

is maintained or not.

This means that the Ho Chi Minh City Water Supply Company, as an authorized organization equivalent to an administrative institution, always checks the water quality even if it is under the BOT scheme. Let me give you one example of administrative measures. If a city water sample we check does not meet the standard or is below the standard, we impose a fine against the sample case based on the rule.

When an indicator of microbes does not comply with the standard, we will prohibit or suspend production, take away the company's license, or demand relevant compensations.

Chairperson (Mr. Hiroto Oda)

Mr. Vo Quang Chau, thank you very much. He pointed out that it is important for a private company to guarantee the quality and amount of city water it produces. As an administrative organization, the company continues to check the water even if it is produced under the BOT scheme.

This concludes the presentations given by each city and the Q&A session. We will take a coffee break here.

Volunteer Group Activity Report

Ms. Michiko Kawaguchi

Director

Hakata-Yumematsubara no kai

Chairperson (Mr. Hiroto Oda)

Now I would like to move on to a report about the activities of a citizen's volunteer group. As for the organization, "Hakata-Yumematsubara no kai" and its Director, Ms. Michiko Kawaguchi, please refer to your handouts. Ms. Michiko Kawaguchi, the Director of "Hakata-Yumematsubara no kai," please.

Ms. Michiko Kawaguchi (HAKATA-YUMEMATSUBARA NO KAI)

Thank you for your introduction. I am Michiko Kawaguchi. On the occasion of this significant working level conference, I am greatly honored to have been given the opportunity to introduce the modest activities of our citizen's campaign. In the 20 minutes that I have been given, I will use slides to facilitate my brief report. Would you please show the first slide?



This is a reclaimed beach in Momochi. In Fukuoka, approximately 130 rivers flow into Hakata Bay. We wanted to recreate the pine grove areas that used to be on this reclaimed beach along Hakata Bay. We made a nationwide appeal for contributions to

buy young pine trees. With the administration's involvement, we have planted pine trees along this 2.5km-long artificial beach. When we first visited this beach, we had a strong desire to restore this vast empty seashore with lush pine trees. We discussed this idea and, consequently, decided to launch a campaign.

The next slide shows "Matsubara-thon," a marathon we organized. About 3,000 participants ran on the reclaimed seashore. We had various individuals taking part in this marathon. The Sea Scouts rushed on boats. Members of OISCA International who are overseas trainees for agriculture came with vegetables to cheer the participants. We received a lot of support from various places. "Matsubara-thon" united the participants with the determination that "we will plant pine trees here," marking the first step of our campaign.

This is a picture of our first planting of about 3,000 pines. We planted 14-15 year-old pine trees, which you can see over here, as well as young ones.

This is a row of grown pine trees. People contributed pines. Since we got news coverage, we had lots of offers from all over Japan. However, we just could not plant all of them. Therefore, we planted 3,000 pines at first. Now this is a place for citizens to relax.

They are Mr. and Mrs. Lee. Mr. Lee is studying at a department of agriculture. This couple was the 10,000th contributor to donate since we started raising funds. They planted a pine tree accompanied by applause.

This is Uminonakamichi Seaside Park, which faces the Sea of Japan where a strong north wind blows. There, the Sea Scouts and elementary school children planted pine trees. We have planted 1,000 pines every year along the coast of Hakata Bay for 13 years. Pines are difficult to grow in some coastal areas with strong winds because they get buried in the sand.

This is a scene of tree planting at a place called Nishi-Fukuoka Marina Town on the western side of Hakata Bay.

This is an offshore breakwater. This is an islet in Hakata Bay, to which we can walk during the ebb tide. We planted young trees there. Now they have grown thick.

This is an expressway. Lion's Club members suggested that we also plant trees there, so we planted them on the side with the wind blowing from the sea. They are also growing very well.

This slide shows our study tour to China. We visited the desert stretching along the Yellow River to observe a greening enterprise there. When sand damaged pine trees at Uminonakamichi, we realized that we needed to take some measures and decided to visit this place. We flew from Beijing to Yinchuan, then took a bus for about 2 hours to Zhong Wei. We observed sand filtration using wheat straws meshed into a frame of about 1 square meter.

