JICA's WORLD

The Magazine of the Japan International Cooperation Agency | www.jica.go.jp/english | October 2016 Vol.8 · No.4

Safe and Sustainable Water Supply

from the water source to the tap

Safe and Sustainable Water Supply

from the water source to the tap

Cooking, laundry, shower, toilet... Tap water is indispensable for our daily life. The coverage of water supply in Japan, which was less than 50% just after the Second World War, rapidly increased during the period of high economic growth in response to the growing demand for domestic and industrial water, and is now one of the highest in the world at 97.7%. Countries around Asia are more and more in need of water due to the population and economic growth and experiencing a similar situation as that of Japan during the period of high economic growth. However, many developing countries are unable to meet this increasing demand for water. The first problem is the lack of water resources. The water level of big rivers in Southeast Asia fluctuates greatly between rainy and dry seasons, which makes the stable water supply difficult. The construction of dams also faces many challenges, such as the coordination between states in case of an inter-state river and with farmers in countries where multiple cropping which need water all year around is prevalent. Another problem, besides the securing of water resources, is the vulnerability of water supply infrastructure. Apart from the construction or renewal of water treatment plants and other facilities, qualified personnel is necessary to maintain and manage facilities as well as collect appropriate user fee to improve the operation. Therefore, Japan has been conducting technical cooperation in addition to financial cooperation, to develop human resources that can support the water supply service in developing countries.

The main bodies of Japan's assistance over the years have been local governments. They have been teach-

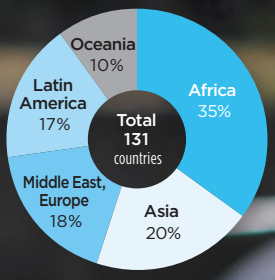
ing various technology and know-how by dispatching engineer of the waterworks bureaus as experts and receiving trainees from abroad. Advantages of local governments are their overall knowledge of the water supply service, such as design, repair, water supply and water quality control, and their capability to teach from the managerial viewpoints nurtured through the self-supporting accounting system. Understanding of local situations is crucial for cooperation in the field of water supply service. For example, while Japan uses multiple water distribution pumps, including supplementary ones for repair and inspection, to supply water constantly, it would be much suitable for developing countries to use a cheaper single pump system and stop the water supply at the time of repair.

Overseas experiences also lead to the development of Japanese engineers. Many rivers in Asia are more turbid than Japanese rivers and necessitate different treatment and operation methods. Reviewing the technology nurtured in Japan and developing it according to the overseas needs is an opportunity to improve the current technology.

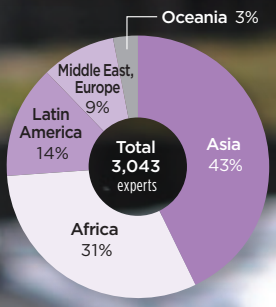
Nowadays, water business by private companies is also increasing. In Japan, private companies produce equipment, such as water pipes, bulbs and meters. Public-private cooperation which optimizes both parties' strengths, such as the creation of master plans for local governments and actual design and civil works for companies, thus becomes valuable. 'Ensure access to water and sanitation for all' – living with safe water, one of the Sustainable Development Goals (SDGs), is a wish of all people around the world.

JICA's cooperation for water supply service (fiscal 2005-2014)

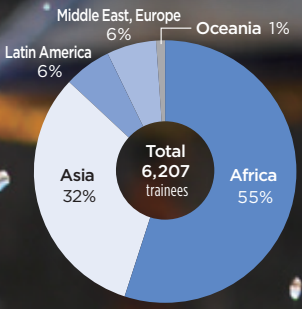
Recipient countries per region



Number of Japanese experts dispatched



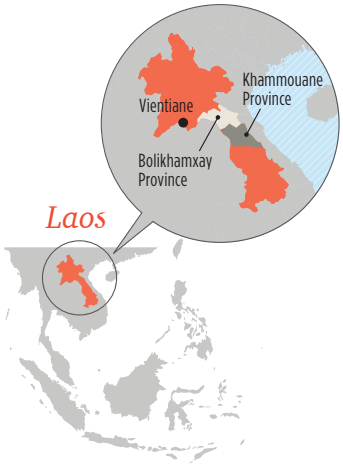
Number of trainees received



Workers digging a ditch on the roadside for laying a water pipe in a village of Thakhek District, Khammouane Province. It is planned to extend the pipeline 33km in the district.

Transmitting the 'Mindset' that Supported Japan's Waterworks

In Laos, located in Southeast Asia, 80% of the population does not have access to tap water. Expansion and renewal of waterworks facilities are matters of the highest urgency.
To support establishing a system in which waterworks can be operated in a planned way, Japan's local governments decided to offer their expertise. In a heartfelt cooperation between the trainers and trainees, they share a common pride as waterworks professionals.



TOGETHER WITH THE WATERWORKS IN LAOS MORE THAN 20 YEARS OF COOPERATION

Late March in Laos is the hottest season in the year. In the oppressive heat, the workers are digging the roadside ground, with sweat on their foreheads. In the narrow, elongated ditch extending at their feet, a brand new water pipe will soon be installed, and tap water shall be distributed to each household in this village for the very first time.

