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Urban water supply and sanitation in Mongolia: A description of the political, legal, and institutional framework

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Urban water supply and sanitation in Mongolia: A description of the political, legal, and institutional framework

Katja Sigel

January 2012

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Katja Sigel

Abstract

The lack of adequate water supply and sanitation services is a major issue related to sustainable development in many parts of the developing world. This also holds for Mongolia. Current data suggests that Mongolia may not meet the Millennium Development Goal 7, target 7c to halve the proportion of people without sustainable access to safe drinking water and basic sanitation by 2015. This mostly applies to peri-urban “ger areas” where people live in gers – the traditional Mongolian portable felt tent – and/or in simple, detached houses.

This report analyses the political, legal and institutional framework for improving urban water supply and sanitation in Mongolia. A special focus is placed on domestic consumers, notably the peri-urban poor living in the “ger areas” of large cities such as Ulaanbaatar, Darkhan and Erdenet. All administrative levels are included in the assessment. The report shows that a variety of policies, programmes, laws and regulations concerning aspects of the water supply and sanitation sector exist, but they are not harmonised and there are significant gaps. The specific problems of peri-urban ger areas are not normally addressed in these policy documents. Some authors argue that the problem is not so much the lack of policies and laws but a lack of capability to implement them and the absence of clear institutional responsibility.

Keywords: Water supply, sanitation, Mongolia, peri-urban, policies, laws, institutions, enabling environment

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**Монгол улсын хот суурин газрын усан хангамж, ариутгах татуурга:
Хууль, улс төрийн болон албан байгууллагын хамрах хүрээг
тодорхойлох нь**

Тойм

Усан хангамж болон ариун цэврийн байгууламжийн хүрэлцээгүй байдал нь хөгжиж буй орнуудын хувьд тогтвортой хөгжлийн зорилтод саад болж буй хамгийн том асуудал болоод байна. Энэ нь мөн Монгол улсад ч адилхан. Одоо байгаа мэдээллээс үзэхэд Монгол улс мянганы хөгжлийн 7с буюу “баталгаат ундны усаар болон анхан шатны ариун цэврийн байгууламжаар хангагдаагүй хүмүүсийн тоог хоёр дахин бууруулна” гэсэн зорилтыг 2015 он гэхэд биелүүлж чадахааргүй болох нь харагдаж байна. Энэ нь ялангуяа гэр хороолол буюу хүн амын ихэнх нь энгийн сууц эсвэл монгол гэрт амьдардаг хэсэгт хамаардаг.

Энэхүү баримтад Монгол улс хотын усан хангамжийг болон бохир ус татан зайлуулалтыг хууль эрхзүйн болон олон нийтийн байгууллагын талаас нь сайжруулах ямар арга хэмжээнүүдийг авч байгааг ажиглан дүгнэсэн болно. Мөн Улаанбаатар, Дархан, Эрдэнэт зэрэг томоохон хотуудын амьдралын түвшин доогуур гэр хорооллын айл өрхүүдийн одоо байгаа нөхцөлд онцгой анхаарал хандуулсан болно. Бүх удирдах газруудын талаар уг баримтад дурьдсан. Судалгаанаас үзэхэд ус хангамж ариутгах татуургатай холбоотой хууль дүрэм, эрхзүйн баримт бичиг, зохицуулалт байдаг боловч хоорондоо уялдаа хамааралгүй, мөн гэр хорооллын тодорхой асуудлууд дээрх баримтуудад дурьдагдаагүй өнгөрсөн байна. Харин дээрх баримтуудыг зохиосон зарим зохиогч нар энэ нь хууль эрхзүйн болон бодлогын хүрэлцээгүй байдал бус харин хэрэгжүүлэх чадамжийн дутагдалтай тал болоод албан байгууллагын хариуцлагагүй байдлын илрэл гэж тайлбарлаж байна.

Түлхүүр үгс: Усан хангамж, ариутгах татуурга, Монгол улс, захын хороолол, Бодлого, хууль, албайн байгууллага, эрх олгогч орчин

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¹ For more about the MoMo project information see <http://www.iwrm-momo.de>.

1 Introduction

1.1 Background

The lack of adequate water supply and sanitation services is a major issue related to sustainable development in many parts of the developing world. This is also reflected in the Millennium Development Goals (MDGs), an integrated set of time-bound targets set at the United Nations Summit in September 2000 with the aim of ending extreme poverty worldwide by 2015. Among these goals is Millennium Development Goal 7, target 7c: to halve, by 2015, the proportion of people without sustainable access to safe drinking water and basic sanitation. Mongolia is one of the countries committed to reaching this target. However, current data suggest that the MDGs for both water supply and sanitation may not be met, particularly in peri-urban and rural areas (UNICEF & UNDP 2008).

Peri-urban areas in Mongolia normally are referred to as “ger areas”. Here, people live in gers – the traditional Mongolian portable felt tent, also known as the yurt – and/or in simple, detached houses. Basic infrastructure services such as piped water, sanitation, proper roads, public transportation, etc. are poor or non-existent. The unplanned growth of ger areas along with the unprecedented pace of urbanisation brings with it many challenges, such as unemployment, traffic congestion, air pollution and adverse environmental impacts (World Bank 2010). In Ulaanbaatar, the capital of Mongolia, today, more than 60 percent of the population lives in peri-urban ger areas. However, the percentage of ger residents is also very high (about 50%) in secondary cities such as Darkhan, Erdenet and Khovd.

New paradigms and approaches to strategic planning have proved to be a crucial step towards improving water supply and sanitation in urban, peri-urban and rural environments in developing countries (Kvarnström & McConville 2007; Mara & Alabaster 2008; Schertenleib 2005; SuSanA 2008). One example of such a strategic sanitation planning approach is the *Household-Centred Environmental Sanitation*² approach HCES (Eawag 2005) and its revised version, the *Community-Led Urban Environmental Sanitation* approach CLUES (Lüthi *et al.* 2011) respectively. HCES/CLUES is a top-down/bottom-up step-by-step procedure for the planning and implementation of environmental sanitation infrastructure and services in urban and peri-urban communities.

Within the framework of the German research project MoMo³ a *case study* is currently being conducted which aims to implement and test the HCES/CLUES approach in a selected peri-urban ger district in the city of Darkhan, Mongolia. Based on a household survey conducted in 2009 in the case study district it could be shown that there is a need for action regarding the existing environmental sanitation situation (Sigel 2010; Sigel *et al.* 2011).

² Environmental sanitation consists of water supply, sanitation, stormwater drainage and solid waste management.

³ MoMo is the acronym for the project *Integrated Water Resources Management in Central Asia: Model Region Mongolia*. It is funded by the Federal Ministry for Education and Research (BMBF). For more information see www.iwrm-momo.de.

HCES/CLUES point out why an *enabling environment* is needed as a precondition for the success of every planning process and how it can be nurtured. An enabling environment can be seen as the set of inter-related conditions that impact the potential to bring about sustained and effective change. This includes political, legal, institutional, financial and economic, educational, technical and social conditions which encourage and support certain activities. (Lüthi *et al.* 2011: 11). This report has been devised against the background of the Darkhan HCES/CLUES case study. It analyses the enabling environment for improving urban water supply and sanitation in Mongolia. Only selected conditions are considered, namely the political, legal and institutional framework conditions.

1.2 Aim and methodology of this report

The aim of this report is to describe the political, legal and institutional framework for improving urban water supply and sanitation in Mongolia. In addition to the description of the status quo, the report comprises a rudimentary deficit analysis based on the following question: which of the framework conditions need to be addressed and adjusted to bring about an environment that enables change?

A special focus is placed on domestic consumers, notably the *peri-urban* poor living in the ger areas of large cities like Ulaanbaatar, Darkhan and Erdenet. However, the special conditions in small towns and rural communities are also considered in a rudimentary way. All administrative levels from the national to the local are included in the assessment.

The report is based on data from various sources. This data is very coarse with a lot of inconsistencies. Several political and legal documents that have been identified and that may be relevant for the topic could not be accessed, neither in Mongolian nor in English. Hence, the report has to be regarded as a living document which can still be improved. It may also help to enhance discussion and knowledge transfer among the German and Mongolian MoMo project partners.

1.3 Literature review and document analysis

Information were gathered from a literature review and document analysis that included project reports, advisory documents, books, internet sites of official authorities and research papers.

1.4 Key informant interviews

In May 2009, September 2009, and June 2010 key informant interviews were conducted with government ministries and entities, public authorities, municipalities, service providers, academic and research institutions, and non-government organisations on the basis of pre-defined questionnaires. In total, more than 30 interviews were carried out. The interviewees

were asked about their responsibilities, competences and functions regarding urban water supply and sanitation and their perceptions of the Darkhan case study.⁴

2 Administrative setting

Mongolia is a parliamentary republic which consists of a central government and three levels of local government. The upper level is split up into 21 Aimags plus the capital Ulaanbaatar. The Aimags are again divided into 340 Soums and around 1.664 Baghs. The capital comprises nine Districts with 121 Khorooos (see Figure 1).

According to the 1992 Constitution (Parliament of Mongolia 1992: chap.4), the administrative and territorial units of Mongolia are organised on the basis of a combination of both self-governance and state-governance. As a result, Mongolia has a dual system in which administrative and territorial units have both a governor and a local council. Aimag and capital as well as Soum and District levels have their own Khurals (parliaments), on Bagh and Khoroo level Public Meetings constitute the bodies of local governance (Parliament of Mongolia 2006).⁵

Mongolia is still essential centralise and while some responsibilities have been devolved (or delegated) to aimag levels, the resources required to implement decisions at the aimag level are very limited and near complete under central fiscal control (UNDP 2009: 20, 39).

