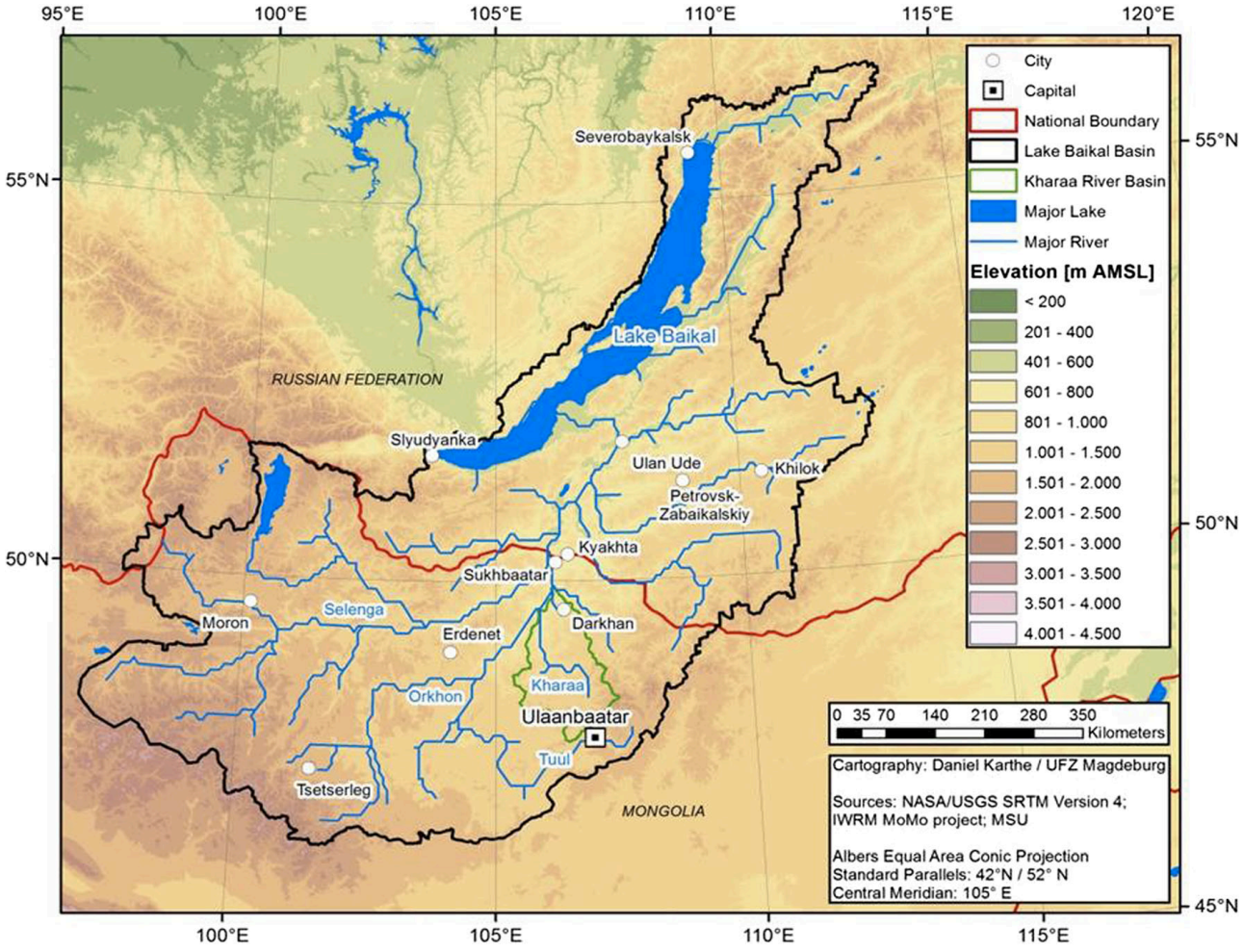
The Selenge River – Lake Baikal Transboundary Basin:

A Preliminary Assessment of Opportunities to Enhance Collaboration on Conservation & Development



UNIVERSITY OF MONTANA
Center for Natural Resources & Environmental Policy

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March 2019

Thanks to Sponsors

Several individuals and organizations contributed financial and other resources to this assessment. We are grateful to these contributors:

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- Center for Natural Resources & Environmental Policy, University of Montana
- Hands Across Borders[1]
- Mongolia River Outfitters
- Nomadic Journeys
- The Trust for Mutual Understanding
- The Transglobe Expedition Trust
- The Taimen Fund

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[1] An international cooperative project among Glacier National Park Conservancy; Waterton-Glacier International Peace Park Association, Rotary; and IUCN Transboundary Conservation Specialist Group. http://naturalresourcespolicy.org/projects/transboundary-conservation.php

Executive Summary

Introduction

At the request of the Baikal Headwaters Expedition, the Center for Natural Resources & Environmental Policy is completing a preliminary, independent assessment to identify opportunities to enhance collaboration on conservation and development in the Selenge River – Lake Baikal transboundary basin. To achieve these objectives, the Center (1) reviewed appropriate background documents; (2) completed interviews with individuals and organizations representing a range of viewpoints; and (3) consulted with an international network of experts in transboundary collaboration.

The Center is a recognized expert in collaborative approaches to natural resources management and has worked on several transboundary resource initiatives. Its role in this assessment is to serve as a neutral, impartial servant of all decision-makers and stakeholders. It is not advocating for any particular interest or outcome; rather, the Center's intent is to accurately capture and communicate the needs and interests of decision-makers and stakeholders representing a diversity of viewpoints. It will also integrate information and options based on similar projects throughout the world.

The Transboundary Basin

The Selenge River originates in Mongolia and flows north into Russia, eventually draining into Lake Baikal. It is formed by the confluence of the Delgermoron and Ider rivers, and its main tributaries include the Eg, Orkhon, and Uda rivers. The Selenge River accounts for more than one-half of the inflows into Lake Baikal, which is the largest freshwater lake in the world. It is also the world's deepest lake, the world's oldest lake, and one of the clearest lakes in the world. Lake Baikal is home to thousands of species of plants and animals, many of which exist nowhere else in the world, as well as a resident population of about 100,000 people.

Proposed Dams & Infrastructure Projects

The primary focus of this assessment revolves around three water development projects currently under consideration by the Mongolian government: (1) the Shuren Hydropower Project (HPP), located on the Selenge River upstream from Lake Baikal; (2) the Orkhon-Gobi Project, located on a tributary of the Selenge River; and (3) the Egiin Gol Hydropower Project, located on the Eg River, another tributary of the Selenge. Feasibility studies and impact assessments for the Shuren HPP and the Orkhon Gobi Project have been conducted by Mongolia's Mining Infrastructure Investment Support (MINIS) Project, with funding from the World Bank.[2]

[2] As of March 2019, the regional environmental assessments for the Shuren and Orkhon-Gobi projects have been cancelled. See additional information in the full body of this report.

Other Initiatives in the Transboundary River Basin

In addition to the activity associated with the proposed hydropower and infrastructure projects, several other initiatives have sought to address the challenges of conservation and development in the transboundary river basin. In order to identify the most compelling opportunities for collaboration in the basin, it is important to understand these other initiatives and the opportunities they may provide to effectively integrate conservation and development interests.

Key Issues & Concerns

The key issues and concerns raised by interviewees revolve around five dominant themes:

a) Mongolia and Russia do not agree on how to effectively balance development and conservation interests in the transboundary basin.

b) The commitment to develop a basin-wide/transboundary approach to the joint use of water resources by Mongolia and Russia is at best nascent and emerging.

c) Decision-makers, experts, and stakeholders disagree on the likely social and ecological impacts to the basin from the proposed water development projects.

d) While the MINIS and Eg River HPP project teams regularly provide information to and consult the public, several people believe that the public participation process could be more robust and meaningful.

e) Many conservation and development activities within the transboundary basin seem to be fragmented and disconnected from one another.

Options Moving Forward

Option # 1 – Enhance the capacity of existing institutions to design and facilitate effective transboundary collaborative processes.

- Provide on-site workshops to review and discuss international best practices for transboundary collaborative problem-solving and natural resources diplomacy.
- Provide a hands-on clinic to design a transboundary collaborative process to satisfy the particular missions and mandates of the MINIS and Eg River HPP project teams, as well as integrate relevant legal, institutional, financial, policy, and other constraints.
    - In the case of the MINIS project, explore the feasibility of providing input and advice in the design and implementation of the Regional Environmental Assessment.
    - In the case of the Eg River HPP project, explore the interest and feasibility of designing and facilitating a joint fact-finding process to complete the biodiversity assessment they are contemplating.

    - Explore the feasibility of convening a basin-wide collaborative process among the MINIS and Eg River HPP project teams given the apparent complementary nature and geography of the projects.
- Provide an executive seminar for the transboundary commission on international best practices and the merits of supporting a parallel or Track II informal process to supplement the more formal process of transboundary collaboration.

Option # 2 – Build the capacity of community-based initiatives and connect them via an appropriate network.

- Provide resources and/or training on what catalyzes, enables, and sustains community-based approaches to conservation and development – building on the capacity-building workshops and experiments with community-based organizations (CBO) that have manifested since 2004.
- Link CBOs through an informal network and/or an annual gathering, where leaders and participants can exchange information, build relationships, learn from each other, and improve their capacity to operate CBOs.
- Use established CBOs in the transboundary region to facilitate public review and comment on the MINIS and Eg HPP projects.

Option # 3 – Build the capacity of future leaders to catalyze and engage in collaborative problem-solving.

- Consider creating a Natural Resources Conflict Resolution (NRCR) Program at an appropriate university or educational center in Mongolia.
- Explore the merits and feasibility of creating a transboundary consortium of universities and other experts to (1) provide independent research and knowledge; and (2) convene and facilitate impartial, non-partisan forums to exchange information, build relationships, and solve problems.
- Encourage and support Rotary Clubs in Mongolia and Russia to provide an independent forum to connect people and search for ways to balance conservation and development interests in the transboundary basin.

Option # 4 – Enhance opportunities and incentives for conservation of threatened species in the basin, particularly taimen.

- Pursue a special designation for taimen conservation under appropriate international treaties and/or conventions.
    1. Seek to have taimen listed on the UN Convention on Migratory Species.
    2. Test the idea of an International Peace Park and/or River Basin (or another appropriate transboundary designation[3]) with Rotary Clubs and other stakeholders in Mongolia and Russia.

[3] For a review of alternative transboundary conservation designations, see the wealth of materials and case studies at http://naturalresourcespolicy.org/projects/transboundary-conservation.php

- ❖ Review existing environmental laws that influence taimen conservation, including the Mongolian Law on Water and Law on Hunting, and identify opportunities to improve the legal and institutional framework.

Conclusions

As you consider the findings, conclusions, and options presented in this assessment, keep in mind the following over-arching principles – let form follow function; seek a homegrown solution; and integrate formal and informal mechanisms for governance.

This preliminary assessment is not an end in itself. At best, it is the beginning of iterative, incremental process to build the capacity for collaborative problem-solving to promote and support livable community, vibrant economies, and healthy landscapes in the Selenge River – Lake Baikal transboundary basin.

2. Introduction

At the request of the Baikal Headwaters Expedition,[4] the Center for Natural Resources & Environmental Policy is completing an independent assessment to identify opportunities to enhance collaboration on conservation and development in the Selenge River – Lake Baikal transboundary basin. The Center is a recognized expert in collaborative approaches to natural resources management and has worked on several transboundary resource initiatives.[5]

Background

The Selenge River originates in a remote corner of Mongolia. It flows north into Russia and Lake Baikal, where it provides more than one-half of the lake's annual inflows. The headwaters of the Selenge River arise nearly 1,500 kilometers from the lake. UNESCO designated Lake Baikal as a World Heritage Site in 1996. It contains one-fifth of the fresh water on the earth's surface, and two-thirds of the plant and animal species within the lake's ecosystem exist nowhere else in the world.

The Mongolian portion of the watershed has been traditionally used for livestock grazing. Recently, there has been an increase in mining activity as well as outdoor recreation in the basin. The Erdenet copper mine has provided a significant percentage of Mongolia's GDP since the 1950s, and the Tuul basin is home to a number of gold mining operations. Hovsgol Aimag is a growing center for outdoor recreation, with both national and international tourists. Tourism has increased since the road from Ulaanbaatar to Hovsgol was paved, and thousands of Mongolians now visit the region every year, especially along the southern shores of Lake Hovsgol. There is also a small but robust fly-fishing industry that revolves around taimen (*Hucho taimen*), the world's largest salmonid.[6]

The Mongolian government is proposing to build and operate a series of dams and diversions in the basin, including both hydropower projects and plans to supply water to faraway cities and mines. Project managers have completed preliminary feasibility studies and environmental reviews for the suite of proposed dams and diversion structures, and are now poised to complete even more comprehensive social and environmental impact assessments in the near future.

