

## Energy – Water Conflicts

The public is well aware of our global energy problems, but still less so of our water challenges. Few people realise how related they are.

### Examples

- Hydropower is generally considered as clean and sustainable energy. Some times it is not! The Aswan Dam in Egypt, for instance, reduces the downstream flow of the Nile because much water is evaporated. Organic solids and nutrients settle and make the downstream land infertile in the long run. Huge amounts of fertilizer have to be applied to replace fertile Nile sludge – and their production consumes much energy. Experts are very concerned about the environmental impact by the Three Gorges Dam at the Yangtze River.
- Reduced flow and increasing temperature of rivers impairs operation of power plants needing their water for cooling.
- Water and wastewater management amounts to around 5 % of the entire US power consumption. Water pumping over a distance of 500 km from the Colorado River to Los Angeles requires 2.3 kWh/m<sup>3</sup> of power.
- Water use for food production is around 2 m<sup>3</sup> per person and day, over 10 times the direct personal water consumption. Much food and water consuming cotton is produced in arid regions. This means that huge amounts of “virtual” water are exported from arid regions.
- Electrical cars consume 15 times more water than conventional cars as a result of power plants’ cooling water consumption.
- Where irrigation is required, production of ethanol from corn consumes up to 150 litres of water for every km a car is driven with this fuel. Ethanol production from corn consumes more energy than it delivers; it is a negative energy balance. Food prices have strongly risen due to increased ethanol production from grain.
- Current water and wastewater management is too energy-intensive.
- Improved wastewater treatment requires even more energy. If micro-pollutants need to be removed, energy consumption could easily double.

### What can we do?

- We can reduce water consumption, our “water footprint”, our import of “virtual water” from regions with water scarcity. We can close water loops, i.e. we need to treat and reuse wastewater, e.g. for irrigation (See [HUBER ReUse Solutions](#)).
- We can recover [energy from wastewater](#) and sewage sludge and reuse its nutrient and organic carbon content (See [Renewable Energy Sources](#)).
- We can stop using energy for nutrient removal and instead reuse nutrient containing effluents for irrigation, thus replacing fertilizers that are produced with much energy.
- We can separate wastewater at the source (See [HUBER ReUse Solutions](#)).
- We can make wastewater treatment energy self-sufficient (See [Renewable Energy Sources](#)).
- We can minimize emission of greenhouse gases resulting from water and wastewater management.