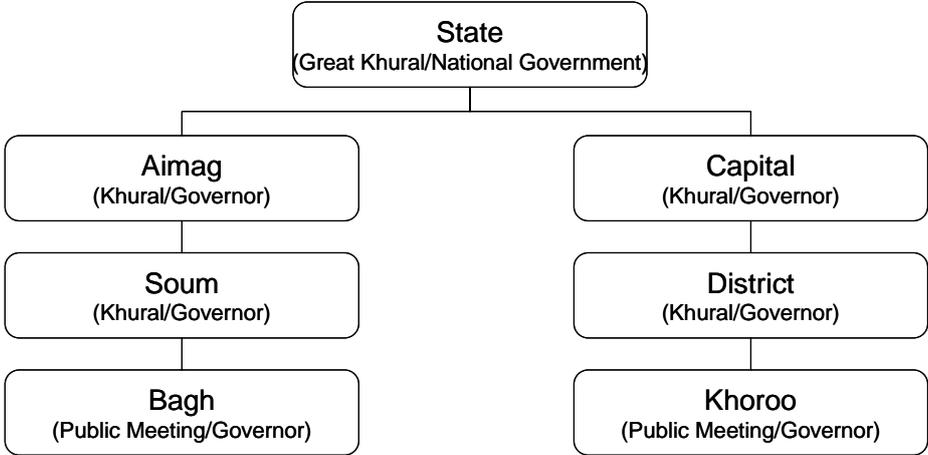


Figure 1: Administrative setting

⁴ The interviewee’s perceptions of the Darkhan case study are not subject of this report.

⁵ Every information and citations of Mongolian laws are taken from translations by the Asia Foundation (in cooperation with the Dutch government) in the „Compendium of Laws“ (The Asia Foundation 2009).

3 Major policies and programmes

In Mongolia, there are several approved policies and programmes related to improved water and sanitation provision (UNDP 2010: 34). In 2008, a comprehensive *National Development Strategy* based on the *Millennium Development Goals* (MDGs) was adopted by the Government of Mongolia. The subsequent *Mongolian Action Programme for the 21st Century* of the Government of Mongolia (2008-2012) reflects and concretises Mongolia's National Development Strategy. Also the *National Water Programme* (2010-2021) has been developed in close connection with the National Development Strategy.⁶

The following table gives an overview of programmes being relevant for the water supply and sanitation sector. Selected programmes will be assessed in further detail in the following sections.

Table 1: Key water related national programmes of Mongolia (Source: Brochure of the MNET, not dated, UNDP 2010: 34)

Name	Year enacted
Millennium Development Goals*	2000
Mongolian Action Programme for the 21 st Century (MAP-21) (2008-2012)*	2008
National Water Programme*	1999, 2010
Programme for supplying the population with water which meets hygienic and sanitary requirements	2008
Programme for reducing wastes	1999
Programme on Sanitation (2006-2015)	2005
Programme on Urban Development and Public Utilities	?
Programme on provision of safe drinking water to population of Mongolia (2008-2015)	?

* English version available

3.1 Millennium Development Goals

In 2000, through the Millennium Development Goals (MDGs), the international community committed to “halve, by 2015, the proportion of people without sustainable access to safe drinking water and basic sanitation” (MDG 7, target 7c). Meeting the MDG water and sanitation goals is more than a health and dignity issue. It is essential to achieving all of the MDGs and it would trigger a major leap forward in human development (UNDP 2010).

⁶ Cf. the presentation of Mr Batbayar, Deputy Director of the Water Authority, about „Integrated Water Resources Management: The National Strategy for Mongolia“ from 8 September 2009.

In 2000, the Mongolian government committed itself to achieving the MDGs. Mongolia adopted the MDGs as the government's mid-term strategic goal of increasing the coverage of improved drinking water source to 80%, and improved sanitation facility to 70% by 2015, measured against the 1990 baseline average (UNDP 2010: 34). Current data suggest that the MDGs for both water supply and sanitation may not be met in Mongolia, particularly in peri-urban ger areas and rural areas (UNDP 2010: 31; UNICEF & UNDP 2008).

The WHO/UNICEF Joint Monitoring Programme for Water Supply and Sanitation (JMP) is charged with international reporting on progress towards the MDG drinking water and sanitation target.⁷ It has developed an international classification to differentiate between "improved" and "unimproved" drinking water sources as well as sanitation. Improved facilities are defined as follows:

- An *improved drinking water source* is one that, by nature of its construction or through active intervention, is protected from outside contamination, in particular from contamination with faecal matter.
- An *improved sanitation facility* is one that hygienically separates human excreta from human contact.

Following these two definitions, the JMP has defined a list of drinking water and sanitation categories that can be considered "improved" or "unimproved". For example, public tap or standpipe sources of drinking water (like water kiosks connected to the central grid) are considered "improved" but water kiosks served by trucks are not. Pit latrines with slab are considered "improved".

According to UNDP (2010: 31, 32), the review of the current status of MDG implementation in Mongolia shows slow progress in general, unsatisfactory performance and weak coordination of policies aimed at implementation of MDGs. Reliable and well-accepted figures on water supply and sanitation are notably absent and the sector lacks a set of commonly agreed categorisation, statistics and goals.

The MDGs can be considered as an important political programme to improve *access to safe drinking water and basic sanitation* in Mongolia. But an "improved" access does not necessarily mean that the water and sanitation provision really is sufficient and sustainable. Concerning water supply, it should be kept in mind that even if there is an "improved" water supply infrastructure, this does not necessarily mean that people do not also use water from additional, unsafe water sources such as river water or water from private wells. Another question is if people can afford the amount of water to meet their basic needs – in ger areas the residents consume an average of 5-10 litres per capita per day, less than the lowest international standard stated in the literature. With regard to sanitation, the use of "improved" pit latrines that are unsealed (open to the ground) leads to the pollution of soil and groundwater and is therefore not a sustainable solution. Also the greywater problem is not addressed by the JMP.

⁷ <http://www.wssinfo.org>

The Darkhan case study

The JMP classification has been used to evaluate the current status of water supply and sanitation in the study area of the HCES case study Darkhan. It could be shown that in this peri-urban ger settlement district water supply and sanitation predominantly can be described as „improved“. But nonetheless there is a need for action (Sigel *et al.* 2011).

3.2 National Water Programme

The National Water Programme (Parliament of Mongolia 2010), which was adopted first in 1999 and renewed on 20 May 2010, is a major policy initiative. It has been developed by members of the National Water Committee, the Water Agency and the Ministry of Nature, Environment and Tourism. The aim is to integrate the numerous programmes and strategies to come to a consistent water programme which is valid for the whole country (Horlemann & Dombrowsky 2010). In the introduction it is said that the National Water Programme shall be implemented in two stages: the first “intensive development stage” is from 2010 to 2015, the second “stable development stage” from 2016-2021.

The overall objective of the National Water Programme is (i) to protect the water resources from deterioration and pollution, (ii) to enhance the proper use of available resources and (iii) to help to create conditions for Mongolian people to live in a healthy and secure environment as a key element for the development of the country (p.4).

With regard to *water supply in cities and settlement areas* the National Water Programme states that in Ulaanbaatar city and Aimag centers in the first stage the existing facilities and pipelines shall be renovated and extended (p. 8). Furthermore, the water service density shall be increased by constructing kiosks and connect them to a centralised system (p.8). In the second stage, feasibility studies shall be conducted for water supply and sewerage systems for group settlements (p.10).

For improving *wastewater treatment and reuse* the National Water Programme puts forward that in the first stage in Aimag centers, larger cities and settlement areas wastewater treatment plants shall be renovated technologically (p.10). In tourist camps and public service facilities near lakes and large rivers small-scale wastewater collection and treatment facilities shall be adopted and implemented with advanced technology (p.10). In Aimag centres, water supply and sewerage pipelines shall be constructed and expanded (p.11). In cities and settlement areas water supply and sewage service trucks and equipment shall be renovated (p.11).

With regard to *rainwater harvesting* the National Water Programme states that in the first stage the roofs of large buildings and facilities shall be adapted to collect precipitation. The collection of precipitation shall be incorporated into designs and included in norms and regulations. Policies for domestic use or for the watering of public green spaces shall be established (p.11). The National Water Programme also says that in new apartment buildings

and facilities with municipal water supply engineering solutions shall be studied for the separation of potable water and domestic use water (*greywater*) (p.11).

To improve *flood protection*, the National Water Programme specifies that in the first stage for Ulaanbaatar city, Aimag centres, other large cities and settlement areas flood protection in the sense of planning and operation shall be improved (p.11).

With regard to households, entities and tourist camps which are not connected to centralised water supply or sewage systems, the National Water Programme states that in the second stage advanced and environmentally friendly technology shall be adopted for toilets (biological and dry toilets) and that waste (grey) water shall be reused by households (p.12).

The National Water Programme also addresses several important non-technical issues for an improved water management. For example, it highlights the importance of institutional and legislative development, coordination of activities by organisations, integrated river basin management, capacity building, community participation, public information and the setting and payment of user fees (p.4, 12).

In summary, it can be noticed that the National Water Programme includes several important objectives and targets with regard to the water supply and sanitation sector including rainwater harvesting and flood protection. The problems which can be found in peri-urban ger settlements are addressed: On page 12 the situation of “households which are not connected to centralised water supply or sewage systems” is designated, thus, for households like for example those in peri-urban ger settlements. (The terms “settlement areas” and “group settlements” often used in the text presumably rather indicate villages or hamlets and not peri-urban settlements). It is surprising that this target has to be fulfilled not before 2021, the end of the second stage, as it is quite well-known, that the problems in peri-urban ger settlements are quite urgent. Regarding technical solutions the authors normally focus on the extension of the central systems. But by mentioning the need for “advanced and environmentally friendly technology ... for toilets (biological and dry toilets)” the authors make clear that this cannot be the only approach. The problems regarding greywater disposal and stormwater management in peri-urban ger areas are not tackled by the National Water Programme.

Interview statements

- Water supply and sanitation in ger areas is a very hard and difficult problem for us. The government must implement the water supply. But how to collect the waste waters...? The strategy of the National Water Committee: New technologies like toilets, small waste water treatments (decentralised). That is a really important issue in the National Water Programme (NWC).
- From the political point of view the National Water Programme currently is most important for ger area development (WA).