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[4] The expedition involved a team of Mongolian, Russian, and American scientists travelling from the headwaters of the Delgermoron River to Lake Baikal during the summer and fall of 2018. The goals of the expedition were three-fold: (1) to gather baseline data on aquatic fauna, including invertebrates and fish; (2) to continue the collection of water-quality data begun by other researchers; and (3) to raise awareness of the river's intrinsic value at both the local and global levels. For more information, see https://www.baikalheadwaters.org/blog

[5] http://naturalresourcespolicy.org/projects/transboundary-conservation.php

[6] James Owen, "Can Angling Save the World's Largest Salmon?" National Geographic News (August 19, 2004).

Objectives

In response to the ongoing plans to develop dams and diversion structures in the Selenge River basin, the objectives of this independent assessment are to:

1. Clarify the interests and concerns of decision-makers and various stakeholders relative to the proposed dams, traditional livelihoods, the emerging recreational economy, and environmental values;

2. Examine past and current efforts to facilitate collaborative problem-solving within the transboundary basin;

3. Share lessons from similar transboundary conservation initiatives throughout the world; and

4. Identify options to enhance collaborative problem-solving within the transboundary basin.

From the outset, the Center assumes that there is no single model for the successful management of transboundary land and water resources. Each initiative must be designed to meet the unique needs and interests of a specific geographical area. Likewise, there is no singular way to balance conservation and development interests, and the best approach to generate informed, durable decisions is to ensure that the right people are engaged in a collaborative process with the best available information.

Methods and Limitations

To achieve these objectives, the Center (1) reviewed appropriate background documents; (2) completed interviews with individuals and organizations representing a range of viewpoints; and (3) consulted with an international network of experts in transboundary collaboration. We conducted initial interviews via skype during May, June, and July 2018, and completed most of the face-to-face interviews in August 2018 in Ulaanbaatar and during a field trip along the Delgermoron River. A few interviews were conducted in September and October 2018. The list of individuals and organizations consulted is presented as Appendix 1.

The Center's role in this independent assessment is to serve as a neutral, impartial servant of all decision-makers and stakeholders. It is not advocating for any particular interest or outcome; rather, the Center's intent is to accurately capture and communicate the needs and interests of decision-makers and stakeholders representing a diversity of viewpoints. To respect people's confidentiality, this report does not present who said what; rather, it emphasizes what was said. Considering the preliminary and incomplete nature of the consultations, it also does not include "stakeholder mapping." The report does integrate information and options based on similar projects throughout the world.

From the outset, we recognize four limitations to this preliminary assessment.

- First, due largely to a lack of time and other resources, we recognize that there are many other individuals and organizations that could provide valuable information and insights on this suite of issues. This list includes, but is not limited to, representatives of local communities, river-dependent businesses, stakeholder groups in Russia, and experts and officials with various international bodies;

- Second, and related to the first limitation, we have not sufficiently addressed the issues and existing collaborative initiatives in the Russian part of the transboundary basin;

- Third, we have reviewed and taken into consideration as much published material as time permitted. We fully realize that a more thorough assessment would include a more complete review of published materials.

- Fourth, it is possible that we have unintentionally mischaracterized some of the history and facts associated with the issues discussed herein.

These and other limitations of this preliminary assessment should be addressed as this effort moves forward. The list of individuals and organizations interested in this work, including next steps, continues to expand.

In the final analysis, this preliminary assessment is not an end in itself. At best, it is the beginning of an iterative, incremental process to build the capacity for collaborative problem-solving to promote and support livable communities, vibrant economies, and healthy landscapes in the Selenge River – Lake Baikal transboundary basin.

The Transboundary Basin

a) Physical Geography

The Selenge River originates in Mongolia and flows north into Russia, eventually draining into Lake Baikal. Sixty-six percent of the basin is within Mongolia.[7] Formed by the confluence of the Delgermoron and Ider rivers, the Selenge is the largest river system in Mongolia; its other principal tributaries include the Eg, Orkhon, and Uda rivers. The Selenge proper is about 1,000 kilometers long (or 621 miles) and carries about 935 cubic meters per second (or 33,000 cu ft/s) of water into Lake Baikal, which accounts for more than one-half of surface inflows.[8] The river mouth forms a large delta on the southeast shoreline of Lake Baikal (680 square kilometers or 260 square miles).[9]

Lake Baikal is located in southern Siberia between Irkutsk Oblast to the northwest and the Buryat Republic to the southeast. It is the largest freshwater lake by volume in the world, containing somewhere between 20 and 25 percent of the world's fresh surface water. For comparison, Lake Baikal contains more water than the five North American Great Lakes combined. It is also the world's deepest lake (with a maximum depth of 1,642 m (or 5,387 ft)), the world's oldest lake (somewhere between 25 and 30 million years), the 7th largest lake in the world by surface area, and one of the clearest lakes in the world. Lake Baikal is home to thousands of species of plants and animals, many of which exist nowhere else in the world.

b) Human Geography

Mongolia is one of the world's least populated countries, with a surface area of 1.6 million square kilometers and about 3 million inhabitants (or 1.9 inhabitants per square kilometer). Somewhere between 60 and 70 percent of Mongolia's population lives in the Selenge River basin, with over half residing in Ulaanbaatar, significant percentages in Darkhan and Erdenet,[10] and the remainder in more rural communities scattered across the landscape. Administratively, the basin includes Ulaanbaatar and nine aimags (or provinces).[11]

The Russian portion of the Selenge watershed includes the city of Ulan-Ude, capital of the Republic of Buryatia. Ulan-Ude is the third-largest city in eastern Siberia with a population

[7] *Terms of Reference (TOR) for a Regional Environmental Assessment (REA) for the Selenge River Basin and Lake Baikal Area in the Context of the Proposed Shuren Hydropower Project and Orkhon Water Diversion Project* (MINIS June 2018): 15.
[8] United States Geological Survey, 2011, The Selenga River, USGS Delta Research And Global Observation Network (DRAGON).
[9] National Aeronautics and Space Administration, 2011, Snowfall on the Selenga River Delta, Russian Federation.
[10] *Integrated Water Management Model on the Selenge River Basin Status Survey and Investigation (2008).*
[11] MINIS TOR, page 5

of more than 400,000.[12] The area immediately surrounding Lake Baikal is a popular tourist destination and home to about 100,000 residents.

The Selenge River is used for agricultural irrigation, community water supplies, industry, mining, recreation, tourism, and transportation. In Mongolia, large amounts of water are used to irrigate fields of wheat and other grains. Near the delta in Russia, networks of canals have been built to irrigate agricultural land. Many of these uses degrade the quality of the water, limit downstream availability, and produce ecological impacts. Mongolia and Russia share an international effort to manage the Selenge River to improve water quality and sustain the water resource.[13]

The Selenga Delta is used extensively by local people for livestock grazing, hay and grain cultivation, commercial fishing, trapping, hunting, and other recreational activities. These activities often encroach on the habitats of endangered plants and animals.

The Irkutsk Hydroelectric Power Station was built on the Angara River, the only river draining Lake Baikal. It is the largest of four dams on the Angara river and regulates the flow of the river and causes water-level fluctuations in Lake Baikal. These water-level changes result in a large part of the Selenga Delta being waterlogged and then drained in response to activities at the power station.

c) Ecological Values

UNESCO designated Lake Baikal a World Heritage Site in 1996. The wetlands of the Selenge River Delta are designated as a Ramsar Site.[14] They provide valuable habitat for more than 170 species of birds, including many migrating species. Like Lake Baikal, the Selenge delta is unique and is home to more than 70 rare or endangered species of plants and animals.[15]

A portion of the Selenge's headwaters lie within the *Ulaan Taiga Specially Protected Areas*. Between 1997 and 2011, Mongolia established three specially protected areas in the north-central part of the country to protect various high-value resources. These areas are jointly referred to as the *Ulaan Taiga Specially Protected Areas.*[16] *Lake Khovsgol National Park,* long regarded as the "Blue Pearl of Mongolia," is also located in the basin. The Eg River flows out of the lake and into the Selenge River, which connects Lake Baikal with Lake Khovsgol.

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[12] The Buryats are considered the largest indigenous group in Siberia. They are the major northern subgroup of the Mongols and share many traditional customs with other Mongols, including nomadic herding and use of gers for shelter. Today, the majority of Buryats live in and around Ulan-Ude. They speak a central Mongolic language called Buryat. According to UNESCO's 2010 edition of the Atlas of the World's Languages in Danger, the Buryat language is classified as severely endangered.

[13] United Nations Environment Programme, 2008, Integrated Water Management Model on the Selenge River Basin, Research report and status survey.

[14] https://www.ramsar.org/sites-countries/the-ramsar-sites

[15] [4] The Ramsar Convention on Wetlands, 1997, Selenga River Delta, Information Sheet on Ramsar Wetlands.

[16] https://pubs.usgs.gov/of/2017/1025/ofr20171025.pdf

The transboundary river basin is important for reproduction of the Baikal sturgeon (included in the second Annex of the Bonn Convention on migratory species), as well as a number of rare and endemic fish species listed in national and international Red Books. It is also home to the world's largest salmonid – *Hucho taimen*. These fish can grow up to 1.5 meters (or 5.0 feet), weigh up to 100 kilograms (220 pounds), and are the focus of an emerging ecotourism industry.[17] However, the species has declined throughout much of its historical range due to poaching, logging, livestock grazing, and mining.[18]

[17] http://www.rareplanet.org/sites/rareplanet.org/files/Jensen_etal_2009_CJFAS.pdf
[18] James Owen, "Can Angling Save World's Largest Salmon?" *National Geographic News* (August 19, 2004). For more information on the the Altai-Sayan ecoregion, including at least part of the Selenge River – Lake Baikal transboundary basin, see http://wwf.panda.org/our_work/biodiversity/protected_areas/pa4lp/altai_sayan/.

3. Proposed Dams & Infrastructure Projects

The primary focus of this assessment revolves around three water development projects currently under consideration by the Mongolian government (see Appendix 2 for a map showing the location of each project):

- The Shuren Hydropower Project (HPP), located on the Selenge River about 360 km upstream from Lake Baikal, would supply electricity to the growing mining sector and help fill the shortfall of electricity faced by the country;

- The Orkhon-Gobi Project, located on a tributary of the Selenge River, would facilitate and support investments in the mining sector and transfer water from the Orkhon River to the Gobi desert via pipelines; and

- The Egiin Gol Hydropower Project (HPP), located on the Eg River, a tributary of the Selenge River, 580 km upstream from Lake Baikal, would respond especially to the peak seasonal demands for electricity in the central part of Mongolia.

The first two projects are part of the Mining Infrastructure Investment Support (MINIS) Project, which was created by the Mongolian government (see www.minis.mn). The secondary goals of all three projects are to provide renewable energy and enable energy independence from the Russian power system.[19]

a) The Egiin Gol Hydropower Project

According to a report prepared by the IUCN for the World Heritage Committee in 2015,[20] several studies have been completed over the last 25 years on the potential of hydropower on the Eg River.[21] The most recent feasibility study was conducted in 2014, along with an environmental impact assessment in 2015.[22]

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[19] Regional environmental assessments for the Shuren and Orkhon-Gobi projects have been cancelled, which may indicate that the Mongolian government does not presently consider them to be of equal priority to the Egiin Gol HPP. See http://www.transrivers.org/2017/2020/; and page 2 of http://documents.worldbank.org/curated/en/421161525703214988/text/Plan-Archive-7.txt

[20] *Reactive Monitoring Mission to Mongolia Concerning the World Heritage Property of Lake Baikal*.

[21] Experts from the Asian Development Bank (ADB) began studying ways to establish hydroelectric power plants in Mongolia in 1991 [*see undated summary of Cabinet Meeting November 14*]. Their studies confirmed the potential profitability of such projects and the ADB expressed interest in providing grant-in-aid and soft loans for a pre-feasibility study and design of a hydroelectric power plant on the Eg River in May 1991. Later that year, the Mongolian government accepted the ADB proposal and made plans for a pre-feasibility study and project design. The parties signed a contract of loan and grant-in-aid in April 1992. The pre-feasibility study, design, and bid documents for the plant were ready by 1994. But the construction of the plant was postponed in 1996 due to conflicts in the project financing.

[22] See Tractebel Engineering GDF Suez, et al., *Egiin Goliin Hydropower Plant Project: Introduction* (Ministry of Energy, Ministry of Finance, Minister of Environmental and Green Development, and Development Bank of Mongolia, undated); and Tractebel Engineering GDF Suez, *Egiin Goliin Hydropower Plant Project: Hydrological Impacts on the Selenga River Regime and Lake Baikal* (Egiin Goliin Hydro Power Plant Project Unit, Ministry of Energy, March 2015).

