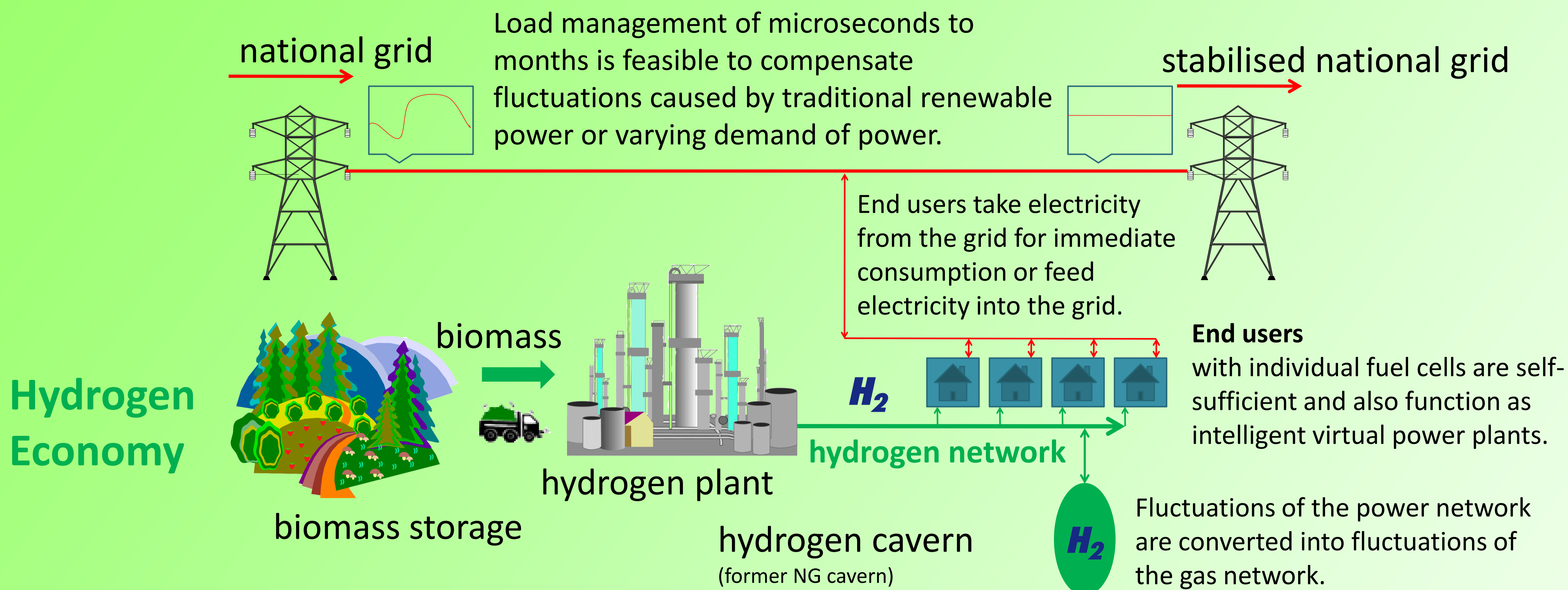


POWER GRID STABILISATION BY HYDROGEN PIPE NETWORK

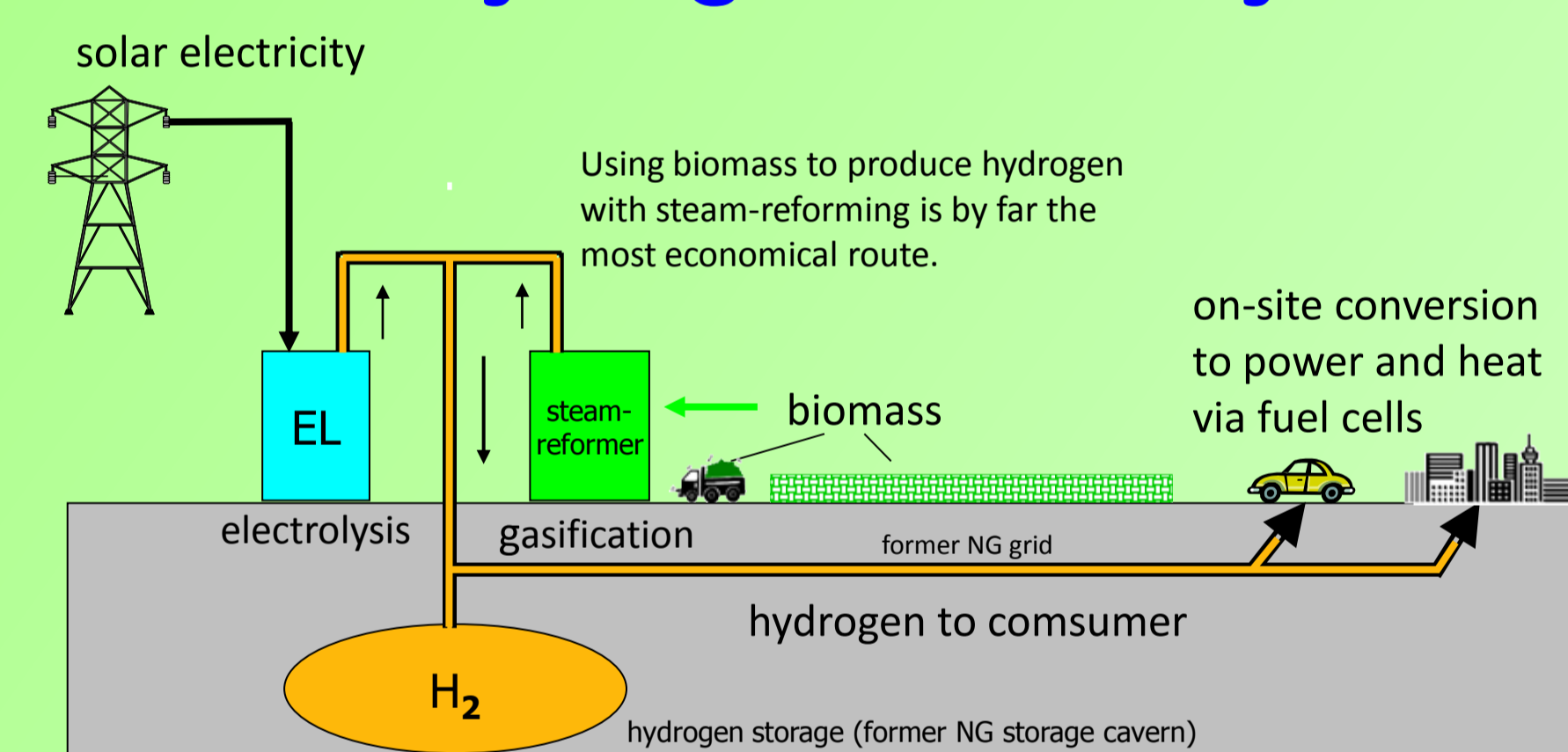
A new Idea



Stabilisation of the national grid - a synergy effect of a biomass-based hydrogen economy

