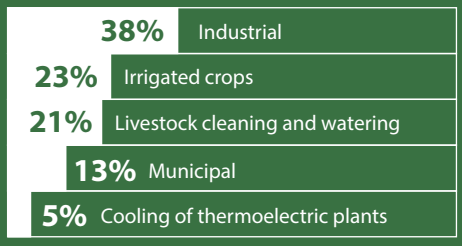
UN WATER

Mongolia

UN-Water Country Brief

		year
Total population (UN Population Division)	2.8 million inhabitants	2012
Total area	1.56 million km^2	
Population density	1.8 inhabitants/km^2	2012
Human Development Index (UNDP) (between 0 and 1; 1 is highest) Country rank (total 187 countries; 1 is highest) Gender Inequality Index (0 is equality between women and men; 1 is least equality)	0.675 108 0.328	2012
Water, sanitation and hygiene-related deaths as % of total deaths (WHO)	3.5 %	2004
Long-term average precipitation (CRU CL 2.0)	241 mm/year	
Long-term average actual renewable water resources (FAO AQUASTAT)	34 800 million m^3/year	
Actual renewable water resources per capita (FAO AQUASTAT)	12 429 m^3/inhabitant	2012
% of total actual renewable freshwater resources withdrawn (MDG Water Indicator) (FAO AQUASTAT)	1.6 %	2009
Groundwater withdrawal as % of total freshwater withdrawal (FAO AQUASTAT)	82 %	2005
Total area equipped for irrigation (FAO FAOSTAT)	84 300 ha	2009
% of area equipped for irrigation actually irrigated (Ministry of Food, Agriculture and Light Industry)	57 %	2012
Increase in number of dried up streams, lakes and springs since 2003 (Mongolia Ministry of Nature, Environment and Tourism)	30 %	2007
Ramsar sites (Ramsar) – number – total area	11 sites 1.4 million hectares	2013

Water withdrawals by sector (total 550 million m^3 in 2009)



The Money Stream

From 2002 to 2010, total water-related government expenditure accounted for 2.1 percent of total government expenditure.

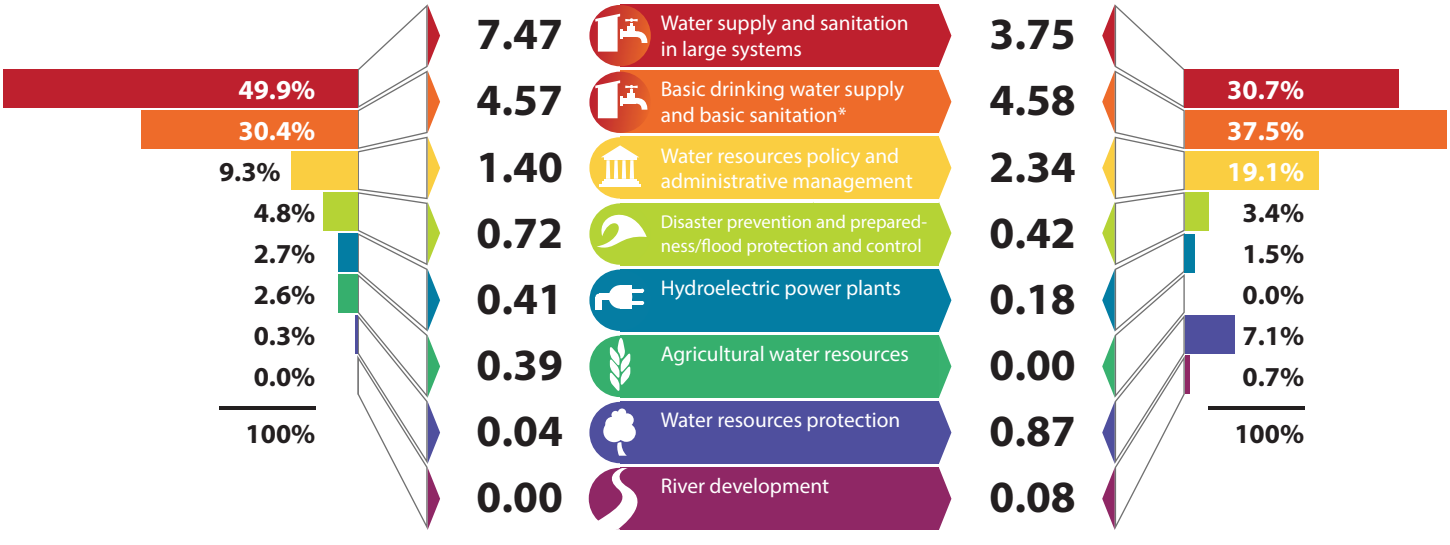
From 2003 to 2011, the government has expended US$ 15 million (in constant 2010 US$ on average per year on water-related infrastructure and programmes. During the same period, official development assistance (ODA) gross disbursements amounted to US$ 12.22 million on average per year.

