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European Union Policies and Initiatives Towards Transitioning to a Hydrogen Society

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Sixth International Conference on Hydrogen Safety
Yokohama, 19.10.2015
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Recent EU energy policy initiatives

Better Regulation Package

Hydrogen – Potential role in the energy chain
• transport
• CHP
• energy storage

EU Member States Initiatives

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Recent EU energy policy initiatives

(1) **2030 Framework for Climate and Energy – Oct. 2014**
   - Basis for CoP 21 - targets for 2030
     - 40% cut in greenhouse gas emissions compared to 1990
     - At least a 27% share of renewable energy consumption (binding at EU-level)
     - 30% improvement in energy efficiency (compared to projections)

(2) **A European Energy Union with a forward-looking Climate Change policy – key priority of the Commission – Feb. 2015**

(3) **An integrated SET-Plan: A new impetus through a more integrated and better targeted SET Plan – Sept. 2015**
The Energy Union

secure, sustainable, competitive, affordable energy for every European
The Energy Union

5th dimension: Research, innovation and competitiveness
Concrete actions
First deliverable of 5\textsuperscript{th} dimension of Energy Union

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Objectives:
• Remove regulatory barriers
• Simplify legal framework
• Increase regulatory predictability

Examples of cases being investigated:

Energy:
• Use of industrial off gases
• Use of hydrogen
• Fuel cells
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Smart mobility
- Transport
- Industrial applications

Smart metering
- Residential CHP
- Feed to electricity grid

Grid connection and interface
- Methanisation feed to natural gas grid

Existing natural gas, electricity and transport infrastructures

By-product from Chemical Industry

Natural gas, biogas, coal, biomass

Energy balance/management

Renewable generation, storage and ‘buffering’

Source: FCH 2 JU
Hydrogen – Potential role in energy chain

- higher energy efficiency with fuel cells
- helps integrating RES in the energy chain by putting a value on excess production while reducing the need for subsidies
- helps balancing the electricity networks
- helps integrated and more cost-effective operation of electricity and natural gas grids
- creates new opportunities for decarbonisation in transport sector (HCNG, SNG and FCEVs)

since then: progress made on all fronts
Transport

(1) Alternative Fuels Infrastructure Directive (AFID)

DIRECTIVE 2014/94/EU OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL
of 22 October 2014
on the deployment of alternative fuels infrastructure
(Text with EEA relevance)

Article 11 Transposition

Member States shall bring into force the laws, regulations and administrative provisions necessary to comply with this Directive by 18 November 2016.
(2) AFID - Mandate M/533 to CEN-CENELEC *(March 2015)*

Deadlines for publication of European Standard on

1. outdoor hydrogen refuelling points dispensing gaseous hydrogen 31/12/2017

2. hydrogen purity dispensed by hydrogen refuelling points 31/12/2017

3. fuelling algorithms and equipment 31/12/2017

4. connectors for vehicles for the refuelling of gaseous hydrogen 31/12/2016
(3) UN Regulation for FCEV

- Global technical regulation (GTR) No.13 on “Hydrogen and fuel cell vehicles” established in June 2013 (ECE/TRANS/180/Add.13)

- Once the UN Regulation is established, EU will adopt as an alternative to existing EU regulation

- meanwhile expecting decision on Phase 2 GTR 13
Micro-CHP – *no EU legislative initiative yet*

- Deployment of up to 1,000 residential fuel cell Combined Heat and Power (micro-CHP) installations, across 11 key European countries
- A step change in the volume of fuel cell micro-CHP (micro FC-CHP) deployment in Europe
- A meaningful step towards technology commercialisation
Energy storage – no EU legislative initiative yet

Storage capacity
Energy system flexibility balances the electricity grid

Commercialisation of Energy Storage in Europe
Oct. 2015:
- identification of priority topics for European standardization and pre-normative R&D
- a roadmap for the next steps
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Hydrogen Mobility Initiatives – HRS deployment
HRS network projections for 2020

national plans align with the 9 TEN-T core network corridors
Informal government support group GSG

- Informal setting for ministries/governmental agencies
- Participants: DK, FR, DE, SE, UK, AT, NL (chair), interest from BE, NO

- Share national visions/strategies
- Coordinate actions where possible/appropriate with EU initiatives
  - regulations
  - cofinancing programmes

- Position paper on Hydrogen
  - *Hydrogen can connect the energy system with the transport sector*
  - *Flexible energy carrier able to accommodate needs of future energy system based on high share of renewables*
Power-to-gas demonstration projects in EU
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Japan:

The new Basic Energy Plan (April 2014) features 3E + S as its basic policy concepts for energy. 3E + S refers to the goals of achieving energy security as the primary objective, along with improving economic efficiency in order to secure a low-cost energy supply and protecting the environment, all under the fundamental premise of safety.

Establish safety standards for new technologies as early as possible based on the details of the new technologies proposed by private businesses and the evaluation of such new technologies.

Data-based evidence that required safety levels have been met will be the fundamental precondition for any deregulation.

Source: Strategic Road Map for Hydrogen Fuel Cells Acceleration of Efforts Toward the Realization of a Hydrogen Society
General safety legislation

• for workers: explosive environments (ATEX directive)
• for products: CE marking for compliance with requirements of pressure equipment directive (PED), machine safety directive, ...


• Type approval regulation, GTR-13 for FCEV safety
Safety research activities: FCH-JU and JRC
An international collaboration in the frame of the International Association HySafe

Hydrogen refuelling

ISO TC 197 WG24 Scope

Technical Report – August 2015
DIS – October 2016

Hydrogen: installations for delivery of hydrogen to road vehicles

NL, April 2015
Power-to-hydrogen

Safety aspects prioritised in standards and pre-normative research
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