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A strong European technology partnership to move towards the hydrogen economy

European Commission President, Romano Prodi, today launched the "European Hydrogen and Fuel Cell Technology" Platform, whose Advisory Council includes key players of the European hydrogen sector, at its first assembly in Brussels. The Platform has the task of drafting a blueprint to smooth the EU's transition from a fossil fuel-based to a hydrogen-based economy. The creation of this platform follows the presentation of a report by an EU high-level expert group on June 16, 2003, and the inclusion of a hydrogen and fuel cell initiative in the "QuickStart" list of transport and research projects. This list was presented by the Commission on November 11, 2003, in the framework of the "European Growth Initiative". World-wide energy demand will double in the next 50 years, and Europe still has very limited home-grown resources. The EU currently imports 50% of its demand for oil, and, if nothing is done, this figure will rise to 70% in 20-30 years time. Hydrogen and fuel cell technologies could form an integral part of future sustainable energy systems. This will contribute to improving Europe's energy security and air quality, whilst lessening climate change. Developing the new hydrogen society while gaining worldwide leadership will require a coherent EU strategy, which this European Hydrogen and Fuel Cells Technology Platform will help devise.

"At the current pace, Europe's oil import dependency is set to grow from around 50% today to 70% or more in 2025. Current trends are clearly unsustainable. We have to act now in order to change them," said Commission President Romano Prodi. "Our objective is to realise a step-by-step shift towards a fully integrated hydrogen economy, based on renewable energy sources, by the middle of the century. To turn this vision into reality, however, Europe needs more research, larger demonstration and deployment projects, and regulations and standards appropriate to the future hydrogen economy. These efforts will be successful only if national and European resources, both public and private, are pulled together in a co-ordinated way. This is why we are launching the European partnership for the hydrogen economy."

The creation of the European Hydrogen and Fuel Cell Technology Platform is sponsored by President Prodi, along with Vice-President and Energy and Transport Commissioner Loyola de Palacio and Research Commissioner Philippe Busquin.

A Technology Platform: what for?

The EU effort in developing and consolidating this technology is fragmented and spread across a number of member states, often with overlapping activities. This is why last year the Commission decided to set up a high level group. The group's vision report was strongly endorsed at the major European conference, "The hydrogen economy – a bridge to sustainable energy".

Foremost amongst the group's recommendations was the establishment of a "*European Hydrogen and Fuel Cell Technology Partnership",* guided by an Advisory Council.

The expected outcome of this Technology Platform will be the development of a broad and far-reaching hydrogen and fuel cell strategy at the EU level. The intention is to secure the EU's position as a leading world-wide player in the supply and deployment of hydrogen technologies. The Technology Platform Advisory Council comprises 35 members representing the relevant stakeholders, and distinguished by their leadership in the field (See the list in Annex 1).

The first assembly of this Technology Platform, to be held on January 20-21 in Brussels and opened by Commission President Romano Prodi, will address the three cornerstones for implementing the new Hydrogen Economy in Europe: "Transport applications" (by 2020, 5% of road transport fuels could be based on hydrogen, as proposed by the EU Communication on alternative fuels for road transportation); "Stationary applications" and "Hydrogen infrastructure". It will stimulate the formation of working groups which will support the Platform's operations and objectives.

The Technology Platform will have the opportunity to build consensus and drive forward a coherent European research and deployment strategy in the hydrogen and fuel cell sector, including public-private partnerships, lighthouse projects, standards and regulations. In so doing, it will build critical mass and rally stakeholders to make Europe a leading player and a stronger partner at the international level.

Hydrogen: a clean energy vector

Hydrogen, like electricity, is a clean energy vector. It can be produced from a wide variety of primary energy sources. It is possible to de-carbonise fossil fuels by carbon capture, allowing for the production of hydrogen from these traditional fuels with negligible carbon emissions. But, more importantly, hydrogen produced through a range of renewable primary energy sources such as wind, biomass and solar energy is ideal for gradually replacing fossil energy - in particular, oil.

A concrete application: fuel cells

The energy conversion principle in a fuel cell is clean and silent: hydrogen combines with oxygen from the air in the fuel cell to produce water and electricity. The electrochemical conversion processes are not limited by the same physical laws of thermodynamics that govern combustion processes and are, therefore, more efficient. Fuel cells generally use hydrogen as a fuel but others, such as natural gas and methanol, can also be used. In the long term, fuel cells have the potential to replace a very large proportion of current energy systems in all fields, from mobile phone batteries to vehicle propulsion to centralised or decentralised stationary power generation. They also represent a potential paradigm shift in the way we produce and consume energy.

The European Union has been supporting fuel cell research since 1989, and the growing importance of this field is reflected in the substantial increase in the financial support to fuel cell research, from €8 million in the 1988-1992 programme, to €150 million for 1999-2002. At present, after a first call of proposals for the 6th Research Framework Programme (FP6 2002-2006), the EU contribution to these activities amounts to €95 million; two more calls for proposals are expected before 2006. Around €300 million should be allocated to hydrogen and fuel cell research within FP6.

