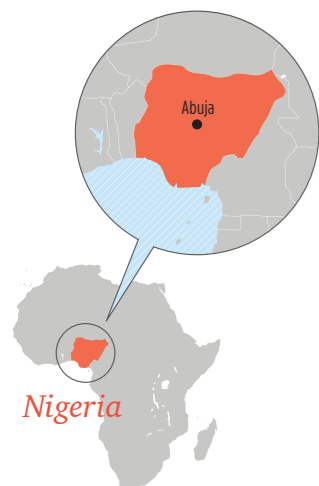


Measuring the amount of water running through a water pipe, using an ultrasound flowmeter.



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.

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.



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.