

Joint European Activities For a Common Hydrogen Energy
Transition Strategy Towards a Sustainable Energy Future



Hydrogen Energy

**Joint European Activities For a
Common Transition Strategy
Towards a Sustainable Energy Future**

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Joint European Activities For a Common Hydrogen Energy Transition Strategy Towards a Sustainable Energy Future



Contents

Important EU initiatives

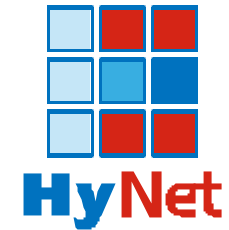
Important EC networks and projects

HyNet - The European Thematic Network on Hydrogen Energy

HyWays - The European Hydrogen Energy Roadmap Project

The Italian Perspective in the European Hydrogen Concert

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Important EC initiatives

- Research branch of European automobile industry (EUCAR) in co-operation with European oil companies' organisation for environment, health and safety (CONCAWE)
- Alternative Fuel Contact Group (AFCG) by DG TREN
- High Level Group on Hydrogen and Fuel Cells (HLG) by DG Research, DG TREN, DG Environment and DG Enterprise
- Research organisation of European natural gas industry (GERG)

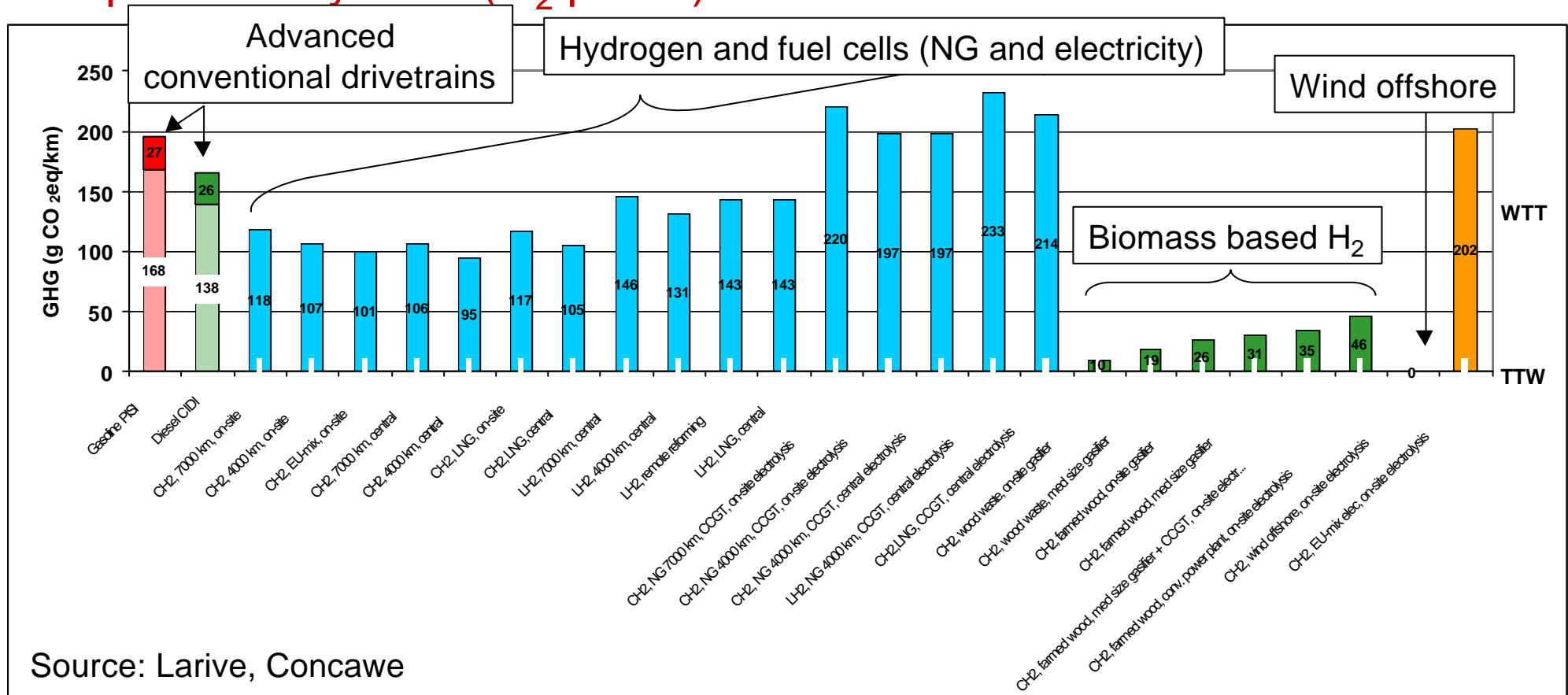
WTW Study CONCAWE/EUCAR - Background Info