Water supply and sanitation systems accounted for the bulk of government expenditure (80.3 percent), and ODA disbursements (68.2 percent). Water resources policy and administrative management received the second largest share of water-related funding (9.3 percent of government expenditure and 19.1 percent of ODA).

Estimated % of water-related to total government expenditure 2002 - 2010

Annual average government expenditure during the period 2003 – 2011
(million constant 2010 US$)

Annual average official development assistance gross disbursements during the period 2003 – 2011
(million constant 2010 US$)



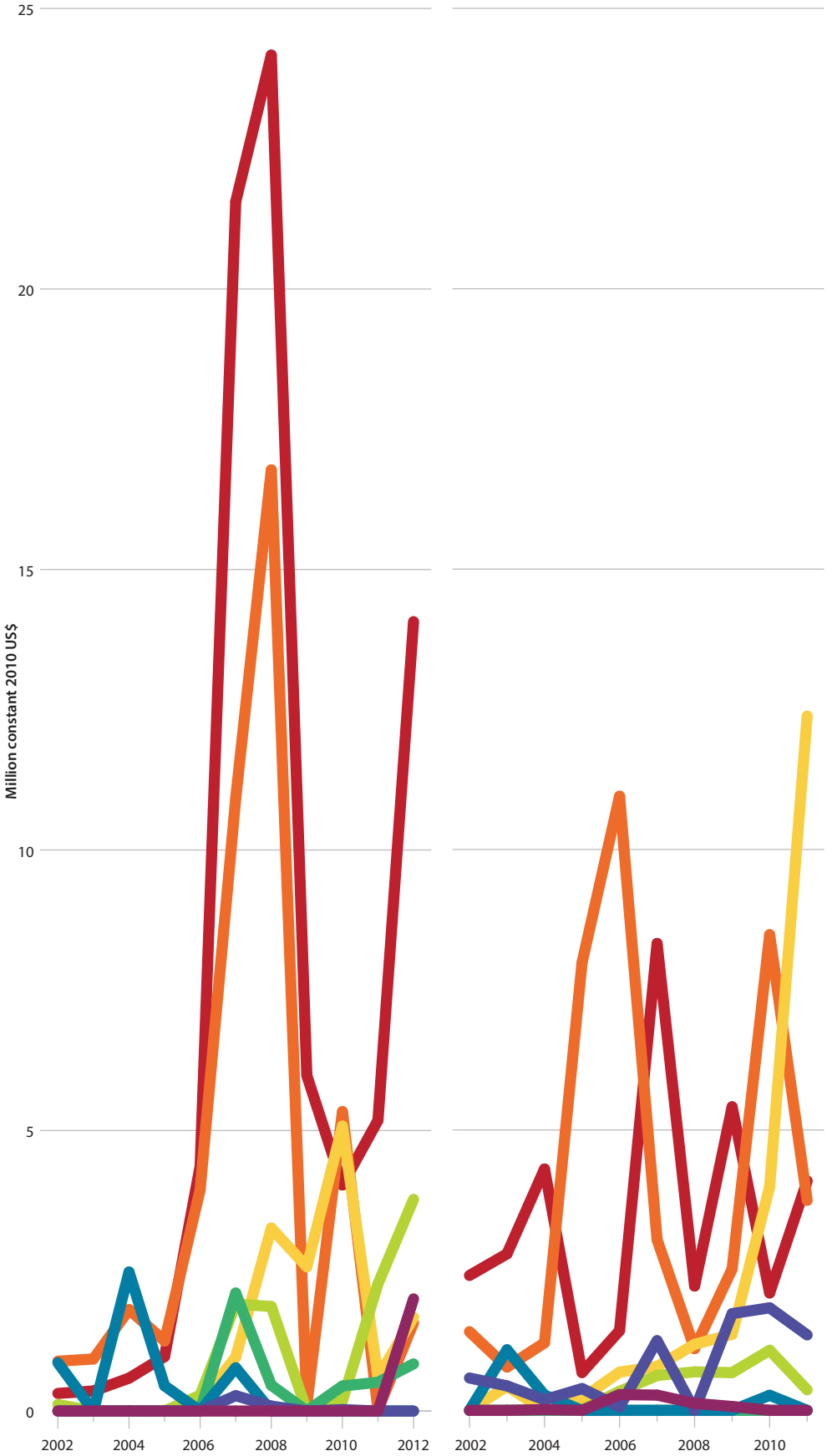
total annual average **15.00**

12.22 total annual average

Status and Trends

Government expenditure during the period 2002 – 2011 and budget for the year 2012
(million 2010 constant US$)

Official development assistance gross disbursements during the period 2002 - 2011
(million 2010 constant US$)



Government water-related investments during the period 2002 to 2012:

- A peak government expenditure was allocated to drinking water supply and sanitation projects in 2007 and 2008 following the adoption of the National Programme on Sanitation (2005-2015).
- Water resources policy and administrative management received particular attention between 2008 and 2010.
- Agricultural water resources only benefited from government expenditure during this period and not from official development assistance.

Official development assistance (ODA) during the period 2002 to 2011:

- A peak ODA in basic drinking water supply and sanitation systems took place during 2005-2006 and in large drinking water supply and sanitation systems in 2007 and 2009.
- River development was funded only through ODA.
- ODA in water resources protection was much higher than government actual expenditure.

Actual expenditure refers to the amount spent by the government during a given year. Where actual expenditure is not available, the government budget is used and refers to the amount that the government reportedly budgeted for the given year. The OECD Creditor Reporting System categories were chosen for the collection of these water-related investments and the data was obtained by the WCB project through in-country research in cooperation with the government (during 2012), while ODA data stems from the OECD Creditor Reporting System (collected January 2013).

Water supply and sanitation in large systems: Water desalination plants; intakes, storage, treatment, pumping stations, conveyance and distribution systems; sewerage; domestic and industrial wastewater treatment plants.