Although the feasibility study and EIA have never been released to the public, the IUCN report – citing engineering reports associated with the project – explains that the EIA concludes that there would be "negligible" effects on Lake Baikal and the Selenge River. According to the IUCN's interpretation of the engineering reports, winter flows may slightly increase and summer flows may slightly decrease, however the changes would never be more than one percent of the annual inflow of the Selenge River into Lake Baikal. In sum, the EIA concludes that there would be "no ecological impact" from the change in streamflow.[23]

The IUCN report goes on to explain that the EIA for the Eg River project only considered the impacts to the hydrology of the basin and did not consider the broader ecological impacts. It notes that the Selenge River and its tributaries, including the Eg River, are home to taimen (*Hucho taimen*), a migratory fish that moves up and down rivers to spawn and overwinter in deep pools. Apparently, the proposed hydropower project contemplates a system of trapping migratory taimen and transporting them by van around the dam. The EIA does not assess the impact on taimen or on other ecological values in the basin.

In conclusion, the IUCN report explains that it is not in a position to fully assess the impacts of the proposed dam given the lack of available information. That said, it goes on to claim that the EIA is too general and does not meet international standards; all of the ecological impacts of the proposed project have not been considered; the cumulative impact of this proposed project along with other projects in the Selenge River basin has not been addressed; no alternatives were considered in the EIA; and local stakeholders were not consulted. The IUCN recommends that the Mongolian government complete an EIA that assesses potential impacts on hydrology as well as ecological values; complete a cumulative impact assessment on all three proposed projects; and work with the Russian Federation to "develop a common strategic approach to water resource management at the Selenge/Lake Baikal ecosystem level."

Three additional initiatives deserve to be mentioned in this context. First, the Global Environment Facility (GEF), at the request of the American flyfishing company Sweetwater Travel and its Mongolian partner, Hovsgol Travel, developed a conservation management system in 1999 to protect the natural resources of the Eg-Uur Watershed Area.[24] The Eg-Uur watershed is a major tributary of the Selenge River. The two companies established the Taimen Conservation Fund to facilitate this project and secured funding from the International Finance Corporation (ICF), a World Bank Group. To facilitate this initiative, the two companies established an NGO, the Tributary Fund (which then morphed into the

[23] Some observers have noted that this does not take into account the likely changes in water temperature of the inflows; some scientists believe that river temperatures could rise 1 or 2 degrees C in winter. Other observers have raised the question of whether water temperatures will rise in the reservoirs behind the proposed dams and if so, what the impacts might be.

[24] The Global Environment Facility is an international partnership of 183 countries, international institutions, civil society organizations and the private sector that addresses global environmental issues. https://www.thegef.org/. See the report *Conservation of the Eg-Uur Watershed (2003)* http://documents.worldbank.org/curated/en/570721468779691955/pdf/298480Mongolia0revised.pdf

Taimen Fund), to assist the local communities to manage natural resources in the watershed.[25]

The intent of the project was to remove threats to biodiversity by (1) developing a participatory management plan, implementation structure, and policy framework for biodiversity conservation in the watershed; (2) improving human and technical capacity to better manage and conserve biodiversity and ecosystems in the watershed; (3) improving sustainable use practices and livelihood options in the EUWA; (4) improving information, communication, and education system to support policy, planning and decision-making in the watershed; and (5) providing for financial sustainability to ensure that the local inhabitants have sufficient resources to address future threats.

To achieve these objectives, GEF and the World Wildlife Fund facilitated two stakeholder meetings in June 2001 and June 2002 with the representatives from the two companies, local communities, and provincial and national governments to develop consensus on the objectives and determine the project structure. The primary recommendation that emerged from this effort was to promote and support fly-fishing ecotourism through community-based collaborative groups at the watershed level.[26]

Second, FAO and the Taimen Conservation Fund (TCF) convened two community-based, multi-stakeholder workshops in 2014 on the design of fish passage systems.[27] Participants included representatives from the Ministry of Nature and Green Development of Mongolia, the Egiin Gol Hydro Power Plant Project Unit (EGHPPPU), the Dorgon hydropower station, the Mongolian Mining Corporation, the National Water Association, civil society organizations, and the TCF.

The participants reviewed the status of fish passage development, research, and construction in Mongolia, as well as the biology and behavior of fish species that would need to be considered in planning fish passage facilities in Mongolia, in particular in the Eg River. They reviewed lessons on engineering and biology from North America and Europe, emphasizing that the most effective fish passage systems are adapted to local conditions.

With respect to the proposed Eg River HPP, the participants did not reach consensus on the likely environmental impacts of the proposed dam. However, the participants agreed that, should the dam on the Eg River be constructed, a fish passage system would be needed to mitigate the blocked upstream and downstream passage and for maintaining genetic exchange between fish in the Eg and Selenge Rivers. The participants agreed that a trap-and-transport system for both upstream and downstream fish passage would most likely be the most viable solution for this Eg River HPP, with the caveat that it could be adjusted and/or adapted in the future. However, the resource people participating in the workshop

[25] http://www.taimen.org
[26] *Conservation of the Eg-Uur Watershed (2003)* http://documents.worldbank.org/curated/en/570721468779691955/pdf/298480Mongolia0revised.pdf
[27] *FAO/TCF Workshop on Fish Passage Design at Cross River Obstacles – Experiences from Different Countries with Potential Relevance to Mongolia* (2014)

emphasized that the dam should not be constructed at the planned location because it would inflict irreversible damage to fish (particularly taimen), biodiversity, and the aquatic ecosystem. The resource people suggested that alternatives should be considered with respect to the proposed dam, including but not limited to finding an alternative location, building several smaller dams, and/or investing in solar and wind energy systems.

The third and final initiative that deserves mention here was prepared in 2014 by Dr. Olaf P. Jensen, affiliated with the Institute of Marine & Coastal Sciences, Rutgers University. Dr. Jensen reviewed and provided comments on the French consultants' report for the Taimen Conservation Fund.[28] According to Dr. Jensen's review, "The section on likely impacts is the most important, and here too, I generally agree with the report's conclusions that the impact on fish populations is likely to be severe. The report concludes that within the 60km long reservoir, 'the calm water species will be favored while running water species will disappear.' I agree that this is likely. It is also not simply a neutral exchange of one fish community for another. The calm water species in question (e.g., pike and perch) are abundant, widespread, and of modest value to anglers. The running water species, which are likely to negatively impacted, include threatened and endangered species such as the taimen, which also supports a valuable recreational fishery on the Eg River."

Dr. Jensen goes on to explain that "the report notes that there are likely to be substantial adverse impacts on fish downstream of the dam from hydropeaking: "the main impact of the hydropeaking pattern is that the population of fish will decrease and the weaker species may disappear. The conditions will not be favorable to the potential return of sturgeon." The report downplays the impact of blocked movements and population fragmentation, but as I describe below, these could also be important negative impacts."

Given the apparent conflict over scientific and technical information, it is perhaps not surprising that in June 2016 "China's National Development and Reform Commission, the China EXIM Bank and the government of Mongolia announced … they have placed a temporary hold on constructing the proposed hydroelectric project on the Eg River, citing concerns over transboundary issues and 'due diligence' related to downstream environmental concerns."[29]

Several months later, during its regular cabinet meeting held on April 12, 2017, the Mongolian Government decided to establish state-owned Eg River Hydro Power Plant LLC, which will be responsible for planning and building the Eg River Hydro Power Plant. According to the *Montsame News Agency*, the company will be responsible for obtaining land-use certificates and negotiating contracts for power, engineering, and construction, among other duties . The company will also be in charge of the operations of the plant once construction is completed.[30]

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[28] Dr. Olaf P. Jensen, Review of Chapter 15 (undated manuscript, Institute of Marine & Coastal Sciences, Rutgers University). Available from the authors of this report.

[29] https://www.hydroworld.com/articles/2016/06/us-1-billion-proposed-315-mw-egiin-hydroelectric-project-in-mongolia-on-hold.html

[30] *The UB Post*, April 14, 2017; https://www.pressreader.com/mongolia/the-ub-post/20170414

Rivers without Boundaries (a transboundary coalition of interested people, including academics, in Russia, China, and Mongolia) believes that the decision to move forward with the dam on the Eg River compromises any future public consultation about the project, violates the World Heritage Convention and other bilateral agreements and will inevitably lead to adverse social and environmental impacts in the Lake Baikal watershed.[31]

In response to these developments, the *UB Post* reported on February 12, 2018, that the Russian Energy Ministry has offered the Mongolian Government alternative energy supplies to meet the amount of electricity generated by the three proposed dams in the Selenge River Basin. Apparently, Mongolia imported more than 20 percent more energy from Russia in the first nine months of 2017. The proposed new agreement is a long-term contract for greater volumes at a cost 3.5 times lower than the expected price of power from the proposed hydropower plants.[32]

At the time of this writing, the Eg River HPP team is planning to conduct a comprehensive assessment of the potential impact of the dam on the biodiversity of the watershed – from the site of the proposed dam all the way to (and including) Lake Baikal.[33] As explained in the next sub-section, the regional environmental assessment on the proposed Shuren HPP on the Selenge River will also include the Eg, since it is a tributary to the Selenge River upstream of the Shuren HPP. However, the Mongolian-Russian Transboundary Commission (see below for more on this institution) does not focus on the Eg River since it is not a transboundary watercourse.

b) The MINIS Projects

According to the *Terms of Reference (TOR) for a Regional Environmental Assessment (REA) for the Selenge River Basin and Lake Baikal Area in the Context of the Proposed Shuren Hydropower Project and Orkhon Water Diversion Project* (MINIS June 2018), the Shuren HPP was identified with another two-dozen potential hydropower power projects in the 1960s. A feasibility study was conducted in 1973, but the project was not pursued because other energy supply options were available. To meet the growing demand for electricity, promote energy security, and support development of the mining sector, the Mongolian government made the Shuren HPP a national priority in 2011.[34]

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[31] https://www.transrivers.org/2017/1913/

[32] https://newsbase.com/topstories/russia-drafts-deal-power-sales-mongolia

[33] See Request for Expression of Interest (Consulting Services*), An Additional Impact Study of the Egiin Gol Hydro Power Plant Project on Biodiversity of the Selenge River and Lake Baikal* (the deadline for proposals was October 10, 2018).

[34] Mongolia Ministry of Finance, *Terms of Reference for the Feasibility Study for Shuren Hydropower Plant Project* (September 2016). "Due to its growing population, Mongolia's primary energy consumption has steadily increased over the last years while consumption intensity remained the same. Mongolia is in danger of a serious energy shortfall as early as 2012, at which point the maximum imported capacity of 255 MW from Russia may not meet demand. Russian power has become more expensive. This shortfall will grow with rapid expansion of the country`s mining sector. To address energy shortfall, the Government cabinet meeting (November 2011) discussed the Shuren hydropower plant (HPP) along with several other energy projects and recognized the Shuren HPP as a priority project."

The proposed Shuren HPP will be located on the Selenge River, the largest river in Mongolia and the main feeder river into Lake Baikal. The Orkhon-Gobi River Diversion, a separate project, is designed to pipe water from the Orkhon River, a tributary of the Selenge River, in northern Mongolia to the mines in the South Gobi region, a distance of over 1,000 km.

The World Bank approved an initial $25 million credit to the Mongolian government for the Mining Infrastructure Investment Support (MINIS) Project on May 10, 2011.[35] The purpose of MINIS is to provide technical assistance to the Government of Mongolia to facilitate investments in the infrastructure needed to support mining (such as roads or power sources) and build the capacity of the government to prepare and seek financing for similar projects in the future. The project does not fund any physical activities or works, only feasibility studies and other preparatory assessments.

In 2012, a feasibility study for Shuren HPP was inserted into the MINIS portfolio, along with the Orkhon-Gobi Project. The government of Mongolia also restarted planning of the Egiin Gol HPP on the Eg River in 2013, and the international NGO Rivers without Boundaries started to raise questions about the legitimacy and impact of the proposed water development projects. The international coordinator of Rivers without Boundaries, Dr. Eugene Simonov, was deported from Mongolia as a "person presenting a threat to national security of Mongolia."[36]

On February 10, 2015, representatives from communities in Mongolia and Russia submitted a request for inspection to the World Bank's independent accountability mechanism, the Inspection Panel.[37] The complaint focused on the potential impacts of the Shuren HPP and the Orkhon-Gobi River Diversion projects. While the Bank is only funding the feasibility studies and the social and environmental impact assessments, the complainants and their supporting NGOs (Greenpeace Russia and Rivers without Boundaries) are concerned that these studies will serve as a rubber-stamp for the Mongolian government to facilitate the construction of these projects without the input of concerned stakeholders and impacted communities.

