

Speaker of Mongolia



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CURRENT STATUS AND FUTURE PLAN OF MUNICIPAL WASTEWATER MANAGEMENT IN MONGOLIA

CONSTRUCTION DEVELOPMENT CENTER

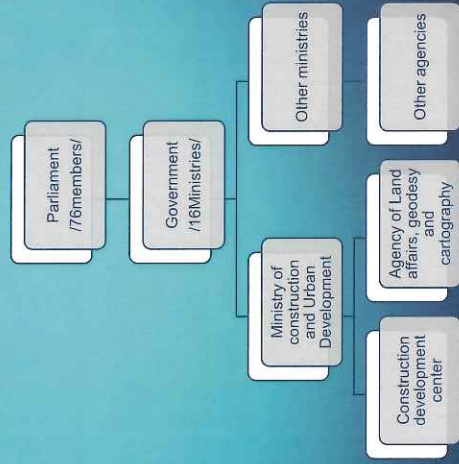
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1. INTRODUCTION

LOCATION: Northern Asia, between China and Russia
AVERAGE ALTITUDE: 1,580 m above sea-level
TERRITORY: 1.566 million square kilometers
LAND BOUNDARIES: 8,158 km. with Russia 3,485 km and with China 4,673 km
POPULATION: 2.93 million; Density: 1 square km per 1.9 persons
LANGUAGES: Mongolian
STATE STRUCTURE: Mongolia is a unitary state and divided administratively into 21 province and a Capital city –Ulaanbaatar

INSTITUTIONAL FRAMEWORK OF CONSTRUCTION SECTOR



RESPONSIBILITY OF THE GOVERNMENT

- The Government shall exercise the following responsibilities on water relation issues:
 - ❖ To organize and ensure implementation of the state policy on water;
 - ❖ To adopt state water management plan;
 - ❖ Coordinate and regulate operation of state administrative central organization and state administrative organizations in charge of water and urban settlement's water supply and sewage;
 - ❖ Other responsibilities provided by law;

RESPONSIBILITIES OF THE MINISTRY OF ENVIRONMENT AND GREEN DEVELOPMENT OF MONGOLIA

- The State Administrative Central Organization in charge of nature and environment shall exercise the following responsibilities on water relation issues:
 - ❖ To carry out water resource management policy and regulation for ensuring natural and ecological balance;
 - ❖ To approve and implement with respective state administrative central organization rules, procedures, methods, and guidelines on water use, protection habitat restoration, and possession and exploitation of water points and water facilities in conformity with legislation;
 - ❖ Other responsibilities provided by law;

RESPONSIBILITIES OF THE MINISTRY OF CONSTRUCTION AND URBAN DEVELOPMENT MONGOLIAN

- Responsibilities of State administrative central organization in charge of urban settlement's water supply and sewage:
 - ❖ Adopt norms, rules, and general regulations of urban settlement's water supply and sewage and monitor the standards;
 - ❖ Develop state policy on urban settlement's water supply and sewage consistent with water consumption tendency, water reserves, and potential reserve for utilization, and other related legislations;
 - ❖ Adopt and ensure the implementation of norm, rules, and regulation regarding to re-using industry's technological consumption water;
 - ❖ Adopt and ensure the implementation of norms, rules, and regulation on hot and cold water consumption and sewage of organization providing tourist service;
 - ❖ Other responsibilities provided by law;

CONSTRUCTION DEVELOPMENT CENTER

- According to the 47th execute order of government of Mongolia in 2012, "Construction Development Center" (State owned Enterprise) was established, having responsibility to provide implementation and policy of Ministry of Construction and Urban Development, as all the construction and housing public utilization units that were executing construction tendencies of Training, Research, Investment, Construction and Procurement Unit and Department of Land Affairs, Construction, Geodesy, and Cartography were integrated together.

CONSTRUCTION DEVELOPMENT CENTER

- Division of construction and building material
- Division of housing and public utilities
- Division of construction procurement
- Division of training
- Division of norms and normative
- Division of project designing and inspection
- Division of research and information

DIVISION OF HOUSING AND PUBLIC UTILITIES

- To support organizing presentation about government programs, laws regarding housing and public utilities and implementation of state policy;
- To organize implementing and processing of standard, monitoring norms, and technical usage of housing and public utilities;
- To provide suggestions, advices, coordination, and planning guidance regarding problem of housing and public utilities;
- To organize implementation of conducting new technology, advertise and prepare database of housing and public utilities;
- To enlarge and develop cooperation, foreign affairs and improve ability of human resource;

2. CURRENT STATUS

The legislation on wastewater shall consist of the Constitution of Mongolia, Law on Environmental Protection, Law on water supply of cities and urban settlement and utilization of sterilization facility, and other legislative acts issued in conformity with them.

