

# MONGOLIAN ECONOMY

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The quiet sector

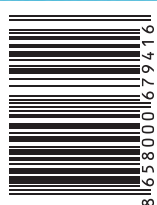
ASEM is not going to wait on us

The coming thirst

# 1.5 billion people

work in water-related sectors, and nearly every profession depends on water and those that ensure its safe delivery

Better water,  
better jobs



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# Mongolian Economy

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## S.Unen: Smart technology to be introduced at water dispensing stations

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## World Water Day

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To speak about some interesting events, the Water and Sewerage Authority will assign 154 of its employees to the same number of schools to conduct lessons about water.

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The entire city will begin to feel the pain of thirst in four years, because only one source of groundwater supplies its residents. Can this something that can be relied on for our future?

### 14 ASEM is not going to wait on us

The reason why it is being paid attention this year is due to the odours being emitted. You can even catch a whiff at Sukhbaatar Square, meaning there is more than just one type of pollution in the air.

### 15 Thirsty lands

Although Mongolia is considered to have a mining-based economy, it ran an agriculture-based economy in the past.

### 18 The coming thirst

Today, 1.5 billion people, work in water-related sectors. In a general sense, nearly every job depends on the people responsible for safe delivery of water. In order to supply the more than seven billion people on earth with water, more people will be needed to work in the water sector.

### 20 Water is work

Why a World Water Day?



### The quiet sector

Scientists and researchers agree that Mongolia has sufficient water resources. About 30-40 years ago, enough research on water resources was conducted by domestic and foreign experts, page 8



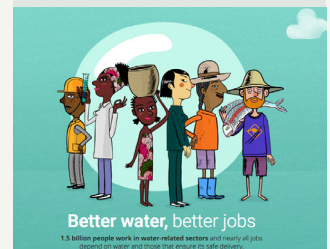
### ASEM is not going to wait on us

The city administration is planning to handle this task before June 15, with the aim of reducing the odour irritating the public by 70-80 percent., page 14



### Thirsty lands

A census conducted in 2003 revealed there remained only 121 irrigation systems that can water up to 29.1 thousand hectares, page 18



### The coming thirst

After all, water is the primary need for all life, page 18

## Why a World Water Day?



## Railways



Aspire Mining Limited, a company implementing coal and railways project in Mongolia, is working to finance the first stage of a project through a loan from the Bank of China. Complete implementation of the project will establish a railway capable of transporting of passengers and 30 million tonnes of cargo and agricultural goods between China and Russia.

## Taxes

This month, 11,727 citizens who submitted statements for income tax returns before 22 January 2016 will receive their refunds. The tax refunds amounting to total of MNT 45.8 billion of 75,396 citizens who submitted statements in order to receive tax refunds in 2015 were cleared.

## Credit

The interest rate on mortgage loans have become five percent starting from 15th of this month. In accordance with the general regulations of mortgage loans and financing, people who buy apartments within the area of Ulaanbaatar's ger district redevelopment plan, remote districts and 21 provinces are to be covered by the lower rates. If budget investment and bond funds increase in the future, the interest rate on mortgage loans will be lowered in phases.

## Employment

The Asian Development Bank and the Credit Guarantee Fund signed an agreement on a project to improve the credit guarantee system on the 15th of this month. The objective of the project is to help Mongolian SMEs get better access to

financing from commercial banks, which will help diversify the economy and create employment in non-mining sectors.

The ADB will finance 88 percent of the project's total cost, or USD 60.5 million. The government of Mongolia is responsible for the remaining 12 percent, or USD 8.1 million.

## Banking



Moody's Investors Service says the negative outlook for Mongolia's banking system, unchanged since 2013, reflects the challenging operating environment, which entails continued deterioration of asset quality and capital, while funding and liquidity will also remain tight. However, the pace of deterioration will moderate compared to 2015.

## Blizzard

The United Nations is to provide help for Mongolians most severely affected blizzards (dzuds). This assistance will cover four areas: food, protection, agriculture and rapid recovery of livelihood. For instance, nutritional and sanitary products will be distributed to herders under the protection and food aspect. For the agricultural part, grass and other necessary nutrition and vitamins will be distributed to herders in order to prevent additional livestock losses.

The USD 2.4 million worth aid was raised



on the United Nations' Central Emergency Response Fund. Starting from December of last year, 60 percent of Mongolia's territory comprising 339 soums experienced a severe blizzard, called a dzud, which is a natural phenomenon that occurs only in Mongolia. It occurs if an extreme drought is experienced during the summer, and winter gets extremely cold reaching -40 to -50 degrees Celsius. Snow levels reach 10-350cm, which degrades pastures and water.

## Tourism

The first international tourism forum in Mongolia is to be held under theme "Nomadic Tourism," in cooperation with the World Tourism Organization (UNWTO) on October 13-15. Mongolia intends to develop the nomadic tourism brand and offer competitive tourism products by organising the forum.

In addition, Minister of Environment, Green Development and Tourism N.Battserg met with the Secretary-General of the UNWTO, Taleb Rifai, for the third time, and agreements on a number of issues were made based on a meeting held in Madrid in January. For instance, it was agreed that two Mongolian people from the tourism sector would be selected for a 6-to-12-month internship at the Asia-Pacific headquarters of the UNWTO.

The ITM-2016 tourism exhibition, which has been organised since 1999, is going to be held in Dornogovi province at the end of this month for three days. The first day of the exhibition will hold closed meetings, as various business meetings and contract negotiations will take place. According to the organisers, more than 100 representatives from neighbouring countries' tourism sector and about 300 Mongolian representatives will attend the exhibition. The exhibition is a platform to exchange experience, find new business partners and learn about tourism companies and products.

The exhibition holds significance not only for Mongolia, but also its two neighbours. Last year, 153 entities and more than 5,000 guests and representatives participated in the event.

## ASEM



The 19th meeting of national committee in charge of the 11th ASEM summit was held on the 16th of this month. During the meeting, attendees discussed preparations for the Asia-Europe Business Forum, approved the aid provided by 11 ASEM partner countries and the programme of the 11th summit.

During the meeting, the head of the working group on ASEM media and advertising, A.Ganbaatar, presented details about the “ASEM Information Centre” project’s budget to committee members.

## Rio Tinto



Jean-Sebastien Jacques was appointed CEO of Rio Tinto. According to a company statement, Jacques will start his new position starting July 1. He is currently the Executive Director of the Copper & Coal Division of the company and had a key role in resolving the second stage financing of the Oyu Tolgoi project.

## Mining

In 2015, Oyu Tolgoi produced a total of 202 thousand tonnes of copper, 653 thousand ounces of gold and 788.5 thousand tonnes of concentrates containing 1.2 million ounces of silver. In terms of sales, the company exported 820 thousand tonnes of concentrate and earned revenues of USD 1.6 billion. The concentrates sold contained 201 thousand tonnes of copper,

737 thousand ounces of gold and 1.16 million ounces of silver.