As you can see in this slide, they were promoting greening by making meshes with wheat straws. This is Mr. Zhang Ke Zhi, who is in charge of this greening enterprise and

also manager of a desert research institute in Yinchuan. We listened to his explanation about their sand filtration technology, which eventually led them to the meshes, as well as the creation of fertile farmland by promoting reforestation through pumping up water from the Yellow River. Now 13,000 farming families are settled there for free and have succeeded in growing fruit and other produce. We were deeply impressed and moved by his passion for this enterprise. He has led and overlooked the whole process for more than 20 years. Also, we saw a magnificent 55km-long sand filtration system that protected the Bao Lan Railway of the Lanzhou Railroad ranging from the Mongolian Autonomous District to Gansu Province. We were so deeply touched that we invited Mr. Chang to Fukuoka in 1996 and organized a symposium.

This shows the progress of greening. You can see the Bao Lan Railway in the background. Tens of thousands of people were engaged in this enterprise so that they would have more green and rich farmland in the future.

In 1997, with China's environmental protection center as the core, we had a friendship meeting in Beijing under the theme of "Water Environment and Our Health." About 20 people from our group participated and listened to speeches by Mr. Wang Zhan Sheng of Beijing Qinghua University, as well as 4 other engineers, on the situation of the water environment in China. From Japan, Professor Jinno of Kyushu University reported on "How to Secure Drinking Water." This was a good opportunity for exchange.

This is Professor Jinno reporting on how to secure water. People in Fukuoka are very sensitive about water shortages. Since Mr. Jinno is also studying this area, we asked him to make a presentation about this topic in China.

This is a picture from our visit to the environmental protection bureau in Xi'an. We observed a dam and listened to an explanation about the water condition there.

Then we moved from Xi'an to Changchun, where we observed sewer works. In Harbin, we looked at the water condition of the Songhua River.

There we exchanged opinions with people of the Environment Protection Bureau. We learned a great deal from them, but at the same time we felt that China also had difficulties in securing water. These activities resulted in a friendship meeting at the Chinese environment protection bureau in Beijing in 1998, with about 20 participants each from China, Hong Kong and Japan. Each region made a presentation. Children on a boat conducted a water quality test on a lake in Beijing. Also in Harbin, they conducted another test. Though it was a simple test to be used for elementary school children, we considered it significant that all people, including children, be conscious of water quality. They enjoyed being given a quiz and having exchanges in a natural environment. In turn, we had about 20 guests from China two years ago and also last year. They had a friendship meeting with children at Minamioguni, a water source area in Oita Prefecture. Through these activities, we realized that we should appreciate water and started the "Water Thanksgiving Festival."

This shows the ritual called “Mizuawase no gi,” mixing water from various places. Around 30 rivers, including the Mikasa River and the Naka River, flow into Hakata Bay. A large quantity of garbage — a huge amount of it — also flows into the bay. To prevent the sea from pollution, we must clean up rivers. This recognition was the start of exchanges with people living along rivers. First, for face-to-face exchanges with leading individuals along river basins, we asked them to bring water from the nearby river to the “Water Thanksgiving Festival.” We mixed the water to symbolize sharing the same idea. This marked the start of our friendship meeting.

As you can see, we donned handmade costumes. During the festival, everybody enjoyed having a dance of thanks. We put up bamboo decorated with paper strips on which children wrote various wishes or messages such as, “Please give us clean water.” It was really an enjoyable event.

About 300 kindergarten children participated in the event. On their shoulders, they carried an “omikoshi,” a portable shrine, decorated with flowers. They also played in the water. They were all so pleased that they said they were eager to carry the “omikoshi” again. This year, many children from day care centers took part in the festival, too.

This is a picture of tree planting on Mt. Aso, where the Chikugo River originates. Boarding from Hakata on 4 buses, 200 people participated in this event. Spring starts with “noyaki” (burning the field) in Aso. “Noyaki” is done to facilitate the growth of young grass on which cows are put to graze. While watching the beautiful “noyaki” on the next mountain, we planted around 3,000 broadleaf trees. They are growing very well and now we go there to cut the undergrowth and thin the trees. In this way, we learn how important water is through experiences including face-to-face communication with people living along the upper streams of rivers.

This picture is Hiranodai, a water source area. On the way to Hiranodai there is a place called “Suzume Jigoku,” which literally means sparrow hell. Even though there are no fish in such a place, we conducted a biological study with the help of the staff from the Fukuoka City Environmental Conservation Department as volunteer participants.

This is the water source area. The water was too cold for us to enter even for 3 seconds, but children from cities were overjoyed and deeply impressed to know that water is so tasty, cold, and clear.

This is a picture of them conducting a water quality test. Just as the water quality test revealed at “Suzume Jigoku,” there are many microorganisms here, as well. The children studied them referring to a table. A teacher explained to the children that “Suzume Jigoku” was the only place that had a special pure white bug. In having an event with children, we prepared a packed water quality test, a biological study, as well as played Bingo so that they could enjoy learning through their experience.