Basic drinking water supply and basic sanitation: Water supply and sanitation through low-cost technologies such as hand-pumps, spring catchment, gravity-fed systems, rainwater collection, storage tanks, small distribution systems; latrines, small-bore sewers, on-site disposal (septic tanks).

Water resources policy and administrative management: Water sector policy, planning and programmes; water legislation and management; institution capacity building and advice; water supply assessments and studies; groundwater, water quality and watershed studies; hydrogeology. Excluding agricultural water resources.

Disaster prevention and preparedness/Flood protection and control: Disaster risk reduction activities such as developing knowledge, natural risks cartography, legal norms for construction; early warning systems; emergency contingency stocks and contingency planning including preparations for forced displacement. Floods from rivers or the sea; including sea water intrusion control and sea level rise related activities.

Agricultural water resources: Irrigation, reservoirs, hydraulic structures, groundwater exploitation for agricultural use.

Hydroelectric power plants: Including power-generating river barrages.

Water resources protection: Inland surface waters (rivers, lakes, etc.); conservation and rehabilitation of groundwater; prevention of water contamination from agrochemicals, industrial effluents.

River development: Integrated river basin projects; river flow control; dams and reservoirs. Excluding dams primarily for irrigation and hydropower and activities related to river transport.

Water - related Disasters*

Impact for development
The Mongolia Water Authority reported in 2011 that climate change is already a fact in Mongolia, with natural disasters such as drought, heavy snowfall, flood, snow and windstorms, and extreme cold and hot temperatures becoming more and more frequent. Empirical evidence in this field shows that investment in water-related disaster measures such as flood control contributes to reducing the economic and social costs associated with natural disasters.

Year	Number of events	Deaths	Affected	Economic damage (current US$)
2011	30	14	-	240 000
2010	5	9	-	670 000
2009	6	26	770 000	3 930 000
2008	10	77	-	2 560 000
2007	22	13	-	230 000
2006	32	21	-	750 000
2003	-	20	400	270 000
2002	-	7	665 000	20 000 000
2001	-	-	175 000	-
2000	-	-	238 000	80 000 000
1996	-	66	-	-
1993	-	7	100 000	10 000 000

(Dartmouth Flood Observatory)

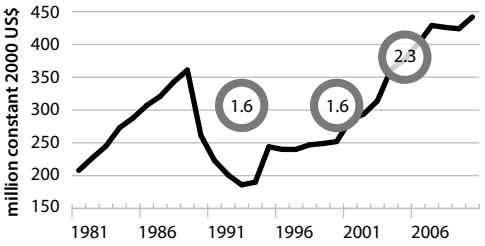
- means no data available

* 'Water-related disasters' within the scope of this WCB study do not include droughts.

