Case Study

Sustainability Assessment – Shardara, Kazakhstan

Hydropower Sustainability Assessment Protocol

The Shardara multi-purpose project

The Shardara multi-purpose project was built between 1964 and 1967 on the Syrdarya River (2,200km). Irrigation water flows from the Shardara reservoir to the Kyzyli-Kum channel before returning to the Syrdarya River.

Shardara reservoir covers a total area of 900 km² with a total storage volume of 5.2km³. Close to the town of Shardara, which was established following its completion, the reservoir is 80km long at full supply level, and on average 15km wide and with an average depth of 6.3m.

The Shardara Hydropower Project (HPP) consists of a 5.3km concrete-faced compressed sand dam, with 100MW of installed capacity (made up of four 25MW turbines). The discharge capacity via the turbines is 800m³/s, and 1,000m³/s via the gates.

Arnasai Dam lies at the southernmost point of the reservoir at the Uzbekistan border, it has a discharge capacity of 1,000m³/s.
Using the Hydropower Sustainability Assessment Protocol

- This involved the first implementation using the final version of the Protocol
- It was an unofficial, operation stage assessment
- Commissioned by GIZ to support their programme: Transboundary Water Management in Central Asia

Intent of the assessment

- To use a sustainability assessment to inform political discussions on water and energy projects, including transboundary issues, in Central Asia
- Multi-agency assessment team (Gesellschaft für Internationale Zusammenarbeit - GIZ, International Hydropower Association, external consultant)

Intended outcomes

- Promoting sustainable operation through identification of areas of relative strength and opportunities for improvements
- Providing recommendations that initiate further investigations and discussions within the responsible state organisations and among the public
- Beyond Shardara, to help form a view on whether the Protocol would be useful for other hydropower projects in Central Asia

Assessment schedule

- Establishment phase: pre-September 2010
• Preparation mission: 20-23 September 2010
• Main assessment: 18-22 October 2010
• Report production: November 2010

Main issues

• Several drivers for the hydropower project
  – Primarily irrigation for agriculture, followed by fisheries, hydropower and flood prevention
• Substantial transboundary tensions since the break-up of the Soviet Union
  – The Syrdarya River flows through the Kyrgyz Republic, Uzbekistan, Kazakhstan and Tajikistan
  – Maintenance of assets

Recommendations

• GIZ requested recommendations to be added to the final document
• The 25 recommendations were directed at the responsible organisation, ranging from governmental (local to supra-national), to technical, to social organisations.
Figure 1: Results of the Hydropower Sustainability Assessment Protocol assessment of the Shardara multi-purpose project, Kazakhstan