- Joint oil and auto industry's view on the optimum future alternative fuel and drive systems choice
- Using WtW analysis and close cross-checking by industry, also by international partners
- Based on recent study results in industry lead initiatives or projects (TES/Germany, GM-WtW)
- Using a standardised approach and database tool to calculate WtW efficiencies, emissions and costs (E² database)
- Constant input to AFCG, final results expected by end 2003,

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WTW Study CONCAWE/EUCAR - GHG emissions, preliminary view (H₂ paths)



Source: Larive, Concawe

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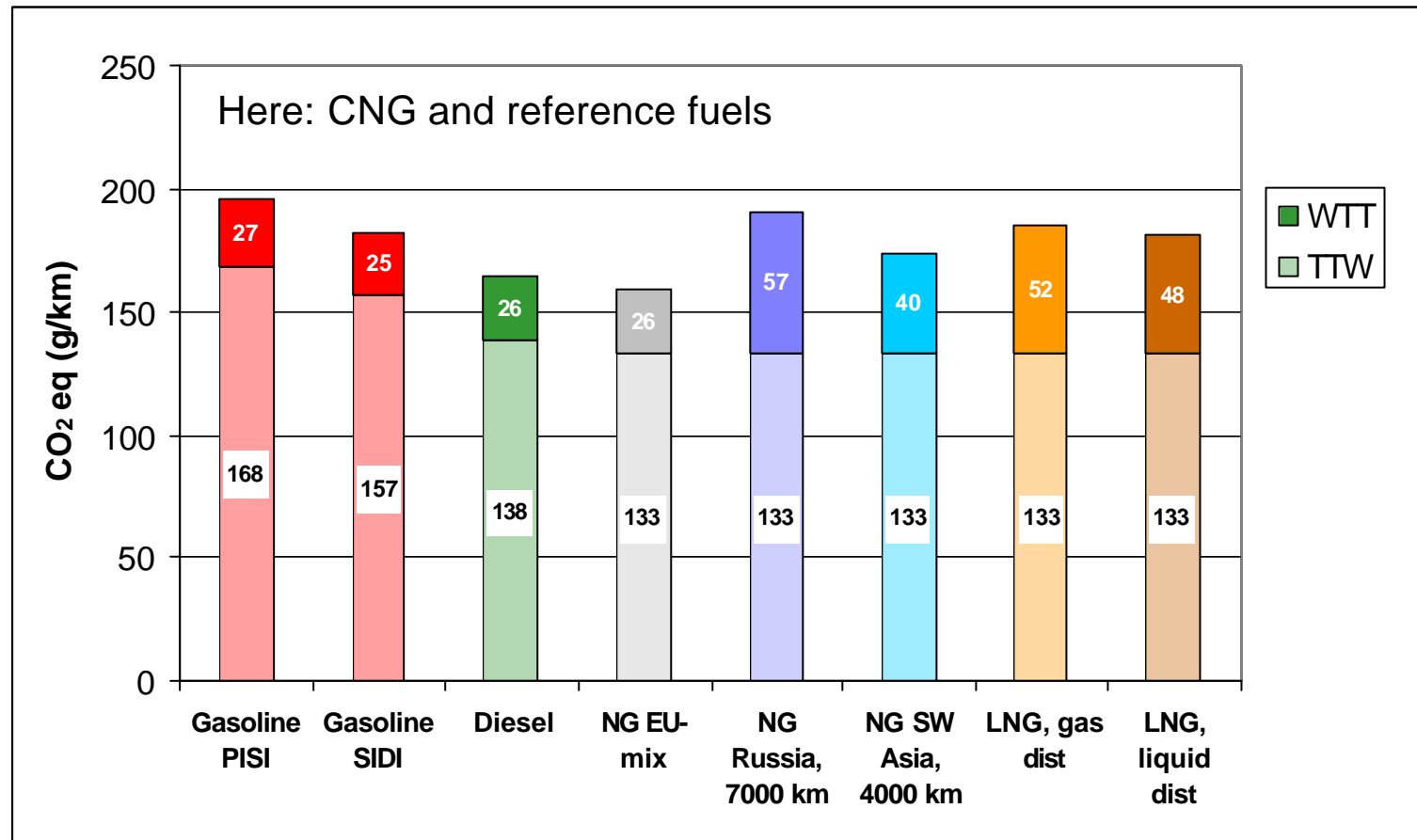
Alternative Fuels Evaluation (AFCG) - Background Info