Water Intensity in Industry

Impact for development
During 1993 to 2000, the value generated by industry per m^3 of water remained constant, during 2000 to 2005 this value increased by 7 percent annually. In general, water is a driver for industry both from the perspective of securing stable supply sources as well as from the standpoint of enhancing operating efficiency. Access to clean drinking water and sanitation is also increasingly recognized by businesses as fundamental to the health of its customers, workers and communities.

Value generated by industry per m^3 of water
(FAO AQUASTAT, World Bank)



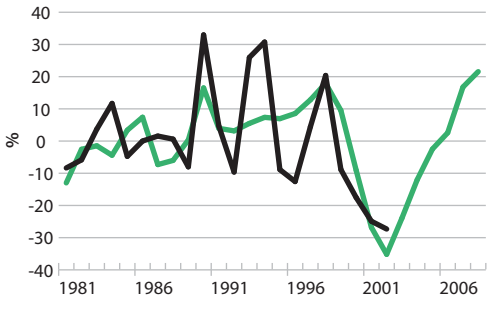
Value generated by industry in constant 2000 US$ per m^3 of water

Value added by industry in million constant 2000 US$

Irrigated Agriculture

Impact for development
Agriculture contributed some 24 percent to gross domestic product and employed 40 percent of the labour force in 2009. In 2012, women accounted for 48 percent of the economically active population in agriculture. Mongolia is essentially a pastoral livestock-based agricultural system. Water supply to livestock is provided mainly from natural sources, which at present are not considered constraints to agricultural development. Irrigation is performed only in the summer months and on a small scale to grow potatoes, wheat and fodder. Half of the agricultural water withdrawal is for irrigation of crops, including fodder, and half for livestock watering and cleaning.

Rainfall variability and agricultural GDP
(FAO AQUASTAT, World Bank)

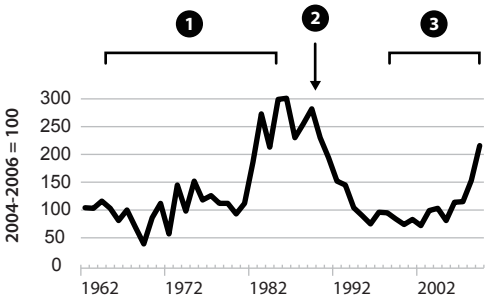


National rainfall index variability (percentage of deviation from average national rainfall index)

Variability in agricultural GDP (percentage of deviation from trend of agricultural goods produced per km^2 of agricultural land)

Agricultural output is dependent on the amount of precipitation that has fallen over a specific area, a situation in part driven by the fact that irrigation is only 9 percent of the cultivated area.

Crop production index (World Bank)



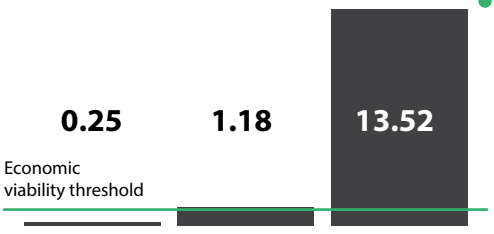
1. Irrigation expansion and development
2. Soviet assistance withdrawal
3. Crop productivity increase

During the 30 years up to 1992, crop production almost tripled in Mongolia, partly driven by an eightfold increase in the percentage of cultivated areas equipped for irrigation: from some 0.7 percent to 6 percent. Increases in crop production and the value of crops produced was highly correlated with the expansion of irrigation until around 1990. Production dropped off significantly after the Soviet withdrawal around 1992. Recently, crop production is on the rise again due to emphasis on raising crop productivity and quality.

From the economic analysis conducted, investments in irrigation for higher value crops such as potatoes and other vegetables are significantly more economically viable than for lower value crops (including irrigated fodder). Nonetheless, those options may have relatively higher agronomic constraints (e.g. soil quality requirements) and logistical and market risks (e.g. access to markets for producers).

