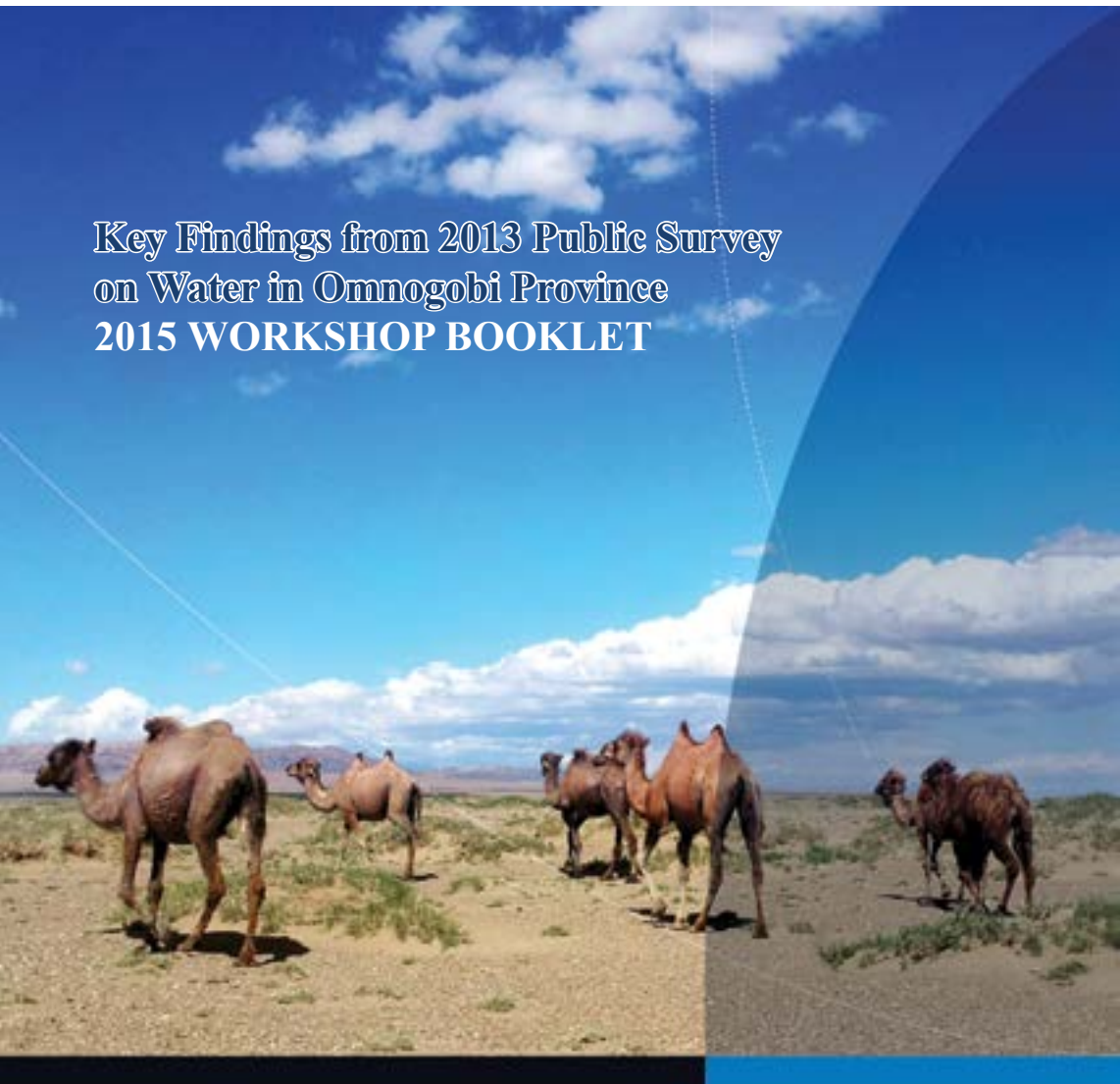


Key Findings from 2013 Public Survey on Water in Omnogobi Province **2015 WORKSHOP BOOKLET**



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Canada 



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**2030
Water
Resources
Group**

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Introduction

The International Finance Corporation (IFC) is working with the mining industry, government officials, herders and civil society in the Gobi region to improve the technical understanding of water, open paths to dialogue and promote collaborative decision-making on water management.

In 2013, the Independent Research Institute of Mongolia (IRIM) was contracted by IFC to implement a baseline survey (Survey) among rural communities in Omnogobi province to improve understanding of local perceptions of:

1. access to water,
2. use of water, and
3. the quantity and quality (past, present and future) of water for personal use.

Key findings from the Survey included:

1.

General lack of information e.g. water availability.

2.

Several examples of perceptions not based on facts specific e.g. people's determination of quality of drinking water.

3.

General absence of trust in information provided by companies e.g. the impact of mining on water, and

4.

Particular fears e.g. that the mining sector's dependence on water will adversely affect grazing for livestock.

The Survey also revealed that:

70% of people had not been involved in consultations on water related issues, and rumours (at 7%) were the fourth most common source of information

70%

People had not been involved in consultations on water related issues

78%

Respondents in the Survey considered themselves to have been inadequately consulted on water-related issues

92%

Wished to receive more information

As a result, the IFC has focused on building industry capacity in engagement around water management practices and in disseminating factual information regarding water management in the Gobi region, including this workshop.

This booklet complements a series of workshops presented by IRIM (on behalf of IFC) throughout Omnogobi in 2015. It provides some of the key findings from the 2013 Survey, along with some related technical information from training workshops delivered in 2014 by Sustainability East Asia and Groundwater Solutions (on behalf of IFC).

Other IFC sponsored activities - including training on Water Monitoring are expected to take place throughout the Gobi region in 2015-16.

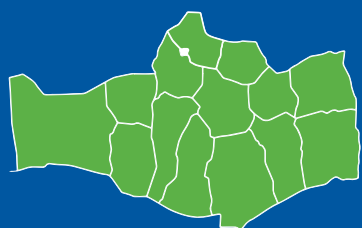
Note. Most statistics in this document are simplified extracts from the 2013 Survey. While it is easy to quote the 'average' number (or %) of respondents answering a particular survey question, it is not as easy to provide the 'average' answer to particular 'open ended' questions. Accordingly, for full details of respondents' answers (research methodology and data analysis) readers should consult the full Final Report (IRIM, 2013).

Water for Cooking and Drinking; Quality

General

2013

OMNOGOBI PROVINCE



Sources of water



wells



kiosks



40%

actually used a 'protected' well



households

87%



20 litres

Per day for cooking and drinking

(Sources: www.mongoliaminingjournal.com)

ULAANBAATAR



Apartment resident



200 litres

average daily consumption



Ger resident



7 litres

average daily consumption

(Sources: www.mongoliaminingjournal.com)



'Protected' means restricted access; to reduce abuse, contamination and/or to maintain quality.