- Development of a consensus view on the optimum alternative fuels choice initiated by the European Commission
- Close co-operation with CONCAWE/EUCAR and HyNet
- Initial focus on CNG, currently hydrogen and later biomass based fuels (LPG as a bridging fuel added later)
- Organised in 3+1 fuel specific working groups
- Tentative intermediate report published, final results expected by end 2003

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Alternative Fuels Evaluation (AFCEG) - WTW GHG-emissions



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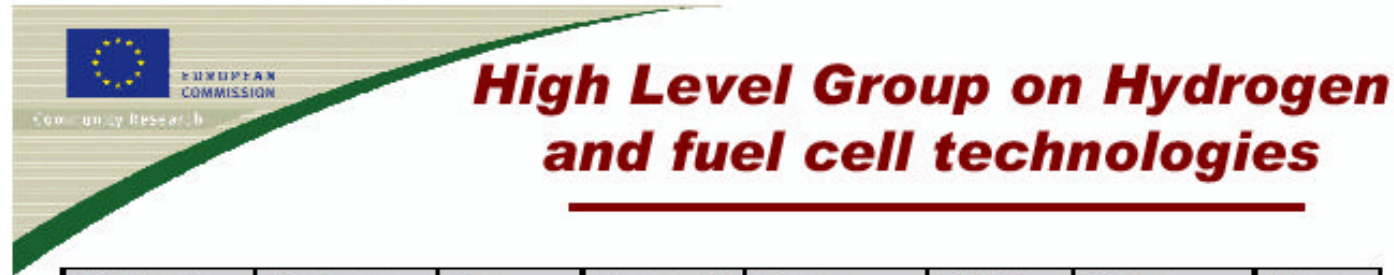
HLG on Hydrogen and Fuel Cells - Background Info

- Develop a vision of the ultimate goals and transition strategy towards a European sustainable energy system at highest level with focus on hydrogen and fuel cells
- Balanced participation of 19 large and small/medium industrial enterprises and important research institutions
- Initiation by the European Commission with the objective to create a sound basis for further focused and efficient r&d activities as well as commercialisation strategies
- Presentation of „Vision Statement“ at invited-only participants 2-day conference 16/17 June

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HLG Partners



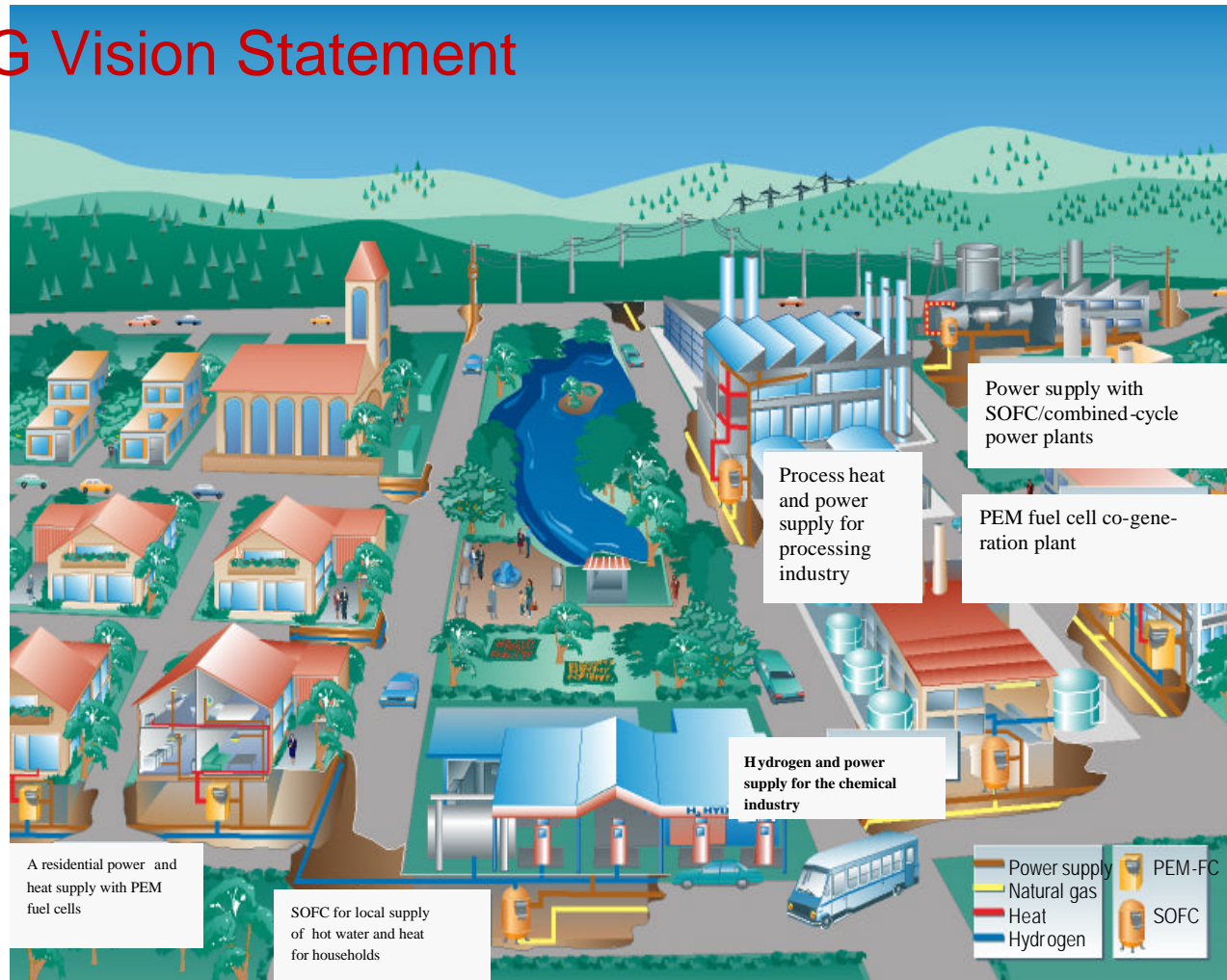
FC stacks, component, systems	Hydrogen infrastructure	Car industry	Research	Energy companies	Utilities	Public authorities	Users
Ballard	Air Liquide	Daimler Chrysler	CEA	Norsk-Hydro	Sydkraft	Iceiland Parliament	UITP
Johnson-Matthey	Vanden Borre	Renault	CIEMAT	Shell			
Rolls-Royce			FZJülich				
Siemens							
Solvay							