This reinforces the need to ensure that scarce investment capital is targeted at irrigation projects that provide the highest benefits in terms of increased production, enhanced food security, employment opportunities, and export opportunities, among others; underpinned by a robust and structured process of identifying opportunities for irrigation development and undertaking production, environmental, economic and social analysis of each option to identify the best projects.

Economic viability of establishing irrigation schemes

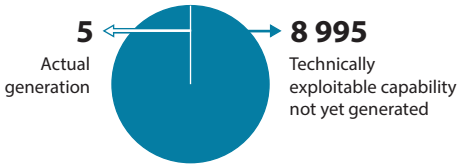


Values indicate the estimated benefit-cost ratio

Energy for Water, Water for Energy

Impact for development
Hydropower: with an installed capacity of 28 MW, Mongolia generated 5 GWh in 2008, which represents around 0.06 percent of the nation's hydropower technically exploitable capability. Water-energy nexus issues: as water quality deteriorates, more energy is required to treat the supply to acceptable standards. Inversely, energy production requires water in large quantities and produces effluents to be treated. Technological innovation is however providing opportunities for water reuse and nutrient recycling.

Hydropower capacity and generation, 2008, in GWh/year (World Energy Council)



Environment and Ecosystem Health

Impact for development
The surface water inventory of 2007 revealed that in Mongolia the number of dried up streams, lakes and springs had increased by 30 percent compared to 2003. The availability of water and its physical, chemical, and biological composition affect the ability of aquatic environments to sustain healthy ecosystems: as water quality and quantity are eroded, organisms suffer and ecosystem services may be lost.

Water Quality Index 2010
(UNEP-GEMS/Water)

A score of 100 indicates that water quality targets are met for all five parameters (DO, pH, conductivity, total nitrogen, and total phosphorus).

Wastewater treatment in Ulaanbaatar city (in million m^3/year) (Ulaanbaatar city Water Supply and Sewerage Authority)

Indicator	2011
Municipal wastewater generated	33.3
Industrial wastewater generated	11.0
Total wastewater generated	44.3
Wastewater not collected	1.7
Municipal wastewater collected	31.6
Industrial wastewater collected	11.0
Wastewater secondary treatment	42.6

According to this data, all wastewater collected in Ulaanbaatar city undergoes secondary treatment. No data is available for other regions.

Drinking Water Supply and Sanitation

Impact for development
In Mongolia, while there are other factors involved, investments in water supply and sanitation would have been partially responsible for the fact that child mortality in 2010 was down to less than 32 per 1000 live births compared to about 107 in 1990 and 61 in 2000. These improvements will ultimately flow through to labour productivity and higher economic growth.

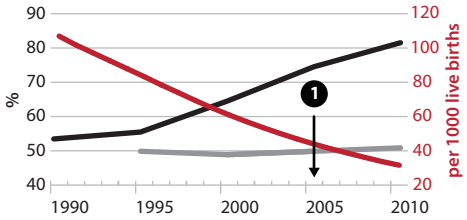
Ratification of the International Covenant on Economic, Social and Cultural Rights (ICESCR):
18 November 1974

Ratification of the Optional Protocol to the ICESCR:
1 July 2010

(The right to water is implicit within the right to an adequate standard of living and inextricably related to the right to the highest attainable standard of health outlined in the ICESCR.)

Data for the period 1990 to 2010 show an overall increase in the use of improved drinking water, from 54 percent to 82 percent. While there has been relative improvement in rural areas, rural populations remain considerably less likely to use improved drinking water sources. As for sanitation, there has been improvement in the use of improved sanitation facilities. Overall, there remains a significant gap in the overall coverage of water and sanitation services.

Access to drinking water and sanitation & under-5 child mortality
(UN Inter-agency Group for Child Mortality Estimation (IGME) and WHO/UNICEF Joint Monitoring Programme)



Improved drinking water source
Improved sanitation facilities
(both indicators above in % of total population)
Under 5 child mortality rate
(probability of dying by age 5 per 1000 live births)

