

## Dzegvi Hydro Power Plant

### Mtkvari River



The proposed project involves the construction of a 15.7 Megawatt (MW) run-of-river Hydro Power Plant (HPP) on the Mtkvari (Kura) River, in the Dzegvi village, Kartli region of central Georgia.

The HPP will be positioned a short distance upstream of Mtskheta on the Mtkvari river. The site offers seasonally variable generation averaging 82.44 GWh/year. The Mtkvari River is characterized by high flows in late spring and summer, with maximum flow in April through July and minimum water levels in winter.

Site accessibility is fairly good. A access road is existing, along with the railway line and station in Ksani (2 km from the site). A 500-m-long, 35 kV transmission line will be built to reach the existing 35 kV transmission line near the Dzegvi powerhouse.

The site offers seasonally variable average annual generation of about 82.44 GWh, at a plant factor of about 63 percent. The river flow is characterized by high flows in late spring and summer, with maximum flows in June and minimum water levels in winter (when much of the basin precipitation is in the form of snow). The watershed is a lightly wooded temperate flora, with drainage basin area exceeding 18,000 km<sup>2</sup>.

The Dzegvi development is expected to include 14.5-m-high concrete dam across the river channel, and integral intake/powerhouse constructed in an excavated channel on the right bank. The impoundment area is limited to the existing river channel. The hydroelectric units will probably consist of two Kaplan turbines with synchronous generators. The power plant may work in island mode as well as in synchronization with the national power grid, allowing both direct and grid-connected supplies to consumers.

According to preliminary assessments the plant offers a good opportunity to sell power during winter inside Georgia, supplementing expensive thermal power, and export part of the energy during the summer to take advantage of the seasonal differentials in power prices between Georgia and its neighboring countries.

Additional details on the project area are on the next page

### PROJECT SUMMARY

Location: Mtskheta-Mtianeti Region

River: Mtkvari

Maximum Head: 10.4 meters

Rated Flow: 180 m<sup>3</sup>/s

Number and Type of Units: 2 × Kaplan

Construction Time: 2.5 years

Potential Installed Capacity: 15.7 MW

Mean Annual Power Output: 82.44 GWh

Anticipated Life-span: 50 years



Project Location Map

## **Project Area Social and Environmental Characteristics**

**Location:** Northern Georgia, Mtskheta-Mtianeti Region

**Administrative District:** Mtskheta

**Area:** 805 km<sup>2</sup>

**Population:** 65,200

**Population density:** 90.1 people/km<sup>2</sup>

**Administrative center:** Mtskheta

The Kura or Mtkvari river Basin is the most important river basin in East Georgia and the largest watercourse of the Caucasus, covering 23% of Georgia's land area. The river originates in Turkey and flows into the Caspian Sea. The total length of Mtkvari River is about 1,515 km, of which only about 390 km are in Georgia, and it drains an area of about 200,000 km<sup>2</sup>.

The river is fed by mixed sources: mostly rain, underground water sources, and snow. The average flow rate near the village Dzegvi is 143 m<sup>3</sup>/s. Its flow regime is characterized by high flows in spring and relatively stable winter season low flow. About 70% of the annual discharge occurs in spring and summer, 20% in autumn, and 10% in winter.

Mtskheta is the administrative center of the district. The population of the district is about 65,200 people, mostly Georgians. The distance from Tbilisi to Mtskheta is about 29 km. The total area of district land equals 805 km<sup>2</sup>. There are 71 settlements in the Mtskheta municipality of which 1 is small town and 70 villages. Mtskheta is mainly an agricultural district with fruit and vegetable growing and animal farming. Industrial enterprises are mainly concentrated in Mtskheta. There are 49 public schools, one vocational school, 41 libraries, one theatre and 4 museums in the district.

Infrastructure of the region is well-developed: The Military Highway of Georgia, which connects Georgia with Russia, runs across this region; the east-west limited-access Highway 1 passes within 10 km of the project site. Internal roads of local importance are in good condition. Currently, Government of Georgia is financing infrastructure development projects as well as rural development projects aiming improving socioeconomic conditions of villages of Mtskheta-Mtianeti region.

The area is rich in old churches, monasteries and other cultural relics. The city of Mtskheta is a UNESCO World Heritage Site, and was the principal city of Georgia for many centuries. The region of Mtskheta - Mtianeti is very interesting for tourists with its history, culture, museums, churches, and monasteries, which creates a great potential for development of cultural and pilgrim tourism. In the Region are Gudauri ski resort and some resorts having potential of medical and rafting tourism.

Mtskheta district area is mainly covered by cultural landscapes and agricultural landscape formed by gardens and orchards. The Saguramo state reserve is located in the Mtskheta district. It was established in 1946 and its area is 5,359 ha. There are no rivers in the reserve. The reserve characterized by rich flora. Forests within the reserve include oak, beech, hornbeam, ash-tree, east hornbeam, pear-tree; grows barber, cherry-tree, cornel-tree etc.