

Taishir Dam and Reservoir on the Zavkhan River:  
Images and Impressions from Herders affected by the Dam and Reservoir  
Version 1

Paul Robinson  
Research Director  
Southwest Research and Information Center  
Albuquerque, New Mexico, USA  
[sricpaul@earthlink.net](mailto:sricpaul@earthlink.net)

July 29, 2017

The Taishir Dam and Reservoir and portions of the Zavkhan River Valley downstream of the Dam were visited as part of “Water and Mining Exchange Program” coordinated by Paul Robinson which included representatives of Mongolian Environmental Civil Council (MECC), Rivers without Boundaries, and Buryat Regional Organization on Baikal.

The group visited the dam and met with operating staff, herders who rely on the Zavkhan River for livestock water and pasture downstream of the dam and herders live the upstream portions of the reservoir, and drove completely around the lake.

## Taishir Dam and Reservoir – General Information



(Photos from <https://www.rccdams.co.uk/dams/taishir/?pages2pdf=1>)

Power Generation Capacity: 11 MW

Turbine Configuration: 3 X 3.45 MW, 1 X 650 kW (Francis)

The Dam and Hydropower Station are located 50km northeast of Altai on the Zavkhan River at the border of Gobi Altai and Zavkhan aimags. In 1998, a consortium of Lahmeyer, IVO International, and MCS International completed a feasibility study for the power station. Kuwait Fund for Arab Economic Development then commissioned Snowy Mountains Engineering Corp to provide analysis and design services for the plant (also known as Ulaanboom ), which has a 190m long RCC dam and a 340km transmission line. **The total cost was about \$39mn**, with funding from KFAED and a development fund in Abu Dhabi. **Output is expected to be about 37 GWh/yr.** <http://www.industcards.com/hydro-mongolia.htm>

**The Taishir project was designed to maximize winter generation, with riparian releases through a micro-turbine in summer when the reservoir is filling.** The most distinguishing feature of the project is the 55m high roller compacted concrete gravity dam with crest elevation of 1708m, crest length of 190m and a volume of 250,000m<sup>3</sup>.

<http://www.waterpowermagazine.com/projectprofiles/projectprofilesextreme-dam-building/>

View Along the Top of the Spillway for the Dam



The Power Station and Channel where Water is Discharged into the Zavkhan River at the Base of the Dam



Comments and Concerns of Area Herders were heard during meetings with herders July 22-24, 2017. Meetings including with Governor of the local district – Bag – downstream of dam site along the Zavkhan River and herders in areas near the upstream portion of the reservoir.

- Governor said the two Bags directly downstream of Dam site each have about 100 herder families. The Zavkhan River is the sole source of water for the herders so they live along the river for his Bag and other down stream.

- Governor said herders were severely affected by losses of large portions of their herds while dam was filling as all flows in Zavkhan was contained in dam to fill reservoir for several years. Herders have grown as water was allowed to return to the River.

- Since the hydropower station has begun to generate energy, herders reported larges losses of livestock during winter when the dam is releasing it largest flows to support operation of power station at peak level. Herders said livestock fell through ice formed above flowing water in river. Herder at meeting reported loss of 600 hear of cattle. Bag Governor mentioned loss of 150 horses.

- Herders said livestock fell through the ice formed over flowing water. Herder said their winter shelters for livestock and gers and homes have flooded during peak winter flows and herders have had to relocate homes and livestock shelters.

- Herders living upstream of the reservoir and along it shores report problem of animal losses due to growth of “poisonous” plants, particular during dry periods. Herders have consulted in veterinarians due to animals losses.

- Governor said herders in downstream Bags have not received compensation for losses during the filling of the lake or as a result of releases.

- Herders said that cultural sites were destroyed including portions of historic monastery lands were drowned by the reservoir.

- Herders have not benefited from electricity generated by the hydropower station as power is distribution through transmission lines to Altai, Govi-Altai Aimag Center and Zavkhan Aimag Center. 5

Zavkhan River Valley Downstream of Taishir Dam



## Zavkhan River Downstream of Taishir Dam



## Livestock in the Floodplain of the Zavkhan River Downstream of Taishir Dam







Herder's Ger near Upstream End of Reservoir



## Reservoir with Dam in the Distance



View of Area which Portions of a Monastery  
where drowned by the Reservoir



View of Area where Portions of a Historically  
And Culturally Important Monastery  
were drowned by the Reservoir



## Largest Structure at Monastery next to Reservoir



Нарванчин гэгээний  
хийдийн туурь  
Халхын 88 шидтэн Нарванчин  
гэгээн Б.Пүрэвжав, Дэмчиг  
бурханы хувилгаан Дүвчин  
дилав хутагт Б.Жамсранжав  
нарын Халх даяар алдартай  
хүрээ хийдийн чулуун туурь.

NOVEL OF NARVONCHIN SAINT  
LIKE MONASTERY  
Novel of Khalkha 88 magic's  
NARVONCHIN SAINT LIKE as  
B.Purebjab, Demjig miracles  
Dilav Saint B.Jamsranjab.  
Those novels is very renowned  
in the Khalkha lands

Winter Shelter where Lamas from Monastery were Massacred



Taishir 12/30/2016





Satellite Images showing the Growth of the Reservoir from Google Earth



shir Тайшир

Taishir Hydro Power Station

Image © 2017 DigitalGlobe

Google earth  
17

Imagery Date: 8/4/2013 lat 46.707140° lon 96.584247° elev 5540 ft eye alt 10.71 mi

Taishir 12/30/2007



Taishir 12/30/2008



Taishir 12/30/2011



# Taishir 12/30/2015



Taishir 12/30/2016



# Taishir Upstream 12/30/2007



# Taishir Upstream 12/30/2012





# Taishir Upstream 12/30/2015



# Taishir Upstream 12/30/2016



## Renewable Energy System Construction Costs and Land Use Requirements in Mongolia

Taishir – 11 MW - \$39 million - \$3.54/watt

<http://www.industcards.com/hydro-mongolia.htm>

Salkhit Wind Farm – 50 MW - \$122 million - \$2.44/watt

<https://www.mottmac.com/article/2321/salkhit-wind-farm-mongolia>

Darkhan Solar Farm – 10 MW – \$17 million - \$1.7/watt

<https://www.infomongol.mn/content/print/70894.htm>

### Land Required Solar Power Station

Darkhan Solar Farm - 10 MW power station - 29.1 hectares (291,000m<sup>2</sup>)

2.91 hectares/MW

<http://annx.asianews.network/content/operation-biggest-solar-power-plant-mongolia-commences-37624>



View of Reservoir and Monastery



Thank you for your time and attention