

Magana Hydro Power Plant

Magana River



The proposed project involves the construction of a 20 Megawatt (MW) run-of-river Hydro Power Plant (HPP) on the Magana River, in the Tskhavashi village, Samegrelo-Zemo Svaneti region of western Georgia.

The HPP will be the upstream plant in the 2 HPP cascade (Lekarde and Magana HPPs) on the Gubazeuli. The site offers relatively stable year-round generation of 106 GWh. The Magana River is characterized by high flows in spring and summer, with maximum flow in July and minimum water levels in winter.

Site accessibility is fairly good. A new access road, about 3.5 km long, will be constructed to reach the dam sites from the Lekarde dam site. A 3.5-km-long transmission line of 35 kV or 110 kV will be built to reach the grid connection near the Lekarde powerhouse.

The site offers seasonally variable average annual generation of about 106 GWh, at a plant factor of about 60 percent. The river flow is characterized by high flows in spring and summer, with maximum flows in July and minimum water levels in winter (when much of the basin precipitation is in the form of snow). The watershed is a heavily wooded temperate rainforest, with mean annual precipitation exceeding 2,000 mm

The Lekarde development is expected to include two low, concrete diversion dams, a diversion canal from a tributary, a 2,700-m-long, pressure tunnel with at least a 2.0 x 2.0-m cross section, a surface surge tank, a 500-m penstock, and a surface powerhouse. The hydroelectric units will consist of two Francis or Pelton 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: Samegrelo, Western Georgia

River: Magana

Maximum Head: 307 meters

Rated Flow: 7.8 m³/sec

Number and Type of Units: 2,
Francis/Pelton

Construction Time: 2.5 years

Potential Installed Capacity: 20 MW

Annual Power Output: 106 GWh

Anticipated Life-span: 50 years



Project Location Map

Project Area Social and Environmental Characteristics

Location: Western Georgia, Samegrelo-Zemo Svaneti Region

Administrative District: Tsalenjikha

Area: 6,467 km²

Population: 34,545

Population density: 6 people/km²

Administrative center: Tsalenjikha

The River Magana is 24 km long and drains an area of 141 km². Its flow regime is characterized by floods in spring, occasional flash floods in autumn and relatively stable winter and summer low waters. The mean flow rate is 8.1 m³/s

The administrative center of Tsalenjikha, consists of two small cities and 13 villages. The population is about 34,545 people, mostly Georgians. The distance from Tbilisi to administrative center of Tsalenjikha is about 350 km.

The total area of district land equals 64,715 hectares. The major activity of industrial production includes wood manufacturing, mainly for a construction. The main agricultural activities involve cultivating annual plants and animal husbandry.

There are about 35 public schools, 4 museums and 18 libraries in the community. The populated area is rich in old churches, monasteries and other cultural relics.

A significant area of the region is covered by cultural landscapes and agricultural landscape formed by gardens, orchards, patches of exotic vegetation (eucalyptus, tung and bamboo), plots of maize, terraced tea and citrus plantations. Native landscape is mountainous and covered with Colchic-type forest. Dominant species of the forest are: hornbeam (*Carpinus caucasica*), maple (*Acer campestre*), beech (*Fagus orientalis*) and chestnut (*Castanea sativa*). Forests are rich with lianas (*Hedera colchica* and *Smilax excelsa*) and fern (*Mateucia struthiopteris*).

The region is rich in minerals (barite, copper, lignite) and mineral waters.