The request for inspection highlighted several interests and concerns:

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[35] In response to a question about why The World Bank is financing this project, the MINIS "frequently asked questions" fact sheet explains that "Mongolia is home to some of the world's richest deposits of copper, uranium, coal, iron ore, and gold. In recent years, several large-scale projects have started development through significant domestic and foreign investment. There is therefore a high urgency for Mongolia to ensure that necessary regulatory frameworks and infrastructure are in place to support these mining activities in an environmentally and socially sustainable manner. "

[36] Rivers without Boundaries, "Baikal vs. Dams – Game Over?" (August 3, 2017). http://www.transrivers.org/2017/1952/

[37] *http://ewebapps.worldbank.org/apps/ip/Pages/ViewCase.aspx?CaseId=107*

- The potential impact of the proposed projects on the hydrological flow and water levels in the Selenge Delta and Lake Baikal (and thus the impact on the ecological health of these ecosystems, specifically on sturgeon and omul populations);

- The need for a basin-wide approach to the joint use of water resources by Mongolia and Russia;

- The impacts of the proposed projects on the livelihoods and cultural heritage of communities living adjacent to the Delta and Lake; and

- The lack of information and public consultation[38].

The complaint was registered by the Panel in March 2015. Staff with the Inspection Panel traveled to Mongolia and Russia in May 2015 to assess the eligibility of the complaint. In support of the complaint, a petition was sent by Avaaz – an international network of activists – to the World Bank and the governments of China, Russia, and Mongolia in May 2015 asking them to protect Lake Baikal from destructive hydropower projects. The petition, Save the Blue Jewel of Siberia, had over 55,000 signatories from around the world.[39]

In July 2015, the Panel proposed – and the Board approved – deferring for one year the Panel's recommendation on whether to investigate the complaint. The Panel concluded that the Bank was committed to improving the process based on the issues raised by the complaint. A year later, in July 2016, the Panel recognized that while progress had been made, there were still several pending actions to address the concerns raised in the complaint. It stated that more time was needed before assessing the implementation of the Bank's actions, specifically regarding the quality of the consultation process and the progress and scope of the project's social and environmental impact assessment. The Panel recommended – and the Board approved – a second deferral and committed to report back to the Board within one year.

Over the next year, the Panel frequently consulted with the complainants, the Bank, IUCN, and the World Heritage Committee. In addition, a Panel team visited Mongolia and Russia in June 2017 and met with stakeholders who had participated in the public consultations for the REA,[40] scientific experts, government officials, and World Bank staff. In sum, the

[38] The complete record of public consultation on the Shuren and Orkhon projects is available at http://www.minis.mn/en by clicking the "Consultation Hub" tab.
[39] For more information on integrated natural resources management in the Baikal basin transboundary ecosystem, see http://baikal.iwlearn.org/en/project/project-document/view.
[40] MINIS conducted numerous public consultation meetings on the draft TOR for the REA in 2017, including 14 locations in Russia and 19 in Mongolia. The public consultation process facilitated by MINIS is designed to follow the World Bank's checklist of best practices, which includes – among other things – identifying stakeholders; including affected communities; involving people in the planning, designing, implementing, monitoring, and evaluating phases of the project; and explaining how feedback was considered. *https://drive.google.com/file/d/135KsS5giGTnTno4uP5uW1FtIr9S7EuZp/view* For a review of the "consultation" process completed to date, go to http://minis.mn/en/p/Consultation-overview. This web site explains the MINIS project's consultation history, including what subjects were consulted, who was consulted,

Panel was satisfied that the project was moving in the right direction – thanks in large part to the issues and concerns raised in the original Request for Inspection. The Panel highlighted the Bank's commitment to address transboundary issues, meaningfully engage stakeholders in Mongolia and Russia, consider alternatives to the proposed projects, and conduct regional and cumulative impact assessments. In July 2017 it recommended – and the Board approved – to not investigate the complaint. In making this recommendation, the Panel emphasized the need for the Bank to remain in close contact with the Requesters and affected communities, to build on the lessons of previous consultations, and to ensure diligent implementation of the full set of environmental assessment tools that have been identified.

Consistent with the recommendations of the World Bank, IUCN, and Rivers without Boundaries, the MINIS Project Team released the *Terms of Reference (TOR) for a Regional Environmental Assessment (REA) for the Selenge River Basin and Lake Baikal Area in the Context of the Proposed Shuren Hydropower Project and Orkhon Water Diversion Project* in June 2018 for public review and comment. The Project Team accepted public comments until August 30, 2018, and at the time of this writing they are reviewing and analyzing the public comments. A compilation of all the comments received can be found here.

According to the 2018 TOR,[41] a previous version of the TOR was presented to stakeholders in Mongolia and the Russian Federation in a series of public consultation meetings between March and June 2017. The feedback received during these meetings reflected strong opposition to the proposed Shuren and Orkhon projects. The key points at that time can be summarized as follows:

- Many stakeholders believe that there is no way to develop Shuren (and to a lesser degree Orkhon) without significant negative impacts on the Selenge River ecosystem (including the delta) and Lake Baikal;

- Several people expressed concern about water availability and water quality, impacts on ecosystems in rivers and Lake Baikal, impacts on sensitive and vulnerable species, impacts on livelihoods, climate, and concerns about hydrological changes, flooding, seismicity and dam safety, and emergency scenarios in case of dam failure;

- NGOs pointed out that the project should have never passed the initial screening stage, and that detailed studies should not even be considered, given that the Selenge River basin and Lake Baikal most likely fall under the World Bank's definition of critical natural habitats;

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what form consultations took in, where and when the consultations were held, what were the results of consultations. This website also provides information about upcoming consultations that to be carried out by MINIS.

[41] *Terms of Reference (TOR) for a Regional Environmental Assessment (REA) for the Selenge River Basin and Lake Baikal Area in the Context of the Proposed Shuren Hydropower Project and Orkhon Water Diversion Project* (MINIS June 2018): 44-45.

- Nearly everyone encouraged the Government of Mongolia to consider alternative sources of energy, such as wind and solar, to fill Mongolia's energy supply gap; and

- NGOs argued that the REA should be completed before the ESIAs are started to allow the REA to be used as vehicle for a meaningful analysis of alternatives, cost-benefit analysis, and decision-making.

c) Other Developments in 2017 and 2018

- ***Commitment to transboundary collaboration*** – On February 22, 2017, Mongolia's Foreign Minister Ts. Munkh-Orgil issued a statement that Mongolia discussed with Russia the proposed dams on the Eg and Selenge Rivers and agreed to conduct a joint study to determine if the projects will adversely impact the Lake Baikal ecosystem. (Montsame News Agency).

- ***Mongolian government testifies at World Heritage Committee*** – At the 42nd World Heritage Committee meeting held June 28, 2018, the Mongolian government explained that it recognizes the significance of Lake Baikal, the impacts of climate change, and its obligations under the Paris Climate Agreement. It also said that it is committed to developing renewable energy resources (i.e., hydropower) to help reduce greenhouse gas emissions; promoting sustainable use of water; facilitating an open process for the Regional Environmental Assessment; and cooperating with Russia via annual meetings of the transboundary commission.

- ***United Nations Economic Commission for Europe releases the "environmental performance review" for Mongolia[42]*** – This impressive report, prepared at the request of the Government of Mongolia, "takes stock of progress made by the country in the management of its environment since 1987. It covers legal and policy frameworks, compliance assurance, greening the economy, environmental monitoring, public participation and education for sustainable development. Furthermore, the EPR addresses issues of specific importance to the country related to air protection, biodiversity conservation and water, waste and land management."

  Among many observations, the report concludes that "Since 1987, Mongolia has developed an extensive legal framework on environmental protection. The environmental legislation is largely consistent and coherent. However, implementation of environmental legislation is often delayed. Furthermore, enforcement of environmental laws and environment-related provisions in sectoral legislation often represents a serious challenge."

  It also concludes that "The legislative framework regulating access to environmental information is in place and evolving. Nevertheless, adequate implementation by

[42] United Nations Economic Commission for Europe, *Environmental Performance Reviews: Mongolia* (2018).

both the Government and the public remains a challenge." And "Mongolia is progressing towards developing the legal framework for public participation in environmental decision-making and implementing it in practice. However, numerous challenges remain to ensure effective public participation."

4. Other Initiatives in the Transboundary River Basin

In addition to the activity associated with the proposed hydropower and infrastructure projects, several other initiatives have sought to address the challenges of conservation and development in the transboundary river basin – though not all of them are transboundary initiatives per se. In order to identify the most compelling opportunities for collaboration in the basin, it is important to understand these other initiatives and the opportunities they may provide to effectively integrate conservation and development interests.

Taken as a whole, these various initiatives demonstrate a deep interest and commitment to address a mix of conservation and development goals, aspirations, and challenges. We present these initiatives in chronological order to help facilitate the narrative or story of conservation and development in the Selenge River – Lake Baikal transboundary basin.

1974 – Mongolia and Russia enter into transboundary *Agreement between the Government of the Russian Federation and the Government of Mongolia on rational management and conservation of river Selenga.* "The Contracting Parties shall strictly cooperate in the sphere of rational management and protection of river Selenga against pollution, clogging up and exhaustion for the prevention of negative impact thereof (art. 1). The forms of cooperation shall be: (a) data collection, reporting and exchange of information on water basin of river Selenga; (b) seasonal inspection for the determination of water quality and water quantity; (c) elaboration of general water protection scheme; (d) use of waterworks; (e) prevention of soil erosion caused by water (art. 2). The Parties shall carry out arrangements for the protection of fish by installing fish protection works (art. 7)."

1992 – *Lake Khovsgol National Park is created.*[43] Long regarded as the "Blue Pearl of Mongolia," the lake is located in northern Mongolia where the Central Asian Steppe meets the Siberian Taiga. Lake Khovsgol is considered to be one of the oldest and most beautiful lakes in the world; it is 136 km long, 20-40 km wide, and up to 260 m deep; it contains nearly 70% of all fresh water in Mongolia. The Eg River flows out of the lake and into the Selenge River, which connects Lake Baikal with Lake Khovsgol. Lake Khovsgol National Park is a "sister park" with Yosemite National Park in the United States.[44]

1994 – The *Law on Special Protected Areas* is passed by Parliament and provides the legal authority to establish and manage protected areas. It includes rules and penalties that apply nationwide and establishes four distinct types of protected areas and levels of protection: (1) strictly protected areas; (2) national parks; (3) national reserves; and (4) national heritage and cultural monuments.

1995 – *Mongolia and Russia revise and update the 1974 agreement for transboundary cooperation*. The amended agreement expands the scope of cooperation to other transboundary basins in addition to the Selenge. "The Parties have agreed to cooperate in the following fields: (a) rational management and protection of transboundary water

[43] http://bic.iwlearn.org/en/atlas/atlas/124-specially-protected-natural-areas-map
[44] https://mn.usembassy.gov/united-states-mongolia-establish-sister-national-parks/

resources against exhaustion and pollution; (b) study of hydrochemical, hydrobiological and channel operation of waterbodies, water resources and quality thereof; (c) exchange of hydrological information and forecasting with a view of prevention of floods and negative consequences thereof; and (d) ensuring natural migration of fishes and other aquatic animals in transboundary water. Cooperation shall be carried out in the following forms: (a) joint water monitoring programmes; (b) distribution of water resources between the Parties; (c) exchange of information; (d) research; (e) exchange of experts; and (f) compliance of water quality indices with international standards."

A transboundary commission, including about 20 representatives from both Russia and Mongolia (including the Mongolian Ministry of Energy), meets every other year, while scientific and technical experts that support this commission meet every year. The meetings are closed to the public and the minutes of the meetings are not available. According to some observers, the commission is monitoring and discussing the proposed HPP projects, but it is not clear what authority they have in terms of providing input and advice and/or decision-making.

In this context, it is useful to note the status of both countries relative to established international law governing transboundary water, indigenous people, and public participation.

- *1989 Convention concerning Indigenous and Tribal Peoples in Independent Countries* – Mongolia and Russia are not parties.[45]

- *1991 Convention on Environmental Impact Assessment in a Transboundary Context* – Russia signed but did not ratify the Convention; Mongolia is not a party.

- *1992 Convention on the Protection and Use of Transboundary Watercourses and International Lakes* – Russia is a party; Mongolia is not.

- *1993 UN Framework Convention on Climate Change* – Mongolia and Russia are both parties.

- *1997 UN Convention on Wetlands (Ramsar Convention)* – Mongolia and Russia are parties.

- *1997 Convention on the Law of the Non-navigational Uses of International Watercourses* – Mongolia and Russia are not parties.

