

Changes in surface water regime and resources in Mongolia

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Mongolia is a landlocked country in the northern part of Central Asia, far from any ocean. It comprises a high plateau, surrounded by mountain ridges, in the transition zone between the Siberian taiga and the dry steppes and the semi-desert area of Central Asia.

The river flow regime of Mongolia is highly seasonal with minimum flows in winter, then typically a limited snow melt response in the spring and with the highest flows generally occurring in summer from rainstorms. During the winter period big rivers and lakes are frozen on the surface and small rivers are frozen up to the bottom. Mongolian rivers take their origin from the high mountains of Central Asia such as Mongol Altai, Hangai-Huvsgul, Hentei and belong to the three main basins, depending on its drainage system: Arctic Ocean Basin (AOB), Pacific Ocean Basin (POB), and Internal Drainage Basin (IDB) of Central Asia. Mean annual river runoff formed in the territory of Mongolia is 30.6 km³/year. However, if water inflow imported from adjacent country is considered, the total river water resources of Mongolia has been estimated to be 34.6 km³/year, inclusive of both surface and ground water. 60 per cent of the mean annual river runoff formed in the Mongolian territory drains to the Russia and China. Only 40 per cent of the annual runoff flows into lakes of Gobi, partially recharging into ground water aquifers.

The total water resource of Mongolia is estimated to be 599 km³/year, and is composed mainly from water stored in lakes (83.5%), glaciers (10.5%) and rivers (5.8%).

The hydrological inventory conducted in 2003 estimated that there are 5565 rivers and streams, 683 of which dried, 9600 springs and 1484 of which dried, 374 mineral waters, 10 of which dried, 4193 lakes and ponds, 760 of them are dried in last few years. The hydrological inventory conducted in 2007 shows that number of dried streams, lakes and springs was even increased.

These information evidence that water use rate is not significant, but it seems that impacts on ecosystems in river basins are quite significant and lead to dry up many water bodies.

Natural process and anthropogenic pressures can influence on water resource in direct or indirect ways. However, indirect and direct impacts are very complex, and cannot be well distinguished by their intensity, area of coverage and their consequences.

Direct anthropogenic pressures in a basin can be livestock pasturing, agricultural activities, population settlement, mining and others industrial activities in basin. These anthropogenic influences lead to consequences as overgrazing, deforestation, loss of biodiversity etc.