This is a small village in Thakhek District, Khammouane Province, about a five-hour drive from the Laotian capital of Vientiane. A woman who secures her daily water from a well says, "What troubles us is that we have no water during the dry season. If we have tap water, I expect our lives will be more convenient."

The coverage of water supply system in the urban area of Thakhek District as a whole is as low as 50%. The existing water treatment plants are getting decrepit. In such circumstances, a new water treatment plant which was built with the help of Japan's grant aid, started operating in January 2016. The supply capacity increased from 6,500 tons per day to 17,000 tons. In the near future, tap water is planned to become newly available to 25,000 inhabitants of the district.

"The staff members are vibrant at work, since the completion of the new water plant," says Khanngeun Sengiem, General Manager of Khammouane Province Water Supply State Enterprise (WSSE). He has a Japanese work partner, Masahiro Shimomura, a JICA expert who retired from the Saitama City Waterworks Bureau last year. They say they consider each other like a 'brother.'

The Saitama City Waterworks Bureau and Laos have a deep connection. The beginning of cooperation dates back to 1992, and many of the bureau's staff members including Shimomura have been involved in various initiatives such as a project to extend a water treatment plant and a mutual trainee-dispatching program. "Mr. Shimomura and I met for the first time in 1994, when he was working here as a short-term expert. We have known each other for more than 20 years. He taught me how to collect waterworks-related data, how to plan, and many other things," explains Khanngeun.

Under a Prime Minister's decree, Laos aims to achieve the 80% water supply coverage in urban areas by 2020. However, the rate as of 2010 was merely 55%, and even the recent acceleration of urbanization is pushing up the demands for water. For further extension and renewal of waterworks facilities and securing investment funds to make it possible, it is indispensable that each of the WSSEs in all of the 18 capital and provincial governments operates in accordance with the business plans made by themselves, and tries streamlining by analyzing and evaluating the project results.

In order to meet such needs, a Japanese technical cooperation project called 'MaWaSU Project' was launched in 2012, focusing on human resource training for the staff of WSSE. With Shimomura as a chief advisor, this five-year project is proceeding, with WSSEs of Vientiane Capital, Luang Prabang and Khammouane Provinces as three pilot WSSEs.

Left: A new water treatment plant in Thakhek District. It was completed three years after construction had started.
Right: Even in the Vientiane Capital where the availability rate of tap water is relatively high, water supply often gets cut during the daytime. Therefore, many households have large tanks to store water during the night.

Shimomura (second from left) giving an OJT at Vientiane Capital WSSE. He shows the trainees in the sessions that it is possible to secure some funds by streamlining the project.

Saiki explaining how a digital map is built. For making the facility management more efficient, he introduces digital mapping and work on improvement of its accuracy.

WITH PASSION FOR INTERNATIONAL COOPERATION IN MIND THE CIRCLE OF COOPERATION EXTENDS

The project delivers, through on-the-job-training (OJT), a wide range of techniques and know-how from the water source to tap such as planning, designing, maintenance and water quality management. At the Vientiane Capital WSSE where 20 of their staff members participate in the project, Shimomura was giving some instructions.

"Why did the amount of water supply drop sharply only for this month? It's important to seek the reasons, rather than just collecting figures." During the OJT, a staff member in charge reported the data of the amount of water that was sent out from the treatment plant to distributing pipes, as well as the amount that was actually provided to users and was subject to being charged a fee. The difference between the two figures is called 'Non-Revenue Water,' namely the water that is lost before reaching users due to leakage and other reasons. The training held a discussion on reduction target and measures to be taken for the non-revenue water. "Waterworks is not something one can operate with feelings; data management is important more than anything. In addition to an improvement of data collection and analysis capacities, I put emphasis on change in the consciousness as to why these are necessary," stresses Shimomura.

Khampheuy Vongsakhamphoui, General Manager of the Vientiane Capital WSSE. "Although we are now the recipient of assistance from Japan, I hope one day we will become mutual supporters."

During the OJT, a man was fervently taking notes. It is Takashi Saiki, an expert of the project, who has worked for the Matsuyama City Municipal Enterprise for more than 20 years. He joined the project in February 2016 and is supposed to gradually take over the OJTs at the pilot WSSEs from Shimomura.

Saiki had long dreamed of taking part in international cooperation in the field of waterworks. "My turning point was when I participated in the Japan Overseas Cooperation Volunteer (JOCV) program about 10 years ago, while belonging to the city government. As I had been involved in making digital maps for managing waterworks facilities and pipe networks for a long time, I trained the staff in charge of managing the Angkor archaeological sites in Cambodia and taught them how to utilize digital maps." Saiki says he took pleasure in building up something from scratch together with local people. This time round, he volunteered to participate in this project, wishing to contribute using more of his expertise.

For Laos, this project which encompasses the entire waterworks industry is of unprecedented scale. For this reason, in addition to Shimomura and Saiki, the project involves staff members as short-term experts from the Public Enterprise Bureau, Saitama Prefectural Government, Kawasaki City Waterworks Bureau, and Yokohama Waterworks Bureau, City of Yokohama, bringing in knowledge and expertise of each municipality. Saiki says enthusiastically, "Like any other municipal government, Matsuyama City is not well-staffed. Nonetheless, my superior gladly agreed with my participation, saying 'your experience on a world stage will bring in some fresh air to the rest of the staff members here.' I am hoping to contribute to the achievement of the project objectives even a little."