PERCEPTIONS

However, when asked about probable future changes to the quality of water for cooking and drinking (during the next five years)

67%

were prepared to provide opinions; the average of which was that quality would 'worsen'

Almost all

97%

of the respondents in the Survey provided opinions about the existing quality of water for cooking and drinking - ranging from 'very bad' to 'very good' - with all answers averaging 'okay'.

And there was no significant difference in opinions among people living in districts with prominent mining activities compared to those living in districts not heavily impacted by mining activities.

However, when asked about changes in quality of water for cooking and drinking in the past five years

77%

of respondents were able to provide opinions; ranging from 'much worse' to 'much better'. Overall, answers averaged 'no change/worsened'.

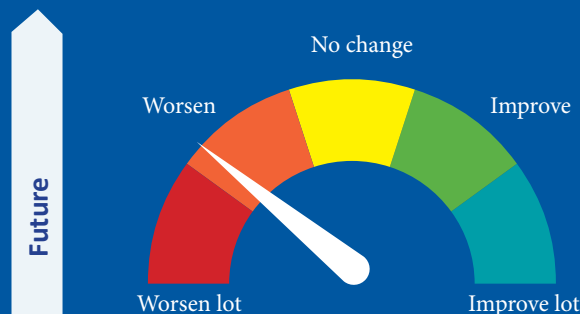


Figure 3. Future Changes to Quality of Drinking Water.

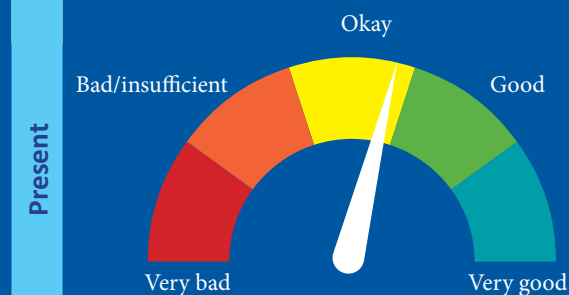


Figure 1. Existing Quality of Drinking Water

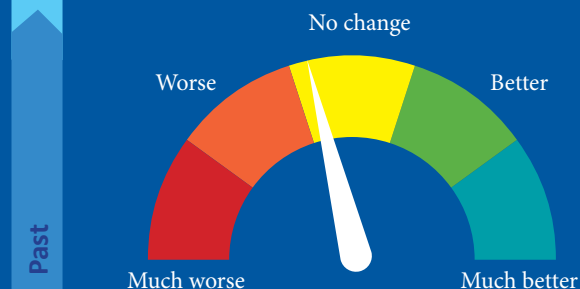
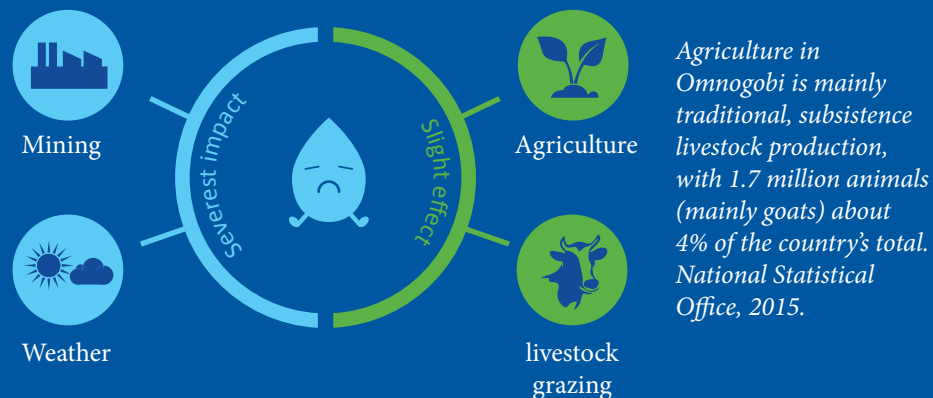
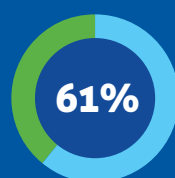
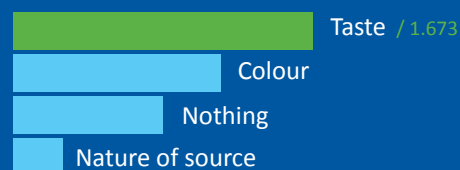


Figure 2. Past Changes to Quality of Drinking Water

Factors identified in the Survey as having the greatest ('severest') impact upon water quality were:

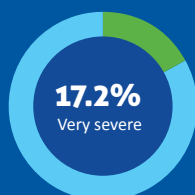


Methods Used to Assess Water Quality



And the methods to determine the quality of water for cooking and drinking, most often used (by 61% of people) were 'taste' and/or 'colour'.

According to 2013 Survey, three factors in particular were said to affect the quality of water for cooking and drinking:



Formal mining



Weather

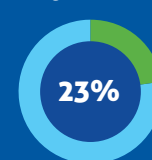


Informal mining

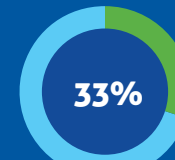
These factors were also considered responsible and in the same order of prevalence – in terms of the quantity of water; for cooking and drinking, and for work-related purposes.

ANALYSIS AND COMMENTS

Overall, people in Omnogobi thought the existing quality of water for cooking and drinking was 'okay'.

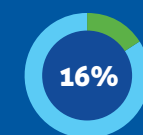


were not prepared to provide an opinion on past changes

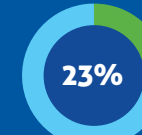


were not prepared to provide an opinion on future changes.

Although 'no change' predominated among those with opinions



thought quality had worsened



thought it would continue to worsen

That is, people were more reluctant to give opinions about changes (past and prospective) and were more negative in their perceptions about such changes; especially for the future.

It is unknown if perceptions of the quality of water for cooking and drinking are accurate because they are based on assessments using indicators like taste and colour (or no indicator at all). Scientifically, colour (or clarity) for example is not a reliable measure of the quality of water for cooking and drinking. There are many examples of harmful contaminants in water that have no effect on colour.



Testing water

Tests used to check the quality of water for cooking and drinking are often only available in laboratories; hence government's major involvement – in most countries - in taking responsibility for water supply and quality assurance.

In situations where water for cooking and drinking is not available from a municipal (piped) supply; there are many simple precautions that can be adopted to ensure access to safe drinking water. For example, the most reliable sources for quality drinking water are:

- bottles,
- registered kiosks, and
- secured/protected wells

The last two should be subject to monitoring by organisations like the General Agency for Specialised Inspection (GASI), to confirm they are acceptable quality for drinking. During the collection of water from a reliable source (other than bottles) it is important that food-grade containers are used to transport and store it.

