WATER Kidz

ENERGY – a thirsty resource

Above: *Roughly 75% of all the water used for industrial purposes are used for energy production.*

Much is being said about the 'water-energy-nexus' these days. But what does the term mean and what does the one have to do with the other? And why should we care?

Basically what 'nexus' means is that water and energy are closely connected to one another. On the one hand, our power plants need water to generate electricity, and on the other hand, energy is required to treat, transport and distribute our water.

Consuming too much of either can lead to resource depletion, pollution and an overall price increase for each. For example, drought diminishes energy production, while lack of access to electricity limits irrigation possibilities. We are already use six times as much energy as we did in 1950, and this is only going to increase as the population increases and more people get access to electricity services, putting more pressure on our water resources.

About 75% of all industrial water withdrawals are used for energy production. All types of electricity generation consume water – either to process the raw materials used in the facility or fuel, constructing and maintaining the plant, or to just generate the electricity itself. Renewable power sources, such as wind power, might require little water to produce energy, but still need water in the processing of the raw materials and in the building of the turbines and solar panels.

SOURCES

- www.eskom.co.za
- http://en.wikipedia.org/wiki/Water-energy_nexus
- www.worldwaterday.org
- www.unwater.org
- www.glendalewaterandpower.com/save_money/tips/energy_savings.aspx

DID YOU KNOW?

It takes 1.5 cubic metres of water and almost 10 megajoules of energy to produce 1 kg of wheat and around ten times more water and 20 times more energy to produce 1 kg of beef.

We just have to look at the water use of South Africa's largest power utility, Eskom, to realise how important the relationship between water and energy is. Eskom generates about 95% of the electricity used in South Africa and about 45% of the electricity used in Africa. It is also one of the ten largest electricity utilities in the world by generation capacity. With its 27 power stations, Eskom is also a large consumer of freshwater, accounting for about 1.5% of the country's total water consumption every year. The utility's power stations run constantly – without water this would not be possible. A special network of pipelines and dams ensures that Eskom's power stations never run out of water.

To improve its water use, Eskom has introduced all sorts of water technologies. This includes dry cooling (which uses 15 times less water than conventional wet-cooled power stations), treatment of polluted mine-water for use at the power stations, and technical improvements on the way water is treated to maximise the beneficial use of water. In so doing, Eskom manages to save more than 200 million litres of water every day.

We have all seen or heard Eskom's advertisements telling us to switch off appliances when we are not using them. This does not only save electricity, but water as well. According to Eskom, for every kilowatt hour of electricity that is saved, about 1.32 litres of water is also saved. So start switching off those lights!

Just as energy requires water, water supply and sewage disposal needs energy. Drinking water must be pumped to the treatment plant and then pumped to consumers following treatment. In areas where freshwater is scarce and drinking water must be brought in from a long distance (like Gauteng, which gets its water all the way from Lesotho), the energy footprint for this drinking water can be very high.

So what can you do to save water and energy? In the kitchen, use your dishwasher only for full loads. If you have a second refrigerator or freezer that is not really used, switch it off. Rather keep one refrigerator stocked full – a full refrigerator uses less energy.

In the bathroom, don't let the hot water run while washing or brushing your teeth. Tighten or plug leaking joints in hot water pipes. Install compact fluorescent lightbulbs (CFLs) – they use as much as 75% less energy than standard light bulbs. When doing your laundry, wash and rinse in cold or warm water instead of hot water whenever possible (remember, energy is used to heat the water and run the washer). ❑

Just as power generation plants use water, water treatment plants use electricity.

By keeping your fridge full you will conserve energy, and so save water.