The company reaped a net profit of USD 313 million in 2015, up by 286 million from 2014, and distributed dividends at 0.16 cents per share. In 2015, the company’s operating expenses amounted to USD 962.6 million, and equipment costs were USD 116.2 million. Technological research related to the underground mine, financing and start of its development factored into the expenditures. The company stated the costs of copper production has been reduced by 30-50 percent since 2014.

OT plans to produce 175-195 thousand tonnes of copper concentrate and 210-260 thousand ounces of gold this year. Thus, production volume is expected to decrease compared to 2015, while further decisions regarding the development of the underground mine are expected in the second quarter.

## Exports

The share of mineral products in exports decreased by four percent from the same period of the previous year, accounting for 85 percent of net exports. The four main commodities – coal, copper concentrate, iron ore and crude oil – account for 84 percent of the mineral exports and 71 percent of net exports. In addition, the total amount of exports of the four commodities decreased by four percent from the same period of the previous year, while their share of net exports showed no change.

## Credit



The government took out a USD 250 million loan from Credit Suisse. During a meeting of the US Chamber of Commerce, Prime Minister Ch.Saikhanbileg stated the money was transferred to the account of the Ministry of Finance on the 16th of

March. It is the first part of Mongolia’s plan to obtain USD 500 million in loans on foreign markets. The repayment period on the loan is five years, with the annual interest rate set at LIBOR plus 6.25 percent.

As for the remaining USD 250 million to be acquired, discussions are taking place and globalcapital.com reported that a three-year loan with interest at LIBOR plus 5.75 percent is most likely. ■



### Issues Faced

## The quiet sector

BY I. JARGAL

Scientists and researchers agree that Mongolia has sufficient water resources. About 30-40 years ago, enough research on water resources was conducted by domestic and foreign experts. However, water sufficiency varies as Mongolia has a vast territory. For example, the provinces of Khuvsgul and Selenge have water resources higher than the world average while water resources in the Gobi region's provinces are several times lower than the world average. Mongolia has usable water resources of 600 thousand cubic kilometres, 80 percent of which is surface water and 20 percent groundwater. Yet, 80 percent of our water consumption comes from groundwater sources and 20 percent from surface water. As for Ulaanbaatar, 99 percent of the city is using groundwater. As a result, it is an important factor in the decline of water resources.

Mongolia has three large lakes in the western, central and eastern parts of the country. The central part has Lake Khuvsgul, the west has Lake Uvs and the east has Lake Buir. We call Lake Khuvsgul a sea. Lake Khuvsgul contains 0.4 percent of the world's fresh water and is connected to Lake Baikal via the Eg River and Selenge River.

Mongolia ranks 56th out of 182 countries by per capita water reserves. Despite the fact that Mongolia has enough water resources, Mongolians lack knowledge regarding the value of water. Increasing pollution and drying of rivers and lakes due to rapid mining production indicate an approaching danger. Over the past 30 years, 569 lakes and three times as many rivers have dried up. In addition, several engineering wells and more than a hundred buildings part of agricultural irrigation systems were destroyed. As a result, there have been cases of fighting over water wells in rural areas. Thirty years ago, the water sector had good human resources, and decisions on industrial and agricultural water supplies were based on scientific conclusions.

People are not ready to understand the value of water, as it is so cheap in Mongolia. In Ulaanbaatar, ger district households pay one tugrik per litre of water while apartment residents pay MNT 30-50 per litre. This has been the rate since the last hike-up in 2014. The price of water in Mongolia is 15-100 times cheaper than other countries, and 50 percent of water used is free of charge. The time to understand the value of water and talk about the water economy has come.

Since our magazine supports green economic policies, we have been raising issues concerning Mongolia's water resources, supply and costs on every World Water Day in cooperation with scientists and researchers. In general, Mongolia has never gone thirsty in the past. Hopefully, the future holds the same. However, there are many issues, including water supplies for mines in the south Gobi, agriculture

with more than 40 million livestock, development and rehabilitation of irrigation fields and water tariffs.

The United Nations theme for this year's World Water Day is "Water and Jobs." Perhaps we can approach the related issues from different angle. Although the topic of water is expanding its scope throughout the world and becoming one of the major determining factors of development, Mongolia's water sector is a relatively quiet one compared to other countries. Why is it so quiet, when it should be buzzing? In exchanging views with several experts on the most pressing issues related to water in Mongolia, all of them gave a similar answer: the water sector needs an established structure. We need to establish a water management ministry. Otherwise, talking about issues related to water is like talking to a wall.

Why does Mongolia need such a ministry? It has been 30 years with no ministry responsible for water sector policies and decisions. Until 1990, there had been a Ministry of Water. Today, water-related issues are a side-note for each ministry depending on what is being discussed.

There is a huge gap of staffing in this sector that consists of more than 30 professions, including hydrotechnology, hydrology, hydrogeology, hydromelioration, water supply and water treatment. This sector had no opportunity to establish stable human resources over the past 30 years. Forget a Ministry of Water, even stable agencies or departments have not been established during this time. Although government water implementation agency was established

► in 2004, it was dissolved in 2012. There used to be a water institute but it also was dissolved long time ago.

Water issues are scattered among the ministries. The Ministry of Construction and Urban Development is responsible for water consumption; the Ministry of Environment, Green Development and Tourism for water resources; the Ministry of Food and Agriculture for agricultural water supply; the Ministry of Health for health problems related to water; and the Ministry of Mining for mining water supplies. Sector experts and even civilians are now worried, as the issue of water has been tossed back and forth for many years. Although specific issues can be dependent on relevant ministries, scientists and experts of the sector believe that the time to have a relevant ministry has come, as water has become one of the most important topics. There are several reasons why this disorderly situation is inefficient. Firstly, it has been almost three decades without substantial research on water resources. It is difficult to understand the research made before the Ministry of Water was abolished, as different organisations are using it in different ways. Secondly, relying on groundwater in this age of global warming is another issue that needs to be addressed.

In fact, only the Ministry of Environment, Green Development and Tourism has a large department responsible for water, while the other ministries have just one or two specialists. As for the Water and Sewerage Authority, it has 1,700 employees. What are the other water experts, scientists and researchers doing? There are not many private companies engaged in the water sector. There is not even some sort of water institute, even though water quality and hygiene is a crucial topic related to human health and life. Mongolia only has authorities responsible for major river basins. Why are we not using the researchers and scientists who graduated domestically or abroad and conducted research with foreign experts during the Soviet era? Scientists in the water sector occasionally gather during water-related conferences and seminars to exchange a few words. Of course they have a desire to work and achieve. They are just waiting for the re-establishment of the Ministry of Water.

