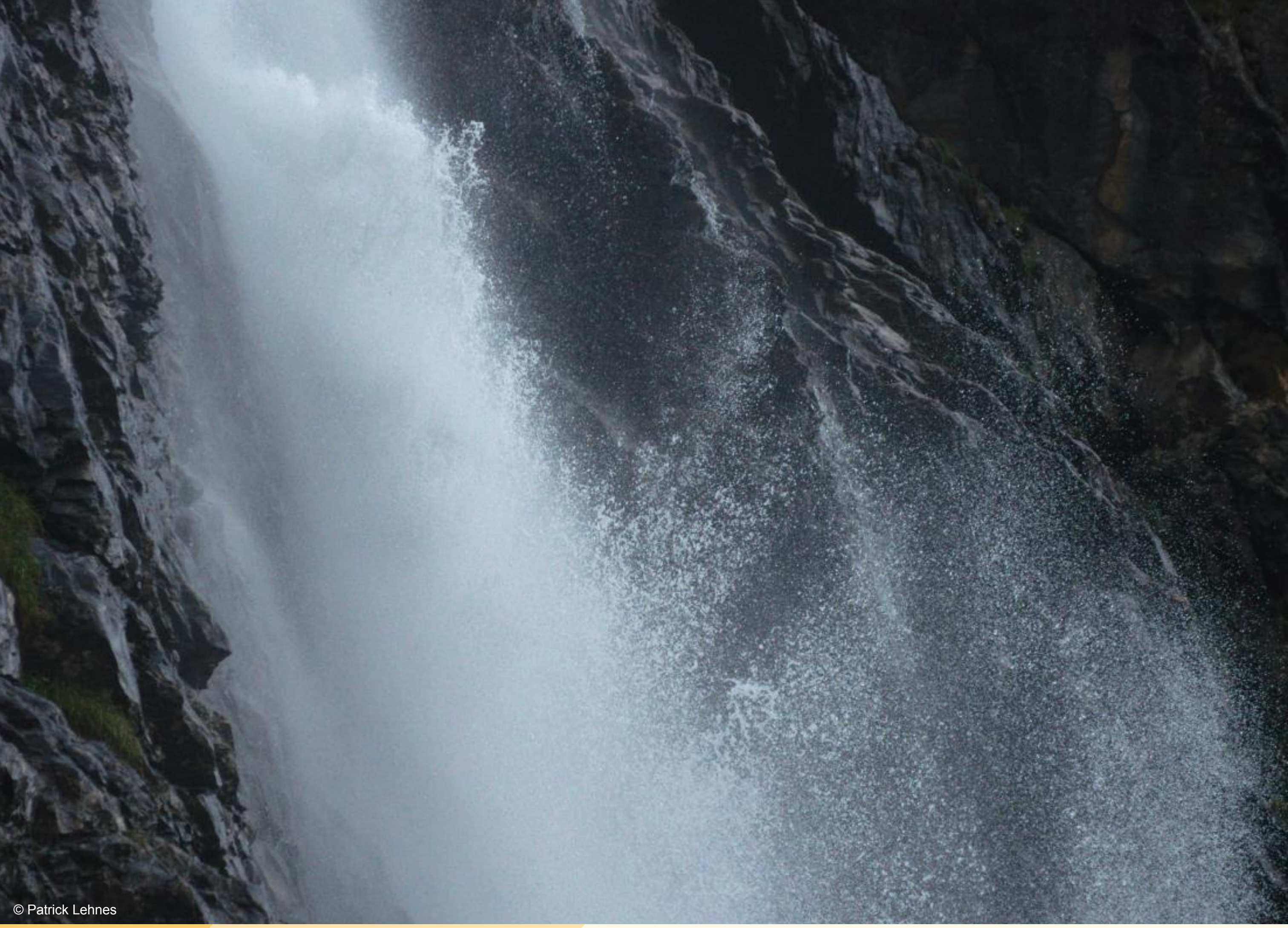


Always in motion



With electricity it is the same as with water for hydro power: it must flow. Whilst the water's energy can easily be stored, problems arise when storing electric current.

For storing water all you need to do is build a dam. A reservoir is formed, and whenever hydro power is required, a water outlet is opened. That's how it was done with mill ponds, later the same principle was applied to reservoirs of large rivers such as the Nile, including the highest dam in Europe, the Grande Dixence.



Lac des Dix: Vast amounts of electricity can be generated with the collected melt water of the Alpine glaciers of Wallis.

© Patrick Lehnes

Wind and sun cannot be regulated. Fast up or down regulation is also impossible for lignite, nuclear or run-of-river power stations. What to do with surplus electricity?