Water for the preparation of (hot) food is likely to be boiled, and this is a very good way of eliminating most (but not necessarily all) risks and hence improving the quality. However some foods are prepared without cooking. Accordingly, even for cooking, consumers should aim to obtain water from a reliable source.

Small, hand-held meters and kits (containing reagents and indicator papers) are available to check water but most are limited to chemical determinations (pH, acid, salt content) and do not include scope for microbiology.

People's determination of quality of water for cooking and drinking (see above) was commonly based on unreliable methods such as colour and taste. Despite this, weather and seasonal variations in general were widely and correctly regarded by people as important determinants of water quality, information from objective (laboratory) analysis and testing would be required to confirm all the factors involved (and how important they were in Omnogobi).



Water Management

Perceptions

Water resources management includes the characterisation, protection, development, planning and distribution of water; for optimal use among demands. Globally, the greatest demand for freshwater is agriculture; accounting for 70% of the total consumption (52% in Mongolia). In Omnogobi, households' daily consumption of water in the 2013 Survey was:

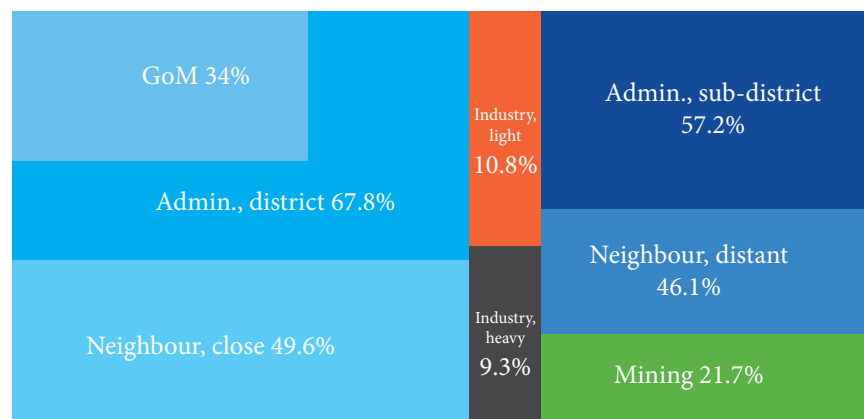


Figure 4. Parties Believed to be involved in Water Management.

For most respondents, the main parties believed to be involved in water resources management consists of four groups: local administrations, neighbours, national level government agencies, and the private sector.

And trust in the various parties involved in the management of water resources appeared very similar; averaging somewhere between 'some' trust and 'highly' trusted.

No parties involved in the management of water resources in Omnogobi were considered 'extremely trustworthy' or 'extremely untrustworthy'.

Analysis and Comments

Combining people's perceptions of the parties believed to be involved in the management of water resources with people's 'trust' in those parties a statistical analysis provided for the ranking (by order of importance).

The results suggest the people have a better impression of those groups that are closer to them (local administration/s, and neighbours) and a lesser impression of those that are more remote (GoM and mining institutions).

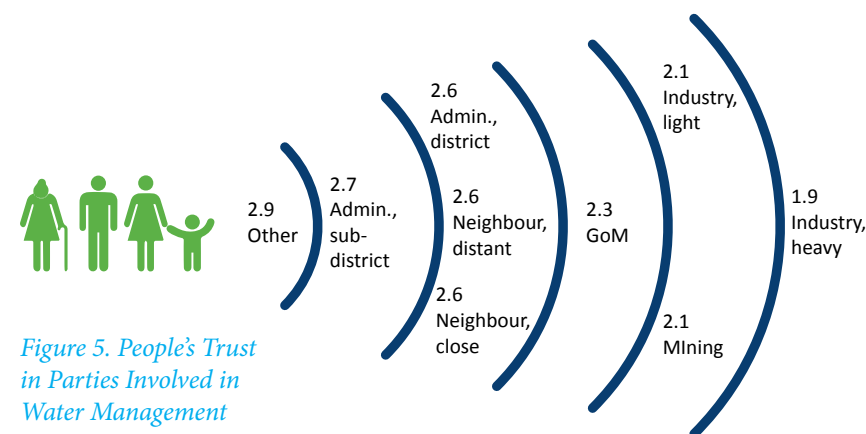


Figure 5. People's Trust in Parties Involved in Water Management

Water resources management' includes the characterisation, protection, development, planning and distribution of water; for optimal use among demands.



Globally, the greatest demand for freshwater is agriculture.



70%



52%

Per day

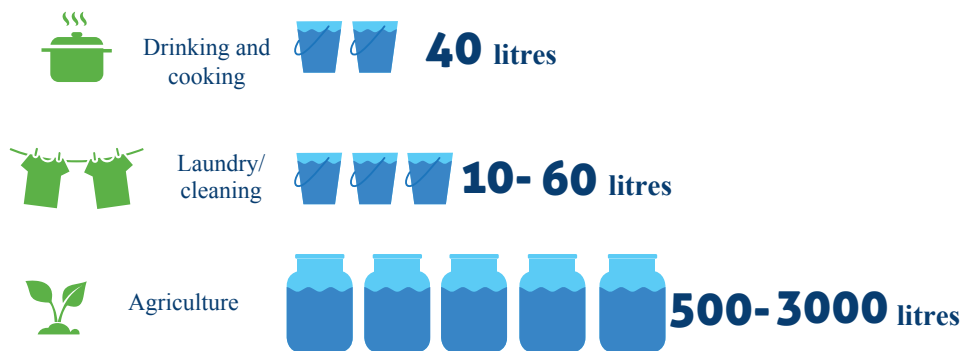
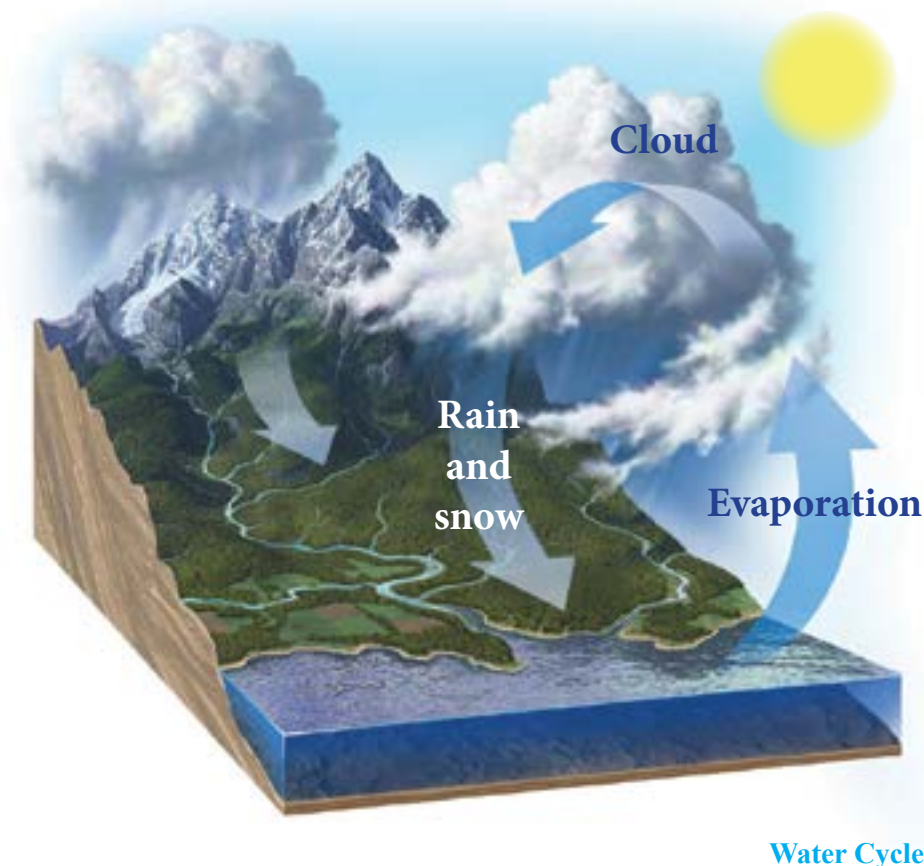


