



OLJE- OG ENERGIDEPARTEMENTET

Norwegian member statement

IPHE – SC meeting Paris
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Update on the latest Hydrogen activities in Norway

- **Policy**
 - Report from the Official Norwegian Hydrogen Commission, NOU 2004:11 Hydrogen as the Energy Carrier of the Future
 - Elaboration of a governmental strategy for increased production and use of hydrogen
- **Research, development and demonstration**
 - the RENERGI-research program
 - Gassnova
 - the Utsira project
 - the HyNor project



NOU 2004:11 Hydrogen as the Energy Carrier of the Future

Content

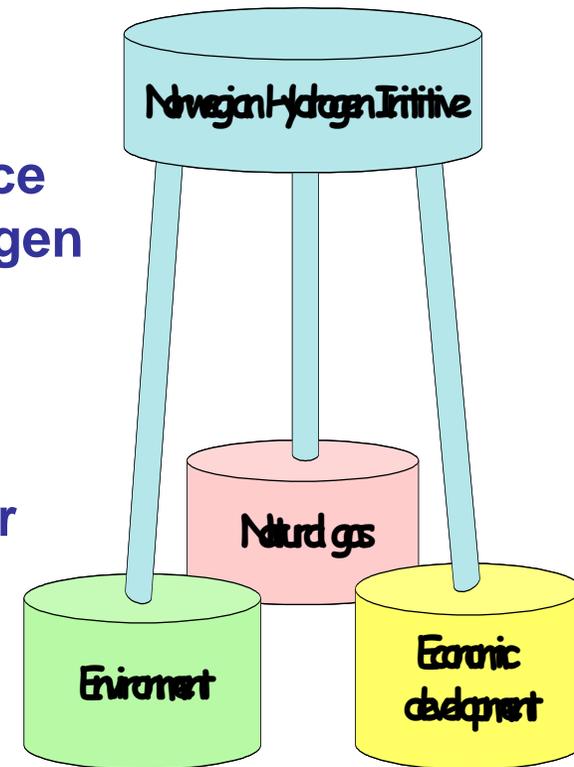
- **Facts and figures**
- **Norwegian players and institutions**
- **Properties of hydrogen as an energy carrier**
- **International efforts**
- **Reasons and targets for a Norwegian hydrogen initiative**
- **Proposal for a national hydrogen RD&D programme**



NOU 2004:11 Hydrogen as the Energy Carrier of the Future

Reasons for a Norwegian hydrogen initiative

- Hydrogen can reduce the emission of greenhouse gases in a long term perspective, primarily in the transport sector
- Norwegian natural gas resources can be a source of environmentally friendly production of hydrogen given CO₂ capture and storage
- Increased use of Hydrogen nationally and internationally will present new opportunities for the Norwegian industry





NOU 2004:11 Hydrogen as the Energy Carrier of the Future

Proposal for a national hydrogen programme

- **Research, development and demonstration**
- **Early use of hydrogen vehicles**
- **Innovation and economic development**
- **Public acceptance, education and information**
- **International cooperation**
- **Organisational and financial issues**



Elaboration of a governmental strategy for increased production and use of hydrogen

- **Joint process between the Ministry of Transport and the Ministry of Petroleum and Energy**
- **Follow-up of the Hydrogen Commission's Report NOU 2004:11**
- **Increased funding for RD&D**
- **Coordination of different authorities and programmes**
 - **Norwegian Research Council**
 - **Gassnova**
 - **Innovation Norway**
 - **Enova**
 - **Directorate of Roads**
 - **Directorate for Civil Protection and Emergency Planning**



Research activities

RENERGI-programme, Norwegian Research Council

- **Hydrogen production**
- **Hydrogen storage**
- **Hydrogen system analysis**
- **Safety**
- **CO₂ capture and storage**

Gassnova, governmental agency established 24 January 2005

- **Investing in research and large scale demonstration of CO₂ capture and storage technology**



Utsira - Demonstration of full scale wind/hydrogen energy system

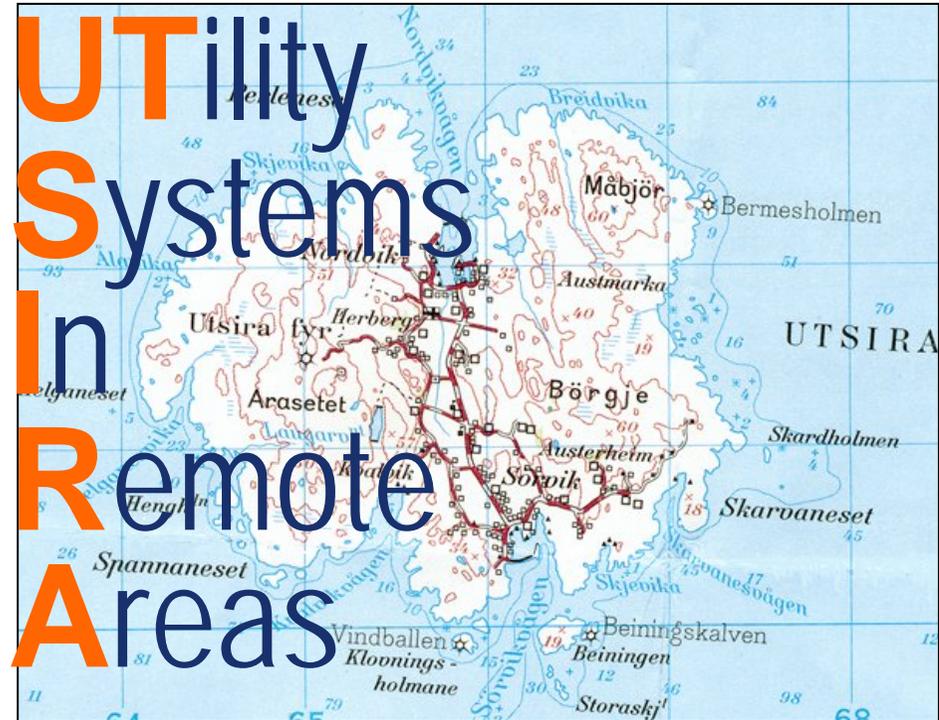
Demonstrate of how renewable energy can provide safe and efficient energy supply to isolated areas

Opened 1 July 2004

Partners Hydro & Enercon

Financed by the partners and Norwegian authorities

Plant constructed and tested. The demonstration will run for two years



Utsira™

HyNor - Individual and different hydrogen production and supply concepts for road transport

Demonstrate full scale concepts for hydrogen production and supply for road transport

- Hydrogen from electrolysis
 - electricity from grid (hydro electric)
 - electricity from waste incineration
 - electricity from solar panels
- Hydrogen from biomass
- Surplus hydrogen from petrochemical plant
- Hydrogen from natural gas steam reforming

Public/private partnership

Possible partner in the ICE-H₂