"ONCE IMPURE OBJECTS SINK, HERE IS DRINKING WATER" REALITY OBSERVED IN RURAL VILLAGES

Shimomura guided to Thonami Village in Bolikhamxay Province, which is in the vicinity of the

A well used in the Thonami Village in Bolikhamxay Province. Livestock roaming around the well pose a sanitation problem.

Vientiane Capital, saying "I would like to show the water situation in rural areas too."

In the case of a villager, his family shares one well with four other families. "We leave the water from the well in a container for a while. Then, once the dirt and other substances sink, we take the supernatant and use it for cooking and drinking," he explains. During the period of the dry season when there is no more water in the well, he goes to a nearby river for laundry. "Tap water is expensive and unnecessary. We have clean ground water and that's enough," another villager says; however, on the surface of the water she was using, there were some white impure substances floating. It seems difficult for them to imagine what it is like to have tap water. It is not an easy task to spread the use of tap water in such an environment.

The Lao government has also started to strengthen their efforts. In December 2015, the Department of Water Supply (DWS) was newly established within the Ministry of Public Works and Transport (MPWT), and 'water supply development in the rural areas' was set as one of the policy issues. Phomma Veoravanh, Director General of DWS, says, "First of all, it is necessary to increase capacities of the WSSEs to raise funds by themselves. At the same time, we plan to consider the establishment of investment funds for WSSEs development."

In order to spread the achievement of the pilot WSSEs to all the other parts of the country including rural areas, in the MaWaSU project, guidelines are being made and a training system is being constructed. However, providing water service in rural areas has difficult issues that are different from that of urban areas: it is inefficient because users are few and spread apart, and they are economically poor. Shimomura says, "Many people live without tap water. I always try to be mindful that we are working for those people."

"IT'S OUR TURN TO SPREAD IT NATIONWIDE" SHIFT IN CONSCIOUSNESS OF THE STAFF

"Initially, when asked if Laotian tap water was potable, local WSSE staff said 'no.' That was the point of departure, but now, they answer 'we will make it potable,' to the same question." Three and a half years since the project started, Yusuke Kinoshita, an expert in charge of project coordinator, says that he finds the consciousness of the staff is shifting.

A system to make a business plan based on estimated water demand and prospect of financial balance, and to do monitoring is being developed. Khamla Vongphachanh who takes care of managing water meters in the Vientiane Capital WSSE, says, "I learned the importance of managing data and renewing meters in a planned manner. The OJT-based training helps me understand better the situation in the field."

There are newly introduced activities, too. One of them is a water user survey. Ongxiong Tongnammavong, a customer service official, explains, "We learned about what the customers think of the price, and the reasons why they feel expensive, for those who answered so. This is a good reference for improving our work." In addition, they launched a waterworks education class to teach the importance of tap water to primary school pupils, which obtained favorable reputation from children as well as their parents.

The training center attached to Chinaimo Water Treatment Plant. The wide-ranging techniques and methods such as the mechanism of water meter, how to connect and repair water pipes, using the real equipment are taught here.

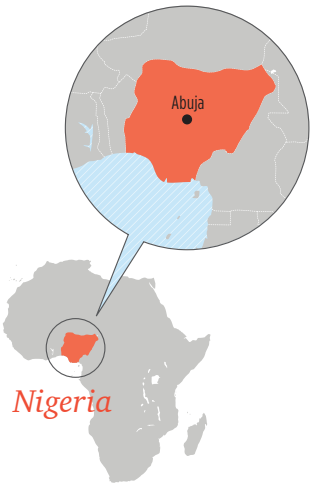
Now, the staff members of the pilot WSSEs have already begun to think about extending the work nationwide. What they often say is "It is our turn to pass on what we learned from the Japanese experts to the colleagues in other provinces." In a training center in Vientiane, the textbooks which were created with the help of Japan in the past are carefully stored. There, the staff of the pilot WSSEs are expected to be trainers, and provide younger staff with training.

To make potable water available out of tap for everybody is Shimomura's ultimate dream. "This time, I came here, determined to leave everything I had learned at Saitama City Waterworks Bureau for over 40 years. This is also to conclude my life as a waterworks specialist. I intend to keep offering my support to people of Laos, which is my second home."

The water supply colleagues, 'Water Family,' come together from Laos and Japan with a common mission. The way they work together, bonded with mutual trust, makes us feel hopeful.

A waterworks education class held at a primary school in Vientiane. The pupils learned how to treat water to make it potable.

Measuring the amount of water running through a water pipe, using an ultrasound flowmeter.



Fairway to a better Water Management

Yokohama, one of the largest port cities in Japan is the first Japanese city to develop modern water management system. Knowledge to deliver clean water to the 3.7 million residents of the Golden Port is now transferred to the Nigerian capital which is one of the most populated cities in Africa.

It is important to expand the outcome of pilot districts to other areas.