Should we let the water sector, which is quickly becoming one of the most important economic sectors in the world, remain irrelevant in Mongolia? ■

## Interview

# S.Unen: Smart technology to be introduced at water dispensing stations



BY I. OTGONJARGAL

*In commemoration of World Water Day this year, our magazine sat down with S.Unen, the head of Water and Sewerage Authority of Mongolia. We talked about Ulaanbaatar's water supply, pipeline maintenance, the proposed Tuul water complex and the central treatment facility. He is a leading member of the Citizens' Council of Ulaanbaatar and was appointed as the Director of Water and Sewerage Authority after the elections of 2012.*

*On 14th of this month, he was evaluated on the implementation of assignments given in 2015 by Ulaanbaatar City Mayor E.Bat-Uul and General Manager of Ulaanbaatar B.Badral, and presented the objectives for 2016. He happily stated: "The city administration evaluated the implementation of the agreement made last year and gave a score of 94 percent fulfilment."*

**-World Water Day is celebrated on March 22 of each year. Then why is it marked from March 22 until June 22 for three months in Mongolia?**

-World Water Day is an event celebrated on one specific day. However, we organised a three-month campaign in order to promote proper usage of water. In doing so, access to and understanding of the people is improved.

**-What works are planned by your organisation during this three-month campaign?**

-To speak about some interesting events, the Water and Sewerage Authority will assign 154 of its employees to 120 schools to conduct lessons about water. I am also going to teach a lesson at a school. We also do an offering ritual and ceremony on the Tuul River each year. Our organisation will pay all the expenses of the Gandantegchilen monastery meeting of the day, feed the monks and finance all the ritual's expenses. The ceremony is held at a place called Black Water Bay, which is the source of Ulaanbaatar's drinking water. The meaning of this ceremony is to soothe the river for it to be clear and pure. In addition, we will organise a water forum in cooperation with the JCI youth organisation. We will hold meeting in cooperation with the Embassy of Japan highlighting the Japanese government's support shown to Ulaanbaatar's water supply. We also have a tradition of organising a drawing contest among students of general education schools.

**-I came across the phrase "smart water supply station" when reviewing information on your organisation. Could ►**

► **you elaborate this?**

-You noticed an important thing. We are going to transfer to a card system and displace water dispensers at ger district wells. It means that smart technology will be introduced at water supply stations. Every family will have their own station cards.

Safety will improve as people will not use cash. The most important thing is that there would be no need to rush before the well closes. Water stations usually work from 10 am to 7 pm. However, people who have work and young families often do not make it in time to get water. Families sometimes pass the day without water. With the transition to a smart system, this will no longer be an issue, because people can get water even at 3 am.

**- That is good news. When can we expect these changes?**

- It has been introduced in the first 20 water stations and tests are on-going. This year, 100 more will make the switch.

**-How are the wells going to be secured during the night if they remain unlocked?**

-They will be monitored; otherwise water safety will be compromised. Thus, there is nothing to worry about. However, there is one downside, which is that a certain number of obsolete jobs will be cut. We see it as one way to save money, though. There is no other option. We have two big expenses. One is wages, and the other is costs of electricity. We will introduce such technological advancements to reduce payroll expenses.

**- You mentioned the ritual ceremony held on the Tuul River, so I would like to ask one question as a resident of Ulaanbaatar. Perhaps it may not be that relevant to the Water and Sewerage Authority, but it should concern you as a member of the Citizens' Council. During the summer, many people head to the Tuul River. People wash their cars and clothes as part of "going outdoors" and pollute the river. Why hasn't the government taken action to protect the river? It seems that removing litter from the river when the snow begins to melt is not enough. Why can't the state institute restrictions, such as prohibiting access to the river for three years or something?**

-We are seeing this issue from a different perspective. Today, the people are not going to the Tuul River just to wash their cars. They figure they might as well wash their cars while they're already there. Then, what is the motivation in going there? Young people especially go there to get close to

nature and relax. Rich people do not go to the Tuul. They say Ulaanbaatar lacks leisure and travel destinations. Hence, people go to the Tuul River when the summer comes. It would not be right to restrict these young people's interest to go outdoors.

**-I doubt there would be much protest, as it is for the good of the river.**

-Young people try to spend the best times of their lives by the river. They need to experience the beauty of nature. It is not wrong to go to the Tuul. The Tuul River attracts people like a magnet on its own. So, we have two options. One is setting the restrictions you mentioned to save the water, and the other is to ensure a comfortable place to relax. The city administration announced a measure on June 13, 2013. It concerns establishing an alcohol-free environment at the Tuul River. Some works are under progress in accordance with this measure. There is a need to create an environment where people can sunbathe and enjoy their free time properly instead of washing their cars. If that environment were created, then people would stop washing their cars and carpets. We are planning to create such an environment and strictly monitor the rest of the places that needs to be monitored. It is not an issue that the Water and Sewerage Authority can answer for. My answer is as a member of the city's Citizens' Council. However, I can say one thing about our organisation's role in this issue. Our organisation spends about MNT 300-400 million annually on this issue, as the Tuul River is our source of drinking water. As for how the money is being spent, we build fences around the sources of drinking water. We clean and conduct monitoring. You can see grey iron fencing along the road to Gachuurt. There is no way to enter the river with a car along the road to Gachuurt. However, it is possible to enter on foot. People are breaking in through the fencing. We place controls on it and take necessary measures.

**-How is the situation of water supply in Ulaanbaatar? There was a study that stated clean water resources will become scarce by 2020. What is being done about this?**

-Ulaanbaatar's water consumption needs have been supplied from a single groundwater resource. Yes, there was such a study. In order to prevent water scarcity, we need to build a dam and reservoir based on the Tuul River. It has been talked about for three decades. Domestic and foreign scientists have conducted enough research

on this matter, and everyone agrees that it is appropriate to build a basin to use surface water. However, a feasibility study has not been conducted to date. According to the study, it is possible to build a basin at six or seven locations on the Tuul River. I believe that the basins must be built at the three most-studied locations. In recent years, the Tuul's water is diminishing due to climate change, which is an indication of risks regarding the water supply of Ulaanbaatar. In 2014, the National Security Council decided that it is the right move to build the proposed Tuul water complex and gave guidance on developing a feasibility study. This has also been reflected in the action plans of the government and the city mayor.

**-I heard that a South Korean company is developing the feasibility study for the Tuul water complex. How were the necessary funds found? How are the works going?**

-The government changed the water fees on July 15, 2014. A certain amount of capital was collected. The city administration decided to use this capital on the development of feasibility study for the Tuul water complex instead of using tax money. The Water and Sewerage Authority is an organisation that operates under a deficit. However, we don't have the right not to resolve this serious issue ahead of us. The MNT three billion required for the feasibility study was allocated in the state budget of 2015, and MNT 3.8 billion in the state budget of 2016.

A tender for the development of the Tuul water complex's feasibility study was announced. Fifteen companies participated in the tender, and three were selected in the finals. A Chinese company's proposal did not make the final cut. Thus, a consortium of the two remaining companies, the Yooshin Engineering Corporation of South Korea and the Prestige Group of Mongolia were selected. Yooshin Engineering has a lot of experience. The Mongolian company is working as a subcontractor. The feasibility study has been finished.

