technology dissemination nor international cooperation could be carried out uniformly. This field experience continues to be a great source of inspiration for me even today as I am involved in international cooperation.



The author (second from the right) conducting an interview with farmers in the Philippines while conducting research at IRRI

## Assigned to work at the Food and Agriculture Organization of the United Nations (FAO) under the Junior Professional Officer (JPO) Programme

When I was dispatched to FAO under the JPO Programme, I was in my third year after graduation, working on the implementation of JICA rural development projects at a consulting firm specializing in development cooperation. The main reason I applied for FAO as my first choice was that FAO's goal of achieving food security for all people was in line with the world I aspired to. Currently, I am in charge of designing and implementing climate investment projects for agriculture, forestry, and fisheries sectors in the African region, leveraging funds from the Green Climate Fund (GCF),\*1 of which Japan



With team members of the FAO (Author is second from the left in the front row)

is a major donor country. Weather-dependent agriculture and the many poor people who work in it are highly vulnerable to climate change. FAO works to support the agricultural activities of the most vulnerable communities, so that smallholder farmers can adapt to climate change, depending on the situation and priorities of each developing country. For example, FAO proposes projects that strengthen farmers' capacity and promote improved technologies, along with those projects that reduce deforestation and greenhouse gas emissions through sustainable agricultural practices. In the design and implementation of climate investment projects, I spend exciting days working with colleagues of different nationalities and expertise not only from the headquarters but also from regional offices and many country offices.

## Aiming for a World Without Hunger While Cherishing My Own Life

“You cannot help others unless you are happy.” These are the words of my high school teacher that I still remember. I am currently assigned in Rome away from home, raising my child on my own. Thanks to my considerate supervisor and the support of those around me, even when there are difficult times, I am able to pursue the balance between my career and parenting, cherishing my family and myself.

Working at an international organization felt like a world that was out of my reach. However, as a result of my consistent efforts toward my goal of realizing the world I aspire to without missing any opportunities or connection with others, I am now where I am today. There are many ways to get involved in international cooperation, yet one of the fascinating aspects of working at the UN is using networks around the world and working with people with diverse backgrounds. Moving forward, I will continue to take steps toward eradicating hunger through supporting sustainable and resilient agriculture.

KATO Hoshie  
FAO Headquarters, Rome, Italy

\*1 See the glossary on page 67.