3.3 Mongolian Action Programme for the 21st Century (MAP-21)

The Action Plan of the Government of Mongolia for 2008-2012, which is based on the National Development Strategy, gives considerable attention to water and infrastructure development. It includes the following *objectives* relevant to water supply and sanitation (UNDP 2010: 34):

- Increase supply and accessibility of safe drinking water in line with hygienic requirements, introducing modern technology and technical facilities
- Improve the infrastructure development in ger areas within urban areas
- Formulate and start implementing a “Rural Development Programme”

From the long list of *National Actions* the following are of high relevance for water supply and sanitation (Water Authority 2011: 20):

- Improve the quality of potable water for all Mongolians, including continuation of the installation of water softening equipment in soums and settled areas where water is hard and rich in minerals
- Install drinking water purification filters and equipment for 102 soums of 17 aimags, and supply residents of all settlements with drinking water meeting standard requirements
- Promote initiatives involving private entities in delivery of services such as water, heat, power supply, wastewater and removal of trash in the peripheral areas of the cities
- Expand, repair and renovate facilities for public utilities of the ger districts, cities and other settlements
- Initiate the connection of ger district families to the water supply and sanitation networks

The Action Programme explicitly claims to improve water supply and sanitation in ger settlements by expanding the central networks. Other approaches for improvement are not mentioned. Interesting is the target “to promote initiatives involving private entities in delivery of services... in the peripheral areas of the cities.”

3.4 Programme on Sanitation

The Sanitation Programme⁸ has been developed by the Ministry of Roads, Transport, Construction and Urban Development (MRTCUD) and adopted in 2005. It includes 45 specific proposals for completion by 2015. There is recognition of the need for a full spectrum of improvements, both physical and institutional. The Programme explicitly recognises the need to develop and introduce improved ger area sanitation, for example, improved pit latrines and holding tanks, in a hierarchy of systems culminating in centralised sewerage (World Bank 2007: 231).

⁸ No English version available.

3.5 Conclusions

In general it can be said that the national strategies and programmes under investigation here include several important objectives and targets with regard to the water supply and sanitation sector. However, they are short of detail on how these targets will be reached including specific responsibilities and financing strategies. In some programmes the problems regarding ger areas are tackled explicitly. But generally the only proposed solution is to expand the central network. One reason why the typical problems of peri-urban ger settlements often are not taken up in detail may be that these settlements are neither typical “urban” nor typical “rural”. The MDGs are very specific regarding the access to service provision but not suitable as a normative framework for sustainable water infrastructure development. According to UNDP (2009: 20) a variety of policies concerning aspects of the sector exist, but they are not harmonized and there are significant policy gaps in key areas or for key functions of the sector.

4 Legal and regulatory framework

The legislation base related to water is extensive. It exists of laws and associated government orders, regulations and standards. In the *Law of Mongolia on Water* (Parliament of Mongolia 2004: article 2.1) it is stated that “the legislation on water shall consist of the Constitution of Mongolia, the Law on Environmental Protection, the Law on water supply of cities and urban settlements and utilization of sterilization facility⁹, this law and other legislative acts issued in conformity with them”. In addition there are many laws being relevant for the water supply and sanitation sector. A selection of key water related laws of Mongolia is compiled in table 2. Selected laws will be assessed in further detail in the following sections.

*Table 2: Key water related laws of Mongolia (*English version available)*

Law	Year adopted
Law On Water*	1995, 2004
Law On Sanitation*	1998
Law On Environmental Protection*	1995
Law On Fees for the Use of Water and Mineral Water*	1995
Law On Subsoil*	1988
Law on Water Supply and Sewage in Cities and Settlements/Law on Urban and Settlement Areas’ Water Supply and Sanitation/Law on Water Supply of Cities and Urban Settlement and Utilization of Sterilization Facility	?
Law on wastewater discharge and its fee	?

⁹ This law could not be found in the literature.

4.1 Law on Water

The Law on Water (Parliament of Mongolia 2004) was adopted in 1995 and amended in 2004. Its purpose is

- to regulate relations pertaining to effective use, protection, and restoration of water and water basins (1.1)

The powers of the state organisations on water-related issues are described as follows:

Extractions from chapter 2: Powers of the state organisations on water-related issues

The *State Great Khural* shall exercise the following powers related to water issues:

- define the state policy on water
- set fees for use of water resources

The *Government* shall exercise the following powers related to water issues:

- organize and ensure implementation of the state policy on water
- adopt a program for provision of drinking water supply for population that meets health and sanitary requirements

The *Ministry of Nature, Environment and Tourism (MNET)* shall exercise the following powers related to water issues:

- approve and implement, with respective state administrative central organizations, 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
- distribute and limit water use for industrial purposes or temporarily prohibit water resource utilization for water resources and habitat restoration in zones where its natural restoration cycle was degraded based on the conclusion of the professional organization
- organize implementation of programs to supply a population with drinking water that meets health and sanitary requirements in collaboration with the relevant state administrative central organizations;

The *Water Authority (WA)* shall operate within the competence of the minister in charge of nature and environment. The WA shall exercise the following powers related to water issues:

- develop, and submit for adoption, technical status and standards for purifying waste water of industries and services that use chemicals, based on advanced technological and scientific progress;
- develop and ensure compliance of technical conditions for recycling industrial waste water;

Aimags and capital city departments of environment shall exercise the following powers:

- monitor implementation of legislation on water and report to the governor of aimags and the capital city and the government agency in charge of water issues;
- submit to respective level governors, proposals to grant or prohibit permits to drill a borehole for the purpose of water utilization;

Soum and district environment rangers shall exercise the following powers related to water issues:

- conclude contracts with water users, issue licenses based on a decision of soum and district governors, and register this in the water databank;
- impose a fee for use of water resources in accordance with a legislation and ensure its implementation.

Aimag and capital city governors shall exercise the following powers:

- issue an order for exploration and research of water resources for centralised water supplies in cities and urban settlements and submit these to the State Administrative Central Organization of Nature and Environment (MNET) and of Construction and Urban Development (MRTCUD)
- manage activities on water and water environment exploitation, protection, restoration and building of water facilities

Citizen's representatives khurals of soums and districts shall exercise the following powers:

- set water service fees based on negotiation with an owner or possessor of water facilities

Soum and district governors shall exercise the following powers:

- terminate water utilization for industrial purposes and drilling a borehole without permission
- set wastewater removal points based on the recommendations of professional organizations
- receive a request from citizens, economic entities, and organizations for drilling a borehole for water utilization and deliver its decision within 14 days;
- make a decision to grant permission for utilization of water based on conclusions of the government agency in charge of water issues, aimag and capital city departments of environment, and environment rangers;

Public meetings of baghs and khorooos shall exercise the following powers:

- regulate possession and use of wells, water resevoirs, irrigation systems within a bagh territory, make decisions on governor's proposals for making a well, creating an irrigation system, and watering pastures, crop fields and hay-fields

A governor of a bagh or khoroo shall exercise the following powers:

- engage the public in restoration and caretaking activities for sources of rivers, streams, and springs, afforestation and plantation of seedlings, augmenting sources of water, and prevention from pollution
- monitor use, protection, and possession of water sources within its territory

The Law on Water makes a distinction between “water user” and “water consumer”:

- “water user” means a citizen, economic entity, and organization that uses a water or water environment for profit in industry and service operations (3.1.14)
- “water consumer” means a user who utilizes water or water environment not for profit and seeking necessity, such as for drinking, household purposes, herding, and agriculture (3.1.15)

About water consumers it is said:

- Soum or district governors shall grant licenses to consumers for drilling a borehole for underground water use (22.1)
- A water consumer has a right to water supply that meets quality norms (22.2)

The Law on Water sets fees for water use and pollution:

- A citizen, economic entity or organization shall pay a water use fee (30.1)
- A citizen, economic entity or organization that pollutes water shall be subject to a water pollution compensation fee (30.3)

In the context of the protection of water resources and water quality the following is said about pit latrines (pits):

- A citizen, economic entity, or organization shall seal completed pits and transfer that to the governor of the soum or district.

According to the above points it can be concluded that ger area residents are water consumers. If they want to establish an own well on their compound they need a licence and they shall pay a water use fee. Furthermore, old pit latrines shall be sealed.

The Law on Water includes a chapter about water facilities. A water facility is an

- ordinary and engineering construction to regulate water discharge, storage, transfer, distribution, provision, sterilization, purification, improving its quality, and exploration of underground water, and protection from water disasters (3.1.8)

About water facilities it is said:

- Decisions on building water facilities of state importance, except those specified in Article 36.8 of this law, shall be issued by the State Administrative Central Organization of Construction and Urban Development (MRTCUD) on the basis of an environmental impact assessment by proposal of aimag and capital city governor.
- Water facilities may be given to citizens, economic entities and organizations for possession and use on contractual basis.
- A license for possession and use of water facilities shall be granted for up to 20 years and with five years duration extension.
- Upon certain permission, a water facility built or repaired by citizens, economic entities, and organizations with their own funding can be their own property, however, a water resource shall be for public use.
- A main water facility designed for centralized water supplies for public sanitization and water disposal regulation shall be the property of the state.

In summary, the Law on Water says a lot about use, protection and restoration of water. However, the field of drinking water supply as one form of water usage is not further assessed. The same holds for sanitation and wastewater disposal, even if it is very important for the protection of water. The problem of pit latrines that are full is mentioned but the requirement “to seal completed pits and transfer that (*what???*) to the governor of the soum or district” is not clear. The Law on Water also says something about water use fees. The information regarding property, operation and maintenance of water facilities is very coarse.

4.2 Law on Sanitation

The Law on Sanitation (Parliament of Mongolia 1998) was adopted in 1998. Its purpose is

- “to govern relationships concerning the maintenance of sanitary conditions, defining the general requirements for sanitation in order to ensure the right of an individual to healthy and safe working and living conditions, ensuring normal sanitary conditions, and defining the rights and duties of individuals, economic entities and organizations with this respect (article 1).”