**-How is progress on resolving the issues related to the central treatment facility? There is the need to kill the odour emitted by the current treatment facility and build a new treatment facility. Is it possible to kill the odour coming out of the facility before ASEM?**

-The Water and Sewerage Authority conducted urgent maintenance on the central treatment facility in June of last year. Then, the head of the Water and Sewerage Authority ►

► declared an emergency on October 17. Experiments to kill the odour are in progress, as plans and funding have been decided. The prime minister has been overseeing the situation and urgently allocated the funds. The reason why the current treatment facility is producing the foul smell is because the two sewage pipes under central and industrial districts have too much fat contamination. The government was able to allocate MNT 8.1 billion to resolve this issue. A working group headed by the General Manager of Ulaanbaatar Ts.Badral is working on it. We believe that we can get rid of the smell by ASEM. In addition, the National Security Council recommended expediting the construction of new central wastewater treatment facility. A working group to build the new treatment facility under concessions has been established. A tender was announced after the first meeting of the working group and eleven companies have submitted proposals. A short list has been made, and five companies were selected. We sent the feasibility study to the selected

companies. The companies must make their decisions and submit their proposals by April 27. We will evaluate the proposals and make a contract with the selected company.

**-You said that the feasibility study for the new treatment facility has been developed. Where will it be built and what will its capacity be?**

-It will be built next to the current treatment facility. USD 600-700 million will be required if a treatment facility with the capacity to bear the levels anticipated in 2030 is to be built. Therefore, we need to build a treatment facility appropriate for our current usage. Let's upgrade the old facility when the new one begins operating. A French company developed an excellent feasibility study. The current treatment facility has a water treatment capacity of 200 thousand cubic metres of water per day, and the new one will be able to treat 250 thousand cubic metres per day. It is enough to ensure smooth operations for the next 50-100 years.

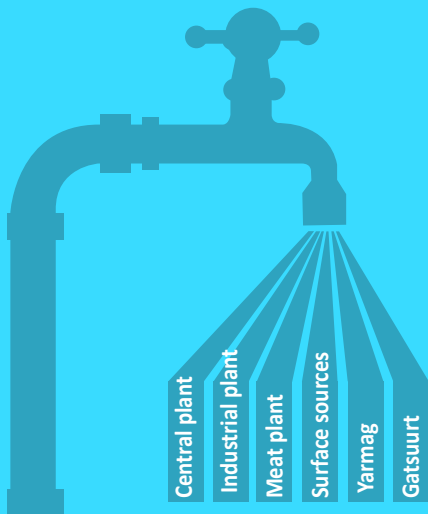
**- Are there any planned upgrades to pipelines?**

-The Water and Sewerage Authority established a new call centre, which receives many complaints. The majority of the complaints are related to the rustiness, colour and smell of tap water. It is a clear indication that the pipes have worn out. Most of the clean water pipelines have been in use since 1959. Although we are pumping good quality clean water from the ground, it is becoming risky on its way to households. Therefore, there is a need to repair the pipelines. We are negotiation a soft loan with the government of Austria in order to improve the city's pipelines. About 10 percent of the piping is said to be in the worst conditions, and it is a priority for us to change those lengths of pipe. We will improve these pipelines by adding internal layers using the above mentioned loan. The most important thing is that we will inherit pipeline padding technology by implementing this project. In doing so, the Water and Sewerage Authority will be able to repair pipelines by on its own instead of taking out loans from abroad. ■

## How does water reach your tap?



# Ulaanbaatar's water resources



**155-160** thousand cubic metres of water extracted per day from 6 sources to provide clean water

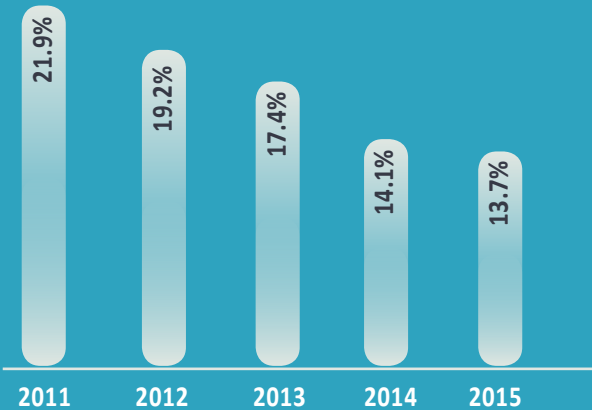
Currently, Ulaanbaatar is using **54%** of its water resources

## Ulaanbaatar extracts drinking water from 6 groundwater sources

Clean water sources are divided into 2 categories: groundwater and surface water. Surface water source includes lakes, ponds, oceans and rivers. Groundwater source includes soil and underground water.

### Water loss during extraction and distribution over the past 5 years

Mongolia's urban areas extensively use groundwater as the main source.

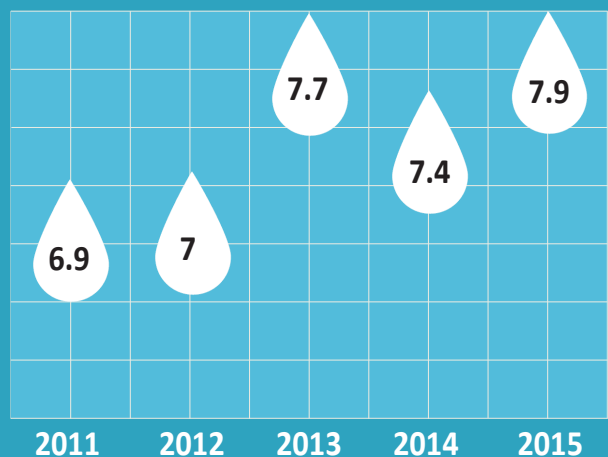
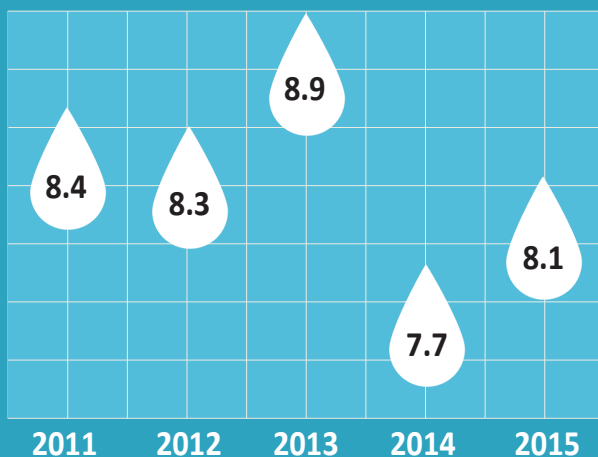


Water source means an underground water reservoir in zone protected to extract drinking water

Underground source facility includes the 1st lifting station, 2nd lifting pump station and reservoir chlorination facilities.

### Per resident consumption of water supplied through central pipelining by those living in apartments per day (litres)

### Per person consumption by those utilising portable water supply per day (litres)



## Water Resources

# Ensuring the city's water resources

BY G. ORKHON

The entire city will begin to feel the pain of thirst in four years, because only one source of groundwater supplies the city's residents. Can this something that can be relied on for our future?