Figure 6. Water Consumption (by Use) in Omnogobi

Informed, inclusive, and integrated management of water will likely bring the best results in terms of secure, sustainable access and utilisation of the resource among all stakeholders. Some common goals for Mongolia's water security for the future include:

- improving the quality, and reducing the quantity of consumption (by protecting sources, monitoring/controlling and increasing people's appreciation of the value of water) and
- improving the balance of present and prospective demands so that the resource is used where it has the best impact; economically and/or socially

Improvements in water management must be based on access to and application of, scientific knowledge and technology. Perceptions that are not based on facts and data can prove counterproductive.



Availability of Water

General

In the 2013 Survey about half (46%) of all respondents in Omnogobi described seasonal variations in accessing water for domestic consumption and for work related purposes; with summer particularly difficult, followed by spring. These perceptions are probably attributable to a combination of many people's regular (annual) relocation – after winter - from flats in urban centres to gers in rural areas, and annual maintenance activities related to municipal water supplies. Similarly, water availability issues for work-related purposes (primarily herding) are mainly attributable to logistical issues related to grazing that are more widely dispersed in the spring and summer. By implication, such issues are longstanding and –related to both the overall escalation of livestock numbers and to other activities such as formal and informal mining and industrial development.

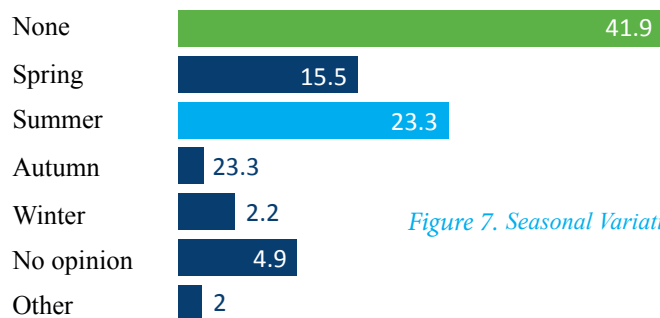


Figure 7. Seasonal Variation in Access to Water.

Perceptions

Despite seasonal variations, respondents' opinions on the present status of the quantity of water available for cooking and drinking were equivocal with most (42%) stating it was 'okay'. However, many people thought the quantity had decreased in the past five years, and even more thought it would deteriorate further, in the future.