Main definitions can be found in article 3:

Definitions (article 3):

- Sanitation shall mean activities to eliminate adverse natural and social factors having potential impact on the public health, and to prevent disease (3.1.1).
- Normal sanitary conditions shall mean a healthy and safe environment for a human to work and to live (3.1.2)

The Law mentions main requirements to ensure safe drinking and household water:

Extractions from chapter 2: General requirements for ensuring normal sanitary conditions

- Local administrative bodies, agencies in charge of water use, and economic entities and individuals, shall take measures to establish security zones for drinking water sources, water distribution network, main water reservoirs, pumping stations, water distribution sites and protect them from contamination in accordance with the relevant regulations (5.1)
- Agencies in charge of water use shall conduct industrial inspection and analysis of the quality of drinking and household water in accordance with the standards and regulations, and take measures to improve the quality of water (5.2)

The protection of the environment is not in the focus of the Law. There are only singular passages in the text where it is stated out that the soil and the environment shall not be contaminated:

Extractions from chapter 2: General requirements for ensuring normal sanitary conditions

- The soil of land within human settlements shall match the sanitary standards and hygienic norms, and shall not be contaminated (7.1).
- It shall be prohibited to contaminate the environment by disposing waste in the places other than the specified points (7.4)

The Law says a lot about the disposal of special waste, dealing with food, new products etc. but nearly nothing about the disposal of faeces. Regarding housing and facilities for public use or work it only says that the sanitary and safety standards shall be met. But about the practical implementation nearly nothing is said.

Extractions from chapter 2: General requirements for ensuring normal sanitary conditions

- Housing, buildings and facilities for public use and services shall not have adverse impact on the public health and shall match sanitary standards and appropriate hygienic norms (8.1)
- Areas for production, service, study, its facilities, equipment, construction, and tools shall not be hazardous to health and working ability of employees, observers, users, and students and shall match the sanitary and safety standards and planning norms (9.1)

There is one chapter about the “powers of the local self-governing bodies and governors” where the responsibilities and duties of the local governmental actors are described (see citations below). But nothing is said about the actors from the national level.

The Law points out that it is important to involve different actors in actions and activities conducted by the local administration:

- *Aimag, capital city, soum, and district governors* shall involve organizations, economic entities, and individuals of their respective territory in the actions aimed at ensuring normal sanitary conditions (15.2.4)
- An *individual* shall participate in the sanitation activities conducted by the local administration, sanitary and specialized inspection agencies and timely fulfill their demands (18.1.1)

Only two times the Law mentions sewage systems and water supply and sanitation systems:

Extractions from chapter 3: Powers of the local self-governing bodies

Aimag, capital city, soum, and district governors shall exercise the following powers:

- control the use and operation of markets, sources of drinking and household water, rivers, springs, sewage systems, clean water networks, water drainage systems, arms of rivers, water holes, lavatories, waste disposal points, cemeteries, and cleaning facilities located in their particular territory and take actions to eliminate the breaches revealed (15.2.5)

An *individual* shall have the following duties to ensure normal sanitary conditions:

- for residents of housing that are not connected to the central water supply and water disinfecting drainage, build and use lavatories, sewage pits and waste disposal containers in accordance with the sanitary regulations and standards (18.1.3)
- ...observe the sanitary regime, not waste human and animal excretions, take care of trash and waste in the urban streets, squares, lawns, and localities of residential areas... (18.1.4)

In summary it can be said that the Law is very coarse and not specific regarding design and use of sanitation systems and technologies. The problems of sanitation in peri-urban ger areas are not addressed explicitly. But point 18.1.3 applies to the situation in peri-urban ger areas (and rural areas): Residents are asked to build and use sewage pits and waste disposal containers in accordance with the sanitary regulations and standards. In the Law nothing is said about sanitation planning in cities and the planning, construction, operation and maintenance of centralised or decentralised sewage systems.

4.3 Law on Environmental Protection

The Law on Environmental Protection (Parliament of Mongolia 1995a) was adopted in 1995. Its purpose is

- to regulate relations between the state, citizens, economic entities and organizations in order to guarantee the human right to live in a healthy and safe environment, have ecologically balanced social and economic development, and for the protection of the environment for present and future generations, the proper use of natural resources and the restoration of available resources (1.1).

Water, land and its soil are part of the resources that shall be protected (3.1). Water includes

- surface and ground water resources including rivers, springs, ponds, mineral waters, and glaciers, as well as natural and man-made waterways within the territory of Mongolia (3.2.2)

Extractions from chapter 3: Powers of state organisations

MNET:

- ... to develop and adopt standards for environmental carrying capacity and to administer their implementation by means of authorized organizations or in cooperation with other state central administrative bodies (15.1.3)
- to develop and endorse a regulation to appoint an active nature protection ranger and reward him based on his performance (15.1.12)

Aimags and capital city citizen's representatives khurals shall exercise the following powers in respect of environmental protection:

- to establish the boundaries of special zones to meet sanitary requirements and protect the environment of cities, villages and other settled areas, resorts and treatment centers, the sources of lakes, rivers, mineral water, springs, ponds, and other water sources (16.1.4)

Soums and district governors shall exercise the following powers in respect of environmental protection:

- to direct the work of rangers and to provide them with required distinctive badges, defensive weapons, equipment and means of transport, to include these costs in local budgets and to provide other assistance as required (17.2.5)

Bagh and khoroo governors shall exercise the following powers in respect of environmental protection:

- to ensure the implementation of hygienic and sanitary requirements in their territory and to designate public waste disposal areas (18.2.4)

Extractions from Article 19: General Methods and Forms of Environmental Protection

- the establishment of hygienically sound areas to ensure a healthy and safe environment for cities, villages, and settled areas and protection of the sources of rivers, lakes, mineral water, springs, ponds, and other bodies of water (19.2.6)

Extractions from Article 21: Protection from Environmental Pollution

- Citizens, economic entities and organizations shall have the following obligations in respect of the prevention of environmental pollution by commercial or household wastes:
 - before disposal, to classify garbage, put it in special containers and deliver it to specially designated sites by specially equipped transport (21.3.2)
 - to keep residential areas clean and, if necessary, to clean and sterilize sites before moving to other places (21.3.3)
 - to remove garbage around houses and residential areas regularly (21.3.4)

Extractions from Article 46: Economic Incentives to Protect the Environment

- The state shall reward citizens, economic entities and organizations for the introduction of modern non-polluting and non-waste technology, progressive methods for environmental protection, the use and restoration of natural resources, and the reduction of adverse environmental impacts (46.1)

From its purpose (“to guarantee the human right to live in a healthy and safe environment”) the Law explicitly includes “the environment of cities”. Hence, it should be relevant regarding the environmental sanitation situation in peri-urban ger areas. However, nothing is said about the pit latrines polluting soil and groundwater in the ger areas. Only the problem of household waste disposal is mentioned. It is a duty of the bagh and khoroo governors “to ensure the implementation of hygienic and sanitary requirements in their territory and to designate public waste disposal areas”.

4.4 Law on Fees for the Use of Water and Mineral Water

The Law on Fees for the Use of Water and Mineral Water (Parliament of Mongolia 1995b) was adopted in 1995. Its purpose is

- to regulate the fees for the use of water and mineral water as well as procedures on paying these fees to the state budget.

According to the Law every citizen of Mongolia using water shall pay a water use fee. This includes water for household use. The issuance of permits is regulated by the Law on Water:

Extractions from Article 3: Fee Payers and Their Registration

- Any citizen of Mongolia or a foreign citizen or persons with no citizenship (hereafter “citizen”) using water, mineral waters and/or riparian zones in Mongolia for any purpose shall pay a water use fee (3.1)
- The issuance of permits to water users shall be regulated by the Law of Mongolia on Water (3.2.)

Extractions from Article 4: Subject of a Water Use Fee

- A water use fee shall be imposed for use of water, mineral water and riparian zones for the following purposes (4.1.):
 - water for drinking, household use and production purposes (4.1.1)

The fee for water used for drinking shall be calculated according to cubic meters of water (6.1.2). The Law does not contain any minimum or maximum fees for “surface and well water” “used for household purposes” (7.1.)

In article 8 it is said that “a fee payer shall be exempt if the purpose of water use is “drinking or household purposes, irrigation of pastures, of family/kitchen gardens for growing vegetables” (8.1.1).

According to the Law it is unclear if a ger resident using a private well on his/her compound shall pay a water use fee or not. According to articles 3 and 4 the answer would be “yes”, according to article 8 it would be “no”.

4.5 Government orders and regulations

There are a lot of government orders and regulations related to water. Annex 3 contains an overview with the latest government orders being from 2007. There is no official English translation available.

4.6 Standards on water

According to the Law on Environmental Protection, the *MNET* shall “develop and adopt standards for environmental carrying capacity and to administer their implementation by means of authorized organizations or in cooperation with other state central administrative bodies”. Standards related to “urban development, design, construction, and building materials” are developed by the *ALAGC*, the Agency for Land Affairs, Geodesy and Cartography (see section 5.1.6).

Standardisation services in Mongolia are handled today for the whole country by the *Mongolian Agency for Standardisation and Metrology (MASM)*.¹⁰ MASM approves and publishes all Mongolian standards and represents Mongolia within the International Organisation for Standardisation (ISO).¹¹ The preparation, application and promotion of national standards are set out in the Mongolian *Law on Standardization and Conformity Assessment*, adopted in 2003.

Annex 4 contains a (partial) list of Mongolian standards on water. Regarding drinking water supply and sanitation in peri-urban ger areas only one relevant standard could be found, the *Standard on Toilet and sewage pit. Technical requirements (MNS 5928:2008)*.

4.6.1 Standard on toilet and sewage pit. Technical requirements¹²

This standard was adopted in 2009. Its purpose is to ensure a safe living environment, to prevent environmental pollution, to provide information about the technical design and use of pit latrines and greywater pits. It explicitly focuses on settlements that are not connected to a water supply and sanitation system.

Extractions from article 6: Hygienic requirements

- Pit latrines or greywater pits have to be located with a minimum distance of 15 metres to dwellings, 20 metres to water kiosks, ..., and 200-250 metres to rivers (6.3)

Extractions from article 7: Requirements for the environment

- It is not allowed that the use of the pit latrine and greywater pits damage the environment, the health or the safety of the residents (7.2)

Extractions from article 13: Requirements of usage

- When the pit latrine and the greywater pit is full up to 90% they have to be emptied.

It is obvious that for example in the ger areas of Darkhan this standard is not fulfilled. Generally the pits are not sealed to the ground and cannot be emptied. The distance to dwellings and even to (private) wells is often only a few metres.

¹⁰ <http://www.masm.gov.mn> and <http://www.estandard.mn>

¹¹ The website <http://www.estandard.mn> contains a list of standards available in Mongolian language. Few are available online for free; most have to be purchased from the Mongolian Agency for Standardisation.

¹² The following information is based on an unofficial German translation.