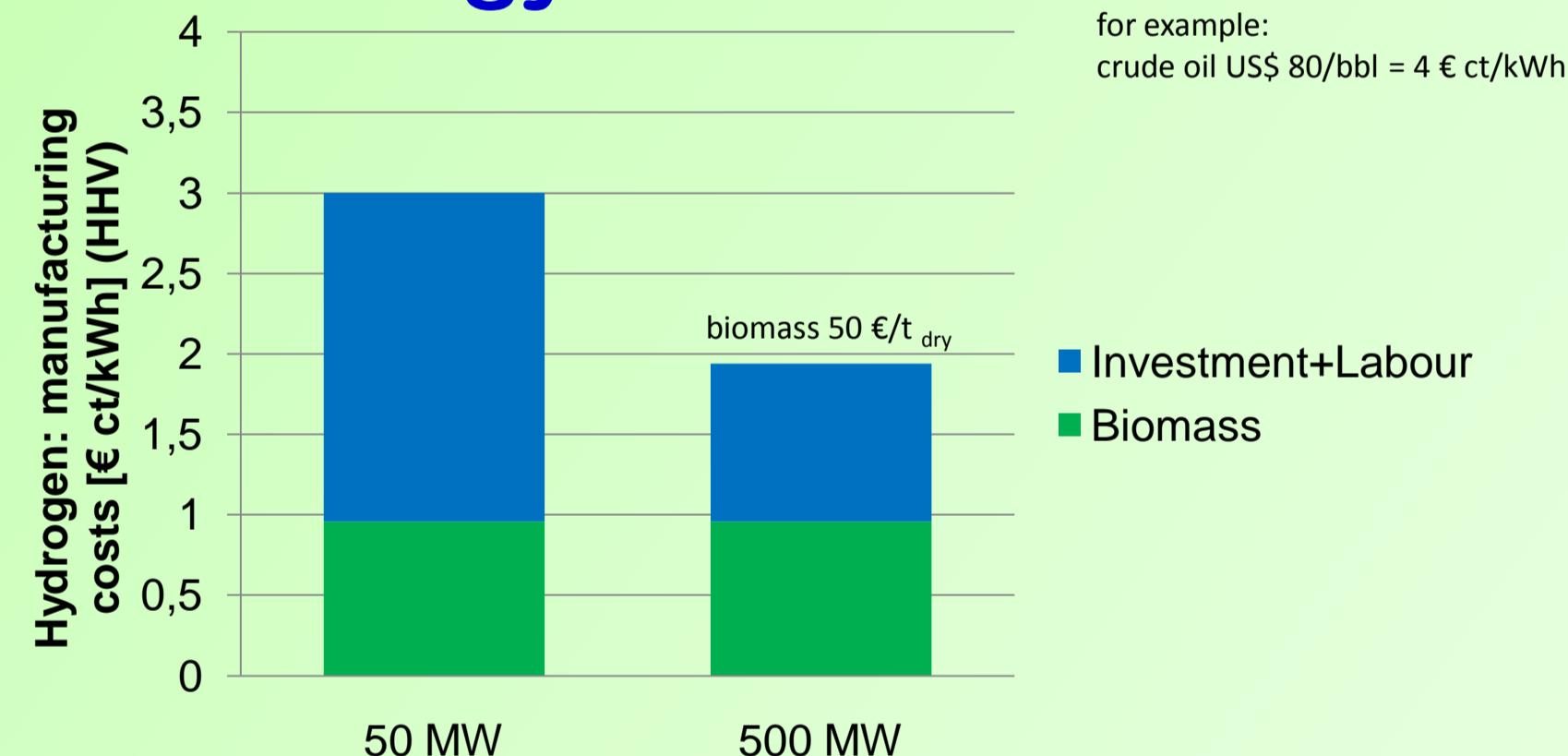
Hydrogen will be our future source of energy. The stabilisation of the power network is just one of many positive side-effects. No energy is lost and no additional costs are incurred. The system also works with mixtures of hydrogen and natural gas. Fuel cells can, with the right know-how, operate with these mixtures. A hydrogen economy itself is absolutely competitive to today's energy supply, even without subsidies.