[45] According to a United Nation's fact sheet on "Understanding International Law," "To become party to a treaty, a State must express, through a concrete act, its willingness to undertake the legal rights and obligations contained in the treaty – it must 'consent to be bound' by the treaty." It can do this in various ways, defined by the terms of the relevant treaty.
https://treaties.un.org/doc/source/events/2008/Press_kit/fact_sheet_5_english.pdf

- *1998 Aarhus Convention on Access to Information, Public Participation and Access to Justice* – Mongolia and Russia are not parties.

These international norms, protocols, and best practices might be instructive as various initiatives in the transboundary basin move forward.

1995 – Mongolia's legislature enacts the *Law on Water* to regulate the protection, effective use, and restoration of water. It also focuses on capacity-building in the water sector and the decentralization of water management.

2008 – *Integrated Water Management Model on the Selenge River Basin: Status Survey and Investigation*.[46] An international team of experts, led by the United Nations Environment Programme and including representatives from Mongolia and Russia, completed a three-year study of the Selenge River Basin. "The overall objective of this project [was] to provide policymakers and stakeholders with an integrated water management system for the Selenge River Basin. About 60 scientists and economists with widely varying backgrounds participated in this project for a period of 3.5 years (2006-2010). It [consisted] of three phases: 1. Status Survey, 2. Basin Assessment and Integrated Analysis, and 3. Model Development and Application. The preliminary study was performed to collect data and information of existing studies, before the first phase was launched containing socio-economic study, water resources study, and water quality study. This report includes the preliminary study and the first phase."

2009 – *The so-called "Law with Long Name" was designed "to prohibit mineral exploration and mining operations at headwaters of rivers, water protection zones and forested areas."* It was [apparently] drafted and promoted by representatives of local communities affected by gold mining to protect headwaters and reduce conflicts between miners and indigenous communities of herders.[47] Once the law was passed, the United Movements for Mongolian Rivers and Lakes (UMMRL) cooperated with the government and helped to delineate actual protection zones and negotiate them with local populations. Apparently, after opposition by international mining companies, the law was amended to reduce the headwaters protection zone to 50 meters for strictly protected areas and 200 meters for general protection. This reduction limits the capacity to protect headwaters. Several other attempts were made to amend the legislation and it remains on the books.

2011 – *Community Based Conservation of Biological Diversity in the Mountain Landscapes of Mongolia's Altai-Sayan Eco-Region*. The intent of this report, published by the Mongolian Ministry of Nature and Environment, is to promote conservation and sustainable livelihoods in the Mongolian part of the Altai and Sayan eco-region. Among other things, the final report recommends community-based initiatives and a transboundary conservation plan for the region.

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[46] Yuri Mun, et al., *Integrated Water Management Model on the Selenge River Basin: Status Survey and Investigation*: Phase 1 (Korea Environment Institute 2008).
[47] Eugene Simonov, "Protect Mongolian Rivers from Mining," *International Rivers* (November 20, 2013) https://www.internationalrivers.org/blogs/227/protect-mongolian-rivers-from-mining

2011 – *Ulaan Taiga Special Protected Area* established at the headwaters of the Selenge River. The Ulaan Taiga Special Protected Area is a "sister park" with Yosemite National Park in the United States.[48]

2014 – *Sustainable Water Management in Selenga-Baikal Basin*. Researchers at Moscow State University and Helmholtz Centre for Environmental Research, Magdeburg, Germany, produced this short publication advocating for integrated water resources development in the basin.

2015 – From 2011 through 2015, the Global Environment Facility funded *Integrated Natural Resource Management in the Baikal Basin Transboundary Ecosystem*.[49] The objective of this project was "To spearhead integrated natural resource management of Baikal Lake Basin and Hövsgöl Lake ensuring ecosystem resilience, reduced water quality threats in the context of sustainable economic development." The strategy was to apply an integrated water resources management (IWRM) approach to address the range of threats and barriers to the Baikal Basin watershed and to produce three primary outcomes: (1) a strategic policy and planning framework developed and adopted by stakeholders; (2) institutional support to strengthen IWRM; and (3) demonstrate methods and approaches to protect water quality and biodiversity. The achievements of the project during 2012, 2013, and 2014 are presented in GEF, *Integrated Natural Resource Management in the Baikal Basin Transboundary Ecosystem: The Russian Federation and Mongolia 2012/2015 Results & Events* (undated publication).

2016 – *The Nature Conservancy – Mongolia* convened a workshop in the Delgermoron watershed with herders, business leaders, tourism operators, and government officials to discuss the benefits and challenges of protecting taimen and the watershed while helping herders gain financial benefit from visitors that come to the Delger to fish.[50] According to TNC, local herders are eager for information, and communities agreed that learning about watershed management, endangered species protection, and economic livelihoods is very useful. The participants agreed that protecting taimen and their habitat generates social and economic benefits for the communities along the Delger River and are eager to work together to achieve these multiple objectives.

TNC explains that this is one of three pilot projects they are sponsoring and is based at least in part on the Mongolia Environmental Protection law, which encourages co-management

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[48] https://mn.usembassy.gov/united-states-mongolia-establish-sister-national-parks/

[49] GEF Agency: United Nations Development Programme, *Integrated Natural Resource Management in the Baikal Basin Transboundary Ecosystem* (GEF Project ID: 4029, UNDP PIMS: 4347; UNDP Atlas Project ID: 00076781, Mid-term Evaluation Report, April 5, 2014). This project was completed in partnership with the Federal Ministry of Natural Resources and Environment, Russian Federation and Ministry of Environment and Green Development, Mongolia. See also The Baikal Project PCU, *Lake Baikal Basin Strategic Action Programme* (Draft June 2014).

[50] Tuguldur Enkhtsetseg, "Partners Join to Protect Mongolia's River Wolves," *Conservancy Talk* (October 3, 2016).

of natural resources by community-based organizations (CBOs).[51] It is also based on Elinor Ostrom's framework for sustaining socio-ecological systems.[52] The Wildlife Conservation Society believes that interest in CBOs and community-based approaches to natural resources management was given a boost by amendments in 2004 to the Mongolia Environmental Protection law, as well as Order #114 from the Minister of Environment (April 2006). Taken together, these policies delegate responsibility to communities to "protect" wildlife and other natural resources; provide a legal right to manage wildlife and other natural resources; and allows communities to own wildlife and other natural resources in some cases.

2018 – *Baikal Headwaters Expedition* – During the summer and fall of 2018, a team of Mongolian, Russian, and American scientists traveled from the headwaters of the Delgermoron River to Lake Baikal. The primary purpose of the expedition was to: (1) gather baseline data on aquatic fauna, including invertebrates and fish; (2) continue the collection of water-quality data begun by other researchers; and (3) raise awareness of the river's intrinsic value at both the local and global levels. IUCN red-list species known to occur in the upper drainage include Arctic whitefish (*Coregonus pidschian*) and taimen (*Hucho taimen*). For more information, see https://www.baikalheadwaters.org/

[51] For an excellent review of specific provisions of Mongolian environmental law related to rights and obligations of communities and local governments and residents, see Wildlife Conservation Society, *Workshop Proceedings, Community Basin Wildlife Conservation in Mongolia: Successes & Lessons Learned* (April 2008).
[52] Elinor Ostrom, "A General Framework for Analyzing Sustainability of Social-Ecological Systems," *Science* 325 (2009): 419-422.

5. Key Issues & Concerns

Based on the interviews completed to date, as well as a review of relevant documents and literature, several key issues and concerns emerge with respect to the Selenge River – Lake Baikal transboundary basin.

a) Mongolia and Russia do not agree on how to effectively balance development and conservation interests in the transboundary basin.

Mongolia and Russia seem to share a common commitment to develop natural resources in an environmentally responsible way. However, the two countries disagree over how to effectively proceed with responsible development of water resources in the Selenge River – Lake Baikal transboundary basin.

The Mongolian government believes that the situation surrounding the proposed hydropower plants is fundamentally an internal issue. According to Prime Minister U. Khurelsukh and his Cabinet, Mongolia desires to become more self-sufficient and self-reliant when it comes to securing its own food, energy, and fuel.[53] Mongolia is currently completely dependent on Russia for fuel and partially dependent for energy. The Egiin Gol project, if completed, would help Mongolia reduce payments to the federal government of Russia, which annually earns about $24 million by exporting energy to Mongolia. Mongolia's annual 700 MW of power generation falls short of demand by about 200 MW during winter.[54] The proposed Egiin Gol project would help offset this peak winter demand. The proposed hydropower projects would not only provide much needed energy, but also water for human consumption, agriculture, and mining.[55]

In contrast to Mongolia's interests and viewpoint, Russia has repeatedly expressed concern about the potential environmental impact of the proposed hydropower plants on rivers that feed into Lake Baikal.[56] Moreover, Russia also wants to continue selling electricity to Mongolia. According to the *UB Post* (February 12, 2018), the Russian Energy Ministry has offered the Mongolian Government alternative energy supplies to meet the amount of electricity generated by the three proposed dams in the Selenge River basin. The proposed agreement is a long-term contract for greater volumes of energy at a cost 3.5 times lower than the expected price of power from the proposed hydropower plants. At least a few people suggest that this is Russia's attempt to compensate Mongolia for the lost benefits as a trade-off to protecting Lake Baikal.

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[53] "Russia Finalizes Draft Agreement to Avoid Construction of Mongolian Hydropower Plants," *UB Post* (February 12, 2018).

[54] https://www.hydroworld.com/articles/2016/06/us-1-billion-proposed-315-mw-egiin-hydroelectric-project-in-mongolia-on-hold.html

[55] Due to a lack of time, we have not yet clarified where the electrical power generated by these facilities will be used. Some people have suggested that the electricity will be used to offset the use of coal in Ulaanbaatar, and thereby decrease air pollution. Other people have explained that these dams will supply water and electricity to the mining activities in the Gobi Desert.

[56] "Shuren and Orkhon Hydroelectric Power Plant Investment Suspended," *UB Post* (May 18, 2016).

While most people in Mongolia support the proposed dams and related infrastructure projects, other people argue that Russia can provide electricity more cheaply and without impacting the quality of Lake Baikal.

Given Mongolia's expressed interest in developing more independent, secure, and sustainable sources of energy, some people raise the question of whether the Mongolian Government has articulated a comprehensive renewable energy policy that would include wind and solar energy along with hydropower.[57] The goal here, according to some people, should be to develop a robust vision and an efficient means to satisfy energy and water demands while protecting and restoring ecosystem services and biodiversity values.

In the final analysis, several people point out that any attempt to engage Mongolia and Russia in some type of transboundary collaborative process to reach agreement on conservation and development goals is complicated by the history and geopolitics between the two countries. That said, many people also suggest that the existing transboundary commission between Mongolia and Russia may be a forum to discuss and resolve some or all of these issues – and in any case demonstrates the two countries' commitment to working together when it comes to shared natural resources. However, it is unclear what role the commission is playing in the decision-making process. At least one person explained that there may be as many as four or five parallel diplomatic forums between Mongolia and Russia focused on energy, environment, water, and socio-economic issues. A few people suggested that it would be useful to review the roles and responsibilities of similar transboundary commissions around the world and use that information to sharpen and refine the role of the transboundary commission between Mongolia and Russia.

b) The commitment to develop a basin-wide/transboundary approach to the joint use of water resources by Mongolia and Russia is at best nascent and emerging.

As explained earlier in this report, representatives from communities in Mongolia and Russia asked the World Bank in 2015 to critically examine the planning process for the MINIS studies. After nearly two years of consultations and evaluations, the World Bank's Inspection Panel concluded in 2017 that the MINIS project was on the right track to address transboundary issues, meaningfully engage stakeholders in Mongolia and Russia, consider alternatives to the proposed projects, and conduct regional and cumulative impact assessments.

About the same time in 2017, Mongolia's Foreign Minister Ts. Munkh-Orgil issued a statement that Mongolia discussed with Russia the proposed dams on the Eg and Selenge Rivers and agreed to conduct a joint study to determine if the projects will adversely impact the Lake Baikal ecosystem. Since then, both the Eg River HPP and MINIS project teams have published "terms of reference" or "requests for proposals" to complete (1) a transboundary assessment of the potential impacts to biodiversity from the Eg River HPP

[57] See Anmar Frangoul, "Millions in Funding Announced for Renewable Energy Project in Mongolia," *CNBC* (Nov. 2, 2018). https://www.cnbc.com/2018/11/02/millions-in-funding-announced-for-renewable-energy-in-mongolia.html

project; and (2) a regional, transboundary environmental impact assessment associated with the proposed Shuren Dam on the Selenge River.