Interview statements

- Often the ger area residents do not know about the legal standards. For example, two years ago a standard on toilet and sewage pit was introduced but it was not communicated to the people (PHI).
- There are standards for the pit latrines in ger areas but they are not met because people don't have enough money (GASI).

4.7 Conclusions

In general it can be said that there is a wide range of legislation, enactments and standards in force in the water supply and sanitation sector in Mongolia. Regarding sanitation in peri-urban ger areas it is said that the residents shall use pit latrines (Law on Sanitation), and that the pit latrines shall be sealed (Law on Water). The technical requirements are described in a specific standard (Standard on toilet and sewage pit). Nothing is said about the emptying of pit latrines. The analysed documents are very coarse regarding information about urban water supply and sanitation services including planning, regulation, organisational structure, operation and maintenance, water pricing, tariff setting etc. Possibly this information can be found in other laws (for example Law on Water Supply of Cities and Urban Settlement and Utilization of Sterilization Facility, Law on wastewater discharge and its fee).

According to UNDP (2010: 35) the extent to which the existing legislation, enactments and standards are enforced is unclear. Also many codes and standards do not reflect current needs of financing capability. Tortell et al. (2008: 16) state that the problem is not so much the lack of laws and policies but a lack of capability to implement them. In addition, there is an apparent lack of political will and corrupt practices which hinder the implementation of policies and legislation which are otherwise sound. According to UNDP (2009: 20) a range of legislation exists but does not allow for integrated implementation of the various policies. Existing standards are quite comprehensive, but enforcement remains difficult due to the large number of organizations involved and poor coordination among organisations.

5 Institutional framework

The aim of this section is to identify the key actors and institutions in Mongolia's water supply and sanitation sector and to describe their main roles and responsibilities. Only *state* actors and institutions are considered. The main state actors and institutions on water related issues are described in the Law on Water.¹³ Thus, concrete roles and responsibilities are ascribed to the parliaments (khurals) on every administrative level, the public meetings on bagh/khoroo level, the national government, the governors on every administrative level, a Government Agency in Charge of Water Issues (i.e. the Water Agency), a Water Basin

¹³ Law on Water (2004), chapter two: „Powers of the state organization on water relation issues“

Council, and a Professional Organisation on Water¹⁴ (cf. Horlemann & Dombrowsky 2010). Other important state institutions not mentioned in the Law on Water are the National Water Committee (NWC) and the General Agency for Specialized Inspection (GASI).

Important governmental Ministries taking responsibility for water are the Ministry of Health (MoH), the Ministry of Mining and Energy (MME), the Ministry of Defence (MD), the Ministry of Food, Agriculture and Light Industry (MFALI), the Ministry of Nature, Environment and Tourism (MNET), and the Ministry of Roads, Transportation, Construction and Urban Development (MRTCUD). The 4 central Ministries in the urban water supply and sanitation sector are the MRTCUD, the MNET, the MFALI and the MoH (UNDP 2010: 36). Other important institutions regarding urban water supply and sanitation are the Agency for Land Affairs, Geodesy and Cartography (ALAGC), the Public Health Institute (PHI) and the public service providers (PUSO or USAG).

In terms of functional allocation of tasks related to water supply and sanitation, there is no single ministry, department nor agency at the central level that is assigned the task of planning and making provision for water supply and sanitation. The MRTCUD formally has this responsibility, but has no influence over resources and little liaison with external stakeholders. The Ministry's outreach does not cover water supply and sanitation in rural small towns, soums and bag centres (UNDP 2010:32).

At present water conservation and water resource management is the responsibility of MNET; water use and licensing are the responsibility of the WA under the MNET; centralised water supply and waste water treatment plants and soums small town water supplies fall under MRTCUD; agriculture, pasture land water supply, urban drinking water or industry and mining fall to MFALI; and MoH is responsible for drinking water quality, ecological and environmental sanitation and hygiene (UNDP 2010: 37).

The following figure shows key actors and institutions in Mongolia's water supply and sanitation sector and their main interconnections. Selected actors and institutions are described in more detail in the following sections.

¹⁴ No equivalent has been defined to this organisation yet (Horlemann & Dombrowsky 2010).

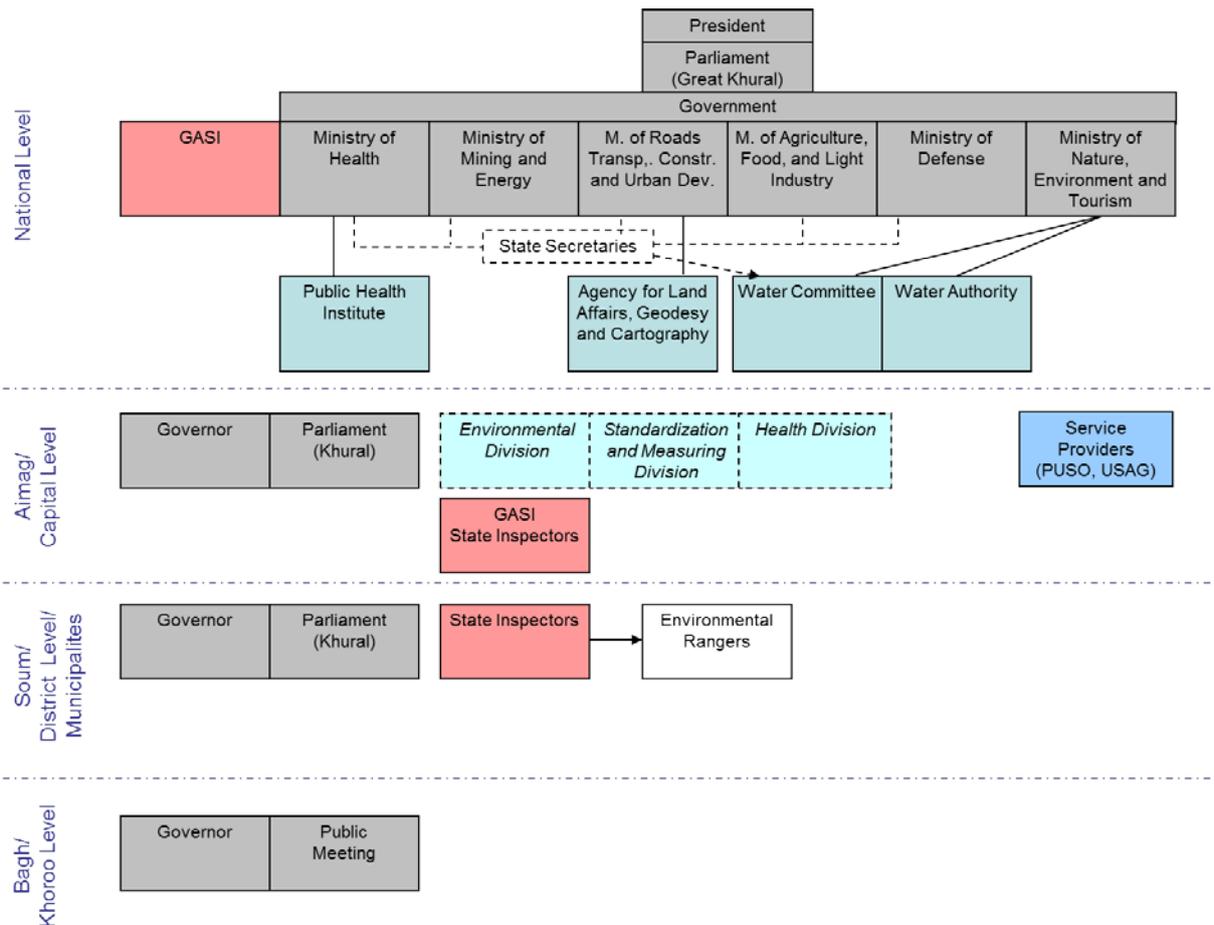


Figure 2: Mongolia’s water supply and sanitation sector: Key actors and institutions (Source: Own compilation based on Horlemann & Dombrowsky 2010, UNDP 2009, UNDP & UNICEF 2004).

5.1 National level

5.1.1 Ministry of Nature, Environment and Tourism (MNET)

According to the Law on Water the main responsibility for water policy lies with the Ministry of Nature, Environment and Tourism (MNET)¹⁵. One of the main responsibilities of the MNET related to water supply and sanitation is “to organize implementation of programs to supply a population with drinking water that meets health and sanitary requirements in collaboration with the relevant state administrative central organizations” (Article 11, 11.1.7). Reduction of air, water and soil contamination in urban areas and increasing the appropriate use and conservation of water resources are among five mid-term goals of the Ministry (Tortell *et al.* 2008: 18). Waste management is also among the duties of the MNET (interview statement).

¹⁵ <http://www.mne.mn>

The MNET has direct supervision for two key organisations, the *National Water Authority* and the *National Water Committee*, both to ensure the implementation and coordination of water policies and the National Water Programme (see section 3.2) (Horlemann & Dombrowsky 2010: 10). Since 2009 the director of the MNET also is director of the NWC.¹⁶

The MNET also has a presence at the local Government level. In each aimag there is a local government unit for environment and tourism. Each soum has designated staff for environment including *rangers*. There are more than 600 rangers working in all over the country.¹⁷ According to Tortell et al. (2008: 20) “the situation at the local Government level is complex, legislation is overlapping and confusing and responsibilities for environment are entangled and complicated.” The authors also state that at local Government level there is poor interaction and cooperation between the MNET and the GASI and also between the MNET, the GASI and local authorities.

5.1.2 National Water Committee (NWC)

In 2000 the National Water Committee (NWC) was founded to coordinate and integrate the activities of the water related ministries. Head of the Water Committee is the Minister of Nature, Environment and Tourism (MNET). The NWC is not constituted by law, but through a policy enactment of the government. The steering committee consists of the state secretaries of the five other ministries (see Figure 2). Besides its coordination tasks, the committee is also taking part in the formulation of the National Water Programme and is responsible for submitting it to the parliament and government (Horlemann & Dombrowsky 2010: 10). The NWC stresses the importance of the currently revised National Water Programme for the Mongolian water management policy.¹⁸

5.1.3 Water Authority (WA)

The Water Authority (WA)¹⁹ was established in 2005 within MNET as an Implementing Agency of the Government.²⁰ The NWA is responsible for ensuring the implementation of water management measures. It also shall support the vertical coordination and cooperation from ministries at national to the private sector at local level. However, the mandate for monitoring compliance is vested within the GASI.