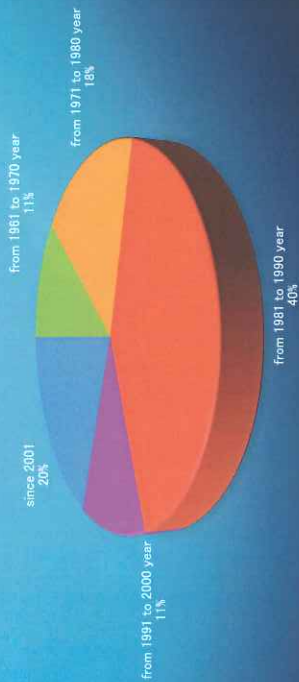
Laws of wastewater:

- LAW ON WATER;
- LAW ON UTILIZATION OF URBAN SETTLEMENT'S WATER SUPPLY AND SEWAGE;
- LAW ON ENVIRONMENTAL PROTECTION;
- LAW ON ENVIRONMENTAL IMPACT ASSESSMENTS; etc

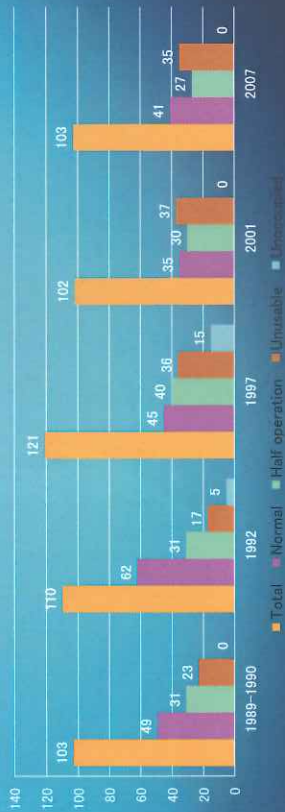
WASTEWATER TREATMENT PLANT CURRENT STATUS

- First in 1959, mechanical wastewater treatment plant was established in Ulaanbaatar city, after that in 1965 waste water treatment was established in Darkhan city, years between 1971-1977, Arkhangai, Dundgobi, Zavkhan, Sukhbaatar, Umnugobi province center purpose of removing waste water of secondary school. In 1980-1990, waste water treatment plant was established in Bulgan, Bayan-Ulgii, Dornogobi, Dornod, Uvs, Khovd, Khentii province, after 1990 waste water treatment plant was established in Bayankhongor, Gobi-Altai, Uvurkhangai, Tuv province centres.

DATE COMMISSIONED A WASTEWATER TREATMENT PLANT



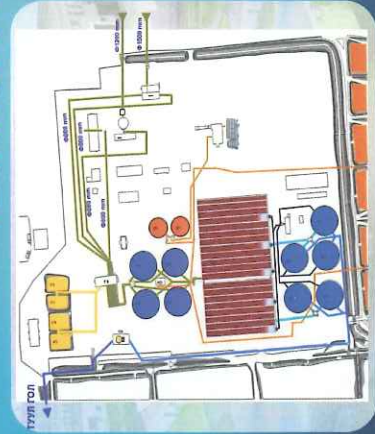
OF TREATMENT PLANT OPERATION CONDITION



WASTEWATER TREATMENT PLANT IN ULAANBAATAR

- Ulaanbaatar city's waste water treatment, sewage pipelines was designed in Russia in according to following steps.
- 7 km sewage pipeline was built in 1960
- Filter square was built in 1961 - 1968
- Mechanical waste water treatment facilities was built in 1969-1979
- Biological cleaning structure was built in 1979-1986
- Currently, 165 km pipeline and about 3000 wells are working normally.

TECHNOLOGY SCHEME



1. Pump station
2. Screens
3. Primary sedimentation tank
4. Aeration tank
5. Secondary sedimentation tank
6. Sludge thickening
7. Sludge pump
8. Disinfection

PUMP STATION



$Q = 1500 \text{ m}^3/\text{hour}$
efficient 5 pumps.
3000–4500m³ on
average hour of
waste water will be
pumped into

SCREENS



- Mechanical waste judge screens in waste water

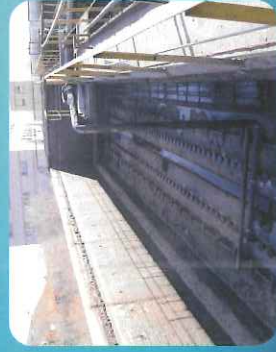
PRIMARY SEDIMENTATION TANK



Radius=40metr. 4 primary sedimentation tank

Designed to reduce the velocity of the wastewater flow for organic solids (raw sludge) to settle

AERATION TANK



- Aeration tank is the reservoir through which waste water and mixed liquor under the aeration.
- Aeration tank open reservoir, where sewage and mixed liquor are aerated and biological treatment is introduced while it's flowing slowly.