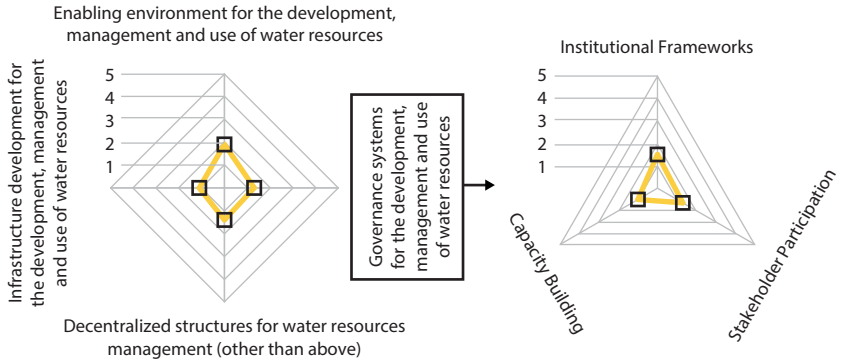
1 Adoption of the National Programme on Sanitation (2005-2015)

Tracking Water Governance

Impact for development
Investments in water resources policy and management are typically quite significant in higher-income countries. Establishing and implementing formalized institutional and management arrangements underpin sustainable ongoing water use and reduce the economic and social risks associated with investments in new water infrastructure.

Results from the 2012 United Nations Rio +20 survey in Mongolia reveal an embryonic state of water governance systems. Another United Nations assessment conducted specifically on water supply and sanitation concluded that Mongolia is not on-track to achieve MDG targets in water supply and sanitation due to lack of leadership and coordination, comprehensive planning and financial strategies, monitoring and regulatory control, low institutional capacity and skills to name a few. A number of national programmes and a comprehensive action plan, with concrete targets to address these underlying causes, have since been approved by the government.

UN-Water survey on integrated approaches in the development, management and use of water resources governance, 2012 (UN-Water)



1 Under development
2 Developed but implementation not yet started
3 Implementation started
4 Implementation advanced
5 Fully implemented

Is the right to sanitation/drinking-water explicitly recognized in policy or law?

sanitation		drinking water	
urban	rural	urban	rural
Progressing with some elements in place	Progressing with some elements in place	Already fully recognized in law or policy	Already fully recognized in law or policy

Can people claim their human right to sanitation or drinking-water in a domestic court?

sanitation		drinking water	
urban	rural	urban	rural
Yes but little used	Yes but little used	Yes and widely used	Yes and widely used

UN-Water GLAAS (WHO, 2012)

Rapid Assessment

Overall

Pressures on water

While at national level the percentage of freshwater resources withdrawn is very low (1.5 percent), in several regions potential over-exploitation of water resources, both groundwater and surface water, and inadequate water supply and sanitation services are major issues faced by Mongolia. The main causes for these are rapid urbanization, climate change and increased mining activity, along with immature policy and water resource management systems.

Investment driver

While the development gains from prior investments have been significant in Mongolia, there are a number of water-related factors that constrain Mongolia's development. Initially the water sector requires substantial investment, but it is clear these investments should deliver significant net benefits to government and investors, provided investments are underpinned by robust information, policy and administrative management systems.

Assessments

Irrigated agriculture

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Less than 60 percent of the area equipped for irrigation is actually irrigated. Recently, rehabilitation and establishment of over five thousand wells annually has contributed to reducing pasture degradation as fewer herders crowd out near the wells, increasing productivity of livestock and, hence, enhancing herder income. In addition, 215 irrigation systems with a capacity to irrigate nearly 20 000 hectares have been newly established or modernized within the scope of the activities of the national programme the 3rd Virgin Land Campaign of 2008-2011.

★★☆☆☆

The latest globally available data on irrigated agriculture is for 2009, but this is based on data from 1993. There is limited data on where irrigation infrastructure can be expanded.

Drinking water supply and sanitation

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Investments in water supply and sanitation in conjunction with other health initiatives are already paying significant dividends in terms of reduced child mortality and improved general health of the population. There is still a significant investment required before water supply and sanitation is beyond being a constraint to development, including addressing the imbalances between rural and urban levels of service.

★★★★☆

Water quality indicators are missing. Not all of the drinking water available might be safe. And different definitions of access deliver varying results.

Water intensity in industry

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From 2000 to 2005, the value generated by industry per m^3 of water increased by 42 percent. Also, many rivers, or parts of the rivers, are polluted due to rapid urbanization and by industrial and mining activities. In recent years, exploration for natural resources has increased rapidly, and many river basins are under intensive use due to mining for gold, silver, coal, precious stones, gravel, and other natural resources. However, the average concentration of phosphorus for Mongolia is less than the medium concentration of global rivers' phosphate or about the average for unpolluted rivers.