Drawing a water pipe arrangement on a satellite photo, resorting to the memory of personnels.

PAY-AS-YOU-GO SYSTEM FOR MAINTAINING OPERATION

How much was your water bill for last month? When you are asked so, probably you would think about the amount of water you spent. In some countries including Japan, a water bill is generally composed of a fixed basic rate and the rate which varies based on the quantity of water you used. Then, how about in other countries? “In Nigeria, customers have been charged only by a fixed rate for water use. The country is in a transition period to a ‘pay as you go’ system, but there are still quite a few customers who pay a fixed rate,” explains Toru Toyoda of Yokohama Water Co. Ltd. “Because water meters are not commonly used in the first place, they cannot figure out how much water a water board sends out and how much water each customer uses.”

Non-Revenue Water is water which suppliers could not collect charge from the customers due to pipe leakage, stolen water, and so on. As a water system requires costs not only for setting up but also for its maintenance, it is important to establish a solid fee-charging system in order to build up the operation system. For many water-supply corporations around the globe, non-revenue water is a big issue. Yokohama Water is a consulting firm which

the Yokohama City government established in 2010. Utilizing its excellent water-supply management technology, Yokohama Water has supported developing countries (e.g. India, Laos and Pakistan) to tackle their non-revenue water issue.

Yokohama City has shared Japanese know-how on water-supply management by dispatching water experts to all over the world; over 40 years since 1973, the city received more than 3,000 trainees and dispatched almost 300 experts to 31 countries.

The connection between Yokohama City and Africa has deepened through the fourth session of the Tokyo International Conference of African Development (TICAD IV) which Yokohama City hosted in 2008. Since then, many trainees including from Nigeria came to Yokohama. They showed interest in awareness-raising activities for citizens, such as 'Outreach water class' for primary school children. Technical cooperation project for reducing non-revenue water in Nigeria's capital of Abuja and its surrounding area is conducted and Yokohama Water takes part in the project.

BASIC TECHNIQUE REMAINS ALWAYS THE SAME

The water utility public corporation of the Federal Capital Territory, which includes the city of Abuja, aims at establishing a medium-term strategic plan for reducing non-revenue water and obtaining the government's approval by 2018. However they are lacking techniques, knowledge and necessary information to make such strategic plan.

"They did not even have a basic drawing showing where and how the water pipes are distributed." says Toyoda. "To start with, we are making a drawing, on an experimental basis, based on staff's memory and satellite photos. Using them, we divide the territory into districts for water distribution management."

Besides making such drawings, it is necessary to grasp the situation of the distributed water amount. In order to do so, not just only obtaining information of the overall system but collecting each customer's basic information such as number of house members, location and amount of monthly water usage are necessary. This task requires patience, but it is an inevitable step to reach the goal.

"We use computers nowadays, but we used to manage everything manually – hand-drawn plans, paper registries, etc. – three or four decades ago in Yokohama. The basics of the water-supply management remains the same and they have been passed down from generation to generation. When it comes to technical cooperation, I think it is important to convey such essence to the people in the developing countries" Toyoda emphasizes.

In this project Nigerian side and Japanese project team designated three pilot districts within the Federal Capital Territory, and made drawings of water distributing pipe arrangements as a first step. Then, the project team set up water service areas on a reservoir-by-reservoir basis and installed flowmeters. In a distribution reservoir, the water processed in a water treatment plant is kept before sending out to households. This leads to water-supply and water-pressure management.

Training held in Yokohama. The techniques that the city developed helps reducing non-revenue water in Abuja.

In the three pilot districts, the balance of the water supply and revenue are analyzed to comprehend the breakdown of the non-revenue water amount and the local engineers draw up a management policy based on that data. Transmission of these know-how is also one of the goals of the project. In the future, it will be gradually applied to other districts. During the course, the importance of managing non-revenue water spreads not only among the water engineers in the field but also to everybody in the water board. This will lead to reducing non-revenue water in the entire Territory, as well as improving quality of water-supply services.

The project team has a spirit to proceed the work 'scientifically'. The experts try to teach the working methods clearly by a logical approach based on statistics and measured data. For instance, when there is a water leakage, they check the amount and location of leakage in the pipeline by using a portable ultrasonic flowmeter. Then prioritize the necessary survey and repairing accordingly to the results. The local engineers are deeply impressed with this sound method.

As of 2015, 9% of the world's population still do not have access to clean water. In order to deliver clean and safe water, which is indispensable for mankind, foundation-building for proper water supply operation is essential.

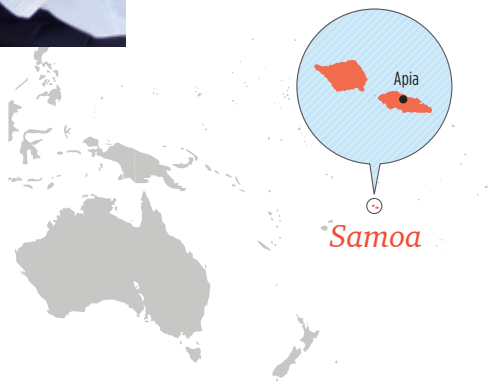
Listening to the meter reader is important to collect information piece by piece.