Italian partners

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HLG Vision Statement



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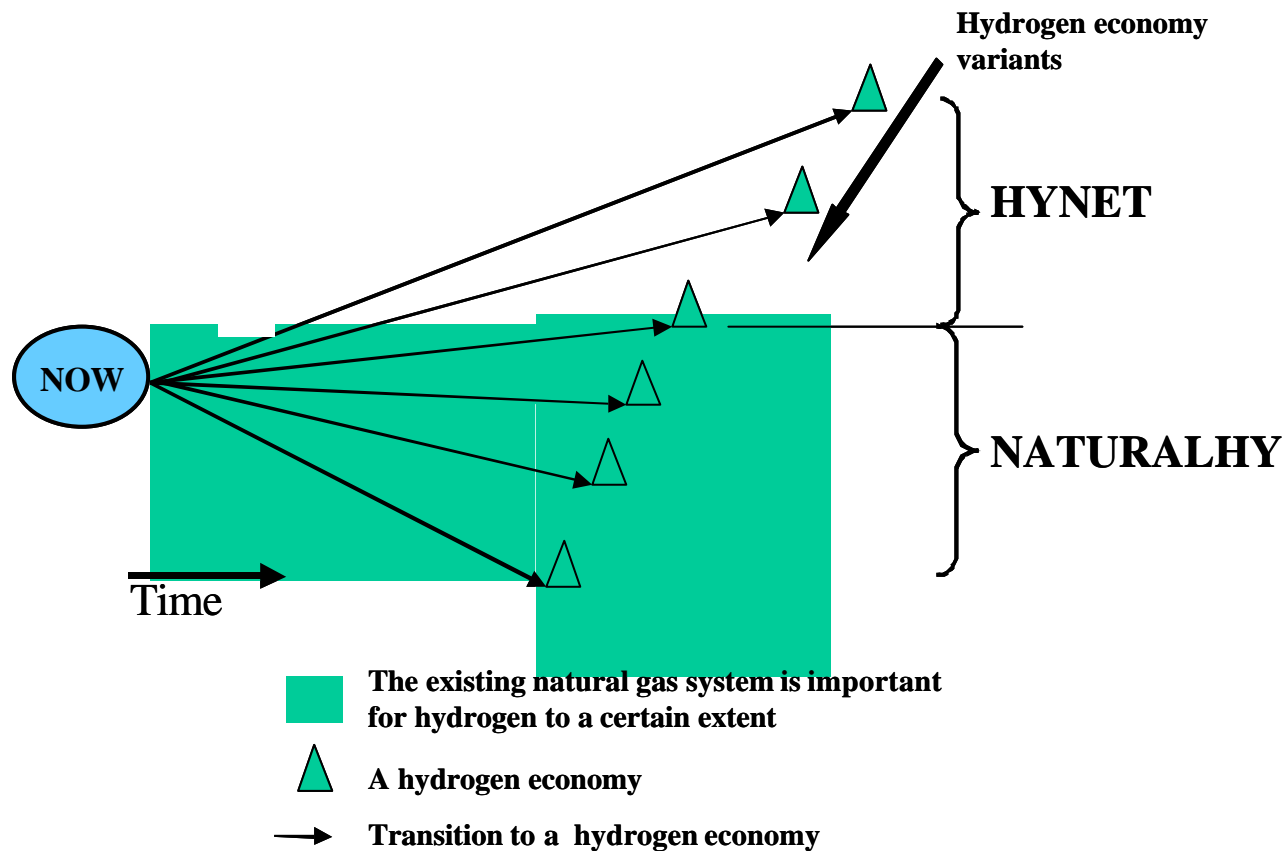
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Vision of the European Natural Gas Industry (GERG)