Genuine hydrogen economy



Systematic excess of power leads to a heat-guided economy without losses

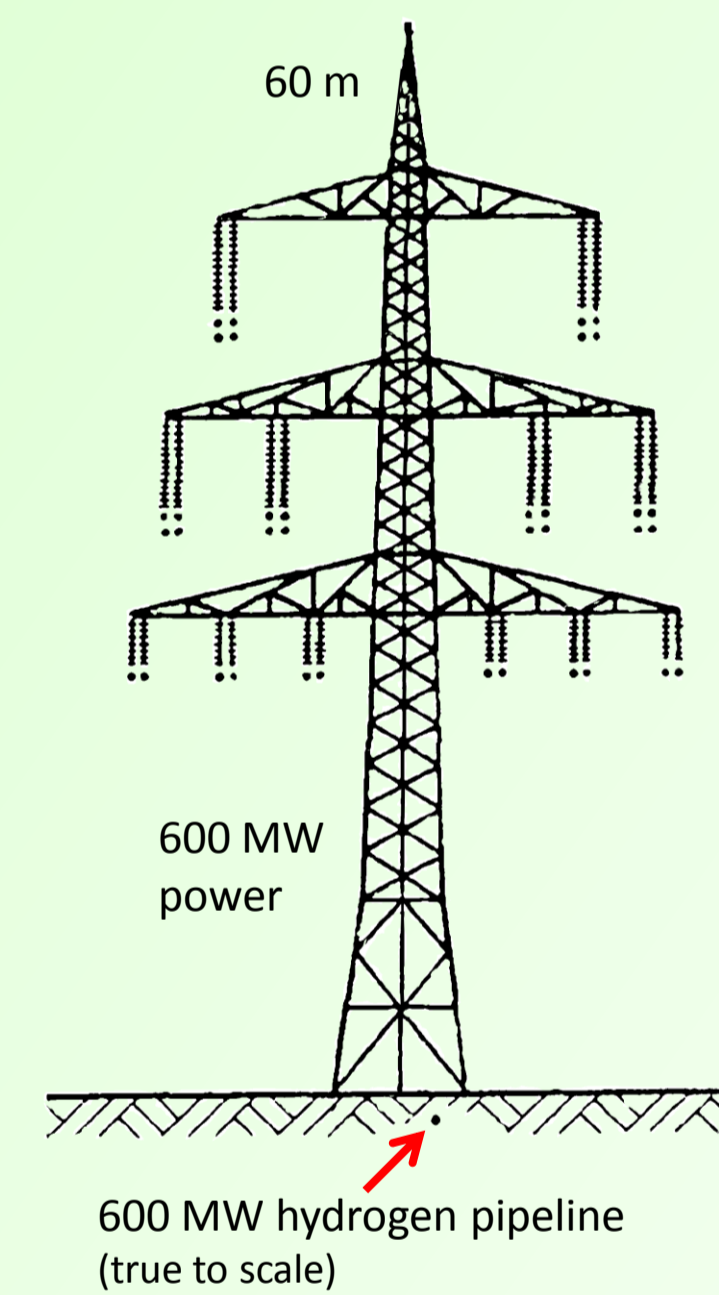
Bio-hydrogen is cheaper than fossil energy



Household tariffs would be 0.7 ct/kWh higher than the actual costs of production (well-to-door costs). Power, respectively heat will then cost 2.7-3.7 ct/kWh.

A 50 MW plant can fully serve more than 20.000 homes (heat and power).