The WA is responsible to develop and implement the policy on national water resources management, its use, conservation and protection of the ecological environment of water resources, to provide information service, issue permission certificates for water use, impose water tax, and to coordinate the cooperation of professional institutions and agencies in this field (UNICEF & UNDP 2008: 31).

¹⁶ Presentation of the NWC at the HCES Launching-Workshop in Darkhan, September 2010

¹⁷ English brochure of the MNET, not dated

¹⁸ Presentation of the NWC at the HCES Launching-Workshop in Darkhan, September 2010

¹⁹ <http://www.water.mn>

²⁰ Presumably therefore it often is also named *Water Agency*.

5.1.4 General Agency for Specialised Inspection (GASI)

The General Agency for Specialized Inspection (GASI)²¹ has been founded in 2002. It is the main supervisory agency of the government, and includes inspection and sanctioning of non-compliance with environmental legislation. This control and enforcement function through an inspectorate is usually what is often translated into the Mongolian language as “monitoring” (Horlemann & Dombrowsky 2010; Tortell *et al.* 2008: 21).

Under the auspices of the GASI 1733 *state inspectors* are working, inspecting the implementation of more than 140 laws, 3600 standards, norms, rules and resolutions of the Parliament and the Government of Mongolia. Key departments for the water supply and sanitation sector are the State Department for Natural Environment, Geology, Radiation and Mining Inspection, and the State Department of Health and Educational Inspection. The latter is responsible for a plenty of inspection activities regarding water supply, sanitation, health and hygiene.²² The GASI has subunits at local level, referred to as aimag inspection, municipality inspection, and district inspection.

The State Professional Inspection Agency consolidated, in 2003, all inspection offices in Ministries and aimags into a single agency reporting to the Prime Minister. It is the most effective agency involved in environmental inspection, but even its policing powers are moderated by the scale of available penalties, and are ineffective against illegal tannery sludge dumping for example (World Bank 2007: 225).

5.1.5 Ministry of Roads, Transport, Construction and Urban Development (MRTCUD)

The Ministry of Roads, Transportation, Construction and Urban Development is the most respective Ministry regarding water supply and sanitation issues. It is responsible for advising the government on the policy framework for public services urban development, housing, water supply and sanitation (Water Authority 2011: 21). Its mission is:

“To provide every citizen with sage and favorable life condition by implementing an appropriate policy of construction, public utilities, land management and urban development of Mongolia.”²³

The MRTCUD pursues the following strategic goals:

- Implement the '40 000 housing units' program
- Privatize the land for every citizen of Mongolia
- Reform and approve administrative and territorial units of Mongolia
- Provide the low income people with apartments

The MRTCUD is responsible for centralised water supply and waste water treatment in Ulaanbaatar and aimag and soum centres (UNDP 2010: 36). One specific goal is to provide

²¹ <http://www.inspection.gov.mn>

²² English brochure of the GASI from 2009.

²³ English brochure of the MRTCUD from 2006.

soum residents with safe water supply by introducing new technologies (water cleaning technologies, technologies to reduce water hardness).²⁴

Of most relevance to water supply and sanitation is its Department for Policy and Coordination of Construction and Public Utilities with responsibility for (i) formulation and implementation of public utility policies; (ii) preparation of a legal system for public services, management coordination and implementation; (iii) planning of funding for public services; and (iv) management of design and research, and provision of government expertise (World Bank 2007: 224).

5.1.6 Agency for Land Affairs, Geodesy and Cartography (ALAGC)

The Agency for Land Affairs, Geodesy and Cartography was founded in 2006. It is under the Ministry of Roads, Transportation, Construction and Urban Development and aims to implement land policy at national, aimag and soum levels.²⁵

The strategic objectives of the ALAGC include the provision of information and professional and technical support to:²⁶

- develop and implement urban development and settlement policies
- ensure proper development and implementation of city master plans and development projects
- develop and implement policies and procedures for construction and production of building materials
- develop and implement public utility policy, programs and projects
- establish and modify development procedures for codes and standards related to urban development, design, construction, and building materials in compliance with international standards²⁷
- strengthen human resources and coordinate research, information and database within the sector

5.1.7 Ministry of Health (MoH)

The Ministry of Health is responsible for the formulation of public health policy, water quality, environmental sanitation and hygiene (Tortell *et al.* 2008: 24; UNICEF & UNDP 2008: 27). In urban environments, air, water and soil pollution play an important role for public health.

²⁴ Mongolian webpage, accessed in February 2011 (<http://www.mrtcud.gov.mn>).

²⁵ Mongolian webpage accessed in February 2011 (<http://www.land-construction.gov.mn>). The former name is „National Centre for Construction, Urban Development and Public Utilities“

²⁶ English brochure of the ALAGC, not dated

²⁷ The ALAGC contributed to the development of the Standard on toilet and sewage pit (see section 4.6.1).

5.1.8 Public Health Institute (PHI)

The Public Health Institute is an institution under the Ministry of Health with responsibility for implementation and research on public health policy (Tortell *et al.* 2008: 24).

Interview statement

- The PHI conducts research about water quality and hygiene since 1960. One important task is the development of legal standards in the field of water supply and sanitation. The PHI also has done several studies about water supply and sanitation in ger areas (PHI).

5.2 Local level (aimag and soum)

The Law on Water provides a broad range of functional responsibilities on water to the local government and make its own budgetary provisions (see section 4.1). However, given the fiscal situation of local governments, there is very little that they can do (UNICEF & UNDP 2008: 29). The rights and duties of *State Inspectors* and *Rangers* working in the field of environmental protection are described in detail in the Law on Environmental Protection (article 27, 28). State Inspectors shall supervise and instruct environmental rangers (27.1.8). Rangers exercise the rights of the state inspectors within their territory (28.1.1).

5.3 Service providers: PUSO, USAG, USUG

In the following the institutional framework of Mongolia's water service provision is described (see figure 3). The focus is put on urban water supply and sanitation for domestic consumers.

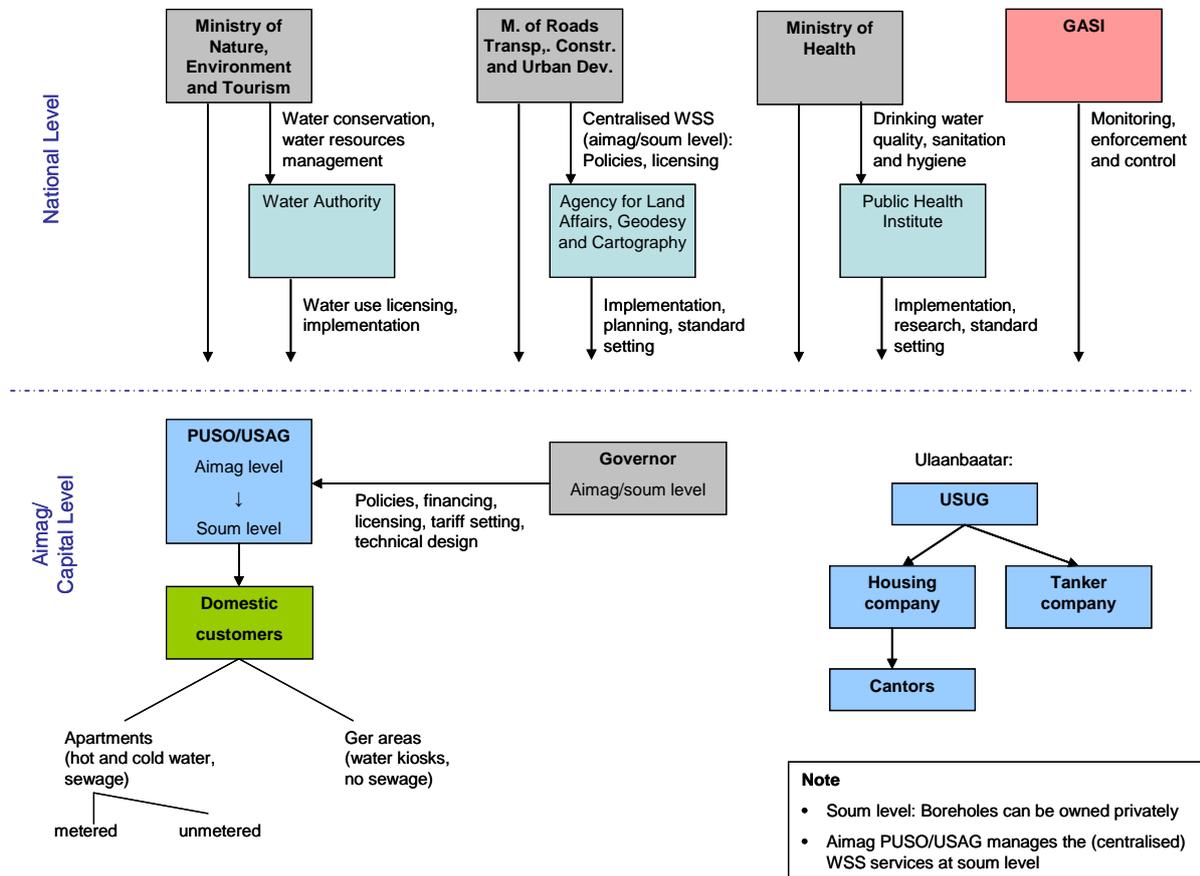


Figure 3: Mongolia's water service provision: Institutional framework (Source: Own compilation)

PUSOs, USAGs, USUG

The municipality of cities have a water supply and sewerage company, *USAG*, which is a self-financing entity with respect to operations and routine maintenance, but any major maintenance projects require additional allocations or subsidies from municipal or central government funds. The responsibility of the *USAG* is to provide potable water to residents, organisations and industries and to remove wastewater from their consumption. The Municipality is directly involved in policy matters, some technical design, contract preparation, and bidding, and construction supervision (UNDP & UNICEF 2004: 53).