According to many observers, these actions demonstrate Mongolia's growing interest and commitment to "think and act like a transboundary basin." It appears to be a step in the right direction, but it is not yet clear how the two processes will engage diverse stakeholders in the scientific and technical process, and/or how the project teams will address the value-questions related to how the basin should be managed. It is also not clear whether there might be some value in the two project teams coming together to conduct a "joint fact finding" process given that they are focused on the same geography.

It is also unclear at the time of this writing whether the commitment by the two project teams to complete basin-wide scientific and technical assessments will translate into a joint water management plan for the transboundary basin. Finally, it is unclear what Russia's interest and involvement is in either one of the ongoing basin-wide assessments, as well as their commitment to preparing and implementing a joint water management plan for the Selenge River – Lake Baikal transboundary basin. Apparently, Russia has already completed an "integrated water resources management" (IWRM) plan for the portion of the Selenge River basin in Russia, but these plans do not incorporate the portion of the basin in Mongolia.[58] Assuming this is correct, this may be a useful building block toward a joint IWRM plan for the transboundary basin.

c) Decision-makers, experts, and stakeholders disagree on the likely social and ecological impacts to the Selenge River – Lake Baikal transboundary basin from the proposed water development projects.

Like many natural resource and environmental issues, the proposed water development projects in the Selenge River basin are fraught with disputes over scientific and technical information. As explained more fully below, these disputes revolve around a lack of information, misinformation, different views on what information is important, different procedures for assessing data, and different interpretations of existing data.

As a general observation, there seems to be more agreement on the likely hydrological impacts from the proposed projects, and less agreement on the likely social and ecological impacts. There also seems to be fundamental disagreement on how best to mitigate the likely social and ecological impacts during the process of building dams, filling reservoirs, and operating the system. Some people commented that there is more agreement among the scientific community on the potential impacts of the proposed HPP projects, and that this disagreement revolves around value-based judgments about the importance of the impacts relative to the benefits of the projects.[59]

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[58] Leaders of the Baikal Headwaters Expedition met with Russian scientists in October 2018. The scientists explained that a comprehensive multi-year ecological assessment of the Selenge River in Russia had been completed and was under review by the national government.

[59] Although we have not had time to learn more about their work, at least one person explained that the Mongolia and Russian academies of science conduct annual field work in the transboundary basin and have published several monographs on the basin since 2009.

Based on the interviews, the scientific and technical disputes revolve around four organizing themes – impacts to Lake Baikal, impacts to taimen, impacts to communities and local people, and lack of coordination among experts.

- **Impact on Lake Baikal**

Several conservation organizations, as well as IUCN and the World Bank, have raised questions about the potential impact of the proposed projects on the hydrological flow and water levels in the Selenge Delta and Lake Baikal – and thus the impact on the ecological health of these ecosystems (specifically on sturgeon and omul populations).

According to several local and international reports in 2015, building the project on the Eg River could adversely affect Lake Baikal.[60] Reports indicated that the lake was at its lowest level in 100 years in 2017 and any hydropower project built upstream could further reduce the water level. A year later, that level rose by more than a meter.[61] By contrast, the Eg River HPP Project Team concluded that, while the reservoir behind the dam is filling, it will reduce the volume of water flowing into Lake Baikal by less than one percent, and that once the reservoir is full (most likely 2-3 years depending on hydrologic conditions), the dam would be operated to mimic natural flows in the Selenge River. Thus there would be no impact on the streamflow into Lake Baikal as a result of the HPP.[62]

In addition to the impacts of the proposed water development projects, Russia and others are concerned about the impacts of livestock grazing in the Selenge River basin on the water quality of Lake Baikal. Ironically, according to some people, there is more pollution coming from the Russian side of the Selenge River due to paper producing factories and the like; on the Mongolia side, the primary impact is from domesticated animals and mining (which really took off in the 1990s).

- **Impact on Taimen and Freshwater Ecosystems**

Several individuals and organizations are concerned about the likely impact of the proposed water development projects on taimen and freshwater ecosystems in the Selenge River basin. According to one observer, "the disappearance of the largest species (in freshwater ecosystems) is one of the first warning signs of over-harvest and biodiversity decline … conversely, a rebound in populations of the largest species may indicate an improvement of the overall health of the ecosystem."[63]

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[60] International Union for the Conservation of Nature (IUCN), *Reactive Monitoring Mission to Mongolia Concerning the World Heritage Property of Lake Baikal (Russian Federation)* 13-17 April 2015.
[61] https://1baikal.ru/en/soxranim-bajkal/bajkal-pod-oxranoj/the-level-of-water-in-baikal-from-one-extreme-to-the-other
[62] Personal communication, August 2018. See also Tractebel Engineering, *Egiin Goliin Hydro Power Plant Project: Introduction* (undated publication): 12.
[63] James Owen, "Can Angling Save World's Largest Salmon?" *National Geographic News* (August 19, 2004).

According to The Nature Conservancy – Mongolia, taimen populations in Mongolia have declined by at least 50% since 1985.[64] The species will be increasingly vulnerable as mining, overgrazing, and fishing become more common throughout their range, polluting water and depleting fish stocks. Taimen need large stretches of pristine water to survive. They may travel more than 100 kilometers (60-plus miles) in a calendar year.

That said, several people commented that there is a general lack of information on the historic range of taimen; as recently as the nineteenth century, taimen were known to occur throughout the Selenge River basin. Over the past few decades, they appear to have vanished from some tributaries as well as the Selenge Delta region. At least one person commented that this impression contradicts readily available scientific information on the distribution of taimen.

Experts also disagree on how best to mitigate the likely impacts to taimen. In the case of the Eg River HPP, the current proposal is to use a lifting structure to capture taimen, then put them in trucks and transport them around the dam. Some scientists question the efficacy of this approach, including whether taimen will even enter lifting structures. Some also question whether interrupting stretches of free-flowing rivers with slack water will negatively impact the migration patterns of taimen, which need clean, cool, flowing water. The slack water in reservoirs may also provide habitat for species that compete with taimen.

Although the impacts of the proposed water development projects on taimen may not significantly influence the final analysis and decisions, several people suggest that it may still be possible to influence the design and operation of the proposed hydropower projects to minimize and mitigate impacts. These people advocate installing the best possible fish passage systems and to then monitor, evaluate, and adapt the operation of the hydropower facilities accordingly.

- **Impact on Local Communities**

Several people expressed concern about the potential impact of the water development projects on communities living in the Selenge River basin and adjacent to the delta and Lake Baikal. Rivers without Boundaries claims that the Eg and Shuren hydropower plans will collectively displace and resettle 800 households and 3000 people, destroy much of the remaining forest in Mongolia, and flood cropland and wheat fields. The livelihoods and heritage of other people will be lost by the loss of pasture and cropland.

Several people in the conservation community have also expressed concern about the potential impact of the water development projects on the emerging recreation economy revolving around flyfishing for taimen. Although impact assessments have apparently assigned no economic valuation to flyfishing and other outdoor recreation activities, this emerging economic sector provides jobs for local people and revenue for local

[64] Tuguldur Enkhtsetseg, "Partners Join to Protect Mongolia's River Wolves," *Conservancy Talk* (October 3, 2016).

communities. It is unclear what the potential impact of the water development projects would be on these economic opportunities.

- **Lack of Coordination Among Experts**

Several people commented that there is a huge need to better coordinate scientific and technical studies in the Selenge River – Lake Baikal basin. They suggest that this step could go a long way toward clarifying what we know, what we don't know, and what we need to know to make informed decisions about water management in the basin.

According to some interviewees, there were several effective binational scientific expeditions between Mongolia and Russia in the 1960s and 1970s. Apparently, due largely to a lack of funding, there have been very few (if any) government-led scientific expeditions since then. Today, there are several ongoing scientific and technical efforts that appear to be operating parallel to each other:

- MINIS regional environmental assessment
- Eg River biodiversity assessment
- 2018 Baikal Headwaters Expedition
- The Taimen Fund and Taimen Conservation Fund
- Several university-based research efforts, including faculty in Mongolia, USA, and Germany

Some people question the motives of some of these efforts, asserting that they are driven by predetermined outcomes rather than a more objective search for scientific and technical facts. In any case, there seems to be a number of ongoing studies occurring independent of each other with no comprehensive forum for experts to share information and learn from one another.[65]

As explained more fully in the next section of this report, many people suggested that it might be useful to convene a professionally facilitated joint fact-finding conference to exchange information, clarify what we know and don't know, identify what we need to know in order to make informed decisions, and to otherwise develop a research agenda going forward – and then to monitor, evaluate, and adapt management strategies accordingly.

In the final analysis, many people concluded that it is important to clarify the scientific and technical implications of the proposed water development projects. However, they went on to explain that a better understanding of the facts is not a substitute for what is in essence a

[65] However, see the call for presentations for *Bringing Together Selenga -Baikal Research International Conference and Workshop, 31 August – 2 September 2018,* convened in Nalaikh, just outside Ulaanbaatar, Mongolia. An announcement about the conference and workshop explains that "Since 2012, scientists working on water-related issues on Lake Baikal and in the Selenga River Basin have been meeting regularly in order to exchange their findings, network with colleagues from around the world, and jointly discuss new research ideas and partnerships."
https://www.atm.helsinki.fi/peex/images/BTSBR_2018_First_circular_lowres.pdf

value question – what is the appropriate balance of conservation and development in the Selenge River – Lake Baikal transboundary basin?

d) Although the MINIS and Eg River HPP project teams regularly provide public information and consult the public, several people believe that the public participation process could be more robust and meaningful.

Many people highlighted the need for more and better public engagement in the decision-making processes related to the proposed water development projects. At least one prominent non-government organization explained that "meaningful, inclusive public participation is the key issue in this process."

More specifically, several people – including the project teams – commented on the challenge of informing and educating rural people in Mongolia, as well as seeking their input and advice.[66] The project teams are searching for creative ways to inform and engage rural people throughout the social and environmental review processes. As the MINIS regional environmental assessment moves forward, the project team is committed to following the World Bank's guidelines on public participation as one of the conditions of the bank's funding for the REA.[67]

Some people also expressed a concern that inadequate and inaccurate information is often distributed to uninformed citizens.

e) Many conservation and development activities within the transboundary basin seem to be fragmented and disconnected from one another.

As demonstrated by the brief (and potentially incomplete) review of other conservation and development initiatives in the transboundary basin, there is a wide-ranging interest and commitment to address a mix of conservation and development goals, aspirations, and challenges in the basin. However, several people commented that these various initiatives are fragmented and disconnected from one another. People working on land, water, and/or community issues may be unaware of what other people are doing to address related issues. Likewise, people working at one geographic scale (e.g., locally) may not fully understand and appreciate what other people are doing at regional and/or transboundary scales – and vice versa.

Several people commented that there may be value in building a common understanding of who is doing what, identifying gaps, and exploring opportunities to work together.

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[66] The Baikal Headwaters Expedition also struggled with this while administering a survey for the Taimen Fund in summer and fall 2018. The project leader explained that it was relatively simple to overcome the obstacle of illiteracy by reading the survey questions aloud and recording the responses. It was more difficult, however, to explain the idea of a survey, and how people's responses would be used.

[67] See the MINIS Public Consultation process at http://minis.mn/en/p/consultation. See also the MINIS Grievance Resolution Mechanism at http://minis.mn/en/p/grievance-resolution-mechanism.

f) International and Other External Forces

In addition to specific issues and concerns about the proposed water development projects, several people offered comments and observations about the role of international and other external forces influencing conservation and development in the transboundary basin.

- Change in political leadership. A number of people explained that, while the inevitability of elections and frequent change in political leaderships may signal a healthy, emerging democracy, it takes time for project staff and others to inform and educate new leaders about the purpose, cost, impacts, and other variables associated with the proposed projects. In addition to delaying feasibility and impact assessment studies, a change in political leadership may also influence the priority of the proposed projects relative to other priorities of the new administration.[68]

- The Second Energy Sector Project, approved by the World Bank in 2017, will contribute $54.4 million in financing support to Mongolia's efforts to improve the reliability and sustainability of electricity services. It will address key bottlenecks in select electricity distribution companies by upgrading aging assets and expanding distribution capacity. The project will also support the development of solar power.[69]

- The Strategy for Northeast Asia Power System Interconnection Project, funded by the Asian Development Bank, is designed to complete a comprehensive analysis of the feasibility of harnessing Mongolia's vast energy resources to meet the power demands of its more prosperous neighbors through power exports. In the absence of an interconnected power system, Mongolia lacks access to large neighboring markets (home to some of the world's largest and most prosperous economies), and thus to investment in its energy resources and power system development.[70]

[68] According to https://en.wikipedia.org/wiki/Elections_in_Mongolia, a new President was elected in Mongolia in 2017 after President Tsakhiagiin Elbegdorj served two four-year terms beginning in 2009.
[69] The World Bank, "Mongolia: New Project to Deliver Reliable Electricity and Scale-up Renewables," (June 15, 2017). http://www.worldbank.org/en/news/press-release/2017/06/15/mongolia-new-project-to-deliver-reliable-electricity-and-scale-up-renewables
[70] Asian Development Bank, *Mongolia: Strategy for Northeast Asia Power System Interconnection* Project Number: 48030-001, Policy and Advisory Technical Assistance (PATA) November 2015. https://www.adb.org/sites/default/files/project-document/177256/48030-001-tar.pdf

6. Options Moving Forward

The following options are designed to address one or more of the issues and concerns presented above. These options emerged from interviews and are reinforced by best practices for transboundary collaboration from around the world.[71]

The options are numbered for ease of reference. The numbers do not indicate any order of priority, nor are the options mutually exclusive. It may make sense to pursue two or more options simultaneously.

