



Used and misused –

Hydropower in South Tyrol

Hydropower belongs to the renewable energies and is an indirect profit of solar energy: water evaporates through solar radiation, returns as rain which feeds creeks and rivers with new water.

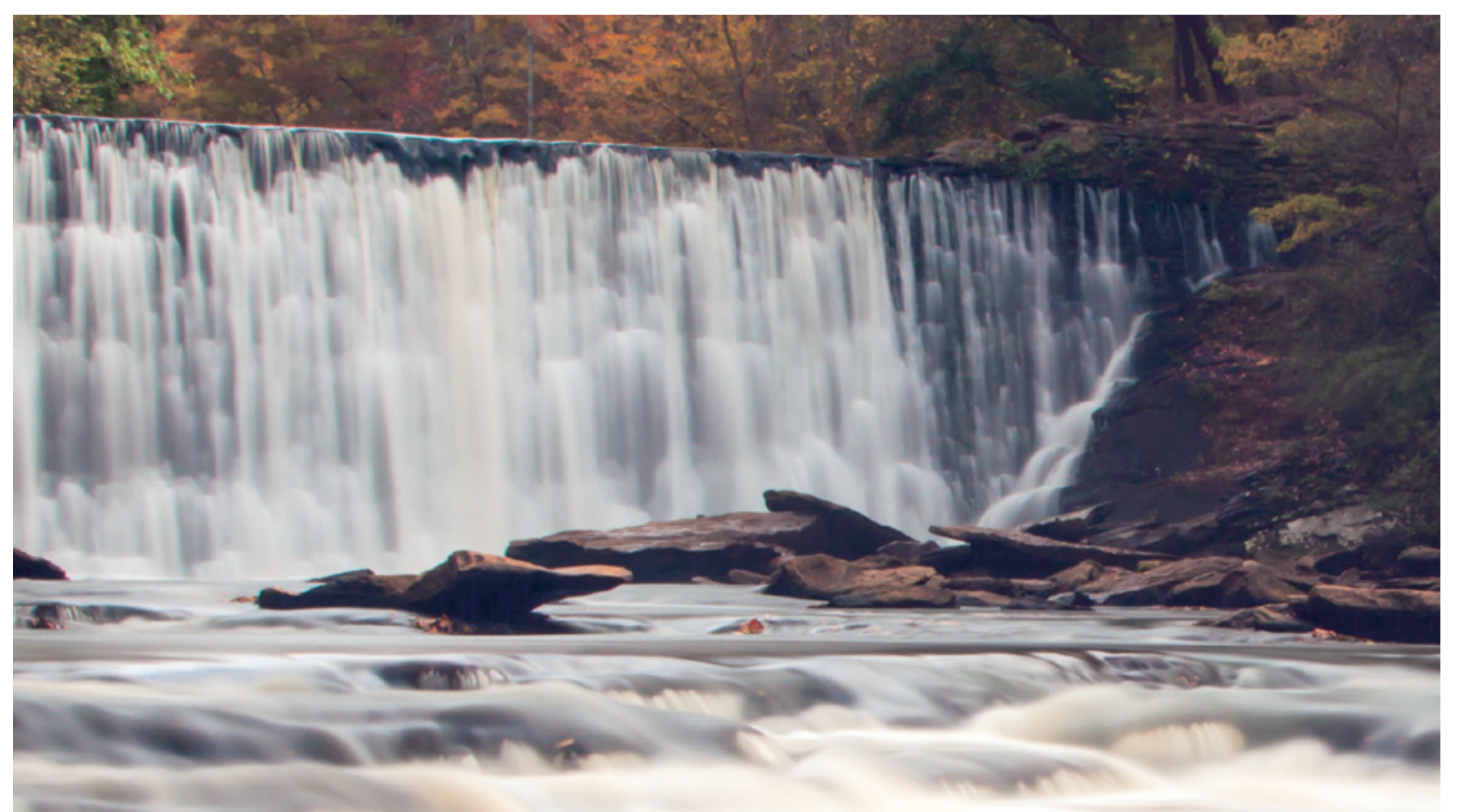
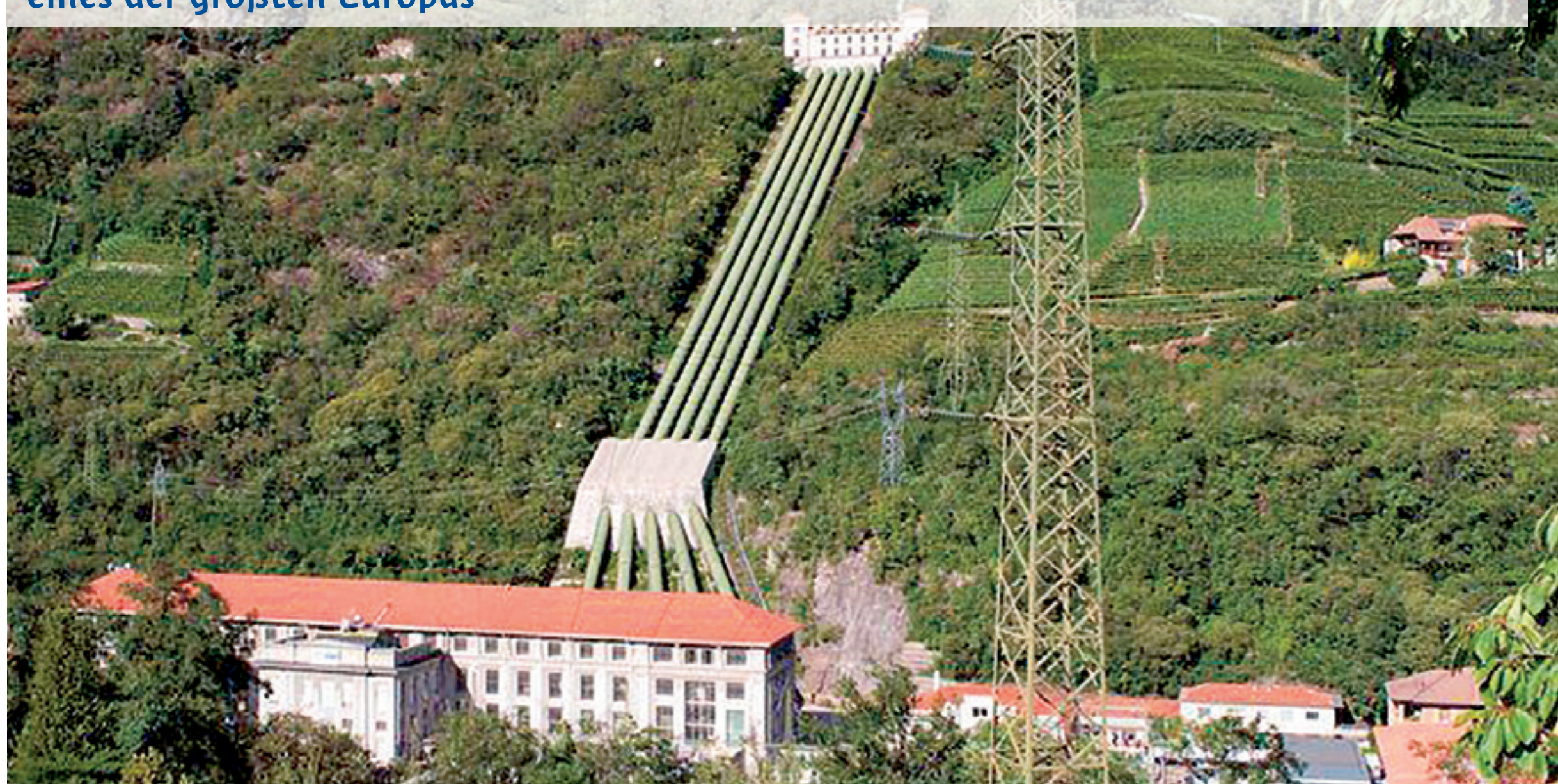
A hydropower plant uses the incline of a river or dam. Water is lead through pipes or canals to a turbine, this starts to rotate and a generator, connected to the turbine, generates power.