Important networks and projects

- European Integrated Hydrogen Project (EIHP)
- European Thematic Network on Hydrogen Energy (HyNet)
- European research project on socio-economic issues of hydrogen energy (HySociety)
- Yet unknown integrated research and demonstration projects and research networks on fuel cells and hydrogen energy under 6th Framework Programme (HyWays, NATURALHY, REFUEL, HyTRAN, HyStore, HySafe etc.)

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Project Duration: 3 Years [01FEB2001 - 31JAN2004]
Project Budget: 5 MEuro
EU Funding: 50%
Partners:

EIHP - Phase II



Develop EU-wide unified regulations for hydrogen vehicles and fuel stations



Work Packages:

WP1 Overall Coordination	WP2 Refuelling Station	WP3 Refuelling Interface	WP4 Vehicles	WP5 Safety	WP6 Links "EU- USA", Cluster Activities
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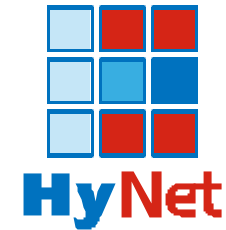
HyNet - Mission

- Develop strategies for and facilitate introduction of hydrogen as an energy carrier in Europe

HyNet - Objectives

- Initiate consensus on vision and strategy to build European hydrogen infrastructure
- Bundle hydrogen RTD and demonstration funds fostering larger impact
- Offer neutral industry position to EC as platform for consensus process

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HyNet - Partners



BMW AG



bp Ltd. 

Council for Scientific Research (Spain)



Linde AG



Messer Griesheim GmbH 

Norsk Hydro ASA



Raufoss

Raufoss ASA

Shell Hydrogen B.V. 



TÜV Nord e.V.

TÜV Süddeutschland e.V. 



Vandenborre Technologies

Coordinator: L-B-Systemtechnik GmbH 

Active Supporters:

Air Products

Air Liquide

DC

EdF

GE

GM/Opel

Repsol

TFE

Vattenfall Europe

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HyNet - Organisation and Thematic Working Groups

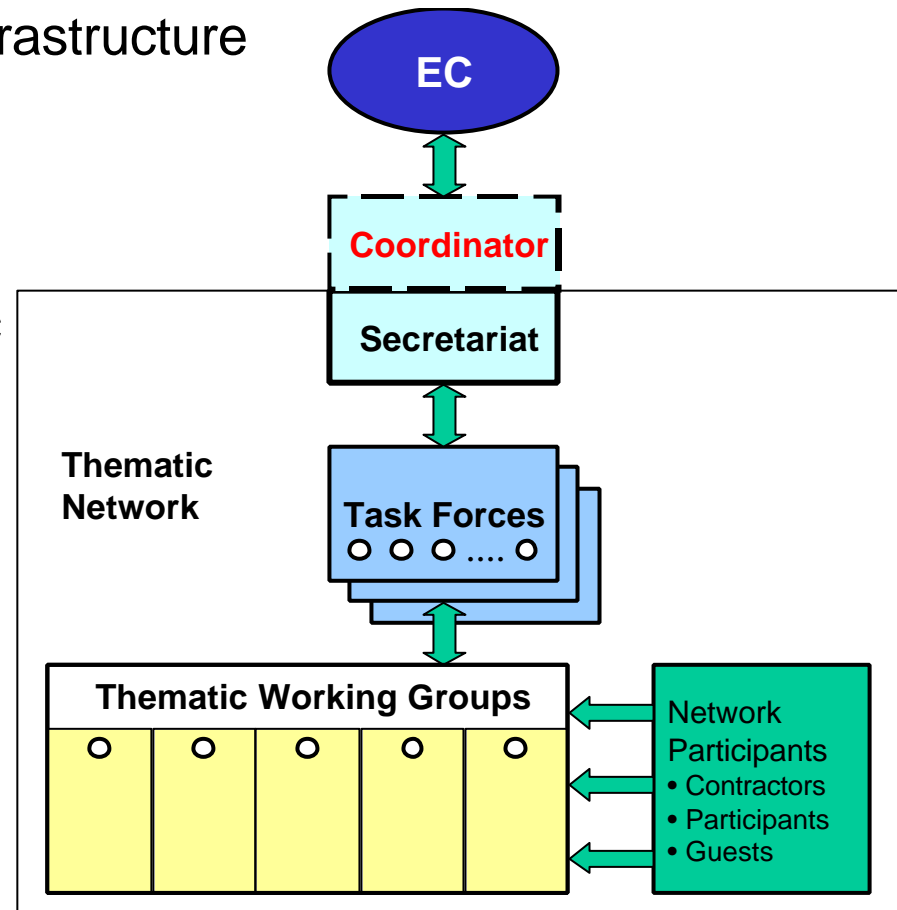
TWG 1 - Hydrogen Production and Infrastructure