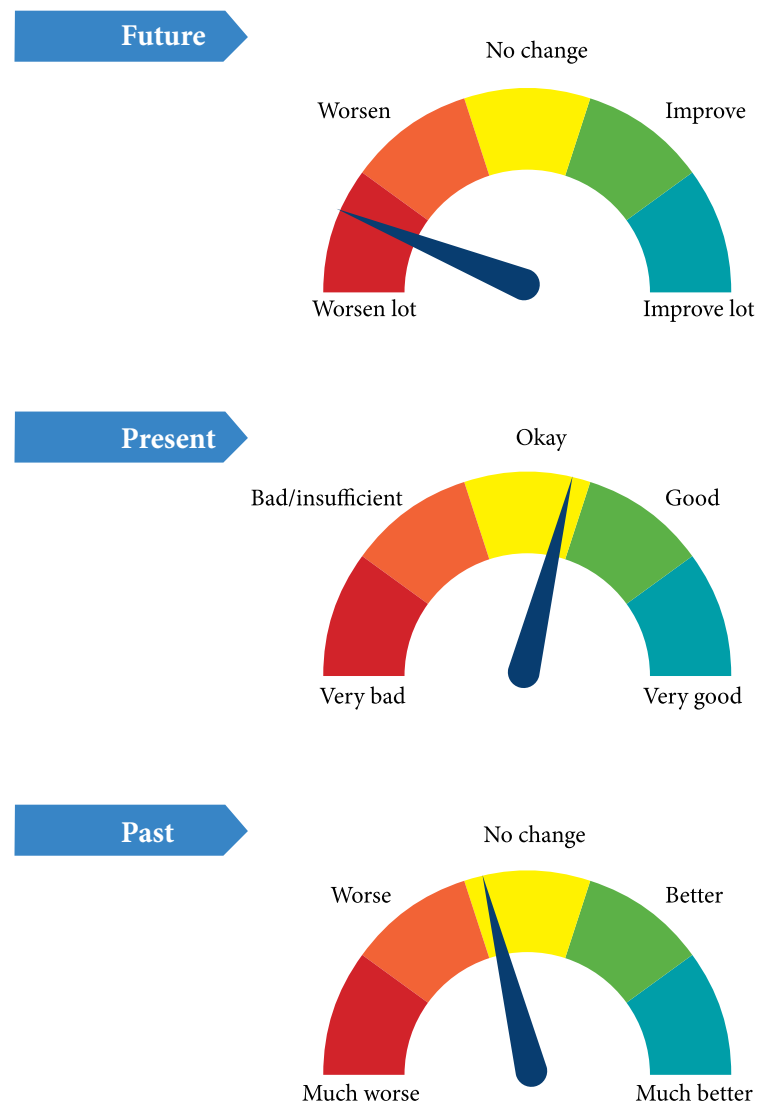


Figure 8. Access to Water for Cooking and Drinking; Past, Present and Future

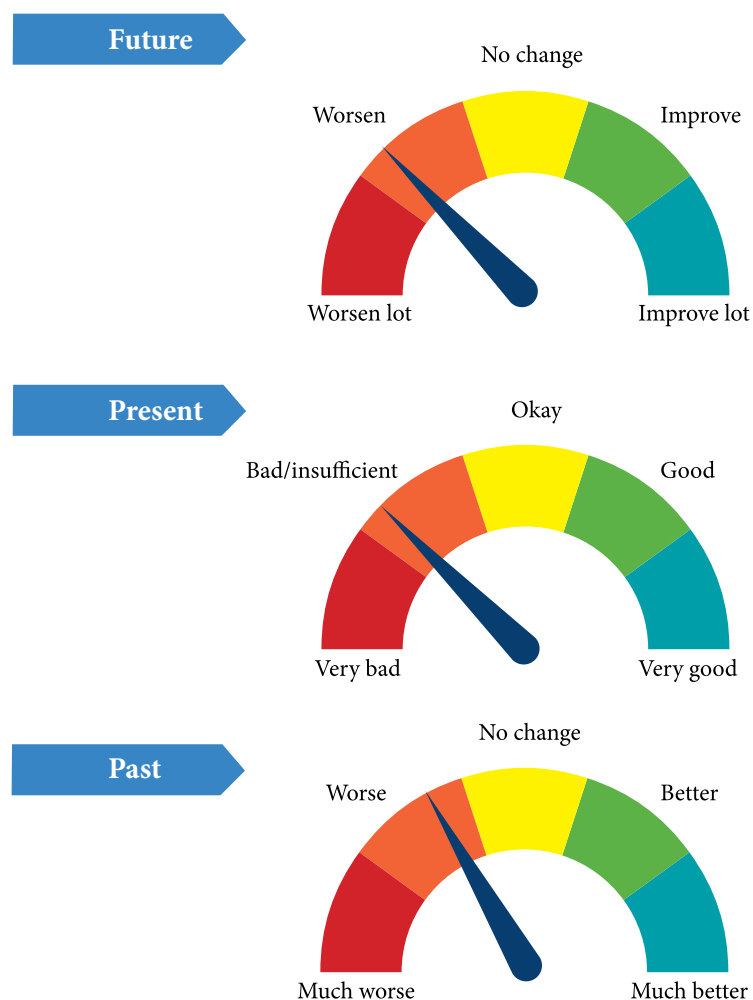


Figure 9. Access to Water (for Work-Related Purposes; Past, Present and Future)

People's perceptions of the quantity of water for work-related (mainly herding) purposes (past, present and prospective) were broadly the same as those of water for personal consumption; though somewhat more negative in each particular case.

Analysis and Comments

It is difficult to say whether people's perceptions of the quantity of water availability – and changes over time - are correct. There is, for example, relatively little readily-available data on water availability in previous years. Some of the issues facing Mongolia in particular are highlighted in a related reported (Targeted Analysis on Water Resources Management Issues in Mongolia Produced by PWC for 2030 Water Resources Group 4 March, 2014).

Moreover, psychologically, people often tend to think better of the past; are negative about recent developments and often pessimistic about the future. But such people may prefer to withhold their opinion - and make no comment at all – to avoid tempting fate.

Irrespective of fluctuation in the supply of water, demand for it has increased in recent years. One example is the water required by herders with increasing herd sizes. From 2011 to 2015, the number of livestock have increased by an average of 12% a year; from 33 to 52 million (NSO, 2015). Apart from the water consumed directly by the larger numbers of animals, there are other demands for water associated with the production of supplementary fodder, and the processing of livestock products and by-products.

And, like any other country with a growing population and undergoing industrialisation there have been other sources of increased demand for water in Mongolia.

For domestic use 20.1%

Population consumption 17.2 %
City service 2.9%



In the South Gobi region (Dornogobi, Dundgobi and Omnogobi provinces) ‘... due to high mineralization, the quality of groundwater is poor, below minimum drinking water standards in many locations.’ (ADB 2014). The problem is due in part to the excess of evaporation over precipitation; leading to the concentration of residual salts and extensive evidence of:

- reduced lathering properties (for washing)
- reduced need to add table salt (sodium chloride) in traditional beverages like salt tea, and
- increased incidence of dental caries

In 2003 (World Bank, 2009), 57% of 1,704 samples of water from throughout South Gobi region had ‘total dissolved solids’ of more than the widely accepted limit of 1,000mg/litre for freshwater.

If a glass of high salt-content water is left to evaporate, the contaminating salt remains behind coating the inside surface.

For industry 25.2 %

| | |
|-------------------------|--------|
| Food and light industry | 1.1% |
| Heavy industry | 0.4% |
| Construction | 10.45% |
| Energy and mining | 12.9% |

It is likely to use 40 million m3 water for mining in 2015 and this number is going to become 83.

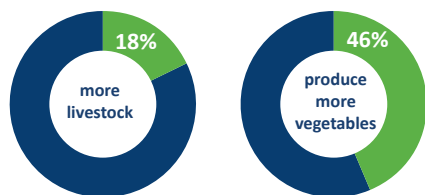


For agriculture

| | |
|-------------------|--------|
| Livestock grazing | 24% |
| Agriculture | 30.75% |



Respondents' perceptions that the availability of water had decreased in the past (see previously) is probably more to do with the increased demand for water – in various sectors - rather than a decrease in the supply.



It is likely that longer term demands on water in the Gobi will continue to grow since 46% of people in Omnogobi would like to produce more vegetables if more water were available; and 18% would like more livestock.

It is critical that all stakeholders

engage and work together in water management decisions to achieve a sustainable future for the future of Omnogobi province. The MEGD, for example, plans to improve water management in the future by developing local and regional planning and government policies.

Nationally, gross domestic product in the short-term is likely to remain low (<http://www.adb.org/countries/mongolia/economy>) – especially when compared with the very high level of 2011 – depressing demand for most inputs to economic production and processing; including water for manufacturing and livestock-based products. In the longer term, however, the country is expected to return to higher growth and hence greater demand for water for domestic and work-related purposes.

