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Hydrogen

A number of analysts from State, industry, energy companies and NGOs believe that hydrogen will or shall play a major role in the energy systems of many countries in coming decades. However, the concepts involved are subject to broad disagreement. A **key question** involved is **the method to produce hydrogen**. Hydrogen is not an energy *source* it is an energy *carrier*.

In order to evaluate the potential for hydrogen in the energy sector in an intelligent way, just as in the case of electricity, one has to pay attention to generation and distribution schemes and technologies. Just as electricity, it is not good or bad, it has numerous possible useful applications and its level of benefit to society depends on how it is generated, stored and shipped.

Hydrogen can be generated in two ways by gas reforming or by electrolysis:

- **Gas reforming**, which generates hydrogen from biomass, ethanol or natural gas (steam reforming) has **an energy efficiency ratio of 30%.**
- While **electrolysis,** the splitting off the oxygen molecule (O) from water (H2O), is much less efficient, with a **conversion ratio of only 12-15%**. Producing first electricity and then through electricity getting hydrogen has so low efficiency that it is not really a promising way.

One of the most promising uses of hydrogen is in the transport sector that remains the most dependent on oil and generates an ever increasing share of greenhouse gas emissions. However there is a great deal of difference between various systems when it comes to fuel chain and vehicle efficiency that make up the largest share of the overall system. Efficiency ratios can vary by a factor of three, which has, of course a significant impact on overall system performance.

Research and development in the hydrogen sector is important but should be concentrated on comparative system analysis, renewable energy based technology development and a clear prioritising of steam reforming systems that promise the highest overall efficiency.

There is a great danger that research funds labelled "hydrogen" will be in fact used for nuclear and fossil fuel research.

The Greens are in favour of a clear distinction of funding that goes to non-renewable energy sources.

The most powerful drivers behind hydrogen are the coal and nuclear lobby. They try to use the "green" image of hydrogen, so called zero-emission, for their dirty business.

As mentioned before, the **combination of the low efficiency of both nuclear power plants** (maximum 35%) and **coal power plants** (maximum 35% in a CCS scenario) with the **low efficiency of hydrogen**

through electrolyses leads to a ridiculous **total efficiency of only 10 to 12%.**

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