A 1997 Government of Mongolia resolution enabled the establishment of *Public Utility Service Organizations (PUSOs)* with the objective of facilitating the management and delivery of urban services in the Provincial capitals as well as in Ulaanbaatar i.e. water supply and sewerage systems, the supply of hot water and heating to apartment blocks and other

formal buildings, public bathhouses and solid waste collection. These responsibilities were previously assigned to independent utility companies or local government departments. The Provincial PUSOs are, principally because of locally constrained revenues, unable to afford to maintain their assets properly, and any expenditure for capital improvements is normally sourced by MRTAUD (World Bank 2007: 226).

According to the provision from 1999 approved by the government cabinet, the ownership issues for cities and towns' PUSO have been legalised in the form of *management contracts*. Until now, the companies of 19 aimag centres have already signed the management contracts for PUSO. Since signing of the contract the selected or signed private companies shall provide the public utility services to clients, working on existing facilities owned by the state. It has not been decided if similar management arrangements will be applied to water supply and public service authorities of Ulaanbaatar, Darkhan and Erdenet (UNDP & UNICEF 2004: 53, 73).

Ulaanbaatar's Water and Sewage Company (USUG) is self-financing with respect to operations and routine repairs, but any major repairs require additional allocations from municipal or central government, or from donor funds. The municipality of Ulaanbaatar is directly involved in water supply and sanitation policy matters, planning, tariff setting, capital funding, technical design, contract preparation and bidding and construction supervision (Water Authority 2011: 49). USUG wholesales services to two other organisations: the Housing company (Housing and Communal Services Authority OSNAAG) and its associated Cantor divisions, and a Tanker Company (TANK) (UNDP & UNICEF 2004: 53). The ger areas are supplied by communal water collection kiosks or in a minority of cases by natural sources (World Bank 2007: 212).

Private sector involvement, organisational structure

Privatisation of PUSO/USAG services in Aimag Centres is proceeding but general lack of private sector capacity in many provinces constrains competition (UNDP 2009: 20).

While monopoly operation is the norm for water providers there are a few small signs that competition is introducing itself. The earliest indications were in the Provincial town ger areas, with newly emerging water suppliers who deliver by animal carts at competitive prices, or operate private wells and the occasional private kiosk. These account for less than 1 percent of the total market but are becoming more widespread, to the extent that they are in some towns regarded as a threat to PUSO profitability, particularly with the proliferation of well drilling (World Bank 2007: 227).

PUP arrangements²⁸ could also be introduced for Provincial PUSOs, particularly if they are grouped in a more efficient way. Beyond this, there is the possibility of more private sector management, for example for water kiosk operations, which should be established within a comparison-competitive regime (World Bank 2007: 217).

²⁸ Public sector – public sector partnership

Water and sanitation utilities in towns (aimag centres) can be awarded to the private sector in the form of *management contracts*. The infrastructure continues to be owned by the state. A similar arrangement exists in soum centres. As per this agreement the soum governor's office signs a management contract with a person who would operate the bore well and collect water charges from soum residents to meet his expenses. All capital costs and repair costs continue to be the responsibility of soum administration and only minor repairs are expected from the well operator (UNICEF & UNDP 2008: 36).

Water pricing, cost-recovery, tariff setting

The responsibility for setting tariffs and laying down the pricing policy has been assigned to local governments in Mongolia. While the literature on fiscal decentralisation advocates this as a major indicator towards devolution, the lack of guidelines and mechanisms for the local governments in the context of weak capacity can impinge on the interests of the poor and marginal sections of society (UNICEF & UNDP 2008: 34).

Tariff setting and regulation is an opaque process and urban services are not being provided on a financially-viable basis at this time for various reasons. Aimag PUSOs/USAGs have been relatively successful in managing technical and administrative aspects of water supply and sanitation service provision in aimag Centres, but with significant external support, and not on a full-cost recovery basis (UNDP 2009: 20, 40). Hot water is supplied to apartments without charge in many towns, and sewerage may also be free of charge or highly subsidised (World Bank 2007: 216). MRTAUD recognises that Mongolia should move as quickly as possible to a situation where water tariffs are based on actual use and appropriate cost recovery (World Bank 2007: 212).

Public utilities in the provincial capitals claim in many cases to be self-supporting for recurrent expenditure. The reality is that they manage to survive without large inputs from other financial sources, and without reference to the levels of service being provided. However, their recurrent expenditure would be deemed inadequate as they are insufficient to maintain the systems (UNDP & UNICEF 2004: 53).

The incomes of the PUSOs are effectively controlled by the governors, but it is not clear what kind of financial supervision of the utilities is exercised by the local government. Requests by the companies for tariff increases are usually not approved in full. PUSOs request capital investment from the governor and, when provided, it is financed from the central, rather than the local budget (UNDP & UNICEF 2004: 53).

The issue of financial viability of services in relation to affordability by poorer segments of society is not systematically addressed. The need for subsidization of services to the poor is not being adequately considered. Water consumption rates per capita in poor areas are among the lowest in the world, while in urban areas they are among the highest, although steps are being taken to reduce this rate (UNDP 2009: 22). While apartment dwellers pay 0,3 to 0,4 MNT per litre for water, the ger district dwellers pay three to five times more, ranging from 1,0 to 2,0 MNT per litre. The average apartment dwellers in Ulaanbaatar city use 203 litres per water per day, while ger dwellers use only 5 litres (UNDP 2010: 32, 33). Hence, those who lack access to improved water services pay the highest and consume the least.

Alternative Service Providers (ASP)

Often overlooked are alternate service providers: the large number of generally informal, small enterprises that fill the demand for water and sanitation services or households beyond the reach of public water and sewerage networks. They provide access through supplies such as water kiosks, wells, public standpipes, informal pipe networks, tankers and small-scale vendors (UNDP 2009: 14). Peri-urban service provision is a perennial and complex problem in most urban areas, but a significant number of urban municipalities are working with ASPs and community management groups directly to provide low-cost but adequate water supply and sanitation services for these areas (UNDP 2009: 37).

Small Town and rural water supply and sanitation

Smaller towns usually require piped water and (at least partial) piped sewerage services, but service demand is often low and affordability a problem, resulting in town systems in rarely being financially self-sufficient. These are usually operated by municipal or quasi-public small utilities (such as PUSOs/USAGs in Mongolia) although the smallest may be operable by *community management groups* who employ staff. In a few cases, *private sector service providers* operate them on contract, but the prospects for profit-making are low. There are several examples of so-called ‘clustering’, where low-or-no-profit systems are bundled in with one profit-making system (such as a city) and operated as a cluster by one private sector or quasi-public entity; profits from the one system subsidize losses from the other systems, and hopefully a better-than-broke-even result is obtained (UNDP 2009: 37).

Rural communities are rarely able to support piped systems; point sources such as wells with hand pumps using *community management* for maintenance and repair are most common (UNDP 2009: 37).

More technical assistance is usually required to support the operation of small town and rural water supply and sanitation services, and users rarely can afford to pay for this so it is normally provided by government. This can be difficult to provide reliably and in a timely manner. Some governments have taken the approach of establishing small town and rural water supply and sanitation agencies (sometimes called *Community Water Supply and Sanitation Agencies*) to provide this technical assistance at provincial and district levels, as well as facilitation and in some cases some funding support to the local-levels (UNDP 2009: 37).

Interview statement

- USAG is owned by the aimag. There are 27 USAGs in Mongolia. USAG needs a licensing by the MRTCUD for offering services. The MRTCUD defines the tariff setting procedure. USAG proposes concrete water prices which need to be approved by the aimag governor. USAG gets money from the MRTCUD for larger construction projects (MRTCUD).

5.4 Conclusions

The assessment of the institutional framework of Mongolia's water supply and sanitation sector shows that there is a lack of clear institutional responsibility for rural and peri-urban areas. The MRTAUD does not cover water supply and sanitation in rural small towns, soum and bag centres. This presumably also includes peri-urban ger areas because the MRTAUD is only responsible for centralised water supply and sanitation. The MNET is responsible "to supply a population with drinking water that meets health and sanitary requirements" and "the reduction of air, water and soil contamination in urban areas" is among its five mid-term goals. Against this background the MNET should address the problems related to water supply and sanitation in peri-urban ger areas. But no official statement could be found in the documents.

According to Tortell et al. (2008: 17) Mongolian Ministries and other agencies are established on a very strong sectoral and hierarchical approach with few if any mechanisms for coordination and less so, cooperation. The system is fragmented and instead of cooperation there is competition. UNDP (2010: 35) points out that sector coordination in Mongolia is weak, particularly in the allocation of specific responsibilities, prioritisation of resources and in liaison with external stakeholders. The sector has recently undergone a process of re-organisation to clarify roles and responsibilities, but it still remains unclear who has responsibility for what components of the sector and who and how the sector is being coordinated. There is no umbrella or overarching organisation to coordinate water supply and sanitation issues; it is scattered through several Ministries. According to UNDP (2009: 25) thirteen Governmental institutions (mostly Ministries) are involved in the water sector, with key sector functions of policy, regulation and implementation scattered among them. Each exists very much as a separate entity or "separated by walls" focused on its piece of the sector and in most cases doing very good technical work, but with limited effective communication and coordination with other entities in the sector. Some are visibly well-resourced, others working under difficult physical conditions, reflecting perhaps their relative political importance and attractiveness to external donors.

Interview statement

- Sanitation is very difficult in Mongolia because nobody is responsible for sanitation, particularly in ger areas (WA). My question of main concern is: Who could and should be responsible for sanitation in ger areas? Perhaps the local government, or the USAG, or the river basin council? Until now USAG is in the ger areas only responsible for water supply and not for sanitation. Perhaps this could or should be changed? I know that this is very difficult, because sometimes these companies are private. Another question is: Could or should the households add something? At the moment they are just waiting (WA).
- A large problem is that water is administered by 5 different Ministries. Since today we don't have a solution for that (MFALI).