Experts teach plumbing and connecting techniques. This not only prevents leaks but also enables water supply with appropriate pressure. Customers will also be able to use tap water comfortably.

Takara (right) carefully checks the design of flowmeter room which enables water pressure and the flow rate to be monitored.

Bringing Together the Wisdom of Okinawa

In Samoa, where there is no dam and have frequent water shortage in dry seasons, control of scarce water resources are necessary. Okinawa, the island region in Japan, Prefectural Government extends technical cooperation on water supply service to Samoa.



SOLVING THE PROBLEMS OF WATER SUPPLY IN THE ISLANDS BY SHARING KNOWLEDGE

Samoa consists of nine small and large islands. In this small country with a land area about 1.3 times larger than Tokyo, Samoa Water Authority (SWA) supplies water to about 160,000 people which is about 85% of its population.

While SWA is responsible for the nation's water

service, problems are piling up. Motomu Takara, a chief advisor of the project which aims to improve water supply service points out that "the problem is Non-Revenue Water which is not invoiced to customers due to leakage. For example, in the Alaoa district supplying water to the central part of the capital city, Apia, 60% of the water supplied is lost."

For Takara, who has been working as a water engineer in Japan, it is not a coincidence that he came to Samoa after retirement. He was familiar with water supply projects in 'island regions,' as he used to work at Okinawa Prefectural Enterprise Bureau which supplies drinking water to local municipalities of the island.

Besides reduction of non-revenue water, the project aims to supply safe water stably to Alaoa through improvement of water quality and enhancement of management of water treatment plant. Okinawa established a domestic support committee to provide logistic support for dispatch of experts and acceptance of trainees to enhance SWA's capacity.

In Miyakojima City, where there is no river and water supply is mostly dependent on groundwater, the 'Ecological Purification System' which does not use chemicals is also adopted to prevent pollution of precious water sources. Ecological Purification, also called as Slow Sand Filtration, is a system to purify water whereby microbes and animalcules grown on the surface and inside the sand layer dissolve suspended solid in the water while allowing water to pass slowly through the sand filter.

This method is maintained easily at low cost as well as effective in subtropical climates with increased biological activity. Okinawa's cooperation began when this technology was passed to the Samoans through JICA Partnership Program in 2006.

Later, Miyakojima City and Nago City also implemented technical cooperation to support operational management of the water treatment plant and leakage detection and repairing. Okinawa have been also offering assistance through JICA, by conducting training to share Okinawa's know-how in water source preservation and management with Okinawa Prefectural Enterprise Bureau as the host organization.

TARGETING DISSEMINATION AND ESTABLISHMENT OF THE TECHNOLOGY

While Samoa has received various support programs, preparation of the manuals and in dissemination of technology to the entire organization of SWA has delayed. Takara recalls the time when Shinshu University Professor Emeritus Nobutada Nakamoto, a leading expert of Ecological Purification System, visited Samoa in February 2016, and says, "To my surprise, there was almost no sand in the filter basin when we inspected the Alaoa Water Treatment Plant. It could have caused not only the failure of self-purification mechanism in the Ecological Purification System but also bacteria leakege from the sand layer". Therefore, experts had to instruct to refill the sand urgently and started creating an operation manual of the water treatment plant of Ecological Purification System so that the plant is operated based on the proper understanding.

Nakamoto (left) explains the method of operation and maintenance of treatment plant based on Ecological Purification System to engineers of SWA. He also created a model using a bucket to promote their understanding.

Through the cooperation on improvement of non-revenue water, mindset of SWA workers started to change. An expert from Naha City Water and Sewer Bureau recommended the use of paper maps, in addition to the geographic information system (GIS), computer-based mapping database. "SWA workers were suspicious at first as they found paper map out-of-date. However, they found out that they can record information on meters and leakage effectively when they used paper maps in the field," says Takara. In the end, they printed out the drawings of the entire Alaoa water supply district on GIS for use in their operations.

"At the request from an engineer in charge of non-revenue water in SWA, workers across divisions participated in the operation to visit all 35 villages in Alaoa one by one, holding maps in their hands they fixed leaks and replaced faulty meters," Takara says. He has been watching how these efforts will affect the non-revenue water ratio.

Besides, standard operating procedures (SOPs) are now being prepared under the supervision of experts from Okinawa to help counterparts achieve uniformity of the performance of a specific work such as piping work, chlorine dosing control for water quality management.

Takara says, "Capacity development is not easy as skilled SWA workers sometimes quit after two or three years. However, the process of having a number of discussions together and solving the problems is worthwhile for me. It also gives us an opportunity to improve our expertise".

By sharing knowledge on the water supply in island region, Okinawa-Cooperation project has contributed to improve the lives of the Samoan people.

The project team members and workers of Samoa Water Authority. They are striving to regain trust for tap water in a country where people buy expensive bottled water.

CEPSO

The project logo created by a former volunteer for Japan Overseas Cooperation Volunteers in Samoa. The thoughts for "ties", "circulation", and "harmony" are embedded in the shape of a circle, a symbol of Alaoa Water Treatment Plant.