★☆☆☆☆

Insufficient information is available about industries' water use, namely the mining processes (how much water is needed) and quality and quantity of available water resources (how much is available) as well as the quality of the return flow.

Water-related disasters

insufficient data ○○○○○

Insufficient data for analysis

★☆☆☆☆

Insufficient data for analysis.

Water for energy, energy for water

insufficient data ○○○○○

Insufficient data for analysis

Low investment in hydro-electricity power plants and a small percentage of technically exploitable hydropower capacity is used to generate energy.

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There is no data available as to the energy needs of supplying and treating water, nor for the water needed to generate electricity. Therefore no assessment could be undertaken.

Environment and ecosystem health

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Regional water shortage should be viewed as one of Mongolia's major socio-economic and environmental challenges. All wastewater collected in Ulaanbaatar city reportedly goes through primary and secondary treatment, but treatment is likely insufficient to prevent pollution as the Tuul river is severely polluted. Domestic wastewater in rural areas is mostly discharged directly into the environment without any treatment. Also, while industrial wastewater legislation exists, increasing pollution of rivers and other surface water quality indicate poor implementation and enforcement of laws and legislations. In this context, the recent national investment trends in water resources protection seem to be of significant concern, although donor investment is significantly increasing.

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Wastewater treatment data is only available for Ulaanbataar city.

Tracking governance

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Current expenditure on water resources policy, administration and data, alongside immature governance systems, create a situation where investment in water-related programs, infrastructure and industries is at risk. Laws and legislations have been enacted for encouraging environmental protection but implementation and enforcement of these laws are lacking.

★★☆☆☆

An overall lack of water-related data in Mongolia seriously constrains decision-making and might lead to blind spots in decision-making.

Data Quality

Legend:

The rapid assessment of the situation above, based on available data, was established in conjunction with in-country experts and officials. It provides an overview of trends according to the following:

- ●○○○○ trends are of significant concern
- ●●○○○ trends are of concern
- ●●●○○ trends are stable or, progressing on certain issues but not on others
- ●●●●○ trends show some measure of improvement in all relevant indicators assessed
- ●●●●● trends show significant improvement and there is no concern
- ○○○○○ insufficient data

Accurate assessments of progress require relevant, accurate and timely data. The above data quality assessment ranges from:

★☆☆☆☆ very poor → ★★★★★ very good

Data Concerns

Data is a vital input to water management and investment in water-related infrastructure and projects. The lack of quality and reliability of physical data in a country makes water-related investment decisions inherently more complex and investments more risky for investors.

Modest investments in coordinated data collection, collation, analysis and dissemination is vital to demonstrate the benefits of water-related investments to governments, donors and ultimately private capital investors.

An assessment of priority data needs from the basis of national decision-makers and international investors (donors and loan capital) would be prudent to establish a forward-looking work programme of data management.

It is to be noted that it is virtually impossible to find national-level gender-disaggregated data for almost all themes contained in the UN-Water Country Briefs.

Disclaimers

• The most recent and updated information can be found in the original databases cited throughout.

• The rapid assessment methodology presented here is an advocacy tool designed to generate debate and attention to the issues, and is developed in conjunction with national government focal points.

• Data presented herein stems either from existing databases or was collected from national reports, experts and institutions, and in some cases raw data underwent various manipulations to categorize the information for this presentation.

• Due to data limitations, the investment-related estimates may not include water-related investments that are counted under other categories of investments, and some investment categories (ie: disaster prevention and preparedness) may include some investments that are not directly water-related. Moreover, water being a crosscutting issue, investments in other parts of the government (not calculated here) may also benefit water management.

• The words investments / invested / funded for ODA refer to gross disbursements of ODA according to the OECD definitions. The words investments / invested / funded for government refer to government expenditure (2002 - 2011) and budget (2012). In addition, investment data and analysis do not include any other forms of investment (such as, private sector investments).

• The benefit-cost analysis on expansion of irrigation is based on very limited data and any decisions should be based on detailed cost-benefit analysis that incorporates all relevant local data.

UN WATER

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Additional information on the project, data and methodologies can be accessed at:

http://www.unwater.org/WaterCountryBriefs.html

MONGOLIA

Legend

- International Boundary
- Administrative Boundary
- Capital, Regional Capital, Town
- River
- Lake
- Dam
- Zone of Irrigation Development

0 75 150 300 450 km

Albers Equal Area Projection, WGS 1984

FAO - AQUASTAT, 2011

Disclaimer

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