According to estimates of experts at the Ministry of Environment, Green Development and Tourism, the city's water consumption will reach 100 million cubic metres at the minimum by 2020, which means the current usable groundwater resources will barely be enough for consumption. If we take the estimates higher than the minimum, they will obviously exceed the above figure and reach 160 million cubic metres, and current water resources will become insufficient.

It was determined through the newly set usable groundwater resources of the capital city that we are living in a city that may consume up to 270 thousand cubic metres of water per day. However, net household water consumption alone will reach 310 thousand cubic metres per day by 2030. In addition, usage by factories and entities will also increase. Current resources will not be able to satisfy consumption – we have to find a new source of water.

Other cities have good experiences of building basins when they faced such an issue. This means that a combination of underground and surface water will be used. Mongolia has been talking about this for more than 30 years, but where to build the basin is still undecided. In any case, officials are in agreement that the most suitable and economically viable option is to build a basin.

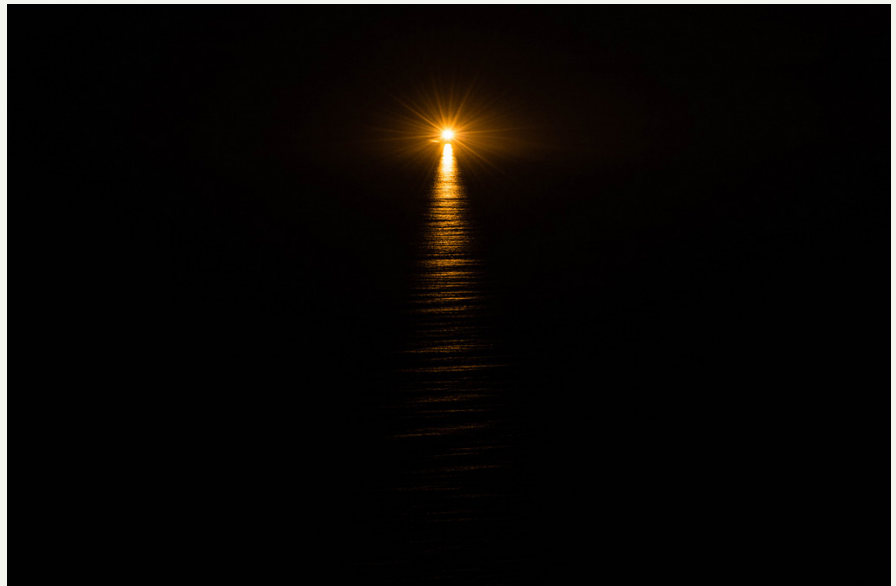
The basin to be built will be called the "Tuul water complex," and the Yooshin Engineering Corporation of South Korea and Prestige Group of Mongolia are collaborating to develop a feasibility study and the basic engineering design of the project. The establishment of the complex will resolve the city's water supply issue, stabilise the ecology of the Tuul River and

prevent the degradation of the river flow. It would have additional benefits such as producing energy, developing tourism and promoting water sports. Furthermore, Head of the Water and Sewerage Authority S.Unen noted that the establishment of the complex will ensure the water supply of the city for the next 50 to 100 years.

Relevant organisations made an agreement with the Yooshin Engineering

for many years. At last, the Water and Sewerage Authority found the means to provide the necessary funds needed to develop a feasibility study. The total cost of the feasibility study is said to be MNT 6.5 billion, for now. The first discussions on the project were held on 25th of February. However, the feasibility study developed by Yooshin received quite a bit of criticism from experts in the sector.

A senior expert at the Ministry of Environment, Green Development and Tourism, Ch.Puntsagsuren, stated: "During the development of the feasibility study, only four places were drilled. It is impossible to know everything by just drilling the same place twice. According to international standards, precise estimates are made by drilling every 20 metres." However, the task called for only two to



Corporation in September of last year, and the company began working soon afterwards. South Korea has more than 30 thousand basins, many purposed for water supply and agriculture. Yooshin has experience being involved in many of these basins' feasibility studies, blueprints and construction work.

The company developed the feasibility study by analysing and compiling past research on the establishment of a water complex in Ulaanbaatar. Enough hydrological research and analyses related to the construction of a basin based on the Tuul River have been conducted in the past. Domestic capital was not enough to develop a feasibility study, and the notion had remained nothing more than just talk

three holes to be drilled at each possible location. Although we attempted to get the position of Yooshin Engineering on this issue, its personnel had returned to South Korea in order to extend their visa. According to technical and renovation project officer of the Water and Sewerage Authority S.Khishigjargal, who was involved in the development of the tasks for the "Tuul water complex" project, two holes were drilled in 2012 at one of the above mentioned three locations. Therefore, two holes were drilled at each of the remaining sites.

Some experts and officials of the ministry criticised the feasibility study for not being developed in accordance with the given tasks. However, S.Khishigjargal ▶

► explained: “The company developed a presentation in a rather different way, which caused a misunderstanding. Now they are preparing to present the completed works in accordance with the assigned tasks. It would be biased to say that they have not reviewed the assigned tasks, as companies become familiar with the tasks in order to participate in the selection process and develop a feasibility study accordingly.”

At the end of the discussions, the deadline for the final version of the feasibility study was extended at the request of the project proponent. In doing so, they were ordered to complete the feasibility study according to the assigned tasks and reflect the advice of experts. The next set of works is set to begin should the feasibility study be approved early next month. In other words, more detailed analyses and calculations are to be introduced.

A total of five locations have been selected in accordance with research conducted by Russian scientists that began in the 1980s. Three locations below bights of the Tuul and Terej, and two more at the Terej River were selected. According to the selection of Yooshin, the most suitable location to build a basin is around Gachuurt. It is believed that this place has the water capacity to supply the city until 2040. According to the feasibility study, a total of USD 400 million is needed to build a water complex at this location. It was proposed that RCC (roller-compacted concrete), widely used internationally, be used for the construction of the basin, but the project proponent believes that a material made of mixed cement and stone is more suitable for the conditions of Mongolia.

As it is an issue of a new water source, the project feasibility study needs to be discussed by the Water Resources Council. Therefore, the Water and Sewerage Authority called on the relevant ministry for discussions. The Tuul water complex is not only about building a basin. It will also contain several other facilities, such as a treatment facility with capacity of 250 thousand cubic meters, a hydroelectric power station and water supply station.

The location, undecided for 30 years, and amount of necessary capital will be determined by the feasibility study. In doing so, Mongolia will have the “Tuul water complex” project to show to future investors. The current water supplier of Ulaanbaatar is nature, but in the future, it will be a combination of nature and technology. ■

## Central Wastewater Treatment Facility

# ASEM is not going to wait on us



BY TS.BADRAL

**T**he city administration has been tasked with resolving the issues concerning the central wastewater treatment facility before July. Actually, ASEM is the one that really gave the order.