As a practical matter, most if not all of these options would be most effective if catalyzed and convened by organizations based in Mongolia and/or Russia, in partnership with recognized experts.[72]

a) Option # 1 – Enhance the capacity of existing institutions to design and facilitate effective transboundary collaborative processes.

The primary government institutions responsible for completing feasibility studies and impact assessments for the proposed dams and related projects – i.e., the MINIS and Eg River HPP project teams, and the transboundary commission – appear to have sufficient scientific, technical, and project management expertise. Moreover, they seem committed to managing water and related resources as efficiently and effectively as possible.

However, like many institutions addressing transboundary natural resource issues around the world, the institutions responsible for the Selenge River – Lake Baikal transboundary basin could move their respective projects forward *and* balance the interests of stakeholders by enhancing their capacity to integrate diverse needs, interests, visions, and cultures[73].

Throughout the world, there is a growing recognition that the most effective way to achieve this objective and to promote livable communities, vibrant economies, and healthy

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[71] For information on best practices for transboundary water management, see *A Sacred Responsibility: Governing the Use of Water and Related Resources in the International Columbia River Basin through the Prism of Tribes and First Nations* (Universities Consortium on Columbia River Governance 2015) http://naturalresourcespolicy.org/projects/columbia-river-basin.php; for information on best practices for transboundary conservation, see *Transboundary Conservation: A Systematic and Integrated Approach* (International Union for the Conservation of Nature 2015) and *Hands Across Borders: An International Workshop on Transboundary Conservation* (2016) http://naturalresourcespolicy.org/projects/transboundary-conservation.php.

[72] The authors maintain an extensive network of individuals and organizations working on transboundary water and conservation, including the World Water Council, Global Water Partnership, and the IUCN Transboundary Conservation Specialist Group.

[73] The Mongolian Law on Consultation Polls, which was adopted by Parliament in 2017, encourages government ministries to inform and educate citizens on the most pressing issues facing Mongolia, to seek their input and advice on how to address such issues, and to involve citizens in decision-making. See B. Ooluun, "New law on consultative poll to empower citizens," *Montsame* (Feb. 9, 2017).

landscapes is to design and facilitate public processes that are inclusive, informed, and deliberative.[74]

- Inclusive participation means that an effort is made to meaningfully engage all viewpoints and interests, including citizens, organized interest groups, and local and national stakeholders. It also suggests that participants are empowered by the presumption that their input and advice will be considered by the decision makers and will influence the outcome.

- An informed process is one where there is an equal opportunity to share views and information. The process fosters mutual learning, common understanding, and consideration of a variety of options. It enables participants to jointly develop and rely on the best available information, regardless of the source.

- Deliberative dialogue occurs when people listen to each other, consider the rationale or reason for competing viewpoints (the interests that underlie the positions), and seek solutions that integrate as many interests as possible.

Experience around the world demonstrates that this principled approach to environmental decision-making results in decisions that receive broad public support; saves time and money when compared to lobbying, litigation, and other ways of shaping public policy or resolving public disputes; provides the most direct and meaningful form of public participation; effectively integrates social and political values with scientific and technical considerations; and makes implementation easier because the stakeholders have helped shape the proposed decision.

There are several ways for the MINIS and Eg River HPP project teams, as well as the transboundary commission, to enhance their capacity to design and facilitate transboundary collaborative processes. First, an individual or organization with experience in transboundary collaboration and decision-making could provide an on-site workshop. Among other things, such a capacity building workshop could review and discuss international best practices for transboundary collaborative problem-solving and natural resources diplomacy.[75]

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[74] There may also be value in identifying, documenting, and sharing case studies in Mongolia where this has happened. These case studies may complement the emerging literature on democracy and public participation in Mongolia. For starters, see Philippe Long, "Mongolia: Increasing Citizen Participation in Local Decision-Making (The Asia Foundation, November 7, 2018); Erdenetsetseg Divaa and Maria Onestini, *Strengthening Environmental Governance in Mongolia: Phase II* (United Nations Development Programme 2014); O. Khatanbold, "The Current State of Democracy and Democratic Governance in Mongolia," *The Mongolian Journal of International Afffairs* (2013); and Uyanga Sambuu, et al., "e-Governance Initiatives in Mongolia," *Proceedings of the 2nd International Conference on Theory and Practice of Electronic Governance* (Cairo, Egypt, December 1-4, 2008).

[75] The framework for water and natural resources diplomacy includes (1) political dimensions, such as voice (i.e., who speak for which interests?), back-table pressure, time frame, uncertainty, and coalitions; and (2) cultural dimensions, such as prevailing assumptions about the (legal and moral) rights of individuals to a clean and healthy environment; the significance of water in sacred practices and everyday rituals; general attitudes toward the prospect of science and technology producing solutions to social and environmental

Second, as part of a capacity building workshop or separately, an experienced individual or organization could work with the project managers in a hands-on clinic to design a transboundary collaborative process to satisfy their particular missions and mandates, as well as integrate relevant legal, institutional, financial, and other constraints. Three real-time opportunities might be considered along these lines:

1. In the case of the MINIS project, explore the feasibility of providing input and advice in the design and implement of the Regional Environmental Assessment. More specifically, consider the possibility of designing and facilitating some type of collaborative process that would engage stakeholders in the process of completing the REA.

2. In the case of the Eg River HPP project, explore the interest and feasibility of designing and facilitating a joint fact-finding process to complete the biodiversity assessment the project managers are planning to complete.[76] Along these lines, it might be valuable to explore the possibility of building on work begun by the 2018 Baikal Headwaters Expedition, which consisted of an international group of scientists collecting baseline data on a number of biological and physical assets. One goal of this type of effort would be to clarify what we know, don't know, and need to know in order to make informed decisions on balancing conservation and development in the basin.

3. There may be interest in exploring the feasibility of convening a joint collaborative process between the MINIS and Eg River HPP project teams given that they appear to be doing complementary work in the same geography. It may be possible, in an exploratory workshop or clinic, to exchange information, clarify objectives and methods, and explore opportunities to work together. This option could intentionally link the REA and biodiversity assessment; create a more integrated collaborative process to fulfill multiple, complementary objectives; and enhance scientific and technical understanding of the transboundary basin. It might also catalyze the creation of a joint water management plan between Mongolia and Russia.

A third way to build the capacity of existing government institutions focuses on the transboundary commission (and perhaps other diplomatic forums between Mongolia and

problems; the intersection of indigenous or traditional knowledge and western science and technology; and philosophical assumptions about fairness, efficiency, and the responsibilities of government. For more information on this topic, see Lawrence E. Susskind, "The Political and Cultural Dimensions of Water Diplomacy in the Middle East," ed. by Jean Axelrad Cahan, *Water Security in the Middle East* (Anthem Press 2017).

[76] See Request for Expression of Interest, *Additional Impact Study of the Egiin Gol Hydro Power Plant Project on Biodiversity of the Selenge River and Lake Baikal* (Ref. No. EGHPP-CS-2018-01).

Russia.)[77] Building on official statements from the Mongolian government in 2017 and 2018 to promote and support transboundary collaboration (see earlier observations on page 22), perhaps there is an opportunity to invite the members of the commission to a capacity-building workshop for the MINIS and Eg River HPP project teams. As an alternative, it may also make sense to provide a shorter executive seminar for the commission. While many of the same topics could be covered, albeit at a higher level, this commission may also be interested in exploring the merits of promoting and supporting something like a Track II process to supplement the more formal process of transboundary collaboration.

To complement and supplement the diplomacy that occurs inside official government channels (often referred to as Track I diplomacy), Track II diplomacy consists of non-governmental, informal, and unofficial contacts and activities among private citizens or groups of individuals, sometimes called "non-state actors." Track II diplomacy is not a substitute for Track I diplomacy. Rather, Track II diplomacy can assist official actors to manage and resolve conflicts by developing options and exploring possible solutions without the expectations and requirements of formal negotiation via Track I diplomacy.

Perhaps there is an opportunity to build on the existing vision, passion, and capacity of Rivers without Boundaries (RwB), "a collaborative international network of organizations and experts dedicated to preserving the health of transboundary river basins in northeast Eurasia through joint advocacy and promoting best practices in river management."[78] RwB has an established track record of providing assistance and sharing information among local initiatives, national and international organizations, and decision-making bodies. Among other things, RwB regularly reviews and recommends amendments to regional, national, and international water development plans with the intent of balancing conservation and development interests. Perhaps there is an opportunity for RwB and other individuals and organizations interested in a Track II process in the Selenge River – Lake Baikal basin to learn about similar efforts in other transboundary basins throughout the world and to then explore options to build the capacity for inclusive, balanced, and informed Track II diplomacy in this particular basin.

b) Option # 2 – Build the capacity of community-based initiatives and connect them via an appropriate network.

As explained in the previous section on *Key Issues and Concerns,* community-based approaches to natural resources management in Mongolia were given a boost by amendments in 2004 to the Mongolia Environmental Protection law, as well as Order #114 from the Minister of Environment (April 2006).[79] Taken together, these policies delegate

[77] The Mongolian Government's 88th Resolution created the Intergovernmental Commission on Trade, Economic, Scientific and Technical Cooperation with Russian Government, along with a sub-commission on Regional and Cross Border Cooperation. https://www.legalinfo.mn/annex/details/7439?lawid=12183.
[78] https://www.transrivers.org/about/
[79] For an excellent review of specific provisions of Mongolian environmental law related to rights and obligations of communities and local governments and residents, see Wildlife Conservation Society, *Workshop Proceedings, Community Basin Wildlife Conservation in Mongolia: Successes & Lessons Learned* (April 2008).

responsibility to communities to "protect" wildlife and other natural resources; provide a legal right to manage wildlife and other natural resources; and allow communities to own wildlife and other natural resources in some cases. This legal authority is consistent with the traditional practice of delegating decision-making and dispute resolution to local authorities during the reign of Chinggis Khan (see Jack Weatherford, *Genghis Khan and the Making of the Modern World*, chapter 8).

Since 2004, there have been numerous initiatives to catalyze, enable, and build the capacity of CBOs.[80] In the Selenge River – Lake Baikal basin, The Nature Conservancy is currently working in the Delgermoron watershed with herders, business leaders, tourism operators, and government officials to discuss the benefits and challenges of protecting taimen and the watershed while helping herders gain financial benefit from visitors that come to the Delger to fish.[81]

During our field trip along the Delger River in August 2018, we met with about 10 people working with TNC throughout Mongolia to coordinate and improve CBOs. Along these lines, perhaps there is an opportunity to provide resources and/or training on what catalyzes, enables, and sustains community-based approaches to conservation and development, building on the capacity-building workshops and CBO experiments that have manifested since 2004. There may also be value in exploring the idea of linking CBOs through an informal network and/or an annual gathering, where leaders and participants can exchange information, build relationships, learn from each other, and improve their capacity to operate CBOs.[82]

Providing some type of capacity-building resources on how to catalyze, enable, and sustain CBOs is also consistent with the findings of the 2003 initiative by the Global Environmental Fund, International Finance Corporation, and Ministry of Nature and Environment to establish watershed councils in the Eg-Uur Watershed. These councils proved unsustainable, however, due largely to a lack of local leadership, capacity, and funding.

With respect to the proposed hydropower and water infrastructure projects, perhaps there is also an opportunity to use established CBOs in the transboundary region to facilitate public review and comment on the MINIS and Eg HPP projects. Both project teams expressed a desire to more effectively engage with local citizens and leaders, and this may be an efficient and effective way to address that objective.

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[80] For starters, see James Wingard, et al., *Improving the Legal Framework for Participatory Forestry: Issues and Options for Mongolia* (FAO Legal Papers, April 2005); Wildlife Conservation Society, *Community-based Wildlife Conservation in Mongolia: Successes and Lessons Learned* (Workshop Proceedings, April 16-17, 2008); Craig Leisher, et al., "Measuring the Impacts of Community-based Grasslands Management in Mongolia's Gobi," *PLoS One* (February 2012); and 2030 Water Resources Group, *Capacity Building Training for River Basin Councils in the Western Region of Mongolia: Implementation Report* (September 2018).