6 Annex

6.1 Annex 1: Policies quoted

- National Water Programme. Approval of the „Water“ National Programme. Attachment to the Mongolian Parliament Resolution No 24, 20 May 2010, Ulaanbaatar (non-formal English version)
- Action Plan of the Government of Mongolia for 2008-2012. Annex to the resolution No 35, 2008, of the State Great Khural of Mongolia
- Sanitation Programme. Draft version of the Ministry of Roads, Transportation, Construction, and Urban Development (MRTCUD) of 7 December 2005. Mongolian language only

6.2 Annex 2: Laws quoted

- Law on Water, last amended in 2004
- Law on Sanitation, adopted in 1998
- Law on Environmental Protection, adopted in 1995
- Law on Fees for the Use of Water and Mineral Water, adopted in 1995

6.3 Annex 3: Government orders and regulations

Table 3: Water related government orders and regulations (Source: UNICEF&UNDP 2008: 56-57)

Approved organization	Year	No	Legal acts
Government order	1998	95	Rules for encouraging citizen and entities to introduce environmental friendly technology
Government order	2005-01-12	7	To determine the water use fee
Government order	2007-10-03	256	Rules for water resource management during drought, desertification and dryness ranking
State Committee for Environmental Control	1992	6	Rules for getting compensation resulting from damage due to water pollution
Ministry of Nature and Environment /appendix 1/	1992	153	Norms of industrial water use
	1992	A/50/A53	Rules for protection of water resources for domestic water use
State Committee for Environmental Control /appendix 1/	1992	168/171	Rules of creating zones to protect small rivers, streams, pool and lakes in Mongolia
Order of Ministry of Nature and Environment /appendix 21	1995	153	Provisional norm of water use in service sector
Minister's order – Ministry of Nature and Environment	1995	152	Design of making contract for using land along a river
Minister's order _ Ministry of Nature and Environment	1995	124	Rules for protection of drinking water resources and building new sites for waste-water disposal
Joint order of Minister of Nature and Environment and Minister of Health	1995	169/171	Rules on construction material for domestic waste water treatment facilities and tankers
Joint order of Minister of Nature and Environment and Minister of Health	1995	167/335a/171	Order on hygiene and protection zone for drinking water source
Minister's order of Nature and Environment	1996	124	Rules on registering and reporting on water resources pollution, category of pollution, regeneration and restoration of water resources
Joint order of Minister of Nature and Environment and Minister of Health /appendix 21	1997	143/A352	Rules related to water resources protection from pollution

Joint order of Minister of Nature and Environment and Minister of Health /appendix 3/	1997	143/A352	Norm and requirements of water quality and provision of drinking water
Joint order of Minister of Nature and Environment and Minister of Health	1997-01-10	a./11/05/a.18	Allowed limits of industrial waste water composition before letting effluents into the Central Waste-water treatment systems
Order of Ministry of Nature and Environment		127	Rules for registering and reporting about poisonous waste water
Joint order of Minister of Nature and Environment and Minister of Health	1998	104/A/234	Rules for mineral water use and protection
Order of Ministry of Nature and Environment	2000	21	Rules for mineral water use and protection in Special protected areas
Order of Minister of Nature and Environment	2006-06-07	180	Rules for making water database and national water cadastral
Order of Minister of Nature and Environment	2006-06-07	180	Rules of water registration
Order of Minister of Nature and Environment	2006-06-07	180	Obligations and duties of professional organizations
Order of Minister of Nature and Environment	2006-06-07	180	Design of certificate for water use
Order of Minister of Nature and Environment	2006-06-09	187	Rules of River Basin Board

6.4 Annex 4: Standards on water

Table 4: Mongolian standards on water in chronological order (Source: Own compilation based on Batsukh et al. (2008), UNICEF&UNDP 2008, World Bank 2007).

Year	No	Name
1978	MNS 2573	Surface water - To determine concentration of phenol compound
	MNS 2570	To determine freshness of water
1979	MNS 0017-1-1-14	Surface water – Types of water use
	MNS 4423	Drinking water - To determine the amount of dry waste
	MNS0017-1-1-10	Water use and protection – methods
1980	MNS 0017-1-5-15	Surface water - To determine fat content
	MNS (ISO) 566-1300	Standard on Water Quality: Guidelines for Taking Water Samples and Samples from Sludge in Wastewater Treatment Plants
	MNS 494300	Standard on Water Quality, Wastewater and General Technical Requirements
1982	MNS 3342	Surface water - To protect groundwater from pollution
1983	MNS 3597	Surface water - To protect ground and surface water
	MNS 3532	Surface water - To determine the concentration of lead
1986	MNS 3935	Drinking water - Requirements for the water analysis
	MNS 3936	Drinking and industrial water- To analyse
	MNS 3900	Drinking water - To determine the flavour, odour, colour and freshness
	MNS 3934	Drinking and industrial water - To conduct chemical analysis, store, transport and take samples
1988	MNS 4047	Surface water - Water quality analysis
1992	MNS 0899	Drinking water - Requirements for central water supply
1994	MNS 4217	Drinking water - Total concentration of nitrate compound
1995	MNS 4288	General requirements for selecting a site for wastewater treatment plants and treatment technologies and effectiveness
1996	MNS 4345	Industrial water - The approach for preparing water for chemical analysis
	MNS 4341	Industrial water - To determine concentration of manganese
	MNS 4348	Industrial water - To determine concentration of copper
	MNS 4431	Industrial water - To determine concentration of nitrate compound
1997	MNS 4420	Drinking water - To determine mercury concentration by the atom absorption approach
	MNS 4431	Drinking water - To determine concentration of nitrate compound
	MNS 4430	Drinking water - To determine concentration of iron

	MNS 4426	Drinking water - To determine concentration of phenol compound
1998	MNS 4586	Water - Environmental quality
1999	MNS (ISO) 4889	Drinking water - To determine the electroconductive characteristics of water
	MNS (ISO) 4867	Water quality - Taking a sample. The approach of storing and transporting the sample.
2000	MNS 4943	Water quality - Waste water standard
2001	MNS (ISO) 11923	Water quality - To determine the amount of solid substances in water by filtering
	MNS (ISO) 5667-10	Water quality - Taking samples of waste water
	MNS (ISO) 5667-2	Water quality - Taking samples from natural and artificial lake
	MNS 5032	Water quality - To determine the concentration of heavy metal by X-ray and fluorescence analysis
	MNS (ISO) 11083	Water quality - To determine chromium concentration by spectrometry with 1.5 diphenylcarbazide
2002	MNS (ISO) 5667-1	Water quality - To install the program of taking sample
2003	MNS 4236	Water supply - Requirements on Central Waste Water Plant and Water Supply
2005	MNS 0900	Environment, health protection, safety, drinking water. Hygienically requirements, assessment of the quality and safety
2008	MNS 5924	Toilet and sewage pit. Technical requirements
2010	MNS 6148	Water quality, maximum limits of substance contaminating the groundwater
2011	MNS 4943	Effluent treated wastewater. General requirements

7 Literature

- Batsukh N., Dorjsuren D. & Batsaikhan G. (2008) The water resources, use and conservation in Mongolia (First national report), Ulaanbaatar.
- Eawag (2005) Household-Centred Environmental Sanitation: Provisional guideline for Decision-Makers, Dübendorf, Switzerland.
- Horlemann L. & Dombrowsky I. (2010) Institutionalizing IWRM in Developing and Transition Countries - The Case of Mongolia. UFZ-Diskussionspapiere 9/2010, Leipzig.
- Kvarnström E. & McConville J. (2007) Sanitation planning - a tool to achieve sustainable sanitation? In: *Proceedings of the International Symposium on Water Supply and Sanitation For All, 27-28 September 2007*, Berching.
- Lüthi C., Morel A., Tilley E. & Ulrich L. (2011) Community-Led Urban Environmental Sanitation. Complete Guidelines for Decision-Makers with 30 Tools. Swiss Federal Institute of Aquatic Science and Technology (Eawag). Dübendorf, Switzerland.
- Mara D. & Alabaster G. (2008) A new paradigm for low-cost urban water supplies and sanitation in developing countries. *Water Policy* 10: 119-129.
- Parliament of Mongolia (1992) The Constitution of Mongolia, Ulaanbaatar.
- Parliament of Mongolia (1995a) Law of Mongolia on Environmental Protection, Ulaanbaatar.
- Parliament of Mongolia (1995b) Law of Mongolia on Fees for the Use of Water and Mineral Water.
- Parliament of Mongolia (1998) Law of Mongolia on Sanitation, Ulaanbaatar.
- Parliament of Mongolia (2004) Law of Mongolia on Water.
- Parliament of Mongolia (2006) Law of Mongolia on Administrative and Territorial Units of Mongolia and their governance, Ulaanbaatar.
- Parliament of Mongolia (2010) National Water Programme, Ulaanbaatar.
- Schertenleib R. (2005) From conventional to advanced environmental sanitation. *Water Science & Technology* 51: 7-14.
- Sigel K. (2010) Environmental sanitation in peri-urban ger areas in Darkhan (Mongolia): A description of current status, practices, and perceptions. UFZ-Bericht 02/2010, Leipzig.
- Sigel K., Altantuul K. & Basandorj D. (2011) Household needs and demand for improved water supply and sanitation in peri-urban ger areas: The case of Darkhan, Mongolia. *Environmental Earth Sciences* (available online).
- SuSanA (2008) Planning for sustainable sanitation in cities. Factsheet Sustainable Sanitation Alliance, version 1.1.
- The Asia Foundation (2009) Compendium of Laws. A Mongolian Citizens Reference Book, Ulaanbaatar.
- Tortell P., Borjigidkhan A. & Naidansuren E. (2008) Institutional Structures for Environmental Management in Mongolia, Ulaanbaatar and Wellington.
- UNDP (2009) Needs assessment on institutional capacity for water governance in Mongolia, Ulaanbaatar.
- UNDP (2010) Country Sector Assessments. UNDP GoAL WaSH Programme. Governance, Advocacy and Leadership for Water, Sanitation and Hygiene. Volume 2, New York.
- UNDP & UNICEF (2004) Access to water and sanitation services in Mongolia, Ulaanbaatar.

- UNICEF & UNDP (2008) Improving local service delivery for the millennium development goals. Restoring the image of Blue Mongolia: Rural Water Supply & Sanitation, Ulaanbaatar.
- Water Authority (2011) Urban Water Vulnerability to Climate Change in Mongolia, Ulaanbaatar.
- World Bank (2007) Mongolia. Foundation for Sustainable Development: Rethinking the Delivery of Infrastructure Services in Mongolia.
- World Bank (2010) Mongolia. Enhancing Policies and Practices for Ger Area Development in Ulaanbaatar. Conference Version, Washington DC.