It has been half a century since the central water treatment facility was put into operation in 1964. It has not seen updates or expansions since 1986. The reason why it is being paid attention this year is due the odours being emitted. You can even catch a whiff at Sukhbaatar Square, meaning there is more than just one type of pollution in the air. Were ASEM not taking place in Mongolia this year, who knows how many more years

the smell would have endured.

The city administration is planning to handle this task before June 15, with the aim of reducing the odour irritating the public by 70-80 percent. Existing resources and funds are not enough to kill the odour completely. The central treatment facility needs to be renovated to completely resolve the issue, which will require around USD 20 million.

The government had decided to build a new wastewater treatment facility in 2013, and it was planned to be completed in 2020. Deputy Governor responsible for Ecology and Green Development T.Bat-Erdene said: “It is necessary that ►

► the new facility be built as quickly as possible. At the same time, the old one will be improved.”

The cause of the issue is that 15 hectares of land covered by mud and rainfall is drying naturally. However, this natural drying process will continue for a long time. They say at least three years are needed. On top of this, 500-600 cubic metres of sludge is coming out daily, so the odour is intensifying instead of declining. There are technologies that accelerate the process and extract the moisture in a shorter period of time, which can even be obtained domestically.

Obviously, the foreign technology will be used as the tech offered by domestic industries comprises just cleansing agents that suppress the odour, but does not get to the root of the problem. Today, the treatment facility's obsolete units of equipment are not able to completely treat the water, pouring the untreated wastewater into the Tuul River. Thus, a technical solution is necessary. The latest technology commonly used internationally separates the water from the sludge rapidly, as odours are stronger when the moisture level in the emitting substance is high.

Before importing equipment from abroad, the power supply must be improved and maintenance work needs to be done. Time is tight because new machinery will be manufactured for the plant. It is hard to find ready-to-use technology, since the size and design of such instruments need to be appropriate for the condition of a plant. Each piece of equipment and gear needs to be newly manufactured, and everything will be produced abroad. Approximately 40-45 days are spent in order to manufacture the necessary tools according to the order. After that, the equipment will be assembled at the plant and tested to ensure whether it is working normally. In such circumstances, two or three months are not enough. Therefore, we are in a race against time. Addressing this issue related to the reputation of the country is a tough responsibility. Quality should not be neglected even though we are in a hurry, but we also cannot lose time by being overly cautious.

Works such as deodorising the liquid sludge, improving the water treatment process, acquiring the new equipment and repairing facilities all still need to be done. MNT 8.1 billion was allocated from

the budget for this, but time is running out.

Currently, the works still have not been started. The maintenance works to repair the facility's walls and ceilings will begin later this month. However, the contractor still has not been selected yet, as the government is being very cautious about selecting the contractor. It would be a waste of time and money if the government chose whoever offers the lowest price or says that they can do the job the quickest. “Everyone is showing the available technologies they can provide,” stated T.Bat-Erdene. “It is important that we study whether these technologies

would be appropriate for the accumulated sludge. Otherwise, the consequences may be even more damaging.” Some companies are saying firmly that they cannot resolve the issue, because the sludge emitted from this plant contains higher levels of fats compared to the plants of other foreign cities. Currently, technologies of more than ten companies have been tested. Officials did not hide the fact that they have fears of choosing the wrong company and the project becoming a failure like Thermal Power Plant II. The clock is ticking, and ASEM is not going to wait on us. ■

## Agriculture

# Thirsty lands

BY B.UURIINTUYA

**L**ast year was the hottest year recorded in history. According to recent studies, the summer of 2016 is also expected to be as hot as the previous summer, said B.Odonkhoo, a senior expert at the Regulatory Department of Policy Implementation at the Ministry of Food and Agriculture. This means Mongolians should not rely too heavily on Mother Nature to pamper their crops. The harvests from Darkhan and Selenge, Mongolia's

main agricultural regions, looked dried and creased due to the dry summer of last year, which resulted in a decline in crops by about 20 million tonnes. The official numbers state that the country harvested about 262.6 thousand tonnes of crops, 203.9 of which were wheat.

Although Mongolia is considered to have a mining-based economy, it ran an agriculture-based economy in the past. Up until the '90s, the country strived ►



▶ to develop agriculture through state policies, resulting in the construction of 482 irrigation systems with a capacity to water a total of 91.6 thousand hectares of land. However, a census conducted in 2003 revealed there remained only 121 irrigation systems that can water up to 29.1 thousand hectares. The rest were broken or unusable. By 2015, the numbers had gone up slightly, reaching 350 irrigation systems that can supply water to 54.1 thousand hectares. Unfortunately, this capacity cannot be fully utilised due to agro-technical specificity of the soil. Since irrigation systems are on open fields, they are easily depleted. In addition, if fertilisers are not used, soil may lose its richness. This carries the risk of reduced harvests. However, these risks are not the main problem facing Mongolia's agriculture sector at the moment.

All of Mongolia's domestically grown fruits come from irrigated fields, while about half of potatoes and 90 per cent of vegetables are grown on watered fields. As of 2014, 21.5 hundredweight of wheat was planted in irrigated fields. According to B.Altangerel, a specialist at the Regulatory Department of Policy Implementation at the Ministry of Food and Agriculture, a lack of water supply for such fields would be catastrophic for the sector. Mongolia does not top the list of countries by water reserves. Although northern Mongolia has more water reservoirs than other regions, issues related to supply depend on the locations of agricultural lands. In some cases, irrigation systems are built relying on natural reserves such as rivers or underground water wells. "Certain steps are being taken to increase water reserves by using ponds that accumulate precipitation," stated B.Altangerel. An artificial lake that holds one million cubic metres of water in Bornuur soum in Tuv province is an example of such a pond. It can supply water to about a thousand hectares. Still, more needs to be done to boost crop yields. However, financing has always been a major hurdle, noted B.Altangerel.

### Consistent and sustainable harvests

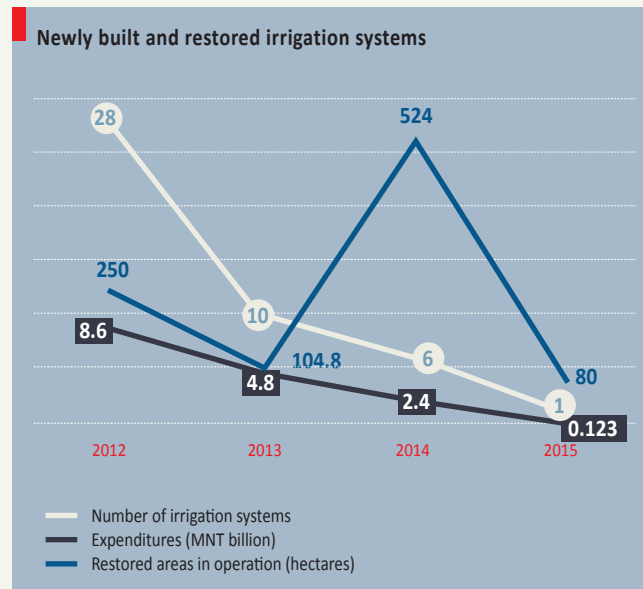
Mongolia has about one million

hectares of agricultural land, of which 800 thousand hectares are actively used. About 400 of this 800 thousand can be fitted with irrigation systems. Building such systems requires quite an investment. The state budget allotted MNT 33.2 billion, while private enterprises gave MNT 18.8 billion and foreign aid programmes invested MNT 343.7 million for restoration