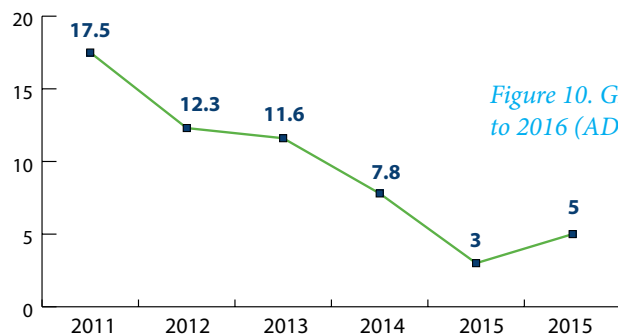


Figure 10. GDP; Mongolia 2011 to 2016 (ADB, 2014)

Competition for Water

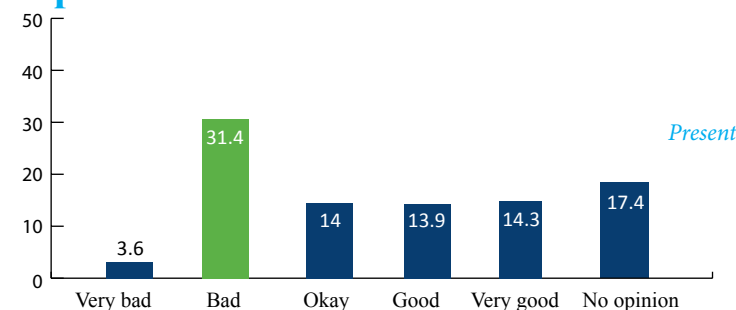
General

In Mongolia, sparse water resources in the largely arid environment have been under considerable pressure. Especially during the last 25 years - as the country transitioned into a democracy and market-based economy - lives and livelihoods have changed, including an increased demand for water. These developments in Mongolia have received a lot of attention from the international donor community, environmental NGOs, and national and global media including a number of headlines in various publications, including:

- Mongolia Faces Critical Water Shortfall Warns UNEP Report
- Is Ulaanbaatar Running Out of Water?
- Water Scarcity a Threat to Mongolia's Sustainable Development.

Examples of concerns over water resources were found locally, in Omnogobi province when the local citizens' representative council passed a resolution banning the use of groundwater for mining operations (CRK Resolution 3/9, July 2, 2013). The council decision was however later voided by the national government, which ruled that water-use decisions were beyond the scope of the citizens' council.

Perceptions



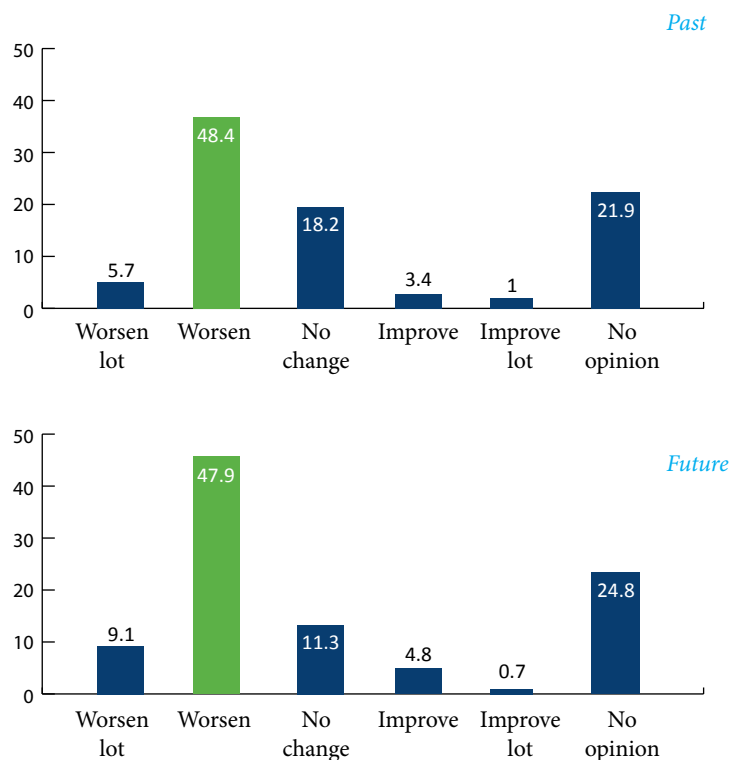


Figure 11. Perceptions on the Status of Water-related Disputes

In the 2013 Survey when asked about the current status of water-related disputes within communities, there was a wide range of opinions but 31% of respondents – on a scale from ‘very bad’ to ‘very good’ - was that it was ‘bad’. That is, almost a third of people felt there were too many intractable problems. Moreover, 48% of people thought the status of disputes had deteriorated in the past five years; and the same proportion thought it would continue to deteriorate in the next five years.

When asked who was best able to resolve water-related disputes, respondents identified the local (district and sub-district) administration, neighbours and the GoM.

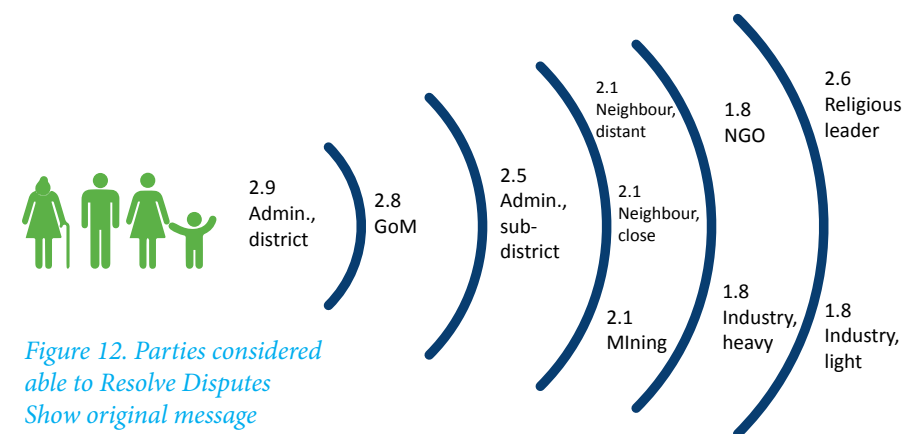


Figure 12. Parties considered able to Resolve Disputes
Show original message

Analysis and Comments

The Survey results highlighted some degree of a sense disengagement among respondents. That is, in Omnogobi at least, disputes are seen as an issue for other people to resolve, more that the respondents themselves. The recent legal requirement to establish multi-stakeholder ‘River Basin Councils’ should help alleviate this.

42% of households used livestock as their main source of income (6% crops); and 63% of all households suggested they would use extra water (if it were available) for more livestock or crops. And this preoccupation with extra livestock was acknowledged even after the start of the recent escalation of livestock numbers to present levels of 52 million.

Sources of Knowledge

General

While tensions over water are not new in Mongolia or around the globe, increasing stress on the resource will require innovative and collaborative thinking to improve its management. In particular, stakeholders will need:

- Fact-based understanding of surface and groundwater systems and their management,
- Appreciation of present (and prospective) developing requirements for water (for domestic and work-related consumption), and
- Data-driven approaches to find solutions.

