

WASTEWATER USE IN AGRICULTURE OF MONGOLIA

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Wastewater production and treatment

Mongolia belongs into the list of countries that have less water resources. The water resource has unevenly distributed with poor management and control, and a water supply level is quite low, range and capacity of sewerage system are limited and lack of professional personnel and human resources in this field.

The wastewater generated in Mongolia can be classified by their sources:

- Coal and gold mines;
- Extractive industries;
- Food, wool and cashmere processing factories;
- Housholding wastewater; and
- Agricultural wastewater.

Total of 146.0 million m³ wastewater have been generating from households and it is being treated by 115 waste water treatment plant in Mongolia per year. Currently there is no estimation on amount of generated industrial waste water.

Total of 70 per cent of generated waste water from the gold and extractive mines have been reusing in their industrial process, however 30 per cent is being released in the open damp without any treatment. This is main cause of surface water pollution and environmental degradation. Waste water generated from coal mining contains less pollutants, it can be used irrigation and livestock after risk assessment.

Wastewater generated from food, wool and cashmere processing factories has been treating by 24 industrial/primary sewerage plants. Some of primary treatment plant for industrial sewerages have been releasing treated water into surface water such as rivers. But some is directly connected with secondary wastewater treatment plan of the local areas for final treatment.

Wastewater use

Mongolia has no tradition on use of wastewater in agriculture. Currently 50.3 thousand hectares of area has been used for as crops field. Total of 80% of the irrigation areas has been using surface water, and 20% using by underground water. Since 2000, the Government of Mongolia has been financially supporting and encouraging use of treated wastewater in agriculture in order to save water resources. By 2012, wastewater irrigation in agriculture has increased. For example, irrigation system for 70 hectares area for crops in use of treated wastewater of urban sewerage has been built in 2012. Irrigation system in use of treated wastewater of coal mining has been constructed for 60 hectares area for growing crop and fruit trees. Every year 152.0 thousand m³ wastewater have been used

for agricultural irrigation. We are aiming to irrigate 300-500 hectares area using 500.0 thousands m³ wastewater annually by 2016.

There are some reasons of limited use of wastewater in agriculture such as:

- There are sufficient water resource and water supply for agricultural purpose;
- There are limited tradition and experience for wastewater use in agriculture; and
- lack of interest of herdsman and agricultural workers for use of wastewater in agriculture

In order to protect environment and save water resources, in the future there are plans to use rainwater, collected from roofs of buildings and road facilities in urban area for irrigation of trees and green facilities, to improve methods and technology for using water in agriculture from sewerage system and coal mine wastewater, and to build capacity.

Policies and institutional set-up and needs for wastewater management

To support sustainable socio-economic development, there are legal environments supporting sustainable development of water supply and distribution such as The Constitution of Mongolia; The Millennium Development Goals (MDGs)-based Comprehensive National Development Strategy (NDS) of Mongolia; The Concept of the National Security of Mongolia; State Policy on Ecology; and The National Water Program.

Currently, there are 56 laws on environmental protection, use of natural resources and its recreation in Mongolia. Water use, resource's protection, treatment and tariff are regulated by the Water Law, and other 8 Laws on regulation of the water related issues.

The following 4 laws are main regulation framework of wastewater use:

- Water Law
- Sanitation and hygiene law
- Law on industrial and household wastes
- Law on urban water supply and sewerage system

Inline those laws, there are more than 40 regulations and standards have been regulating water related issues including wastewater. Eleven regulations and standards are related to the treatment of waste water and its safe use. Title of those mentioned regulations and standards are:

- Water quality standard. MNS 4586-98;
- Standard of wastewater treatment MNS 4943: 2000;
- Standard on location of sewerage facility, treatment technology and its basic requirements;
- Standard on technological wastewater generated from tanneries before primary treatment facility MNS 5582:2006;
- Water supply and sanitation facilities. MNS 6279: 2011;
- Standard on treated wastewater is released to the natural environment. MNS 4943: 2011; and
- Maximum acceptable level of residuals and composition is connected to the Secondary sewerage facilities.

Research on different aspects of wastewater

The monitoring, evaluation, researches are regulated by Water Law and engaged the following principles like prevention from water pollution, polluter's pay principles, developing standards, guidelines, and procedures, monitoring water pollution at their resources, defining conformity between economic and industrial sectors, following management plan on basin, government's support and promotion of repeated reuse of wastewater; and introducing rational water consuming technology into production.

Status and need for the knowledge and skills on the safe use of wastewater

We have lack of experiences on safety usage of wastewater. There are limited interest and practices for famers for safe use of wastewater in agriculture irrigation.