SECONDARY SEDIMENTATION TANK



- Designed to reduce the velocity of the wastewater flow for organic solids (raw sludge) to settle

AERATORS



- Aerators are machines used to add air to water

SLUDGE THICKENING



- Process of increasing the concentration of solids in a sludge by the removal of water

ULTRAVIOLET DISINFECTION



- Accomplished by using different methods such as chlorine disinfection, ultraviolet disinfection to disinfect sewage water.

CLEARANCE RATE

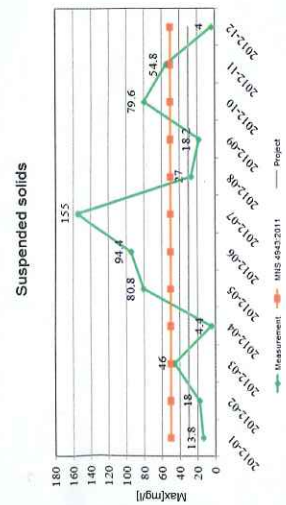
- In 2013, 36 waste water treatment facilities was conducted by the general examination of State Inspection Authority. 17% of them was established between 1971-1980, 11% of them was established between 1991-2000, 39% of them was established between 1981-1990 and 19% of them was established in since 2001.
- Currently, 40 waste water treatment plants are working in public utilities sectors and 22 of them are working normally and 18 plants are working abnormal and 10 plants have controlling laboratories.

CLEARANCE RATE

- 66.7% of above 36 water treatment plants Suspended Solids substances are 4.9%-23.5 times higher than standards, 73.3% of above 36 wastewater treatment plants Biological oxygen demand substances are 12.8%-9.3 times higher than standards, 33.5% of above 36 wastewater treatment plants permanganate oxidation are 7.5%-25.8 times higher than standards, 71.4% of above 36 wastewater treatment plants Ammonia are 22%-12.3 times higher than standards.

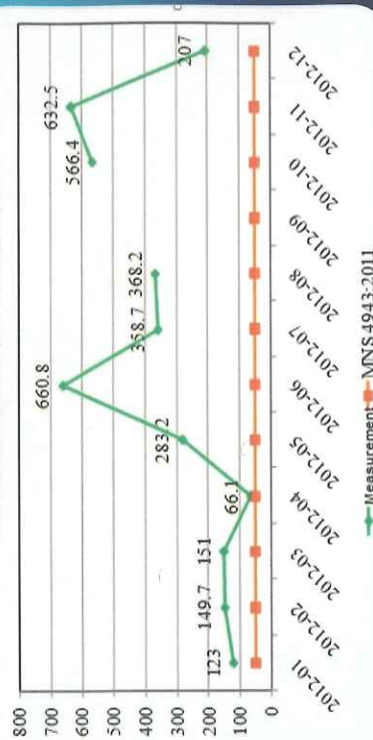
CLEANING RATE OF WASTEWATER

- BASED ON THE ANALYSIS OF RECENT YEARS, TREATMENT OF WASTE WATER TREATMENT OVERALL RATE IS AROUND 40-60 PERCENT.

