



IEA Hydrogen Roadmap

Europe Workshop - Infrastructure panel

M. Steen

European Commission – DG JRC

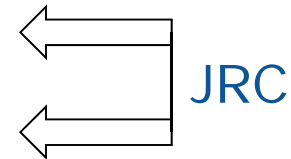
- EU efforts on H2 technologies and infrastructure
- Proposal for Directive for an Alternative Fuels Infrastructure
- Regulation on guidelines for trans-European Energy Infrastructure
- Support activities
- International cooperation





EU-level efforts on H2 technologies and infrastructure:

- *Policy-DGs MOVE, ENER, ENTR, CLIMA*
- *Research and Innovation: FCH-JU (RTD)*



DG MOVE:

- Transport White Paper: EU 2050 transport strategy
- Strategic Transport Technology Plan

DG ENER:

- Energy Roadmap 2050
- Strategic Energy Technology Plan
- Communication Energy Technology and Innovation
- Working Paper Energy Storage

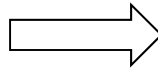


Directive on Alternative Fuels Infrastructure

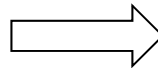


Barriers identified for hydrogen as an alternative fuel:

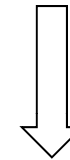
- High retail cost of vehicles
- **Lack of infrastructure**
- Low level of consumer acceptance



R&I in FCH-JU

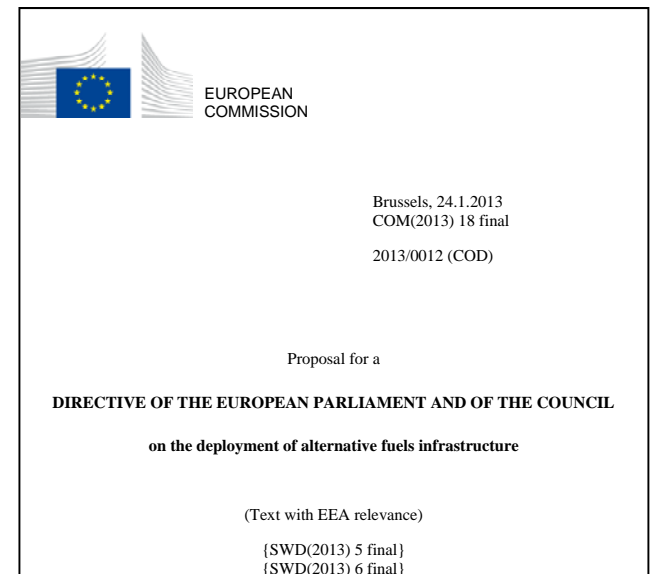


Proposal for directive AFI



Proposal for a Directive on Alternative Fuels Infrastructure COM(2013)18

- **Focus on current obstacles:** infrastructure; standards
- **Obligation of means** (national policy frameworks+ EC recommendations)
- **Developed in close consultation with Member States and industry**
- **Targets unlocking private investment = a pro-business initiative**
- **Full freedom given to Member States for implementation**



Targets hydrogen transport infrastructure build-up by end 2020

MS	Additional # of stations needed
AT	4
BE	3
BG	0
CY	0
CZ	4
DE	existing > target
DK	existing > target
EE	0
EL	6
ES	18
FI	6
FR	19
HU	0
IE	0
IT	existing > target
LT	0
LU	0
LV	0
MT	0
NL	existing > target
PL	0
PT	0
RO	0
SE	17
SI	existing > target
SK	0
UK	existing > target
Total	77

- Only address countries with already existing H2 infrastructure
- Set out **minimum** level of infrastructure coverage necessary to:
 - ✓ enable cross-border mobility in-between 14 Member States
 - ✓ support commercialisation of hydrogen vehicles in the 2020 horizon
- minimum 77 hydrogen refuelling stations along TEN-T Core Network, with maximum distance of 300 km
- cost = 77 refuelling stations * 1.6 M€ = 123 M€



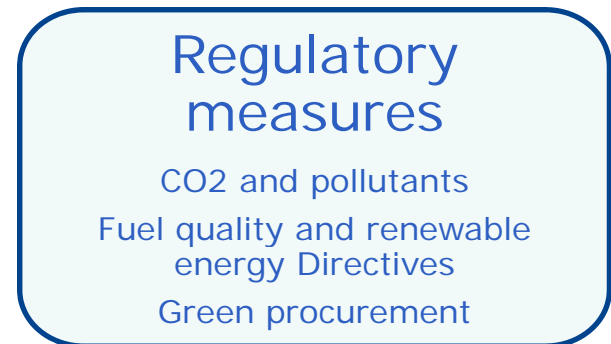


Core network corridors will be created as a way to promote the coordinated development of infrastructure and resource-efficient ways of using it.

The new policy focuses the most critical elements: cross-border projects, interoperability and inter-modality between different means of transport.



Closure of the Missing Link




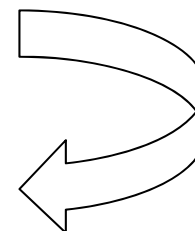
Energy Infrastructure Priorities for 2020 and beyond



REGULATION (EU) No 347/2013 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL
of 17 April 2013

on guidelines for trans-European energy infrastructure and repealing Decision No 1364/2006/EC
and amending Regulations (EC) No 713/2009, (EC) No 714/2009 and (EC) No 715/2009

- Infrastructure for electricity, gas, oil, CO2
- H2 infrastructure not explicitly included, but H2 is enabler



EUROPEAN COMMISSION
DIRECTORATE-GENERAL FOR ENERGY

DG ENER Working Paper

The future role and challenges of Energy Storage



H2 in the economy

- **The strongest link in the energy chain?** -

April 26th 2013,



Support activities



FCH-JU studies:

- Identify financing options for a HRS roll-out not exclusively by public subsidy and/or corporate equity.
- Economic and technical assessment of the role of hydrogen in energy storage

FCH-JU(1): ongoing projects

FCH-JU(2) - Multi-annual Work Plan: Energy and Transport Pillars

HIT Project: Hydrogen Infrastructure for Transport (TEN-T)

- define optimum strategies to migrate from H2 hotspots in densely populated areas to actual local markets for HRS and from there to long distance transport and mobility along TEN-T corridors.
- develop National Implementation Plans for FR, SE, DK and NL

http://tentea.ec.europa.eu/download/project_fiches/multi_country/fichenew_2011eu92130s_final.pdf



International Cooperation



***** SUMMARY *****

Workshop "Hydrogen – A competitive Energy Storage Medium to enable the large scale integration of renewable energies"

Seville, 15-16 November 2012



IEA HIA Task 28 - Large Scale Hydrogen Delivery Infrastructure

IEA HIA Task 30 - Global Hydrogen Systems Analysis