[81] Tuguldur Enkhtsetseg, "Partners Join to Protect Mongolia's River Wolves," *Conservancy Talk* (October 3, 2016).

[82] Although we have not had time to learn more about this initiative, there was apparently an effort in 2014-2016 to create a "friends of the basin" transboundary network.

c) Option # 3 – Build the capacity of future leaders to catalyze and engage in collaborative problem-solving.

One of the most common themes that emerged from conversations with people across Mongolia is the need to inspire and equip the next generation of leaders in Mongolia. Many people commented that Mongolia is fundamentally committed to both conserving and developing its natural resources, and that tensions between these goals are inevitable. Therefore, many people concluded that it is imperative to equip future leaders with the knowledge, skills, and abilities to prevent, manage, and resolve natural resource conflicts.

Several options may be pursued to achieve this goal. First, the National University of Mongolia or another appropriate academic institution may want to consider the merits of creating a Natural Resources Conflict Resolution (NRCR) Program. This program could follow and adapt the model of the very successful NRCR Program at the University of Montana,[83] a graduate-level certificate program designed to be embedded within a student's existing graduate program. Another similar program is the Water Conflict Management and Transformation graduate certificate program at Oregon State University.[84]

A second option, which may complement a graduate program in NRCR, is for universities in Mongolia and Russia to consider the merits and feasibility of creating some type of transboundary consortium to (1) provide independent research and knowledge; and (2) convene and facilitate impartial, non-partisan forums to exchange information, build relationships, and solve problems. The Universities Consortium on Columbia River Governance[85] and the Colorado River Research Group[86] provide two potentially relevant models from transboundary river basins in North America. One opportunity to launch this type of university consortium and add value to the ongoing efforts in the Selenge River – Lake Baikal transboundary basin is to convene a transboundary dialogue designed to bring together all the disparate initiatives in the basin to clarify who is doing what, identify gaps, and explore opportunities to work together.

A third option to build the capacity of future leaders is to encourage and support Rotary Clubs and similar organizations in Mongolia and Russia to provide an independent forum to connect people and search for ways to balance conservation and development interests in the transboundary basin. In the 1930s, Rotary Clubs in Alberta (Canada) and Montana (United States) came together to create the world's first international peace park.[87] Perhaps the Rotary Club of Ulaanbaatar Peace Avenue could help catalyze a conversation

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[83] For more information on this program, please go to http://naturalresourcespolicy.org/education/conflict-resolution-program.php

[84] For more information on this program, please go to https://gradschool.oregonstate.edu/programs/cg06/water-conflict-management-and-transformation-cert

[85] The web site for this consortium is currently unavailable. For some preliminary information on this consortium, please go to http://naturalresourcespolicy.org/projects/columbia-river-basin.php

[86] For more information on this group, please go to https://www.coloradoriverresearchgroup.org

[87] To learn about the history, rationale, and role of Rotary Clubs in catalyzing this unique conservation initiative, please go to http://www.watertonglacierpeacepark.org

with the other 12 Rotary Clubs in Mongolia (a total of 11 of the 13 clubs in Mongolia are located in Ulaanbaatar) and Rotary Clubs in Russia about the possibility of some type of transboundary initiative focused on the Selenge River - Lake Baikal basin.[88] The Peace Avenue Rotary Club was created in 2013 and is focused on young, emerging leaders. Its mission is to "carry-out significant and meaningful service projects towards youth in water, health, literacy and community development among other areas, while members enjoy each other's' fellowship."[89]

d) Option # 4 – Enhance opportunities and incentives for conservation of threatened species in the basin, particularly taimen.

A fourth option to address some of the specific issues that emerged during the assessment and to otherwise seek a dynamic balance between conservation and development goals in the transboundary basin is to enhance opportunities and incentives to conserve taimen and enhance freshwater ecosystem management. At least two sub-options may be pursued to achieve this goal.

The first sub-option is to pursue a special designation for taimen conservation under an appropriate international treaty and/or convention.[90] There are at least two strategies to advance this sub-option. The first is the UN Convention on Migratory Species. According to Zeb Hogan (University of Nevada, Reno), the UN Convention on Migratory Species (CMS) may be interested in listing taimen under this convention, which exists to facilitate cooperation among countries interested in improved management and conservation of animals that migrate across international borders. CMS completed a review of the conservation status of migratory freshwater fish and in that report *Hucho taimen* is identified as a species that would benefit from cooperative management action through CMS.[91] The Baikal sturgeon, *Acipenser baerii baicalensis*, is already listed under Appendix II of CMS.

To list taimen under CMS, three things need to happen before September 2019. First, a proponent that is a signatory to CMS needs to be identified; this proponent must then submit the listing proposal to CMS. In this case, the proponent would most likely be Mongolia which actively participates in CMS meetings and processes. Second, the proposal needs to be drafted and submitted through official channels. Most often, this requires a champion from the NGO community that works closely with government officials to draft the listing proposal and help push it through the listing process. Third and finally, a set of preliminary actions needs to be identified to kickstart improved cooperative action. This assessment could help catalyze that effort, which in turn could elevate the status of taimen and potentially provide a platform for further discussions and conservation action.

[88] The Rotary Clubs in Mongolia are affiliated with Rotary District 3450. https://rotary3450.org/front-page/
[89] http://rotaryclub.mn/club-introduction/
[90] It should be noted that not everyone consulted agrees that this option will be effective in achieving taimen conservation and enhancing freshwater ecosystem management.
[91] https://www.cms.int/en/document/review-freshwater-fish

However, the listing of taimen under the CMS would be more effective if Russia and China were signatories to CMS.

Another strategy to pursue a special designation for taimen conservation is to test the idea of an International Peace Park and/or River Basin (or another appropriate transboundary designation[92]) with Rotary Clubs in Mongolia and Russia (see option # 3 above). This option could build on the success of the world's first international peace park – Waterton-Glacier International Peace Park, which was established in 1932.

The second sub-option to enhance opportunities and incentives for taimen conservation is to review and reform existing environmental laws. The idea here is to examine critically all of the laws that influence taimen conservation and identify opportunities to improve the legal and institutional framework. For example, the regulation of hunting and fishing in Mongolia is delegated and decentralized to local districts referred to as soums (see Mongolian Law on Hunting, May 5, 2000, Article 3.3). Part of the upper Selenge River basin is largely situated in Khovsgol province (or aimag), which in turn consists of 23 soums and the provincial capital of Murun.[93] This administrative patchwork creates the possibility of multiple, perhaps conflicting, regulatory regimes for hunting and fishing.

Given that taimen travel across multiple soums, there may be a need to promote and support more watershed-based approaches to taimen conservation. Such approaches could create incentives and/or perhaps require multiple soums to come together to develop, implement, and monitor joint regulations and management plans to sustain taimen. A multi-jurisdictional, watershed approach may also be compelling given that taimen are a species of national and international concern, as illustrated by their inclusion on the IUCN Red List. This option might be linked to one or more of the options presented above, such as the idea of a summer program for graduate students/future leaders to learn how to collaborate across boundaries and the idea of enhancing the capacity of community-based organizations.

Several other laws that influence taimen conservation, either directly or indirectly, could be similarly evaluated. The MINIS Terms of Reference for a Regional Environmental Assessment (June 2018) provides a comprehensive list of Mongolia laws and policies that influence water development and management, and this might be a good starting point to identify the legal and institutional framework for taimen conservation (see pages 21-23). It is interesting to note that the REA will include an assessment of the legal and institutional framework for water development in the transboundary context, including the capacity of existing project management and oversight bodies. In other words, completing a parallel assessment focused on taimen conservation might complement and supplement the

[92] For a review of alternative transboundary conservation designations, see the wealth of materials and case studies at http://naturalresourcespolicy.org/projects/transboundary-conservation.php

[93] Daniel H. Bailey, *Collaborative Conservation of Taimen (Hucho taimen)Through Education and Awareness Khovsgol Aimag Mongolia* (University of Montana Master's Thesis, 2012).

analysis focused on water development, and may lead to new laws and opportunities to balance conservation and development, such as a Mongolia Wild and Scenic Rivers Act.[94]

e) Other Options

Several other options may be considered to balance conservation and development in the Selenge River – Lake Baikal transboundary basin, including but not limited to:

- Maintaining the status quo;
- Creating a public information and education campaign;
- Invoking the principles of international water law; and/or
- Some combination of these and other options.

[94] One model may be the Wild and Scenic Rivers Act in the United States. See https://rivers.gov

7. Conclusions & Next Steps

The Selenge River – Lake Baikal transboundary river basin is a special landscape with a unique history. Like many transboundary river basins throughout the world, it is governed by a complex system of formal and informal laws, customs, and norms.

As you consider the findings, conclusions, and options presented in this assessment, several overarching principles should be kept in mind:

- *Let form follow function*. Clarify what needs and interests are not being addressed by existing formal and informal institutional arrangements, and then explore opportunities to design an appropriate forum to meet those unique objectives or functions. People need a compelling reason to participate in something beyond their existing mission, mandate, and set of activities. Any new initiative must add value and help them achieve their interests and aspirations in a way that not participating does not provide.

- *Seek a homegrown solution.* Based on experience and knowledge from around the world, there is a wide range of institutional designs to govern the use of transboundary waters. Given the unique needs and interests of each basin, there is no single model for success. The most appropriate, effective, and sustainable institutional architecture for the Selenge River – Lake Baikal basin will be homegrown, designed by and for the people that live, work, and recreate in the basin.

- *Integrate formal and informal mechanisms for governance.* As one governance model does not fit all situations, neither can governing the use of water and related resources in the Selenge River – Lake Baikal basin be achieved by a single governing arrangement. Different governance arrangements are designed to achieve different ends. Some are more formal (e.g., the transboundary commission) while others are more informal (e.g., CBOs). Each arrangement has a unique place in the overall fabric of governing a transboundary river basin. The challenge and opportunity is to connect, coordinate, and leverage assets by working together on issues of common interest.

A draft of this report was widely distributed in spring 2019 for review and comment. The primary purpose of the review was to check the validity of the findings and conclusions to make sure that we accurately and fairly captured and presented the needs and interests of people that we interviewed. Several people provided feedback and we have done our best to integrate their comments and suggestions.

As explained above, most if not all of the options regarding next steps would be most effective if catalyzed and convened by one or more organizations in Mongolia and/or Russia, preferably both given the transboundary nature of the basin. Other organizations with relevant expertise could join as partners.

Please let us know if you have any comments, questions, or suggestions. We are willing to explore opportunities to convene some type of workshop to discuss the options and next steps.

Appendix 1: Individuals & Organizations Consulted

MINIS Project Team
- Tsetsgee Tulgaa, Environmental safeguard & water management specialist
- L. Baterdene, Contract management and monitoring specialist
- O. Altai, Stakeholder engagement and communication specialist

Egiin Golin HPP Project Team
- Mr. Otgonsukh, Project Director
- 7 staff

Ministry of Energy
Mr. Bavuudorj, Director
Renewable Energy Division

Ministry of Environment and Tourism
Mr. Myagmar, Director
Water Management Division

Information & Research Institute of Meteorology, Hydrology and Environment
Dr. G. Davaa, Hydrology Section

Ulaanbaatar Peace Avenue Rotary Club
- Chimednyam Purev-Ochir, President
- 20 people

National University of Mongolia
Dr. Boldgiv, Vice-President for Research and International Relations

Rivers without Boundaries
- Eugene Simonov, International Coordinator
- Sukhgerel Dugersuren, Mongolia Coordinator

The Nature Conservancy, Mongolia
- Gala Davaa**,** Director of Conservation
- Bayarjargal Yunden, Director of Science
- Staff, Community-based Initiatives

Mongol Ecology Center
- Gary Cook, Board Member (also with Earth Island Institute/Baikal Watch)
- Bob McIntosh, Board Member
- Other contacts (Tom Medema, US National Park Service)

Wild Salmon Center
Guido Rahr, President and CEO

Taimen Fund
Charlie Conn, Executive Director

Taimen Conservation Fund
Erdenbat Eldevochir, Senior Advisor

Mongolia River Outfitters
Dan Bailey, Managing Director

BioRegions International
Cliff Montagne, Founder and Director

World Wildlife Fund
Chimed-Ochir Bazarsad, former Director

Green Focus
Erdene Dorjsuren, Director

Mark Johnstad, International Consultant

Dr. Olaf P. Jensen
Department of Marine and Coastal Sciences, Rutgers University, USA

Appendix 2:
Map of Selenge River Basin and Location of Proposed Projects