

---

## Business Trip to Mongolia

---

International Affairs Department

### 1. Members on the trip

JS, four from Shizuoka Prefecture, one from Fusou Co., Ltd., and one from Hasuike Sekkei Co., Ltd.

### 2. Purpose of the trip

Assist Shizuoka Prefecture with its JICA Grassroots Technical Cooperation Project, "Improving Untreated Wastewater through Public-Private Partnerships in Dornogovi Province, Mongolia," including support work for online and domestic training.

### 3. Period of the trip

From June 11 to June 25, 2023 (15 days)

### 4. Visiting organizations (or districts)

- 1) JICA Mongolia in Ulaanbaatar City
- 2) Ministry of Construction and Urban Planning of Mongolia in Ulaanbaatar City
- 3) Water Supply and Sewerage Authority of Ulaanbaatar City (Ulaanbaatar Central Treatment Plant) in Ulaanbaatar City
- 4) GEM International (distilled liquor manufacturer) in Ulaanbaatar City
- 5) Dornogovi Branch of the Ministry of Construction and Urban Planning in Sainshand County, Dornogovi Province
- 6) Dornogovi Province Office in Sainshand County, Dornogovi Province
- 7) Zhundabay County Government (and public hall) in Zhundabay County, Dornogovi Province
- 8) Chandalmanirchi Heating, Water Supply and Sewerage Public Corporation in Sainshand County, Dornogovi Province
- 9) Sainshand Wastewater Treatment Plant (maintenance management guidance and design confirmation) in Sainshand County, Dornogovi Province
- 10) Ger District (settlement area to settle nomadic people) in Sainshand County, Dornogovi Province

## **5. Other organizations interviewed**

- 1) HYDRO (design company for water and wastewater facilities), a Chinese company in Ulaanbaatar City
- 2) IKH DELTA (control system construction company), a Mongolian company in Ulaanbaatar City

## **6. Overview of the Dornogovi Province**

### **<Dornogovi Province>**

- Area: 109,500 km<sup>2</sup> \*Average altitude: 784m, Roughly equivalent to the total areas of the six prefectures of Tohoku, the six prefectures of Kanto, Niigata Prefecture, and Toyama Prefecture
- Capital: Sainshand County
- Population: 68,190 (as of 2017)

### **<Sainshand County>**

- Area: 2,300 km<sup>2</sup> \*Average altitude: 961m, 1.05 times the size of Tokyo
- Population: approx. 30,000 (according to the prefectural government)

## **7. Activities (Activities other than courtesy visits and administrative coordination will be reported by the organizations visited)**

### **1) Water Supply and Sewerage Authority of Ulaanbaatar City (Ulaanbaatar Central Treatment Plant)**

- The only wastewater treatment plant in Ulaanbaatar, with a capacity of 170,000 m<sup>3</sup>/day, began operations in 1997 and is responsible for treating wastewater for 45% of the city's population of 1.6 million. The facilities are in significant disrepair, and concrete structures are clearly at risk of deterioration and damage in many places.
- Inflow: high concentrations of BOD 1,300, COD-CR 1,800, and SS 690 (all in mg/l)
- Treated wastewater: BOD 84, COD-CR 350, and SS 150 (as above), with significant turbidity and a strong odor
- The HRT is overloaded in the primary sedimentation tank, the final sedimentation tank (1 hour each), and the reaction tank (3 hours). A new wastewater treatment plant financially supported by the ADB, with a capacity of 250,000 m<sup>3</sup>/day, is under construction in an adjacent area (the current treatment plant is closed, not expanded).

### **2) GEM International (distilled liquor manufacturer) and IKH DELTA**

- GEM International has a factory in Ulaanbaatar that produces distilled liquor from a fermented liquid primarily made from wheat, and IKH DELTA is involved in GEM's wastewater treatment system.
- The central wastewater from the factory is the remaining liquid from the distillation furnace, which contains grain residue and emulsifiers. The remaining liquid from the distillation furnace is passed through a screw press-type dehydrator with no chemical addition, and the separated liquid is discharged into the sewerage system (SS: several thousand mg/L, BOD: unknown). The dehydrated sludge is converted into livestock feed.
- In Ulaanbaatar, due to the strengthening of the "discharged water quality regulations" (new regulation values are unknown), (2025?), businesses that have not achieved the regulations will be ordered to stop operations. Therefore, many companies have clear intentions to improve water quality, and the business opportunities for wastewater treatment are significant.