TWG 2 - Hydrogen Applications

TWG 3 - Hydrogen Regulatory Issues

TWG 4 - Political and Socio-economic Issues

TWG 5 - Dissemination and Communication



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HyNet - Achievements

- ✓ Since Jan. 2002:
 - 9 companies have joined HyNet as **Active Supporters** and 70 organisations supported the initiative through letters of support
 - Interactions with **external organisations**: HLG, AFCG, TES / EUCAR, EIHP, EHA, AFH2, FCCJ, GERG
- ✓ Since Feb. 2002: Developed and maintain the **HyNet website** www.HyNet.info, becoming the leading internet platform for hydrogen related information in Europe
- ✓ Since 24 Sept. 2002: **Five Thematic Working Groups** operate
- ✓ Oct. 2002 to Feb. 2003: Facilitated FP6 hydrogen **Eol process with EC**:
 - Eol Coordinator Workshop (23 Oct. 2002)
 - HyNet acted as central point for integration of / cooperation between projects
- ✓ 14 Jan. 2003: Organised the **first EC Meeting with Hydrogen Industry**
- ✓ February 2003: **HyNet Annual Report** including a state of the art analysis
- ✓ Since Feb. 2003: Database establishment "**Who-is-Who**" in European Hydrogen
- ✓ March 2003: Submission of a HyNet joint proposal for FP6 RTD project funding: "**HyWays**"



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HyWays - Develop European Hydrogen Energy Roadmap

A joint proposal to the EC for funding under FP6 RTD thematic priority Sustainable Energy Systems (**applied for but not yet accepted!**)

Objectives:

- Develop European Hydrogen Energy Roadmap (EHER)
- Provide instruments, methods and tools to develop EHER
- Include transport and stationary / portable applications with initial focus on transport
- Disseminate EHER results to industry, EC, Member States, institutes and the public

