



# HYDROELECTRIC POWER STATIONS IN HUNGARY

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- Nearly all the countries by river Danube depend on hydropower. The upper part of the Danube is ideal for building hydropower plants due to the river's natural gradient. **A total of 59 dams have been built along the Danube's first 1,000 kilometres** – from the source down to Gabčíkovo – many of them decades ago.

# Use of hydropower in the past



Hydraulic works in the form of dams and reservoirs are found in all mountainous areas of the Danube basin, while most navigation canals, dyke and irrigation networks concentrate on the lowlands along the central and lower Danube.

The building of large dike systems for flood protection started in the 16th century in Hungary. Old networks of drainage/irrigation systems exist in all basins, for instance in the Banat (northern YU) and in southern Romania.

- The first major Danube regulation works started in 1830 in Upper Austria; the first Danube hydro dam was built in 1927 at Vilshofen (lower Bavaria). Today, hydro-power utilisation and energy production varies substantially from country to country.
- Hungary: 28 MW = 0.6% of power generation,
- Romania: 5,200 MW = 30% of power generation; more than 400 large dams;
- Austria: 14,200 MW (DRB) = 70% of electricity production; 78 large dams (DRB);

# Categorization of hydroelectric power plants according to their performance

- Category I power plants above 500 kW are classified as having national importance due to their performance. These could be recuperation turbines that can be built into larger thermal power plants (Tisza, Paks) or, for example, the water resources of Maros or Kőrös could be used with power plants of this size.
- Category II power plants in the 100-500 kW power range or unused facilities. This includes some of the existing small water power plants, or as an option, some west Transdanubian watercourses or the main canals of the Great Plain.
- We list options below 100 kW, for which there are numerous examples in Hungary.

# Gabčíkovo–Nagymaros Dams

- Hungary's greatest hydroelectric project was the [Gabčíkovo–Nagymaros Dams](#).
- The complex was built together with [Czechoslovakia](#), but cancelled after the fall of [Communism](#) in Hungary.
- [Slovakia](#) finished the modified version of the project, unilaterally.



# Hydroelectric power plants in Hungary

- There are no electricity generating facilities on the Danube and are not expected to be in the near future.
- On the Tisza, there is the Tiszalök Hydroelectric Power Plant, which is considered to be large in domestic conditions, and as the newest facility, the Kisköre Hydroelectric Power Plant can be found with 11.5 MW and 28 MVA installed power.
- There is currently no power plant in the Drava.



# Hydropower plants in Hungary



# Plans for the future

- Due to the environmental concerns of the Hungarian society, no major hydroelectric projects are supported by the government.
- However, plans exist to create new dams on the [Danube](#) to make the river more suitable for navigation.
- Danube leaders discuss the increased need for CO2-neutral energy, the construction of new hydropower plants, minimum ecological requirements and how all of this can be in line with the Danube River Basin Management Plan.

# Discuss

- Based on the possible effects of climate change and pressure stemming from the renewable energy sector, hydropower is a hot topic within the European Union as well as around the world.
- Voices for increased exploitation of hydropower along the rivers are getting louder.
- Another key problem is the increased and subsidised construction of small hydropower plants. “There is a general conception that a small hydropower plant causes small impacts”