CEPSO: Capacity Enhancement Project for Samoa Water Authority in cooperation with Okinawa

Delivering through Business

KENYA

Wellthy Corporation

01

Using Water Technology to Provide Clean Drinking Water for Villages

Wellthy Corporation has developed a groundbreaking membrane filtration system which transforms groundwater into safe drinking water. The water treatment plant built by the company provides a decentralized water supply system which is independent of piped water supply system thus contributes to the reduction of water costs for factories and business companies. In addition, these plants are gaining attention as disaster mitigation facilities since it functions as an alternative water source during natural disasters and in other situations when the centralized water system is damaged or inoperative.

After the Great East Japan Earthquake on March 11, 2011, Wellthy Corporation plants supplied water to a hospital which had no public water supply for nearly two weeks, and kept the hospital running. Also during the Great Sichuan Earthquake that struck the southwestern part of China in 2008, a Wellthy Corporation water treatment system capable of supplying drinkable water up to about 40,000 people was donated to support evacuees. Recently, its plants have been introduced to hospitals and local governments to provide a secure source of safe water that will remain accessible in case of emergency.

Wellthy Corporation started a water supply project in Kenya after the Fifth Tokyo International Conference on African Development (TICAD V) in 2013. The company is currently conducting a pilot test to provide drinking water to around 1,000 people, 400 households located in the area 30 minutes by car from Nairobi.

Due to the rapid influx of population in the area, compensating the possible future water shortages is a major issue. Therefore expansion of the water treatment plant in the area is planned. Wellthy Corporation is taking part of this plan through a demonstrative experiment with its plant that treats muddy river water source and provides safe and drinkable water to each household.

For the future of this project, expanding the application to additional areas and securing sustainability of the business are both essential. Therefore to secure sustainability, training engineers capable of operating the plants and building a local supply network for maintenance are crucial. For the efficient operation, the company has developed a remote monitoring system that allows engineers to check the plants' status with smartphones without even leaving Japan. This system shows them detailed information about each plant's status. So if problems occur, experts in Japan can guess the causes of the troubles and give specific instructions to the local engineers. By using this system the company aims to manage a large number of plants with a minimal local staff.

Since purchasing expensive bottled water is common in Kenya, safe and affordable drinking water provided by these Wellthy Corporation water treatment plants is drawing attention from the local people. Water supply is a major issue that is of great interest for many African countries, too. Wellthy Corporation will continue its efforts to provide safe and reliable drinking water.

This water treatment plant provides clean water to 1,000 residents of this village.

Safe Water

Business also contributes to supply safe drinking water in developing countries. Here are examples of successful water business that contribute to provide safe water and also employment of the local people.

VIET NAM

02

Kitakyushu Overseas Water Business Association (KOWBA)

Supplying Clean Water at Low Cost

The Vinh Bao water treatment plant in Hai Phong City (built in 2013)

Hai Phong City water engineer receiving training on water quality inspection (2011)

Settling the impurities in the water drawn from the river, and filtering and sterilizing it with chlorine, tap water is purified through such process and supplied to us. However, when the contamination of the water source worsens by domestic wastewater and other reasons, additional treatment known as 'advanced treatment' becomes necessary.

In Hai Phong City in Northern Viet Nam, the increase of the urban population led to the pollution of the nearby river, which led to concerns of odor and hazardous substances in the tap water. However the city could not introduce any advanced treatment due to financial difficulties.

In such circumstances, water treatment technology developed by the City of Kitakyushu in Fukuoka Prefecture in Japan is gaining much attention of Hai Phong City.

Kitakyushu, one of Japan's biggest industrial areas, had faced many pollution problems subsequent to rapid economic growth after the Second World War. The pollution of rivers especially became worse from the 1960s due to domestic wastewater. In order to purify its water resource, the Kitakyushu City Water and Sewer Bureau spent more than 10 years developing the 'Upward Biological Contact Filtration (U-BCF)' - an advanced treatment technology that uses biological activated carbon.

"We mainly use ozone when conducting advanced treatment in Japan. The ozone treatment is, however, too expensive for developing countries to implement and maintain. On the other hand, the construction of facilities for U-BCF costs half of that of ozone treatment, and one-twentieth for operational cost," says Masashi Yayama of Kitakyushu City Water and Sewer Bureau.

The Kitakyushu City Water and Sewer Bureau established a U-BCF pilot plant in Hai Phong City through the JICA Partnership Program between 2010 and 2012. Its excellent performance was acknowledged, and U-BCF was then introduced to the city's small water treatment plant in 2013. Currently, its introduction to the main water treatment plant is in progress.

As the news of its positive effects spread, other municipalities across Viet Nam requested the introduction of U-BCF technology. Currently, surveys in regards to its implementation are being conducted in five cities including Ho Chi Minh.

Companies such as Kobelco Eco-Solutions also played an important role in the development of U-BCF. Kitakyushu City established the public-private partnership institution, the Kitakyushu Overseas Water Business Association (KOWBA) in 2010 to spread water technology abroad, together with private companies. KOWBA also engages in other projects in Viet Nam.

Engineers at Kitakyushu City Water and Sewer Bureau and the affiliated companies continue to work hard to turn tap water in Viet Nam into water that is safe to drink.