You already saw this in the video by the Fukuoka City Waterworks Bureau, but this is the Chikugo Barrage. We are about to conduct a quality test of the water for conveyance

to Fukuoka. The Chikugo River is over 50km long. We reached here after conducting water quality tests from the river's upper to middle stream. This is near the sea, the estuary. Since the Chikugo River provides water to 7 towns in the Fukuoka metropolitan area and 9 cities, including Fukuoka City, we discussed the importance of using water carefully there. We tested the water quality of a dam. The water was clean without much difference in quality between its upper stream and midstream water. When we conducted a water quality test of a pond in Changchun, China, children were swimming there in spite of its poor quality, which made me worry. We talked to those children. By contrast, the Chikugo River flowed majestically and its water quality was excellent.

This is the Hii River, which is a really short river running through Jonan Ward, Fukuoka City. People throw trash in bushes along the rivers, so we wished to clean it up. Jonan Ward has 6 junior high school and elementary school districts with 10,000 pupils. Therefore, we asked the schools for help. As a result, overcoming various obstacles, we managed to get children involved. We named the campaign "A Grand Operation of 10,000." Three thousand children gathered to help.

This slide shows children drawing on stones. They greatly enjoyed themselves. The tide ebbs during the spring tide, leaving a vast space along the bank. The children enjoyed playing dodge ball there. We did not know, but the prefecture and the city play a different role in managing rivers. Actually getting into a river taught us various things. The water of the Hii River has become very clean and now there are flowers planted along it.

In this way, appreciating people living along rivers who are protecting mountains, forests and rich land that keep and purify water, we will continue the "Water Thanksgiving Festival." That concludes my report. Thank you very much for your kind attention.

(Applause)

Chairperson (Mr. Hiroto Oda)

Thank you very much, Ms. Michiko Kawaguchi. We have listened to a report about precious experiences through friendship meetings with people in water source areas. Also, we have been reminded of various environmental problems.

United Nations Report

Mr. Graham Philip Alabaster
Human Settlement Officer

United Nations Centre for Human Settlements (Habitat)

Chairperson (Mr. Hiroto Oda)

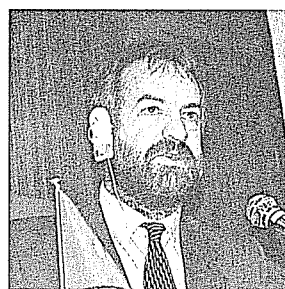
Now I would like to move on to the United Nations Report. This building, ACROS Fukuoka houses the Fukuoka office of the United Nations Centre for Human Settlements

(Habitat), which has jurisdiction over the Asian-Pacific region. Currently, the Habitat Fukuoka office is undertaking various projects in regard to the development of human settlements in Asian countries, including technological assistance, model project operations and human resource development.

Concerning the theme of this conference, the "Supply of Safe, Clean Water to the City," we should be able to learn a great deal. Our next speaker is Mr. Graham Philip Alabaster, Human Settlement Officer of Habitat from the headquarters in Nairobi. His report is entitled "Managing Water for Our Cities: An Outstanding Challenge in the Twenty-first Century." Please refer to your handouts for more detailed information about Mr. Alabaster's career. Mr. Alabaster, please.

Mr. Graham Philip Alabaster (HABITAT)

Thank you very much indeed, Mr. Chairman. Before I begin my presentation, I think it is important for us to realize that we have to supply water to a wide range of people in many cities throughout the world. Asia is no exception. We have to supply water to people of high income. At the other end of the scale, there are people of lower income. So my presentation this afternoon will look at some of the issues that Habitat has learned about through its activities all over the world in relation to managing water in cities. Then I want to briefly tell you about the project that we started in the African region, which suffers from the most severe water shortage in the world. Also, Habitat is very keen to initiate an activity of managing water in Asian cities. Therefore, I would like to touch on that, too.



First of all, let us look at the global context that we are facing. Since Habitat II (United Nations Conference on Human Settlements) in 1996 in Istanbul, the situation of the world's poor has worsened. In fact, as we speak here, at least 1.3 billion people in the world do not have access to clean water. Many of them survive on a meager income. We have to consider this population group in addition to the high-income people who can afford to pay for services.

Let's have a look at some of the issues surrounding water supply in cities.