thousand tonnes of wheat in 1988. Last year's numbers showed that Mongolia lost up to 20 thousand tonnes of its total crop reserves due to heat and drought. Hence, 2016 will bring challenges when farmers begin planting crops in spring. If irrigation systems were sufficient enough to water these fields, such shortcomings would never have happened, explain sector associates. In addition to this problem, private enterprises have it hard when it comes to financial stability and securing their harvest. The administration and parliament authorised the Development Bank of Mongolia to settle on investment resources of MNT 100 billion in the scope of "Short term programme for sustainable agriculture." The ministry has already made estimations on this year's required investment and delivered its conclusions to the Development Bank of Mongolia, said B.Odonkhoo. He added: "The Development Bank must decide where the financing should come from. Then it should decide the loan interest rate. If this is done as soon as possible,

spring planting of crops should not be a major issue. If not, serious problems lay ahead." When asked to comment on the issue, a Development Bank representative stated: "There will be an announcement when any kind of decision is made."

Former Minister of Agriculture Sh.Gungaadorj stated money was just an excuse for the lack of action. He said that in addition to rain and snow, Mongolia has a reasonable amount of water reserves. He criticised that sector officials make bad choices instead of investing in what is crucial. "There are many irrigated fields that were used before the 1990s," he said. "These could be restored and renovated. A huge amount of money is not the primary problem." He also noted that artificial ponds can be built where the most flooding occurs in the spring. As Sh.Gungaadorj said, provincial authorities could initiate such ideas – it is like moving a big stone by leveraging a smaller one. ■



and renovations on over 350 irrigation systems nationwide. This resulted in a seven-fold increase in irrigated fields. However, in 2012 when the current State Budget Law was approved, it stated government-funded investments shall not finance private enterprises or individual farmers. This regulation caused further development of irrigation systems to be put on hold. Private enterprises and individual farmers must put their money into establishments that are based on carefully conducted studies and research. However, they cannot do all the necessary research on their own. According to B.Altangerel, it is important to train hydro-technical engineers and agricultural technicians. Although there are quite a few graduates in the field, it is still not enough to make significant changes to the current state of agricultural development.

### Money, money, money

Agriculture is one of the pillars of Mongolia's national security. According to the FAO's Agricultural Statistics 2014, Mongolia exported about 31.1



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# The coming thirst

BY B. ENKHTSETSEG

**T**oday, 1.5 billion people, work in water-related sectors. In a general sense, nearly every job depends on the people responsible for safe delivery of water. In order to supply the more than seven billion people on earth with water, more people will be needed to work in the water sector.

Last year, the UN chose "Water and Sustainable Development" as the theme for the World Water Day while this year's theme is "Water and Jobs." In other words, the underlying idea of this theme is to show how enough quantity and quality of water can change workers' lives – and even transform societies and economies.

Actually, water sources are at the losing end due to issues such as global warming, high population growth and negative impacts of urbanisation, all of which are causing the world to unite. Thus, international experts have noted that works in fields of environment, especially the water sector, are likely to intensify. Three types of sectors – government, consulting service companies and water facilities – are expected to gain a thirst for water quality specialists. Following this trend, the market is beginning to demand more professional personnel. Take water quality testers as an example: 75 percent of employers require a bachelor's degree for this job, yet only 25 percent of the workers have a bachelor's degree today.

There is a figure indicating that 10,000 people work in Mongolia's water sector. Of those people, around 5,000 are working in professional organisations possessing licences. Since 1960, Mongolia trained water-related staff and provided the graduates with jobs to balance the supply and demand via state planning. But today, the above mentioned allocation of personnel and jobs has been lost and is going by the principles of a market economy. As for the disciplines taught at universities, private and public universities are enrolling students in 20 types of water-related majors. Approximately 70 students



**One billion** people work in agriculture, fishing and forestry. Sufficient quantity and quality of water is central to their survival.



**Feeding more** than 7 billion people is not an easy task. With climate change, water-wise farmers are more important than ever.



graduate with a professional degree per year if extrapolated from data from larger schools. Most of them find work in the private sector. A number of them switch to other sectors. These trained personnel have an opportunity to work in various fields, including geological exploration, geophysical research companies, water supply companies, drilling companies, scientific institutes, design institutes, environmental and engineering consulting companies, government, mining, energy, chemical, metallurgy, medicine, the waste processing industry, universities and international projects and programmes.

In the water sector, it is common for women to work at blueprint and design companies, while men mostly work in plumbing. Last spring, O.Byambadelger, university graduate, was able to find a job sooner than expected. She chose

the profession anticipating high market demand for expertise. She says it was not too difficult to find a job. However, E.Purevdulam, who graduated with O.Byambadelger, still could not find a job, as private companies prefer people with many years of experience over training a new graduate student. She said if she cannot find a job soon, she would have to look for work in other sectors. Some give the explanation that the low demand for workers in this sector is due to a slower economy, as some private firm get by doing projects and programmes. This forces them to take measures, such as resting workers during winter and not hiring new employees.

The majority of the graduates with a degree related to the water sector find a job in 9-10 types of professional areas. Sector experts say that the possibility of finding a job is reasonably high compared ▶



## Every hour

38 workers die from water-related diseases. These deaths can be prevented with better water and sanitation.



## With the 2030 Agenda

the needs in the water sector are greater than ever before. We need more and better talent to help shape our future.



## Walking everyday

to get water is often a job that is not paid and not recognised. Decent jobs are part of women's empowerment.



► to other sectors, as this profession is not too common. Environmental engineer and professor S.Chuluunkhuyag stated: "The possibility of finding a job for graduates of water professions is not so limited that graduates are working at a sales counter. There are jobs available." He did, however, say that it is true that it is a bit difficult to find an employer-employee match.

Water-related professions are among the most useful professions in Mongolia. Compared to other sectors, average salary is relevantly high. The salary of young and inexperienced people who are just starting out in this profession is ranged between MNT 600-700 thousand. Even after retirement, people can work as consultants. "According to our estimates, 1500-2000 professional staff will be needed to implement major water-related projects," stated G.Munkh-Erdem, Head of the Policy for

Land and Water Management Department at the Ministry of Environment, Green Development and Tourism. According to him, the costs will be too high to hire the above mentioned professionals from overseas. Therefore, it will be necessary to find skilled workers domestically. For Mongolia, getting young people to study abroad in developed countries is perhaps the shortest way to obtain the necessary know-how.

Today, various programmes and scholarships in areas of environmental studies are being announced throughout the world to encourage the new generation to study this field. This is also true for Mongolia. Many governments try to support and provide more opportunity to people who are willing to study in this field. Naturally, the criteria are high. According to professor S.Chuluunkhuyag,

professors and school administrations are very interested in getting students to study abroad, but it is common for students to get rejected due to insufficient language proficiency. There are enough scholarship opportunities. He stressed that the most important thing that the young people try to put forth more effort.