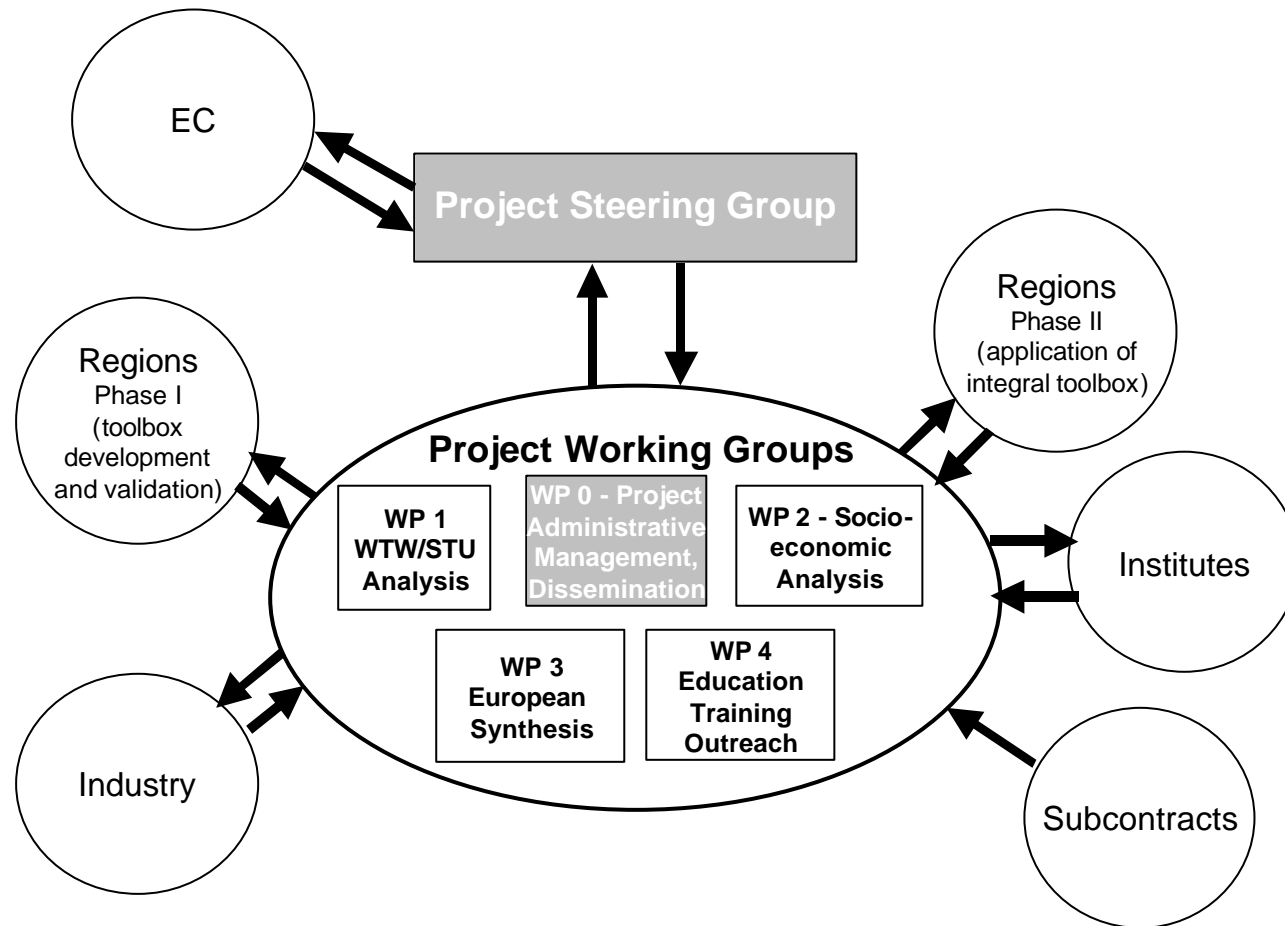
Strategy:

- Use HyNet as a platform: industry driven
- Include national views via member state or regional energy agencies
- Address EC for short, medium and long term impact
- Harmonise with other interest groups by balanced partnerships
- Interface with the HLG (High Level Group on Hydrogen and Fuel Cells)