· TRENDS ·

Kenya

Sixth Tokyo International Conference on African Development (TICAD VI)

Photo: Shinichi Kuno/JICA

On August 27-28, the Sixth Tokyo International Conference on African Development (TICAD VI) was held in Nairobi, the capital city of Kenya. The Conference drew more than 3,000 participants including Japanese Prime Minister Shinzo Abe and more than 35 heads of African states. The Nairobi Declaration was adopted with three priority areas:

i) Promoting structural transformation through economic diversification and industrialization
ii) Promoting resilient health systems for quality of life
iii) Promoting social stability for shared prosperity

Japan announced cooperation for Africa between 2016 and 2018 in the amount of 3 trillion yen with a public-private partnership.

While continuing to contribute to achieve targets set at TICAD V in 2013, JICA will also contribute to TICAD VI commitments by various cooperation including following areas by 2018:

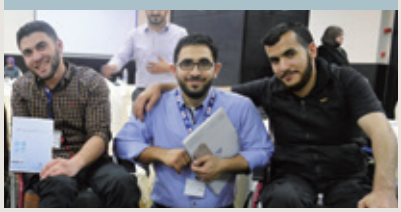
i) Expanding the amount of finance to more than USD 33 hundred million by co-financing with African Development Bank(AfDB)
ii) Development of human resources in industrial activities by continuing the program of 'ABE initiative' and implementing KAIZEN initiative
iii) Support in health sector through the promotion of universal health coverage (UHC) and newly launched 'Initiative for Food and Nutrition Security in Africa' (IFNA)

JICA organized 18 side events during the Conference. For a high-level panel discussion on August 28, JICA President Shinichi Kitaoka became a moderator and invited a number of eminent panelists such as the President of Rwanda Paul Kagame, the Liberian President Ellen Johnson Sirleaf, former Nigerian President Olusegun Obasanjo, African Development Bank President Akinwumi Adesina, and Prof. Joseph Stiglitz of Columbia University to discuss various issues which Africa, Japan and the international community face.

Prime Minister Shinzo Abe gives a speech at TICAD VI

Jordan

JICA Assists Syrian Refugees with Disabilities in Jordan



Syrian refugees with disabilities in Jordan have completed a 'Guidebook to Services for People with Disabilities.' A workshop announcing the guidebook was held in Amman, the capital, on May 31.

In 2014, JICA began dispatching short-term experts with disabilities to assist Syrian refugees with disabilities in Jordan. As a result of the workshop, Syrian refugees with disabilities formed a peer-support group and developed the guidebook to provide information to others with disabilities. This guidebook is expected to help people learn what groups are offering what kinds of services, and how people can receive the services.

Jordan has almost 650,000 Syrian refugees. In addition to congenital impairments, many people have impairments caused by conflicts. Among the population, 25.9% of people are believed to have some functional impairment*; they have more difficulty in accessing medical and social resources.

The experts JICA dispatched carried out initiatives including: 1) a workshop to establish peer support groups where people with disabilities help one another, 2) a peer counseling seminar to enable people facing common difficulties to talk as equals and regain self-confidence, 3) training of facilitators for 'Disability Equality Training (DET)'

At first, many participants said "We're refugees so there's nothing we can do." However, their understanding has deepened and they have begun to think that they can understand other refugees with disabilities because they are in the same situation. The group of people now implement activities such as DET, peer counseling and sports, to support other Syrian refugees with disabilities. JICA will continue providing assistance to promote the social participation of people with disabilities.

Syrian refugees with disabilities in Jordan with the completed guidebook in their hands

* 'Hidden victims of the Syrian crisis: disabled, injured and older refugees.' Help Age international/Handicap International.

Philippines

JOCVs receives the Ramon Magsaysay Award

©Aya KIMURA/Ms./JICA

Japan Overseas Cooperation Volunteers (JOCVs), who are dispatched through one of the JICA volunteer programs, has been honored with the Ramon Magsaysay Award.

The Ramon Magsaysay Award was established in 1958 to commemorate Ramon Magsaysay, a former Philippines president. The award is widely regarded as the region's equivalent of the Nobel Prize. This award is given every year from the Ramon Magsaysay Award Foundation based in Manila, to an individual or an organization who has made an outstanding performance in social contribution in Asia.

Since the first award given in 1958 until present, over 300 individuals and 10 organizations have received the esteemed award. The winners come from different parts of Asia and in the past, Mother Teresa and the 14th Dalai Lama have received the award. In 1997, Sadako Ogata, a former JICA President, also received the award.

JICA volunteer programs including JOCV program has been contributing to the socioeconomic development of the Asian region for many years and celebrated its 50th anniversary last year under the concept of living and working together with the local communities. Such longstanding efforts have been recognized by the Ramon Magsaysay Foundation.

As of 31 July 2016, about 41,800 people have been sent around the world under JOCV program in total, of which 12,200 were dispatched to Asia. Currently there are 600 JOCVs engaged in activities in 18 Asian countries.

JOCV contributed to the Lymphatic Filariasis Elimination programme in Bangladesh over two years. She was invited to the awards ceremony.