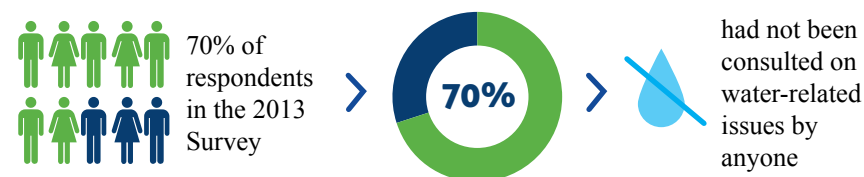
‘Data’, ‘information’ and ‘knowledge’ are crucial to the resolution and management of water-related issues.



Information is like Water; let it flow.

Data and information about water-related issues help to accurately understand problems and disputes; and – by means of knowledge - provide options to the identification of solutions. Without proper understanding of a problem it is difficult to identify the correct solution

Perceptions

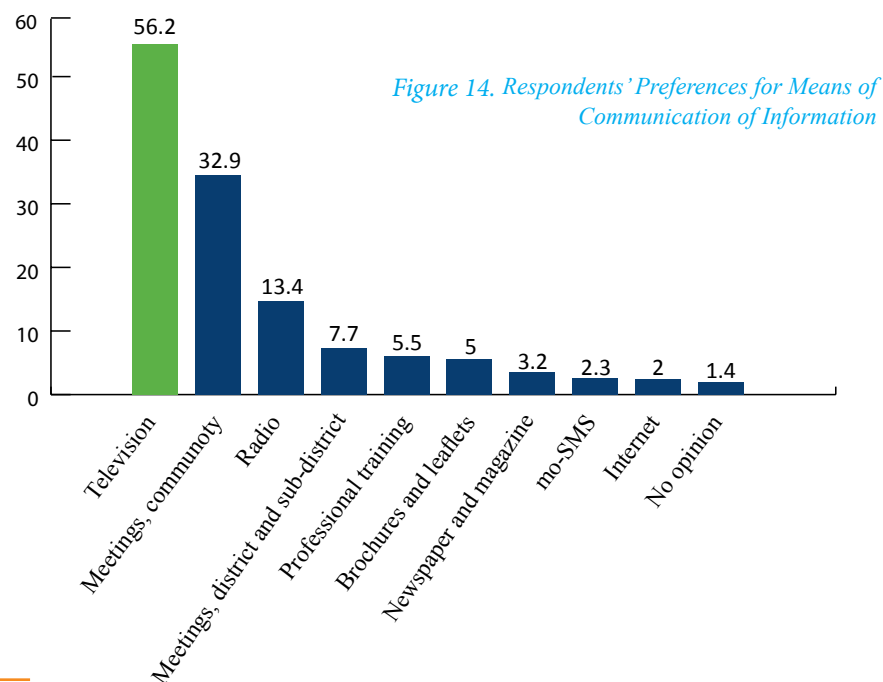
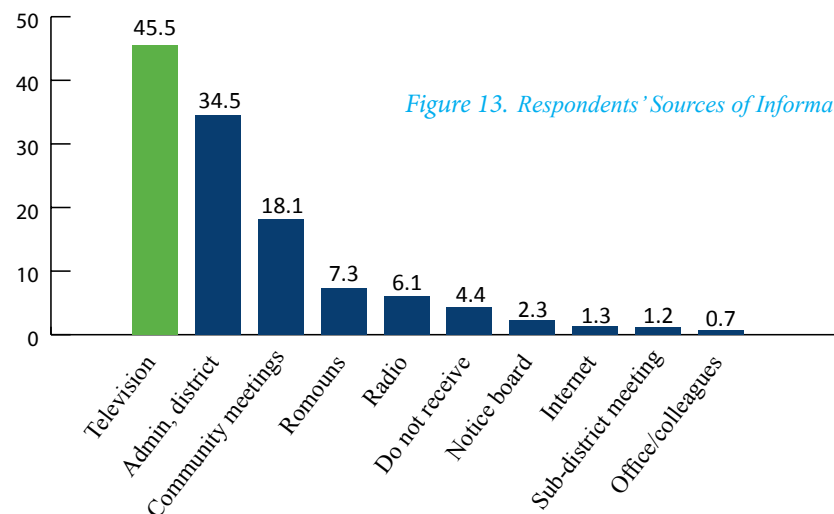


70% of respondents in the 2013 Survey had not been consulted on water-related issues by anyone in the previous year. A similar proportion felt inadequately consulted on water management issues in particular, and water resources in general. Very few respondents were able to explicitly name any of the laws or rules related to water management.

Respondents' main sources of information on water are, in order of importance:

- television,
- meetings (organised by the local administration) and
- meetings organised by the local community).

But, the fourth most popular source was rumour. However, most (92%) respondents wanted to receive more information; preferably, by television, meetings and radio.



Analysis and Comments

The 2013 Survey provided for the collection of data and information about water-related issues in Omnogobi, and this booklet (and accompanying workshops) contributes to people's demands for more access to information and sharing key findings the Survey itself; which are also being communicated through other IFC sponsored activities related to the collection and dissemination of information in the Gobi region includes:

- 2013 Baseline Survey,
- 2014 Groundwater Management Training,
- 2015 Feedback (Baseline Perception and Training) Workshops
- 2015 Water Monitoring Training, and
- 2015 Communications and Awareness-raising strategy

The Future

General

This booklet, accompanying workshop and other IFC water related activities listed above aim to:

- improve technical understanding of water,
- open paths to dialogue, and
- promote collaborative decision-making.

There are also other efforts under way from organizations like the UNDP, World Bank, 2030 Water Resources Group, Mongolian (and international) universities, and mining companies. Nonetheless, respondents still felt the level of engagement around water issues was not sufficient. To better prepare local people to engage and participate in water management, respondents felt more information was needed.

Perceptions

In the 2013 Survey, respondents' most popular suggestions for easing water stress included:

- 'dig new wells'
- 'stop mining activities and reduce water exploitation' and
- 'Study and save water'

Irrespective of how practical such proposals are, they demonstrate a high level of enthusiasm for engagement.