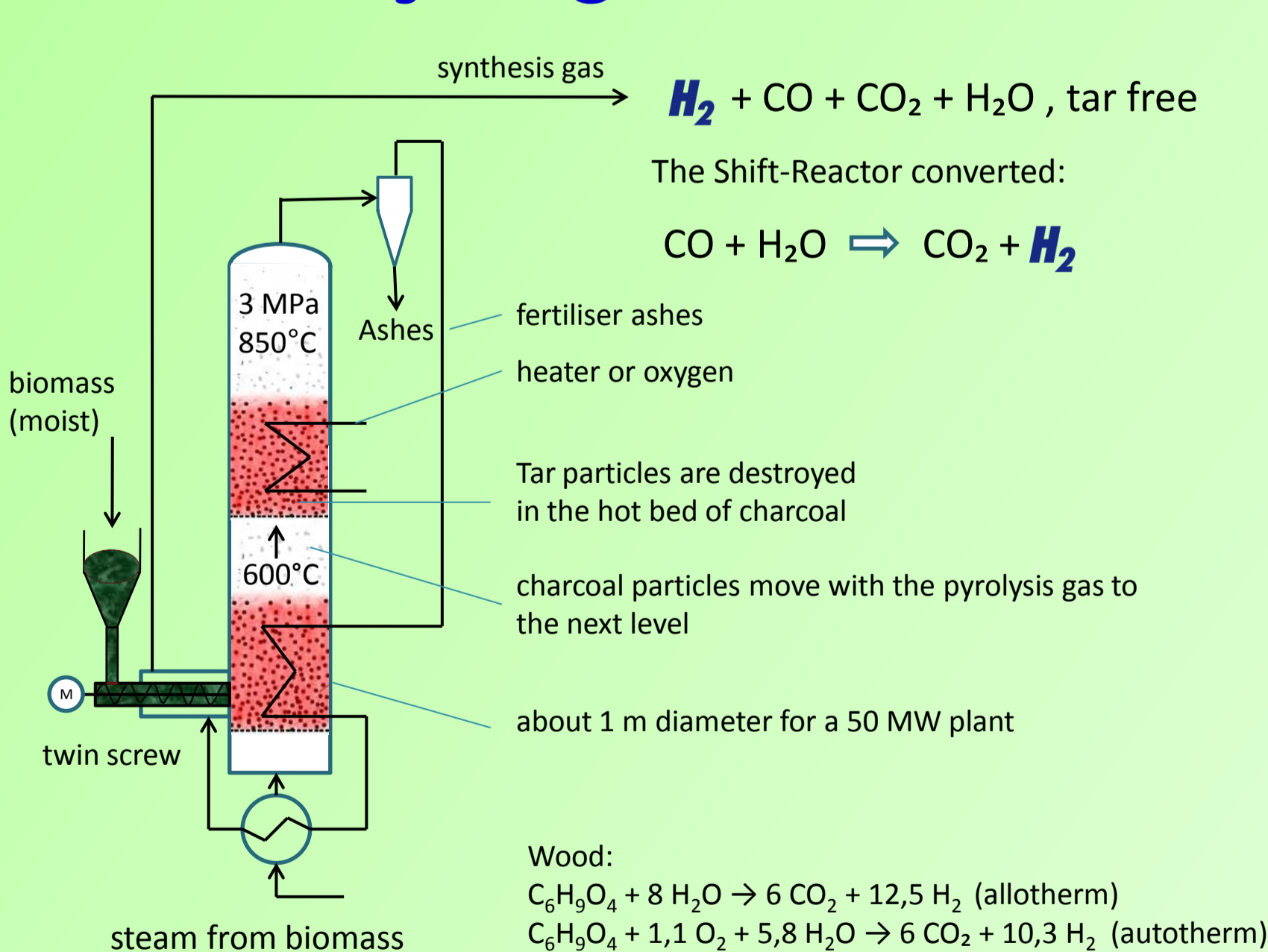
Cost of delivery well-to-door (Germany)



Hydrogen = 0.7 ct/kWh
Power = 9.3 ct/kWh (2009, Germany)