One very important aspect is that water is actually a finite resource. Many cities throughout the world and indeed in the Asian region are constrained by the amount of water resources that they can use. In fact, water does have an economic value. In many places, there is a large difference in water used by the different sectors — by industry, by agriculture and by domestic consumers. Some places have a conflict between economic development and supplying water. In order to survive, the very poor pay much more than the rich for this important resource. It may surprise you, but in some cities, the poor pay up to 20 times as much as the rich for their water. Some people pay nearly

10% of their income for water every day. One of the reasons this situation exists is that the public sector often focuses its attention on the high-income class of the city — people who can pay for water. Even though there has been an increasing and worldwide trend of privatization in the water sector, the public sector is not always strong enough to offer sufficient regulations.

In many cities, water of marginal quality, treated wastewater and used water drain into rivers. If we can utilize such water effectively, that can diminish our dependence on this finite resource.

Many donors prefer supporting new large-capital projects — new and large-scale water schemes — to spending some of their money on conservation and encouraging people to conserve water. Also, in the private sector, as long as they are paid for the water they supply and their costs are covered, there is not necessarily a need, for example, for a private company to reduce leakage beyond the water meter. If the customer pays for it, the private sector is not necessarily interested in conserving water. Perhaps one of the areas where there is the greatest promise for reducing water use is to educate people about how to use water more effectively. We have heard a presenter speaking about how you can encourage people to change their minds about how water is used and to get away from the idea that water is an endless commodity without any value. But as our cities and towns grow, we produce waste. And the waste is quite often not appropriately discarded nor treated, contaminating precious water resources. City water management must be more efficient. Today we have had some good examples here of excellent water management. Nevertheless, there are quite a large number of people who need the attention of city administrations.

I now would like to show you a few statistics here. These three charts are from the Asian Utilities Water Handbook, which was produced by the Asian Development Bank a few years ago.

The first slide indicates the range of per-capita water consumption in cities. As you can see on the one hand, this goes from somewhere around 70 liters up to 250 liters. These are people who are fortunate enough to have water connections to their house. There are, of course, many other people who survive on far less than 50 liters a day. And you can see a wide disparity in per-capita consumption in Asian cities.

We heard from Singapore this morning that they have low unaccounted-for water. Nevertheless, they are at the top of the list in terms of lost water. As you can see, again, there is a wide gap of over perhaps 50%. Some cities are losing half of the water they provide. You would find these figures in many other continents. In many African cities, unaccounted-for water accounts for between 30 and 50% of lost water. There are many European cities where unaccounted-for water is in excess of 20 or 30% of lost water. Something has to be done to reduce these figures.

The next chart gives you an indication of the rate at which reticulation systems need to be repaired or replaced. We can see a variety of cities listed on the left. This shows how often they replace defective or broken meters. Figures on the bottom axis are the number of meters repaired per 100 connections.

It is clear that really efficient water management in cities requires consideration for not just quality, but also quantity. Many cities rely not only on surface water from rivers and water bodies but also groundwater from aquifers. All of these must be protected from pollution. Particularly, groundwater is over-abstracted. There are many places where excessive extraction from groundwater resources has irreversibly destroyed freshwater aquifers. This is much the case in coastal areas, where you can easily contaminate the freshwater aquifer with saltwater from the marine environment.

In terms of quantity, water in cities is usually limited because there is a finite resource, the supply reservoir has only a certain capacity, or the distribution pipe that carries water from your catchment area to your city is of a certain size. You may be in a particularly arid climate. Many African countries are in this situation. For example, in Egypt, the Nile is basically the only source of water. In some cities, water supply is restricted because the reticulation system is ineffective. In other cities, a large amount of water is lost because of outdated systems, insufficient capacity or poor repair work. Another reason may be the profligate use of water. Perhaps people just do not appreciate the worth of water and its economic value.

Then what opportunities do we have? We have many. Encouraging water demand management in cities can actually reduce water consumption. In some cases, water consumption can be reduced by as much as 20%. This is a very large amount. In fact, one could argue that conservation could be looked at as an alternative to increasing the capacity of a new treatment facility or building a completely new system.

To look at the other aspect, let's go back to the urban poor. Many of them cannot afford to buy water. As I said earlier, some of them are paying between 10 and 20 times more than what we do for water. Given an opportunity to buy water at a fair price, many of them will be able to pay. They are an untapped population that needs a water supply and is prepared to pay for it. In some cities, you could save 20% of the water used in the higher income area as well as in industry, and redirect the saved water to the urban poor.

Perhaps the most significant aspect of encouraging water conservation is to delay investment in new infrastructures because the cost of borrowing money from development banks, even on soft loans, is greatly crippling the economies of many countries. Delaying the investment for a period as short as five years can save sufficient money for cities to undertake water demand management. We found this fact in many cities. Of course, people's awareness is heightened through public education.