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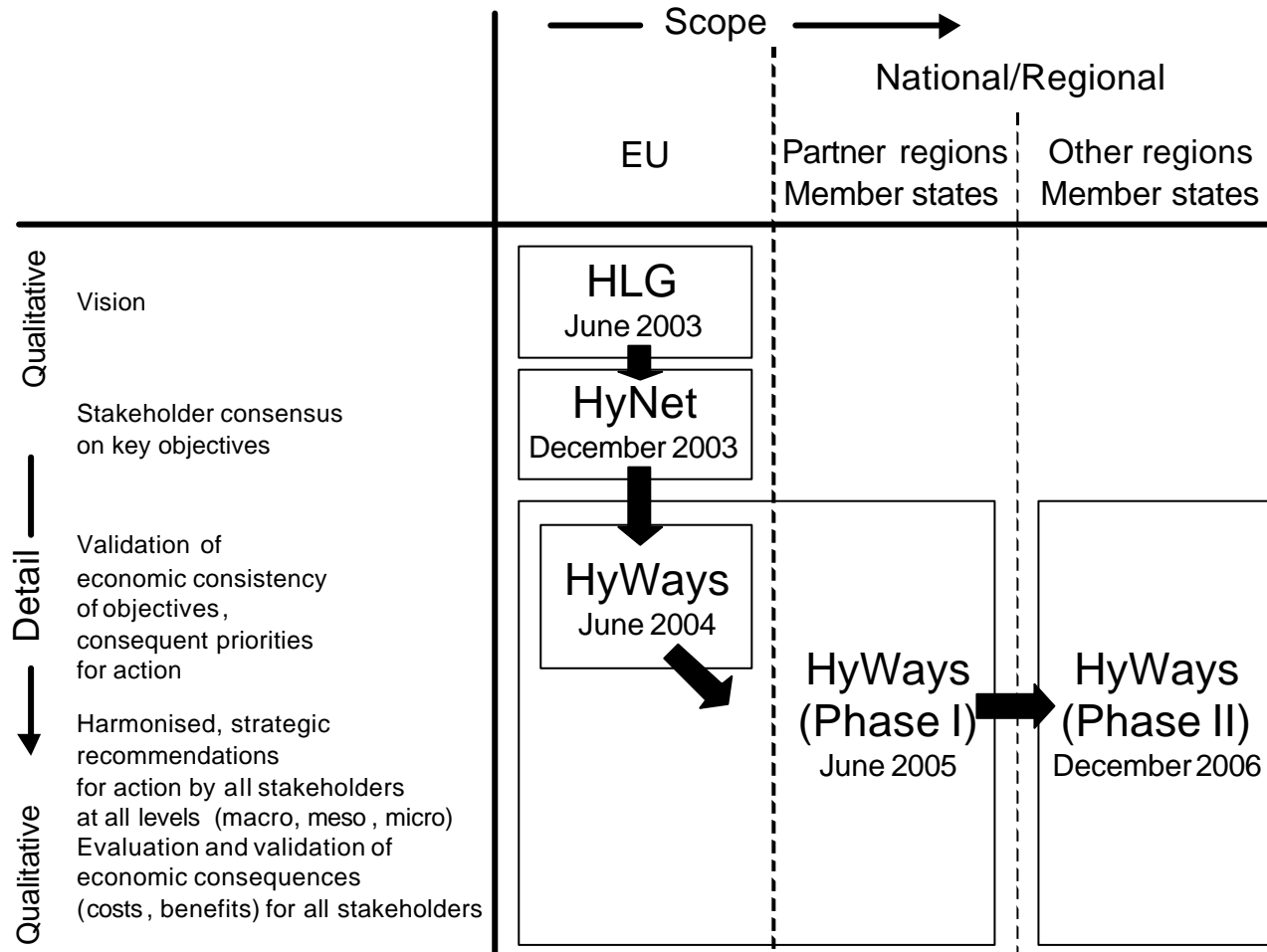
HyWays - Project Organisation



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HLG - HyNet - HyWays: Roadmap evolution



HyWays - Work Packages structure

WP	Contents
0	General project management, project dissemination
1	Well-to-wheel (WTW) and Source-to-user (STU) analysis
2	Socio-economic analysis of member state specific hydrogen energy road/routemaps
3	European integration: Road- and Routemaps definition
4	Public communication programs, education and training

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HyWays - Participants

Industry:

Auto: BMW-D, DaimlerChrysler-D, Opel-D

Oil: bp-UK, Norsk Hydro-N, Repsol-E, Total-F

Power: EdF-F, Vattenfall-Europe/S, Statkraft-N

Gas: Air Liquide-F, Air Products-UK, Linde-D, Messer-D, Vandenborre Techn.-B

Others: GE-I, Hoechst-infraserv-D, Hexion-NL

Member states

Phase I: D, F,GR , I, N, NL (existing national hydrogen programs)

Phase II: all other member states depending on interest

Working Group Coordinators

CEA(F), ECN(NL), ENEA(I), FhG-ISI(D), ICCTM(UK), IST(Pt), LBST(D), ULP(F)

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The Italian Perspective in the European Hydrogen Concert Participate in HyNet: Fuel Cell Europe/Italy, EVALUE and ENEA

Local Italian HyNet group (HyNet Italia) launched 10 April

Purpose: form Task Force of private and public entities to start Italian Hydrogen Infrastructure Development in close collaboration with European initiatives

Conclusions: Formation of three WG (private/public):

- Security and Standardisation: 36 members (15/21)
- Finance and Market Analysis: 10 members (8/2)
- Education and Promotion: 9 members (7/2)

First deliverable June 2003/Conference EU; brief overview of Italian Hydrogen Infrastructure situation to be presented 19 June

Industry is ready to start infrastructure initiatives, while Government institutions are informed by research institutions and stick to their long term H₂ perspective

Joint European Activities For a Common Hydrogen Energy Transition Strategy Towards a Sustainable Energy Future



The Italian Perspective in the European Hydrogen Concert Participate in HyWays (ENEA, GE Nuovo Pignone, CRF informally)

Italy will become one of the 6 core member states for which the analysis instruments will be developed and tested until June 2005

ENEA is one of the major institutes contributing with expertise for the emissions scenarios

Italian industry is represented, although the active contribution needs to be improved

The Italian Government is informed and the Ministry for Environment has officially announced their support for the project. Yet, other Ministries are asked to get involved actively. Part of the co-financing will be provided through the participation of ENEA as a national research institute