

DOCUMENTATION SHEET

ACTIVITY NO. 2

LESSON 2



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A sturgeon lift will be built at the Iron Gates 1

The Iron Gates 1 hydropower plant produces half of Romania's hydroelectric power - as much as all the other dams combined. It is located 15 km upstream from the town of Drobeta Turnu-Severin and is one of the largest hydrotechnical constructions in Europe. And certainly the largest on the Danube... Romania and Serbia - then the Socialist Federal Republic of Yugoslavia - decided in 1956 to build a hydroelectric plant at the Iron Gates, the place where the Danube is small in width and large in volume of water. The documents were signed in 1963, and construction began in 1964. The efforts were colossal, both financial and human. A large tribute was paid for the construction of the Iron Gates 1 hydroelectric power plant: the city of Orsova was moved; nine villages were moved in their entirety and another eight villages in part; 88,000 square meters of public buildings were covered by water; a number of 14,533 inhabitants changed their domicile; 27 km of railways and 102 km of roads and highways were flooded. The heaviest losses were Ada Kaleh - the most beautiful island on the Danube, mentioned in Antiquity by Herodotus, and inhabited uninterruptedly until it was covered by the waters of Lake accumulation - and obstruction, through the dam, of the sturgeon migration. The dam has led to a drastic decrease in the populations of cod, sturgeon, blind and trout in the Danube, because fish can no longer climb the river, for breeding, only accidentally, through locks. This is why it is now intended to make a special passage for fish at the Iron Gates 1.

Huge, endangered fish

Sturgeons, migratory fish species that appeared in the time of the dinosaurs 200 million years ago, are now endangered. Currently, 25 species of sturgeons live in the coastal waters, rivers and lakes of the northern hemisphere, the Danube basin housing the most important

populations in the world. In Romania and Bulgaria there are still viable populations of wild sturgeons, unique in the European Union. They live in the sea, but lay their eggs in fresh water. Sturgeons are large fish that can live for 100 years. They travel thousands of miles to reproduce. Until the 19th century, giant sturgeons migrated from the Danube to Germany and were a source of livelihood for many fishing communities. Today, 5 of the 6 native species in the Danube are critically endangered, for two reasons: poaching and dams on the Danube. The most important, of course, is the Iron Gates 1 dam. In this context, the Romanian and Serbian authorities intend to build at the Iron Gates 1 a special traffic corridor for fish, a kind of sturgeon elevator. According to a study by the National Institute of Hydrology and Water Management, there are 29,000 such constructions in the world, most of them in the United States and Japan. In Europe, two such fish passages have so far been built on the dams on the Danube in Austria. The passage can be a passage slide made next to the dam, through which the water flows, or actually a fish elevator that crosses large dams. They have an open pool; after the creature enters, the hatch closes and the fish is transported by elevator. This variant is used for large fish, especially in France. The elevator at the Tuileries dam, for example, cost 1,300,000 euros. In Romania, 100 such constructions were made on inland rivers, but for obstacles that do not exceed 14 m in height. At the Iron Gates 1, the level difference is over 30 meters.

The reservoir has 2,200 million cubic meters of water

The Iron Gates 1 hydropower plant has an installed capacity of 1,164 MW, through the six Kaplan turbines of 194 MWh each.

- The Kaplan turbine is a rotor with adjustable blades, over which water falls from the hydroelectric dam. Through the phenomenon of electromagnetic induction, the rotation of the unit produces electricity. Half of Romania's hydroelectric energy production is produced at the Iron Gates 1.
- The dam has 14 overflow fields, each with an opening of 25 meters. The accumulation lake, with a volume of over 2,200 million cubic meters, stretches from the dam to the confluence of the Danube and the Tisza River. The lake mainly includes the Danube Gorge area, the largest gorge in Europe, between Baziaş and Orşova.
- At the same time, the system ensures navigation on the Danube through the three locks made on both banks - two on the Romanian side and one on the Serbian side. Together they have a traffic capacity of 52.4 million tons per year, for one-way exclusion.
- The accumulation lake, the largest in the country, has led to environmental transformations at the Iron Gates and the formation of a wetland protected by the DiviciPojejena area, which we monitor, "said Dr. Eng. Deak Gyorgy , director of the National Research and Development Institute for Environmental Protection in Bucharest.

The dam claimed 100 lives

Beyond the tribute paid by the relocation of an entire city and several villages or by the flooding of an island, the dam also claimed human lives. About 100 workers died during the construction of the hydroelectric plant, in various accidents. There were also cases when people were killed by horned vipers, the most venomous reptiles on Romanian territory, living in this area of the country. Of course, the sacrifices were not in vain. Now, the hydropower plant produces non-polluting electricity, ie green, ensures the regulation of the Danube flow in case of flood, ie protects Romania from floods, and is also a bridge between Romania and Serbia. By the way, no visa is required to enter Serbia, even if the country is not an EU member. For the Romanian citizens, the bulletin is enough...

Rooster's blood, laid at the foundation of the houses in Orșova

Old Orsova, the city at the gate of the famous Boilers, was built on the Danube on the site of the Roman fort "Dierna". The city was swallowed by the waters of the Iron Gates, and the inhabitants were displaced 4 km further north, in the new Orșova. Tradition says that each family laid the head and blood of a sacrificed rooster at the foundation of the new houses, in order to ensure, according to an ancient custom, the durability of the construction and the permanence of the family.

By Sorin Golea, Saturday, 16 May 2015, 17:01

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