The European Initiative for Growth and QuickStart Programme

In November 2003 the Commission also launched the European Initiative for Growth to accelerate EU economic recovery. The Growth Initiative includes a "Quick Start Programme" of projects of public and private investment in infrastructure, networks and knowledge. The aim is to encourage the creation of public-private partnerships, in co-operation with the European Investment Bank, to leverage finance.

This programme foresees a major ten year initiative for hydrogen-related research, production and use, with an indicative total budget of €2.8 billion of public and private funding. The technology platform can help shape this initiative, which has already received the political backing of Member States at the highest level.

The international framework

In June 2003, hydrogen was discussed during the EU-US summit. In a joint statement with the US, the EU committed to collaborate on a global scale in accelerating the development of the hydrogen economy. Behind this collaboration is the aim to enhance security of energy supply, increase diversity of energy sources and improve local and global air quality.

The growing commitment to developing a global hydrogen economy was further strengthened in November 2003, when the International Partnership for the Hydrogen Economy was launched with the United States, fourteen countries and the European Union in Washington. This International Partnership includes, notably, India and China, which will become major consumers of energy as their economies rapidly expand. It is a step forward for building international collaboration on both technical, regulatory and policy related matters.

Links of interest:

The proceedings of the meeting 20-21 January 2004 in Brussels to launch the Hydrogen & Fuel cells Platform will be available next week at the following address:

http://forum.europa.eu.int/Public/irc/rtd/eurhydrofuelcellplat/library

The concept of a Hydrogen and Fuel Cell Technology Platform, and its related activities, was endorsed by the European Commission on September 2003 in the Communication "*A European Partnership for the Sustainable Hydrogen Economy*"

The objectives, scope, operational structure and timelines of the Technology Platform, is set out in the document posted at:

http://europa.eu.int/comm/research/energy/nn/nn_rt_htp1_en.html

The European Initiative for Growth and the "QuickStart" programme:

http://europa.eu.int/comm/commissioners/prodi/pdf/growth_initiative_en.pdf

Annex 1

Members of the Advisory Council of the European hydrogen and fuel cell Technology Platform

Name	First name	Nationality	Company	Function
AIRAGHI	Angelo	I	Ansaldo	President
ALLI	Paolo	I	Regione Lombardia	Director General
BALLAY	Roger	F	Proposed by ADEME	Chairman of PACo Network
BATTERSHELL	Carol	UK	BP	Director of Alternative Fuels
BENTHAM (Chairman)	Jeremy	UK	Shell Hydrogen B.V.	Chief Executive Officer
BEUZIT	Pierre	F	Renault	Vice-President Research
BREY	Javier	E	Abengoa	General Manager, Hynergreen
BUGAT	Alain	F	CEA	Administrateur Général
CAROLIN	John	UK	The BOC Group plc	Global Director, Hydrogen Energy
DEMIDDELEER	Leopold	B	SOLVAY	Corporate R&D Director
DIEHL	Manfred	D	Umicore	Vice President and General Manager
DOPAZO	Cesar	E	Ciemat	Director General
ESCARDINO	Agustín	E	NTDA Energía	President
FERNANDEZ RUIZ	Pablo	E	European Commission	Director, DG RTD “Energy” Directorate
FJERMESTAD HAGEN	Elisabet	NO	Norsk Hydro ASA	Director, Hydrogen Business Development
FLORETTE	Marc	F	Gaz de France	Vice President of Research
GARCHE	Juergen	D	ZSW	Board Member
HENNINGSEN	Jörgen	DK	European Commission	Principal Adviser to the Director-General, DG TREN
KOHLER (Vice-chairman)	Herbert	D	DaimlerChrysler AG	Vice President, Research Body and Powertrain, Chief Environmental Officer

MARTIN	André	D	Ballard Power Systems AG	Managing Director Europe & Transportation Programs
MEYER	Wolfgang	D	UITP	President
ROSTRUP-NIELSEN	Jens	DK	Haldor Topsøe A/S	Director R&D
RUBBIA (Vice-chairman)	Carlo	I	ENEA	High Commissioner
SAWYER	Steve	NL	Greenpeace International	Political Director
SCHEUERER	Klaus	D	BMW AG	Representative of the Board for Traffic and Environment
SIGFUSSON	Thorsteinn	IS	University of Iceland, Icelandic New Energy	Professor, Chairman of the Board INE
SINGER	Stephan	D	WWF International	Head of Unit European Climate and Energy Policy
SJUNNESSON	Lars	S	Sydkraft AB	Director R&D
STOLTEN	Detlef	D	Government of North-Rhine-Westphalia (NRW)	Fuel Cell Advisor
TETTAMANTI	Michele	I	Nuvera Fuel Cells Europe Srl	Senior Vice President, COO Europe
TÖRRÖNEN	Kari	FI	European Commission	Director, Institute for Energy, Joint Research Centre,
VAN DER KLEIN	Kees	NL	ECN	Director
VANDENBORRE	Hugo	B	Vandenborre Hydrogen Systems	Chairman
VORTMEYER	Nicolas	D	Siemens AG Power Generation	Chief Technology Officer
WOLF	Joachim	D	Linde	Executive Director, Hydrogen Solutions