The mountainous landscape of South Tyrol is especially suitable for the use of hydropower. Already in the end of the 19th century hydropower plants were being built in South Tyrol and since then continuously expanded.

Pelton turbine - spezielles „Schaufelrad“ für die maximale Ausnutzung der Energie des Wassers



Das Wasserkraftwerk in Kardaun bei Bozen: Bei der Einweihung 1926 war dieses eines der größten Europas





Hydropower

and the environment

Although the use of hydropower as a source of energy production is especially acknowledged as being ecologically positive, there is a **considerable intrusion in nature and the landscape** connected with it. The ecological system of a river is severely strained upon due to this intrusion: on the one hand **barriers** in the river prevent fish and other animals to carry out their accustomed wanderings. On the other hand a **reduced speed of the water-flow** due to the damming up of water and to the **reduced amount of water** running in the river between the dam and the point where water is again introduced into the river, after leaving the turbines, effects the amount of water, its temperature and the level of oxygen in it.

Constant compromises and an honest and an objective discussion regarding cost and benefit are the requirements for a considerate exploitation of this resource.

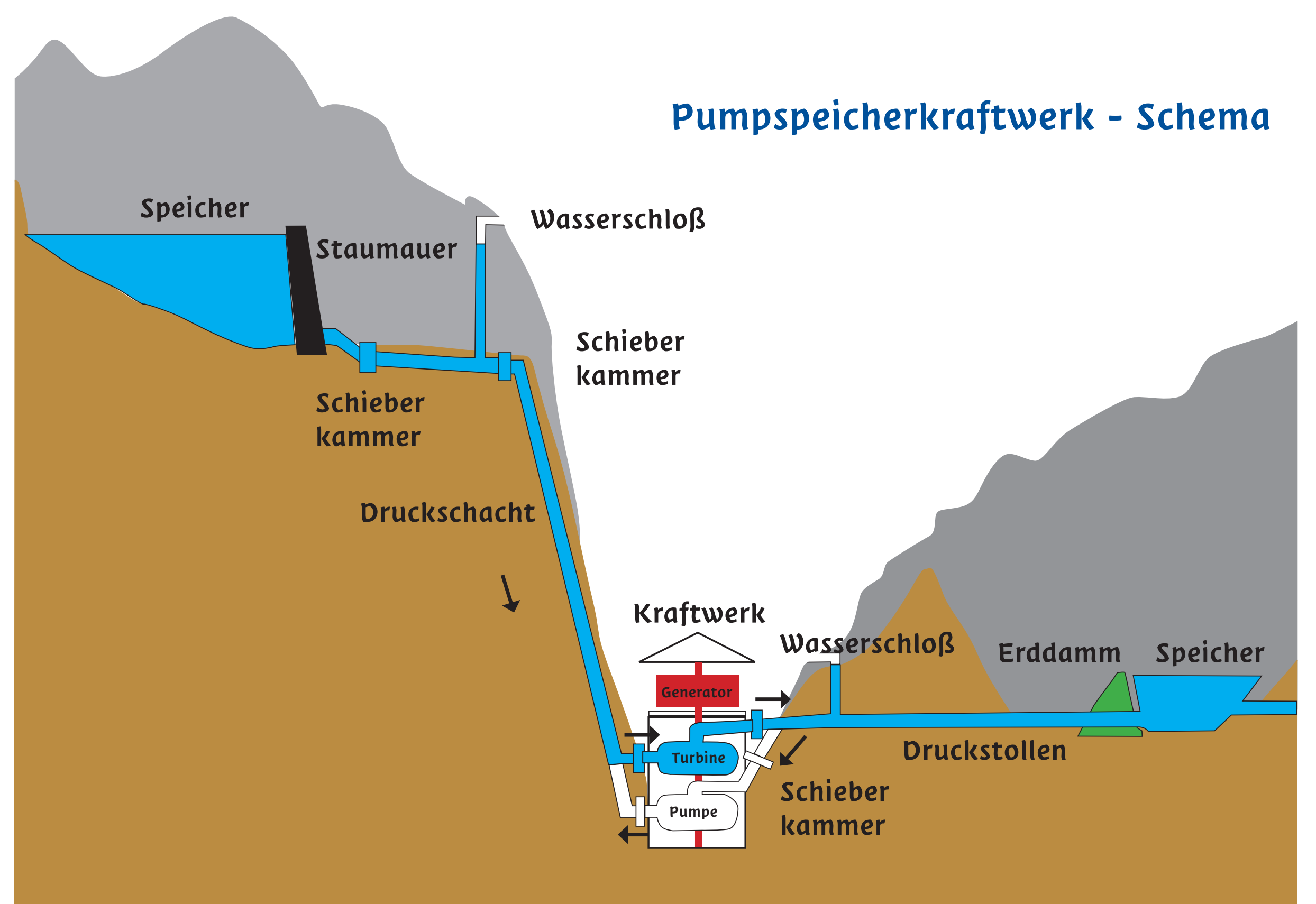
Pumped storage hydropower station

A pumped storage hydropower station stores electric energy. With the energy that is obtained through a renewable source of energy (mainly hydropower, but can also be wind energy or solar energy), water is pumped up to a fixed point. Later (when energy is needed) the water is allowed to flow back down and electric power is produced using generators.

Pumped storage hydropower stations can involve a considerable intrusion in the ecological system and the landscape.

They are generally built of concrete or bitumen due to the operational strain, meaning that no natural vegetal cover of the building surface can develop. The frequent water changes, in which the body of water is completely stirred up, prevent a natural ecological system being formed.

Despite this, it is necessary to deal with the subject “storage of renewable energy”, in order that the dependency on fossil fuels such as crude oil is eliminated in future. A new project is the attempt to convert energy from renewable sources into hydrogen in order to store it. In Bolzano such experiments are currently being carried out.



Water channels:

witnesses of a past use

“Waaale” are man-made water channels made for irrigational purposes. There are sources documenting the use of such water channels already in the 12th century. For maintenance and service of the water channel, a narrow path was erected, the so called “Waalweg” (water channel path). The responsible “Waalner” took care of the function and the equal distribution of the costly water.

Especially in Val Venosta the amount of rainfall is, due to its geographical position, so small that the farmers are dependent on artificial irrigation. This is why in the region of Val Venosta one of the largest water channel systems in the Alp-region came into existence.

The water channel brings water into meadows and fields that need to be irrigated. The water channel was also used to operate flourmills and sawmills since the incline of the surroundings were ideal for these purposes. The water channels delivered water for stock and in earlier times also for the households of complete villages. Water channels that are only used for irrigation are only kept operational during the growth periods. In October water is let out and in April/May the water channels are put into running again.

Mode of operation: with the aid of planks water is diverted off the main “Waal” into smaller auxiliary channels. The irrigation of slightly inclined fields and meadows is achieved through a trickle method. Many farmers also saved water

in smaller dams, to bridge the time until it was again their turn to receive water from the Waal.

Today, the paths along the water channels are popular hiking trails, which can be explored all year round. In the reception there is information on the most popular water channel paths.