**3) Shinshanda Treatment Plant (maintenance and management guidance):**  
**Commencement of service: June 2022**

- The concentration of inflowing pollutants is significantly higher than in Japan. Inflowing water quality COD: approx. 100-150 mg/L NH4-N: 100-150 mg/L (Pack Test® value)
- Although patrol inspections of the facilities are carried out, there is no specification of the inspection items or analysis of the records, and the response to the inspection's objective of "early detection of abnormalities" is unclear.

**4) Investigation of the drainage situation in the Ger district**

The ger district, located around the old town area, is a residential area designed to encourage nomadic people to settle down. There are 4,000 ger district residents in Sainshand County, which accounts for 1/4 to 1/5 of the county's population.

The Ger district does not have a water pipe supply, so water is purchased from a vending water station using containers. The toilet is a simple pit toilet (3x3x3m) on the premises, and when the toilet is full, another pit is dug.

- The monthly water bill is just under 20,000 Tg (about 800 yen), and the electricity bill is about the same. The prices have been stable since 2016, so they are not dissatisfied with the cost of water and electricity. However, they find using the toilet in winter challenging, so they would be pleased to have it in their house.

- The price of the septic tank (800,000 yen, excluding transport costs to Mongolia) is lower than that of a second-hand car sold locally (1,000,000-1,500,000 yen: Prius), so it is a price that an ordinary person can afford.

#### **5) HYDRO (interview survey)**

- HYDRO is a Chinese company with an office in Ulaanbaatar that specializes in water and wastewater facilities and designed the Sainshand WWTP. It is reported that approximately 100 companies in Mongolia are certified to design wastewater treatment facilities, but only 20 of these are actively engaged in the field.
- When designing the Sainshand WWTP, it was confirmed that it was based on the standards of the Mongolian Ministry of Construction and Urban Development.
- According to national standards, the inflow load is determined based on the water consumption unit (150L/person), and the inflow water quality is not specified. The calculation of the pollution load is based on the inflow water quality measured in past F/S surveys and by design companies. Still, there is a large discrepancy between this water quality value and the actual situation.
- The design HRT of the Sainshand WWTP is 1.5 hours for the sedimentation tank and 4 hours for the reaction tank. The Ulaanbaatar WWTP also has no significant difference in HRT.

#### **8. Extra (Miscellaneous thoughts)**

Mongolia is a land of lush greenery (except in the south) and the long-awaited summer.

The southern part of Mongolia is part of the Gobi Desert, and the scenery changes dramatically after traveling approximately 100 kilometers south of Ulaanbaatar. The area where I traveled, Dornogovi Province's Sainshand, is located in this desert region, and even in June, the dry, brown earth stretches out as far as the eye can see (I even experienced a sandstorm that reduced visibility to zero meters).

On the other hand, in the area around Ulaanbaatar, you can see vivid green grasslands, natural forests, and rivers, which make you feel the richness of the land.

In the northern and western regions, mountains with rich undulations exist closer to the Russian border. The magnificent scenery created by the changes in the terrain, the flowers, and the fresh greenery seems to be the Mongolia that many people imagine.

The Japanese person who spoke to me on the flight back to Japan was a tourist who had come for trekking and photography. He told me in detail about the beauty of the natural environment and the refreshing climate. (This was a very different experience from my image of Mongolia: dry, dusty, intense UV rays, and freezing winters.)

At the airport in Ulaanbaatar, I also saw many Westerners. The middle-aged men who spoke to me were tourists who had come for horse riding and trekking. (This is also a big difference from my image of Mongolia.)

On the other hand, the period from mid-June to early August is the season that Mongolian people have been waiting for. It is lit from around 4 a.m. until after 9 p.m., so they make the most of their time spent outdoors (this is the same even in desert regions).

It is prime time, around 7 p.m., when the sunlight starts to fade. You can see young people enjoying volleyball and small children playing with their bicycles until around 11 p.m. daily. They also go out with their friends to "camp houses" in the suburbs, where they enjoy singing and dancing while enjoying the food they have cooked themselves.

Some people refer to Mongolia, which has a harsh natural environment with icy weather for most of the year and dry conditions in many areas, as "the Latin America of Asia." When the warmth and sunlight arrived, I could see the explosive joy that seemed to release everything, and I understood what that meant.