No waste of electricity

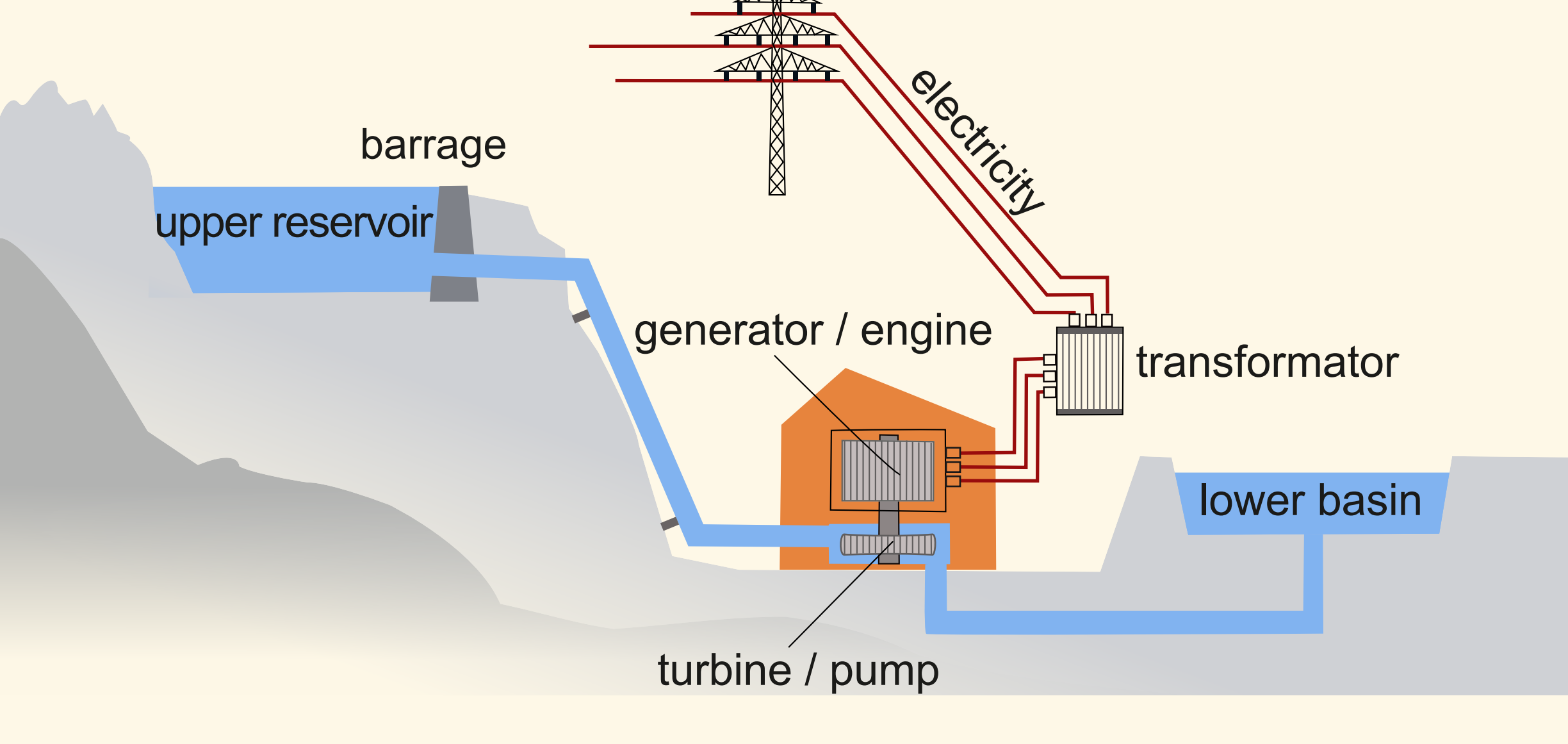
As early as in the 1920s the provincial government of Baden picked up an ingenious idea: surplus energy produced by the big power stations could be used to pump water uphill for storage in a reservoir. Thus dams and pumped-storage hydro power plants were built on the Schwarzenbach in the Northern Black Forest and on the Schluchsee lake.



Schwarzenbach weir: One of the oldest pumped-storage power plants in Germany.

However, they were a long way off from the big power stations and centres of energy consumption.

Thus these pumped storage plants were linked via a new high voltage power grid with the coal power stations and the cities of the Oberrhein and the hydropower stations on the Hochrhein.



As soon as demand on the power grid runs high, the surplus power which has been generated and stored at night can be released in within minutes.