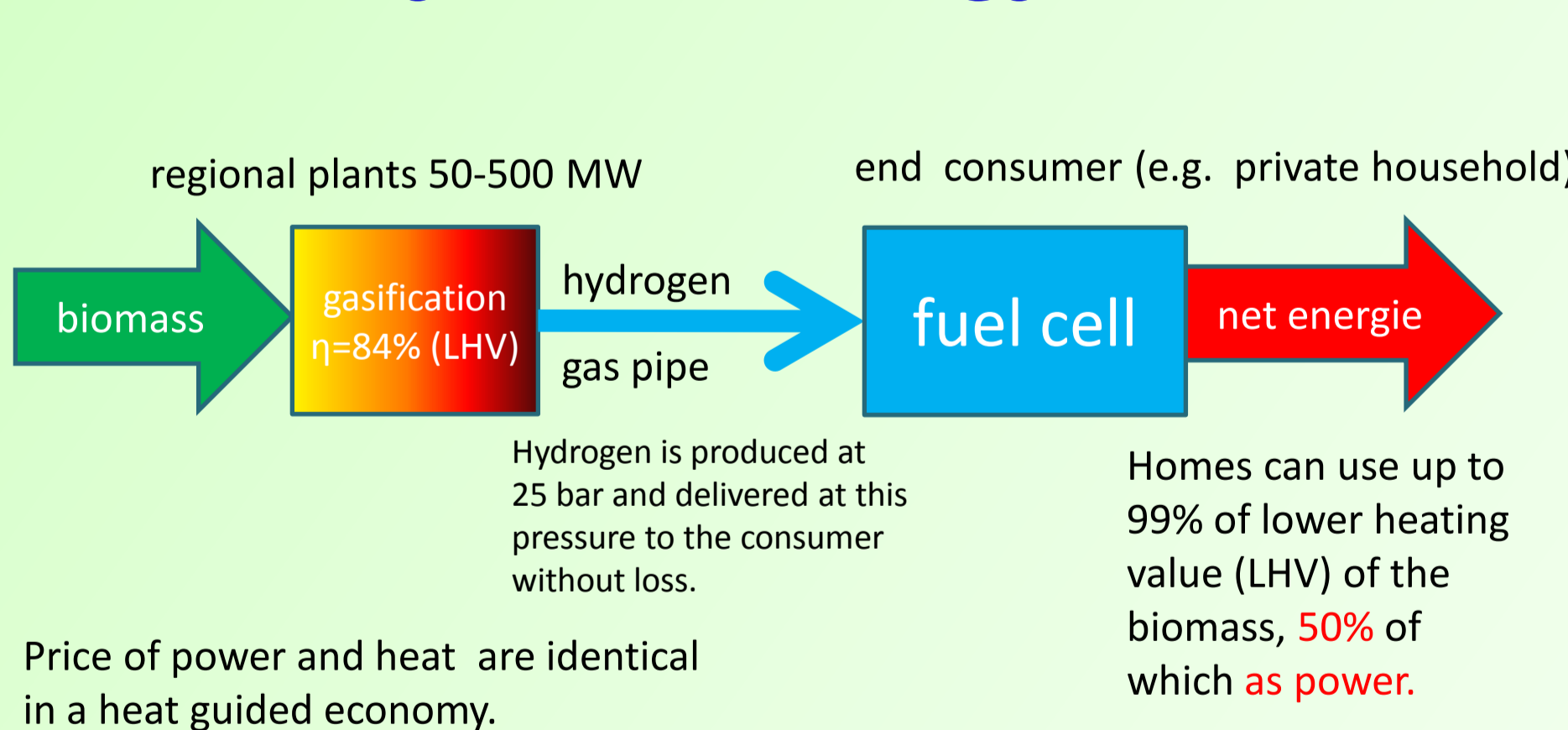
Examples for production plus delivery costs:
Power generated by individual fuel cells = 3 + 0.7 = 3.7 ct/kWh
Power generated by existing nuclear stations = 2.5 + 9.3 = 11.8 ct/kWh

