

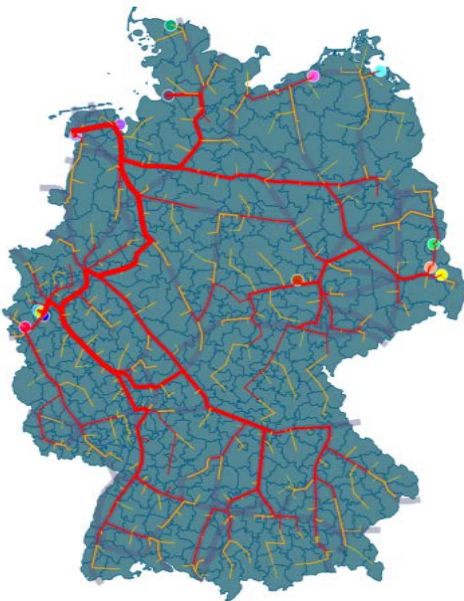
# Concept and cost of a pipeline system to supply hydrogen to fuel cell cars in Germany by 2050

Dennis Krieg

Institute of Energy and Climate Research – Fuel Cells (IEK-3), Forschungszentrum Jülich

Renewable energy, especially wind power, is steadily growing in Europe and in Germany<sup>1</sup> alike. Wind power is already available, but in some areas wind is too abundant or erratic to be used efficiently to power homes and industry. The excess electricity produced by too much wind can be used to produce hydrogen, which can be stored and reconverted into electricity in order to drive fuel cell cars, providing a feasible alternative to conventional fossil fuels. Like production and usage, the distribution of hydrogen must be fully and properly assessed in detail. Although different road maps are available, concluding that a pipeline is economically and environmentally the most attractive option, no technical study has been made so far.

The aim of the work is to obtain a comprehensive understanding of the future distribution of hydrogen in Germany. The potential research and development fields are identified first, followed by estimates of the cost range for investment and the final cost at filling stations.



Key conclusions:

Transmission

- Length: 12,000 km
- Cost: 5 – 7.5 billion €

Distribution

- Length: 36,000 km
- 11 – 15 billion €

Comprehensive Pipeline (incl. Compressors, etc.)

- 18 – 30 billion € (Ø: 23 billion €)

Share of the pipeline system

- 15 – 26%

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<sup>1</sup> Share of renewable electricity. 1990: 3.6%; 2010: 16.4% [Source: AG Energiebilanzen e.V., 2010]