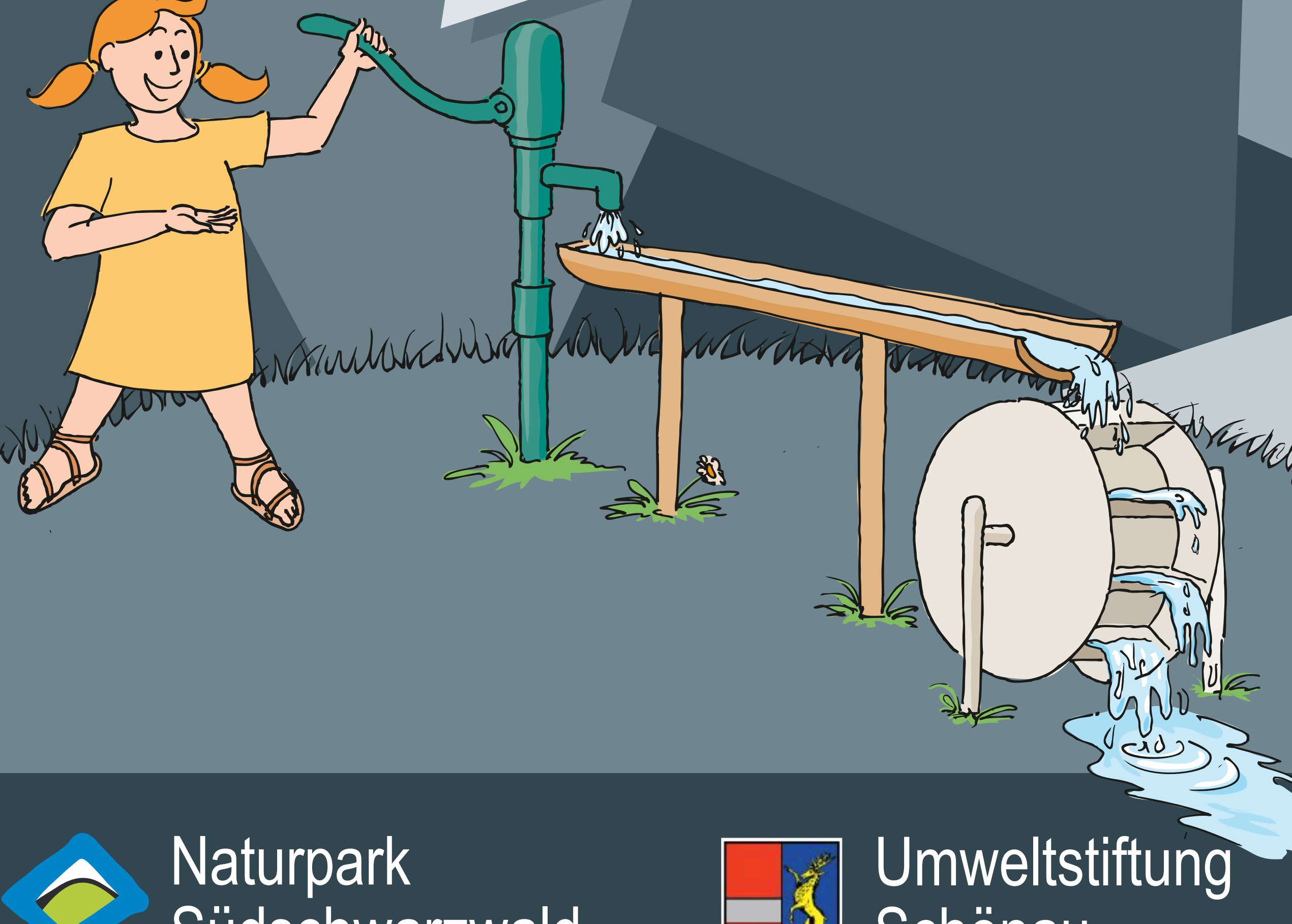
On a large scale

In the course of the transition to renewable energy high voltage cables are laid from Germany through the North Sea to Norway. The Norwegians convert already existing reservoirs into pump-storage power plants in order to store surplus wind and solar energy from Germany intermediately.

...on the playground at any rate. But imagine, you had to first pump up all the water you need for bathing, washing, and cooking. Yet, pumps are a great invention, which has made life a lot easier for people. Previously, they had to raise water from wells with buckets on long ropes - bucket by bucket. This probably built up some muscle, but was quite laborious.

Since muscle power has been replaced by the invention of electric engines, pumps have got bigger and bigger. Thus entire lakes can be filled with water - you could not manage this with a playground pump, could you?

With some water wheels the water flows over the top, with others it flows through underneath. One is called 'overshot', the other 'undershot'. Which one might we have here?



Naturpark Südschwarzwald



Umweltstiftung Schönau