Tar-free hydrogen

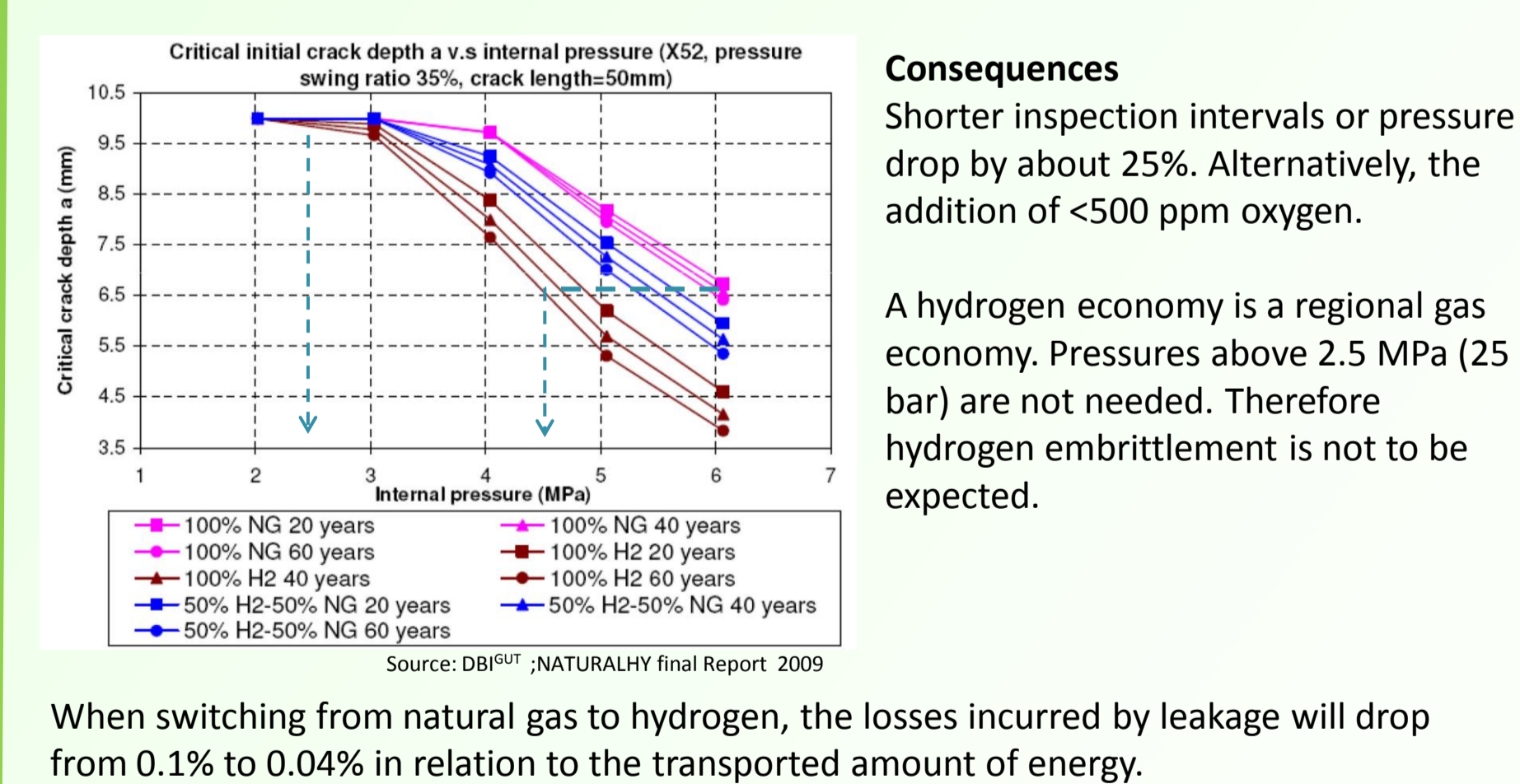


This is an endothermic reaction with principally no energy losses.