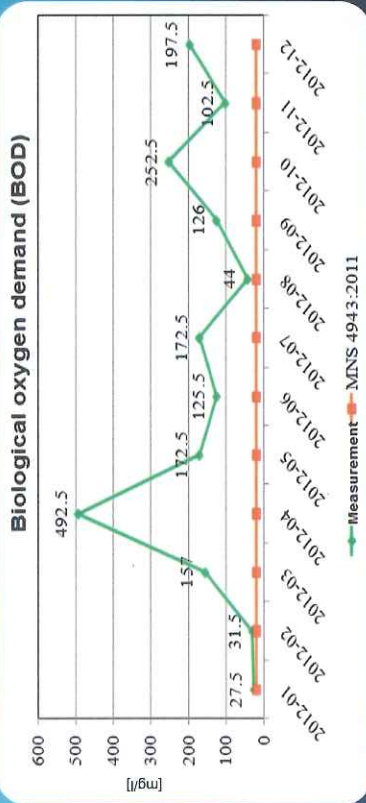


CLEANING RATE OF WASTEWATER

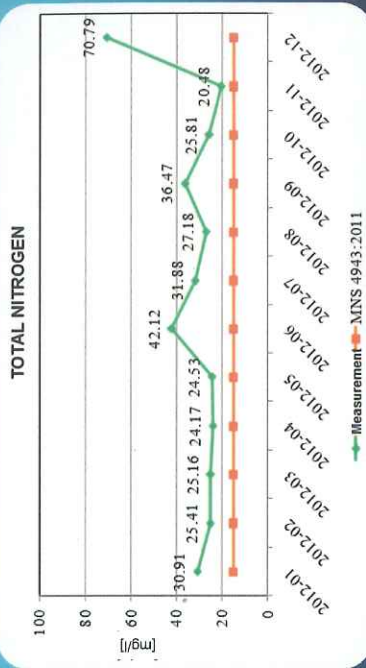
CHEMICAL OXYGEN DEMAND



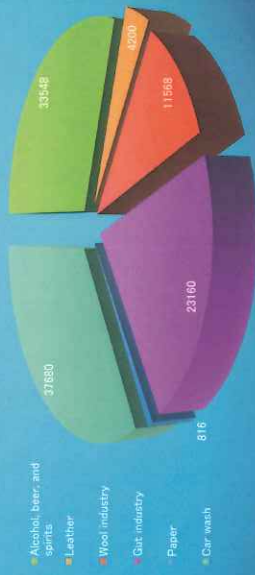
CLEANING RATE OF WASTEWATER



CLEANING RATE OF WASTEWATER

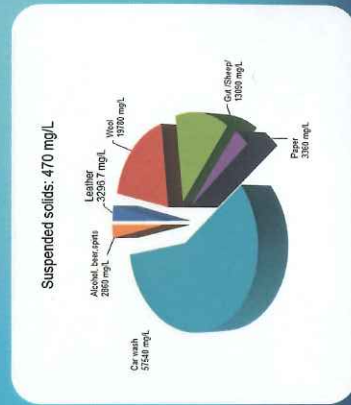


INDUSTRIAL WASTEWATER INDICATORS



Chemical oxygen demand (COD) centralized industrial waste, water supply network, or 47.1 times the maximum permissible level /washing car/ and 41.9 times /alcohol, beer and spirits industry/ and 28-19 times the /casings process and the wool industry the activities of the central treatment plant has a significant negative impact on.

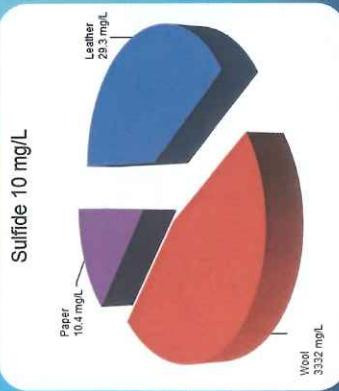
INDUSTRIAL WASTEWATER INDICATORS



Commercially available in centralized networks for the analysis of water was the most polluted waste water, car washing.

For example: "Tav", April 29, 2013 in the analysis of suspended solids to 57540 mg / l. According to data of the above delivered to centralized networks, the importance of the composition of industrial waste water to meet standards. Consequently, industry has developed standards for a centralized sewage lines merge.

INDUSTRIAL WASTEWATER INDICATORS



- Wool and leather industry wastewater of sulfide in the central industrial waste, water supply network is 3-3.3 times higher than the permissible level. Leather industry waste water of the total chromium in the central industrial waste, water supply network is 2.2 times the maximum permissible level.

3. FUTURE PLAN

- TO IMPROVE THE LEGAL ENVIRONMENT
- TO UPDATE RULES AND STANDARDS, DEVELOP NEW STANDARDS AND RULES AND TO MOVE EUROPEAN STANDARDS
- TO IMPROVE PUBLIC SECTORS STRUCTURE, SERVICE FEES
- TO INTRODUCE NEW TECHNOLOGIES
- TO STRENGTHEN HUMAN CAPACITY

RECOMMENDATIONS FOR THE WAY FORWARD

- To work towards addressing Mongolia's water challenges, it is key to address the underlying causes, rather than just the symptoms. These include improving the data basis and scientific understanding of water resources in Mongolia, undertaking a hydro-economic analysis so as to identify a range of cost-effective, practical solutions and priorities, leveraging the potential of water economics in order to design incentives for sustainable water resource management, working towards organizational and institutional clarity of responsibilities and strengthening capacities at all levels of the government and finally to support in setting up a multi-stakeholder platform with priority work streams for inclusive decision-making and efficient knowledge transfers. Addressing these focus areas will provide a solid basis for and will enable sustainable water resources management with which Mongolia can achieve its social and economic growth aspirations.

THANK YOU FOR YOUR ATTENTION