It may seem like this is an issue only about the water sector, but it is actually about the drinking water of the three million people of Mongolia and seven billion people of the world. Although not everyone is directly engaged in water-related activities, we are all indirectly involved and affected. The United Nations holds that more professional staff are required in the environmental sector globally in order to ensure sustainable development. How can we ignore this trend? After all, water is the primary need for all life. ■

## Water is work



**By Yasmina, France** “I heard that thousands of children die everyday just because they don’t have access to water and sanitation. In my job as a nanny, enough quantity and quality of water is really important to take good care of the baby. It’s hard to imagine having to think about how I spend every drop.”



**By Kajsa, Norway**

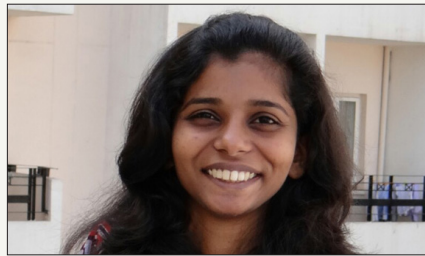
“As owner of a Restaurant, sufficient and good water is key in my everyday life and work. As for many of us, we can just go into our kitchens or bathrooms to get clean water from a tap. It’s crazy that girls are walking for 6 hours every day to get water for their basic needs. Could you imagine having to do that?”



**By Guy Ryder**

*“Water is vital to our working lives. At International Labour Organization (ILO) we use water from Lake Geneva to run our air conditioning. Water is Work,”* says Guy Ryder ILO Director-General and Chair of UN-Water.

In his message for World Water Day, Guy Ryder highlights the situation of the some 1.5 billion people who work in water, many of whom are not recognised for the work they do, nor protected by basic labour rights.



**By Shilpa Dahake**

“Every passing day is increasing the preciousness of water. The rivers are an important source of water, but the human actions are severely affecting the ecology, hydrology, and continuum of the rivers. My research tries to bring together the socio-cultural dimensions, urbanisation, and the river ecology. Thus hoping to create awareness and empower people to solve the problems of the rivers.”



**By Julien Monney**

“My name is Julien Monney; I am a fisherman. This is my job and how I make a living. Without water there is no fish, which is why it is important to look after water and the wetlands. I use fishing gear that allows me to catch only what I need. I believe this demonstrates respect for the lake and the fish. I am pleased my government regulates how and when we can fish In Switzerland as this shows they care about the future.”



**By Lisa and Emma, Make It Last**

“We work in fashion which needs a lot of water – from growing fibre crops to dyeing fabrics and washing clothes. For us making more sustainable choices should be obvious because we all like fish in the sea and crops on the soil and people working in fair conditions.”



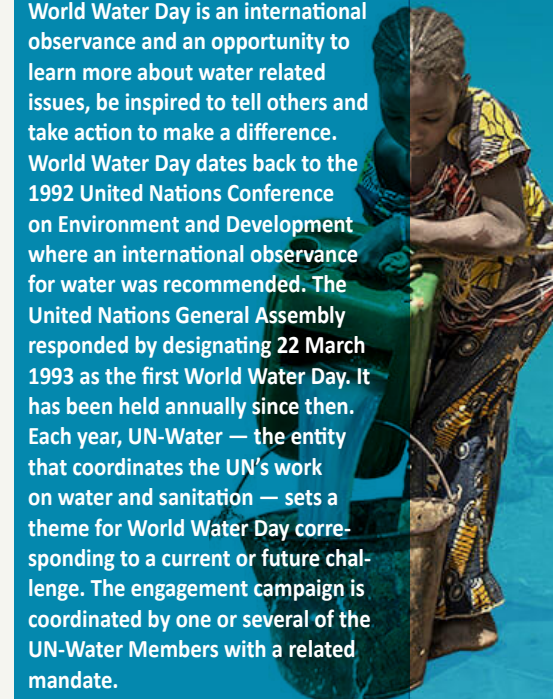
**By Brighton in Malawi**

“Water gave me a job for life. I have started my own business so I can now provide others with safe water.”

## Why a World Water Day?

World Water Day is an international observance and an opportunity to learn more about water related issues, be inspired to tell others and take action to make a difference.

World Water Day dates back to the 1992 United Nations Conference on Environment and Development where an international observance for water was recommended. The United Nations General Assembly responded by designating 22 March 1993 as the first World Water Day. It has been held annually since then. Each year, UN-Water — the entity that coordinates the UN’s work on water and sanitation — sets a theme for World Water Day corresponding to a current or future challenge. The engagement campaign is coordinated by one or several of the UN-Water Members with a related mandate.



**By Ranajit Kumar Mondal**

“I am engaged with water works through which I earn money for my family. The Southwest region of Bangladesh is dying for drinking water, so I am very happy to work with vulnerable people to support in the drinking water crisis.”



**By Jose Antonio Ruiz**

“We purify sewage water in Spain. It’s very positive to be able to produce quality water, contributing to the global water cycle.”



**By Neeraj Kapoor**

“I am an IT Professional, but designing solutions for saving water brings more joy. It’s my work and social duty.”



**By Professor Arjen Hoekstra**

“With my research team we aim to understand how the world can move towards more sustainable, efficient and equitable water use. Recently we estimated what are maximum sustainable water footprints in river basins across the world, so that governments can avoid overallocation of water. We also develop benchmarks for the water footprint of products, so that companies know how they can reduce their water use to a reasonable level.”



**By Ágnes Beregszaszi, Budapest**

“I live in Budapest, the city of spas. Working as an Aquakontakt Water Relaxation therapist connects me with the thermal waters here. I treasure them, and am constantly amazed by their healing power. I sincerely hope that the unique character of Budapest with its thermal waters will be well cared for by our governments, and can nurture people for many-many years to come.”



**By Moa, Sweden**

“I have an office-based job working with youth and equality issues. I love coffee and drink it to keep my mind clear, but I am aware that you need 140 liters of water for only one cup! Thank you water for making me happy and focused in my daily job.”



**By Suzanne Chidiebe**

“Before the new pump came to the village last year, we would walk for almost 2 miles to collect water each day. The children would have to get up really early, and would often be late for school because of the long walk. They’re now more punctual at school – I think their teachers are happy,” laughs Suzanne Chidiebe.



**By Eric Scherch, San Diego**

“World changer. I love it. It’s the perfect way to explain the life-changing work I’ve experienced through Engineers Without Borders USA (EWB) these last eight years. I’ve seen EWB’s work change people’s quality of life by improving their water supplies. It also changes the lives of people who volunteer for EWB.”



**By Sunanka, Nigeria**

“I know I could charge more for the products if I wanted, but I don’t. It’s important that everyone can afford the water kettles (for handwashing) I’m selling. We’re trying to make the community a cleaner and healthier place.”