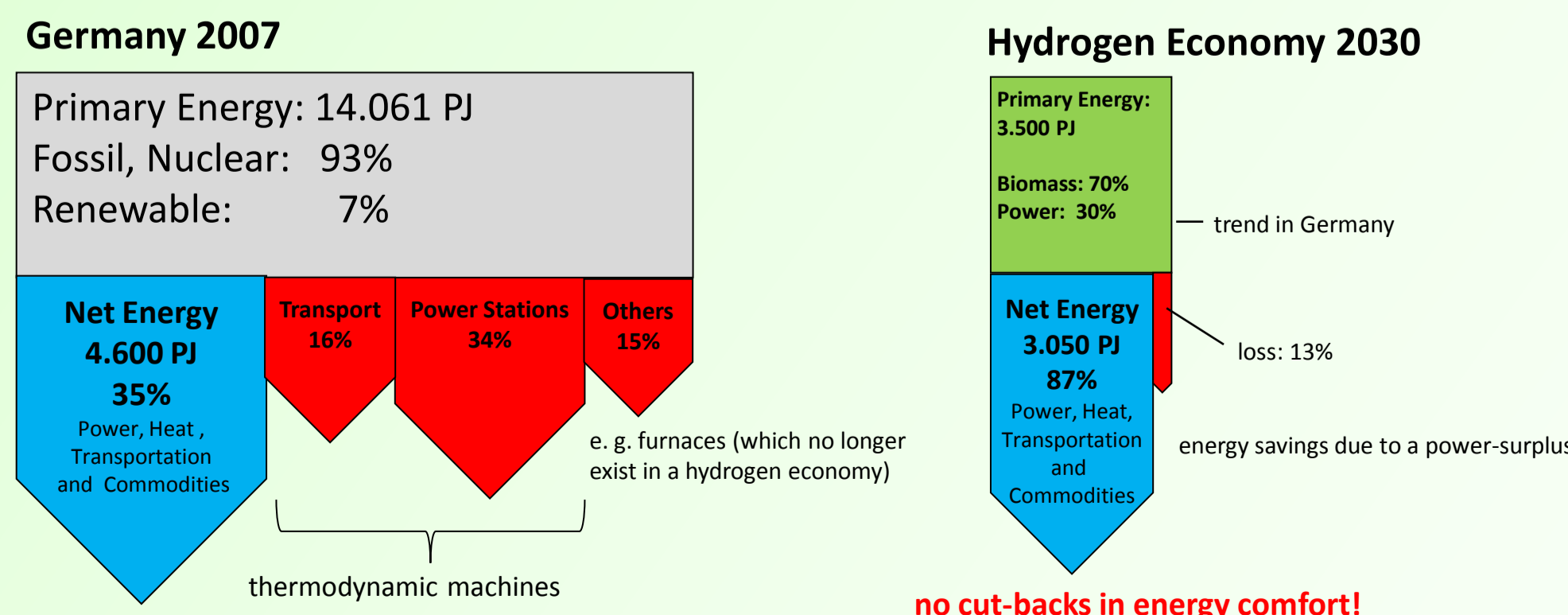
Efficiency of the energy chain



Hydrogen in natural gas pipelines



Energy consumption today and tomorrow



In a future hydrogen economy, the demand for primary energy is reduced to a quarter - at the same level of comfort.

Investment for a hydrogen economy in Germany

The complete installation of an absolutely sustainable hydrogen economy for Germany would cost about € 40 billion*. This is a one-off investment! Please bear in mind that the same amount is at present being invested into our energy infrastructure year after year.

* Including full environmental and climate protection

Biomass potential

Experts largely agree that, based on the present structures in Germany, biomass can in future contribute about 20% of the overall energy demand. The calculation thus is: 14,000 PJ x 0.2 = 2,800 PJ.

Note: as shown left, a biomass-based hydrogen economy would need approx. 2,500 PJ (70% of 3,500 PJ) to replace all nuclear and fossil energies.

In summary, there is sufficient potential of biomass and no threat whatsoever to food-producing agriculture.

H₂-Patent GmbH
Postfach 13 61
D-49182 Bad Iburg
www.h2-patent.eu

©Karl-Heinz Tetzlaff
tetzlaff@h2-patent.eu