# Advantages - disadvantages

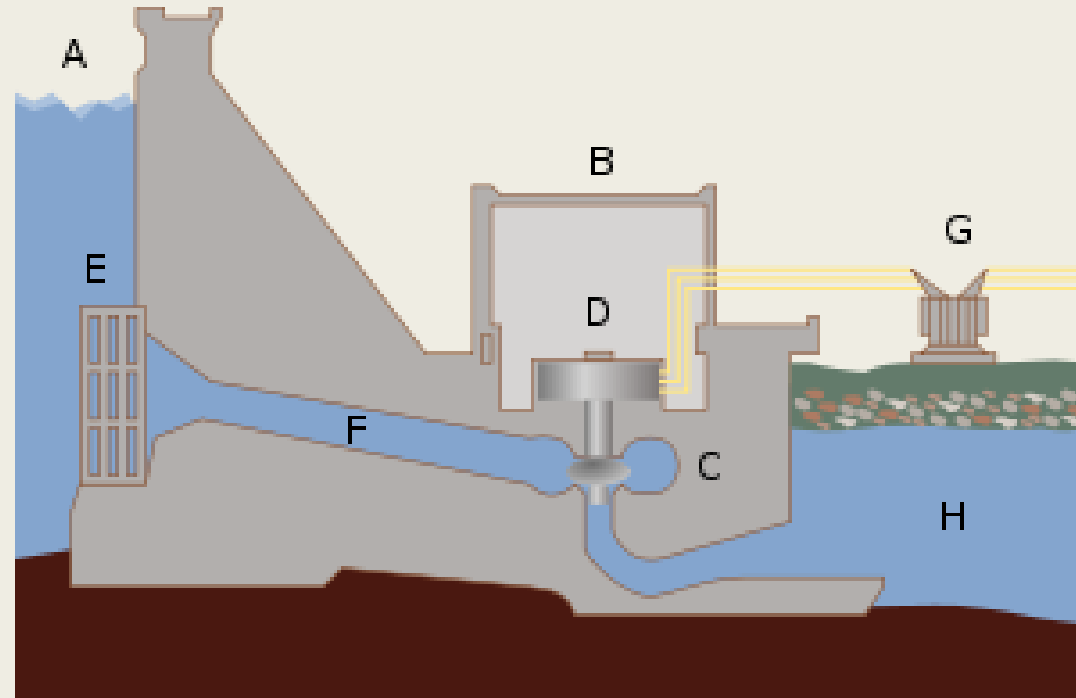
## ■ Advantages

- It can be used to generate electricity almost free of charge.
- It does not produce carbon dioxide at all.
- It is a sustainable type of energy, as the rains filling reservoirs and rivers do not subside.
- With the help of dams, water can be stored, so they can determine the time and extent of electricity generation.
- As long as there is enough water, hydropower is suitable for continuous electricity generation.

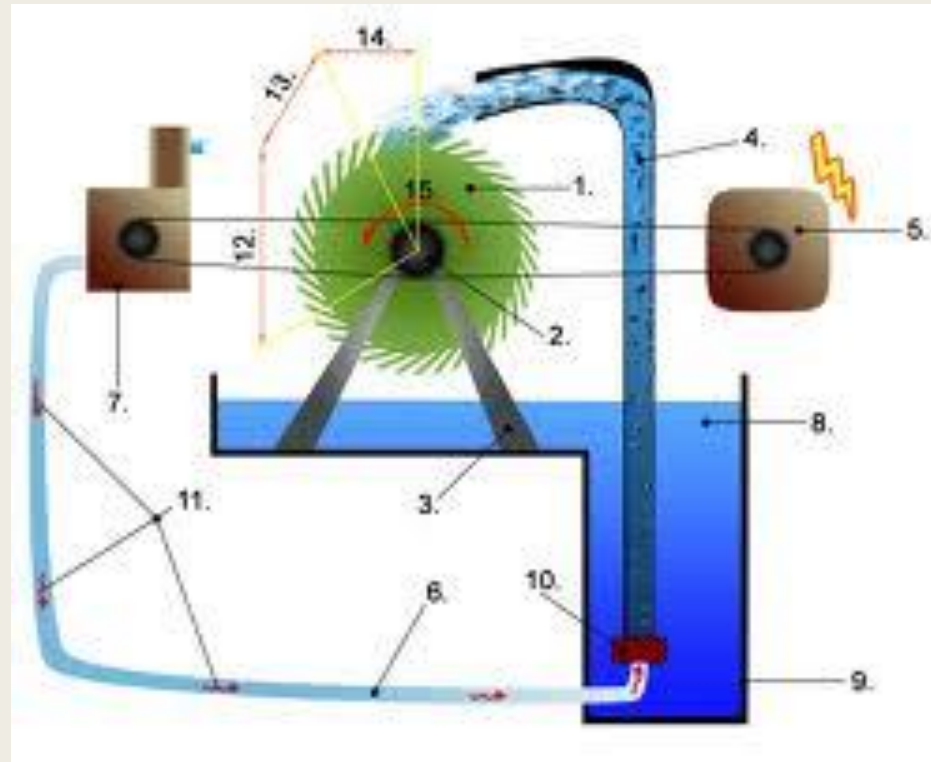
## ■ Disadvantages

- During the construction of reservoirs, valuable land is flooded, during which residential areas and natural habitats can be damaged.
- In Hungary, the vulnerability and protection of wetlands severely restricts the construction of new hydroelectric power plants.
- There is hardly any new hydroelectric site.

# Hydroelectric power plant internal view



# The power generation process of the hydroelectric power plant



# Tiszalök - Hydroelectric power station



# Kiskörei - Hydroelectric power station





# Sources

- <https://www.icpdr.org/main/publications/power-danube-can-it-be-sustainable>
- <http://www.internationalrivers.org/resources/the-next-wave-1723>
- [http://www.undp-drp.org/drp/danube\\_dams\\_and\\_reservoirs.html](http://www.undp-drp.org/drp/danube_dams_and_reservoirs.html)
- <https://www.osti.gov/etdeweb/biblio/6981941>
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