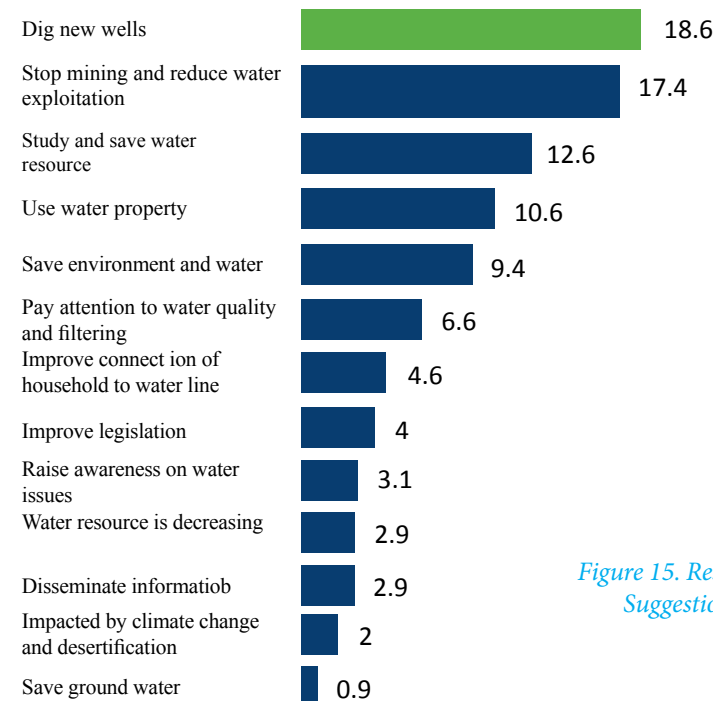


Figure 15. Respondents
Suggestions for the
Future

Analysis and Comments

One method of engagement and awareness raising is the Internet. Globally, the use of social media, blogs, and online learning to disseminate information and facilitate 'real time' in knowledge sharing is on the rise. Although Internet penetration in Omnogobi is still fairly limited, it is increasing with expanding network coverage and the growing ownership of smart phones and tablets. More details on how to best provide the information required in this sector are currently being elaborated in a Communications and Awareness Raising Strategy.

Resources

Documents:

| |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ADB, 2014. Demand in the Desert; Mongolia's Water–Energy–Mining Nexus. 68 pages. http://www.zaragoza.es/contenidos/medioambiente/onu/1419-eng-ed2014_Demand_in_the_Desert.pdf |
| Dettoni, J., 2014. Is Ulaanbaatar Running Out of Water? http://thediplomat.com/2014/05/is-ulaanbaatar-running-out-of-water/ |
| GoM, 2012. Law of Mongolia on Water. 17 May. 17 pages. English and Mongolian. |
| IRIM, 2013. Baseline Survey for the IFC. 71 pages. English and Mongolian |
| Jadamba, 2012. Mongolia Geology and Underground Resource; Hydrology. 548 pages. Mongolian. |
| Jerome, S., 2015. A Brief History of Water Conflict. http://www.wateronline.com/doc/a-brief-history-of-water-conflict-0001 |
| Targeted Analysis on Water Resources Management Issues in Mongolia Produced by PWC for 2030 Water Resources Group 4 March, 2014 |
| Speech by President Ts. Elbegdorj, World Economic Forum, Davos (2015). Switzerland |
| Sustainability East Asia and Groundwater Solutions, 2014. Factsheets; Mining And Groundwater Management. 16 pages. Mongolian. |
| Sustainability East Asia and Groundwater Solutions, 2014. Mongolia Mining and Water Management Training Module. 93 slides English and Mongolian. |
| Theunissen, T., 2014. Water Scarcity a Threat to Mongolia's Sustainable Development. http://asiafoundation.org/in-asia/2014/09/17/water-scarcity-a-threat-to-mongolias-sustainable-development/ |
| World Bank, 2009. Groundwater Assessment in the Gobi Region. 64 pages. http://siteresources.worldbank.org/INTMONGOLIA/Resources/Southern_mongolia_groundwater_assessment_eng.pdf |

Learn more:

| | |
|-------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------|
| www.altai.gobiwater.mn | Altain Uvurgobi River Basin Authority; Facebook page. |
| www.galba.gobiwater.mn | Galba-Uush Dolood River Basin Authority: Facebook page; Facebook page. |
| www.gobi.gobiwater.mn | North Gobi Guveet Khalkh Dundad River Basin Authority |
| www.riverbasin.mn/ongi-gol | Ongi River Basin Authority |
| http://eic.mn/ | Environmental database of the Meteorology and Environmental Studies and Information Institute. |
| http://www.iic.mn | Information and Research Institute of Meteorology, Hydrology and Environment |
| http://www.mne.mn/ | Ministry of Environment and Green Development; website. |
| https://www.facebook.com/mne.mn | Ministry of Environment and Green Development; Facebook page. |
| watersolutions.mn | Ground Water Solutions |
| www.om.inspection.gov.mn | Inspection Agency in Omnogobi |

Get involved:

| | |
|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------|
| Altain Uvurgobi River Basin Authority | State Bank Building, Level 4, Dalanzadgad district, Omnogobi province. Tel: 70534080, 70534081 |
| Artisanal and Small-scale Miners National Federation of Mongolia | Suite 102, Building 7a, Hogoos Nuur St., 10 Khoroo, Sukhbaatar District, Ulaanbaatar |
| Galba-Uush Dolood Gobi Basin Authority | Shanti Building, Level 2, Sainshand city, Dornogobi province |
| General Agency for Specialised Inspection (GASI) | Government Building VII, Barilgachdyn Square 13, Ulaanbaatar, Tuv 15170, Mongolia |
| Ground Water Solutions | 701 San Business Centre. Prime Minister Amar's St., 29 Baga Toiruu, 14200, Sukhbaatar District, 8 th Khoroo, Ulaanbaatar. |
| Information and Research Institute of Meteorology, Hydrology and Environment | 5 Tourist Street, Baga 3, 15160 Ulaanbaatar, Mongolian State |
| Meteorology and Environmental Studies and Information Institute. | Meteorology and Hydrology Department Building, 5 Tourist Street, Ulaanbaatar 15160 |
| Ministry of Environment and Green Development and Tourism | 5/2 United Nation's Street, Ulaanbaatar 210646 |
| Mongolian National Mining Association | Suite 6, 4 th Floor, Sky Plaza Business Centre, 12 Olympic St., Sukhbaatar District, Ulaanbaatar |
| North Gobi Guveet Khalkh Dundad River Basin Authority | Suite 58, Apartment 12, Level 2, 3 rd sub-district, Sumer district, Gobisumber province |
| SAM Knowledge Hub | Sustainable Artisanal Mining Project Sky Plaza Business Centre, Olympic Street 12 Khoroo 1, SBD, Ulaanbaatar Tel: 11 328848 |
| Sustainability East Asia | 501 San Business Centre. Prime Minister Amar's St., 29 Baga Toiruu, 14200, Sukhbaatar District, 8 th Khoroo, Ulaanbaatar. |
| Ongi River Basin Authority | Arvaikheer city, Uvurkhangai province, Tel: 9818-0033, 9532-4324 |

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IFC International Finance Corporation

4th Floor, MCS Plaza Building,

4 Seoul Street

210644 Ulaanbaatar

Mongolia

Tel: +976 7007 8280

Fax: +976 7007 8285

<http://www.ifc.org>

IRIM Independent Research Institute of Mongolia

Building 45-30, Khoroo-8,

Sukhbaatar District

Ulaanbaatar 14201,

Mongolia

Tel/Fax: +976-70117101,

E-mail: contact@irim.mn

<http://www.irim.mn>