Therefore in developing strategies for cities, we should first look at water demand management. Here, I will talk about what water demand management means. It means

minimizing the impact of urbanization on freshwater resources, encouraging exchange throughout the region and spreading good practices about urban water management. And hopefully in the longer term, we can leverage more investment, which we will need ultimately for new water schemes. Basically adopting this approach gives us an opportunity to encourage people to invest more fully.

Water demand management at the city level can include a variety of options depending on where you are working, which city you are working in, and what you are doing. So-called progressive tariffs, which allow the poor to have water at a low cost and higher users to pay progressively increased tariffs, are perhaps some of the most efficient methods of water demand management.

Leak detection and repair are others. I need to add that it is important to consider leakages both before and after metering. There are many cases of quite severe leakages beyond the water supply meter at homes and apartment blocks. Another option is reusing treated wastewater for irrigation and other purposes.

Also, water consumption can be reduced by retrofitting establishments, that is, changing water fittings in establishments to, for instance, low-flow shower heads and taps that turn themselves off. This does not necessarily have to be restricted to the domestic sector. A much greater impact will be achieved by looking at industrial water use and how wastewater can be recycled within particular manufacturing industries.

One of the ideas that Habitat adopted in the African project seems to be working quite well. Rather than doing complete retrofitting or doing an activity throughout the whole city in the first stage, we select a pilot area or a representative area of the city and do a small demonstration there. This will enable you to make a good prediction about what would happen if you were to expand the exercise to the whole city. Of course, this means community education.

To minimize the impact on freshwater, we need to concentrate on issues like wastewater disposal. Solid waste management is another issue, not only because of poorly managed landfills, but also because of people dumping waste into drainage channels. All these aspects require attention. It is an integrated approach that is needed to deal with minimizing the impact on freshwater.

I already mentioned about groundwater abstraction, but there is also an opportunity for aquifer recharging by using wastewater or water of a marginal quality.

Of course, it is necessary to improve on-site sanitation methods for lower-income areas.

There are many ways of sharing experiences about good practices. Indeed, this meeting is one such example. There are a variety of ways we can share useful information, such as by having professionals visit each other's cities and by developing key messages for campaigns. I believe this is probably particularly relevant to the Asian region.

Now I want to talk to you a little about the African water project, which we started around a year ago. The project is basically comprised of three phases. In the first phase,

we selected about seven countries and developed firm collaborative arrangements with the particular partners in those countries based on their interests and need for conserving water. Each of the cities selected from those countries developed an action plan based on information exchange as well as on information about water demand management and environmental protection. We are now in the implementation phase of this project, but there is also a process separate from the activities at the city level. We are in the process of developing the abilities of professionals within particular cities in order to leave something behind for the project once we leave. Of course, in the longer term, we will make follow-up investments in the water sector, but we focus on water conservation. Hopefully in about 18 months, we will compile the results and use it to develop a policy approach for city water management in African cities.

The project is currently implemented in seven cities — three in western Africa: in Dakar, Accra and Abidjan, and the rest in eastern and southern Africa: in Johannesburg in South Africa, Lusaka in Zambia, Addis Ababa and the city I live in, Nairobi in Kenya. Each of these cities identified a package of activities in an integrated way to address this issue. Also most of the cities concluded agreements with donors for parallel funding. Habitat has a firm commitment from all of the governments in the form of memoranda.

Finally, Habitat is very happy to have been involved in promoting Fukuoka City's expertise in waste disposal, which is an international technical cooperation called the "Fukuoka Method." The previous working level conference led us to this involvement. We are also very keen to turn our attention to starting an initiative on water management in cities. The information that you have in your hand includes a questionnaire that we used to identify and gauge the interests of the participating cities in the African region. If any of you are interested in that, we would be more than happy to have you approach us and let us know your opinion about this project.

I have shown you some ideas in this final slide about particular elements of the project. The most important thing is that we felt a need for some practical demonstrations of good water management in cities. Today, we have heard some examples. There are many cities in the Asian region that would greatly benefit from sharing this information. I believe that, ultimately, sharing information and good practices will lead to policy reform in the water sector, which in turn will result in a significant reduction in water loss, as well as conservation of this finite resource.

Thank you very much for your attention, ladies and gentlemen. (Applause)

Chairperson (Mr. Hiroto Oda)

Thank you very much, Mr. Graham Philip Alabaster. He has spoken about the activities of Habitat and has provided specific measures for the effective use of our precious and finite water resource from an expert's point of view. He has also reported on the activities carried out in seven African cities. Again, thank you very much.