There was an error in the July 2016 edition of JICA's World. We sincerely apologize for the mistake.

<p.2, first paragraph, line 8>
Original text: "from 19 billion in 1990"
Correction: "from 1.9 billion in 1990"

Voices

FROM THE FIELD

Hani Kurdi

Chief Program Officer, JICA Jordan Office

Jordan is one of the countries where renewable water resources are the most limited in the world. Hani Kurdi, Chief Program Officer at JICA Jordan Office, is working on projects for the people in the area most in need of water in his country. Alleviation of the water shortage, as well as improvement of the water supply, is never easy in his country, but he is motivated to pick up this challenge.

A specialist in Civil Engineering and Water Resources Planning & Management, Kurdi started his career at the Ministry of Water and Irrigation in his country. He was involved in irrigation projects financed by OECF (currently JBIC) as well as some water studies conducted by JICA. In late 1991, when JICA established a Jordan office, he decided to work for JICA so that he could bridge the gap between donors and recipient organizations.

In 1994, Kurdi worked with a Japanese expert, Haruo Iwahori, who spent four months as his mission to Jordan. During the mission, Iwahori visited all water facilities in the country to collect information by interviewing the staff. This helped the facility staff to recognize the problems and thus to negotiate with people concerned. They have successfully formulated a plan of intervention consisting of several projects which were implemented from 1994 to 2011. The projects had remarkable achievements and Kurdi is proud that he took part.

Among the projects, there was a water supply project from Yarmouk river and lake Tiberias, the sources that brought additional water to Jordan from Israel as a peace dividend in 1994. Amman, the capital of Jordan with around two million residents, had been suffering a severe water supply condition. With Japan's help, Jordan implemented the water supply project around Amman and the renewal of the equipment at the Zai water treatment plant not only made it possible to supply more water but also better quality of water, which solidified the confidence of citizens toward the Water Authority of Jordan.

He thinks Japan's assistance is focused on the basic needs of his country. As JICA's staff, he is trying to make the best use of assistance and make sure it's directed to the sectors and areas where it is most needed.

Success in Urban Water Supply in Cambodia

From Phnom Penh to the Whole Country

H.E. EK Sonn Chan
Secretary of State, Ministry of Industry and Handicraft

I was appointed as the head of Phnom Penh Water Supply Authority (PPWSA) in 1993. The water loss rate was then around 72% and production capacity was only 50,000 m^3/d against the demand of at least 200,000 m^3/d with only 288km of old cast iron pipes. Among about 27,000 recorded customers, more than half never received water, and many of those who received water never received their bills. Staff morale was low: chemicals were often stolen and illegal connections were common. Needless to say, water quality did not meet the standard.

In such a situation, my first work was to raise 50,000 USD to buy chemical for water treatment and the Japanese Embassy kindly provided the funds that I requested. I also prepared the Master Plan together with Japanese consultants. When I left PPWSA in 2012, water supply had increased to 430,000 m^3/d, and the distribution network had reached almost 2,000 km with 200,000 customers. The water was drinkable with less than 6% water loss. Staff capacity and morale had also improved remarkably.

Now in my position at the Ministry, I am responsible for the water supply for all of Cambodia. Three years of hard work with close collaboration with JICA's technical cooperation project has brought substantial achievements. Most significantly, all 13 public water utilities in major provincial cities started to obtain net profit since last year through activities such as standard setting, OJT, monitoring and information sharing. In addition, infrastructure development through Japan's financial assistance has also brought positive impact. In terms of management, all of these utilities can now prepare annual plans and keep accounting records in accordance with the national norms.

In the meantime, we have put in place several regulations that enable the Ministry to control private water utilities in a fair and accountable manner. Two more regulations are now under preparation, which will lead to establishing the Water Supply Law, assisted by JICA.

Having said so, currently in Cambodia only 21% of the population receives piped water and the rest still rely on other sources. My goal is to provide piped water to everyone in Cambodia. So, we still need to strengthen the implementation.

On 21st July 2016, the government decided to expand the Potable Water Supply Department to become General Department. This is significant change in the management of water supply in Cambodia. I hope JICA will assist us with this process along with the current support of achieve financial autonomy for all public water utilities.

Due to the genocide from 1975 to 1979, Cambodia lost many skilled workers including those in the water sector. All water systems were once abandoned. Today's success in the urban water supply in Cambodia is the achievement of our work with support from development partners, especially from Japan. I have learned that ownership or partnership alone will not work; both are needed. I would like to work with all stakeholders and keep providing the very best know-how to my people and the generations that will follow.

JICA's WORLD
is published by **JICA**

Publisher:
Masahiko Tanaka
Office of Media and
Public Relations

Nibancho Center Bldg
5-25, Niban-cho
Chiyoda-ku
Tokyo 102-8012 JAPAN

Tel: +81-3-5226-6660
Fax: +81-3-5226-6396
www.jica.go.jp/english/

Cover: Children running towards water as the water supply system was developed with Japan's assistance in Siem Reap, Cambodia. (Photo: Kenshiro Imamura)

Photo on pages 2-3:
A boy sprinkling water on a sports day in Bhutan (Photo: Kensaku Seki)