European Commission Country Update

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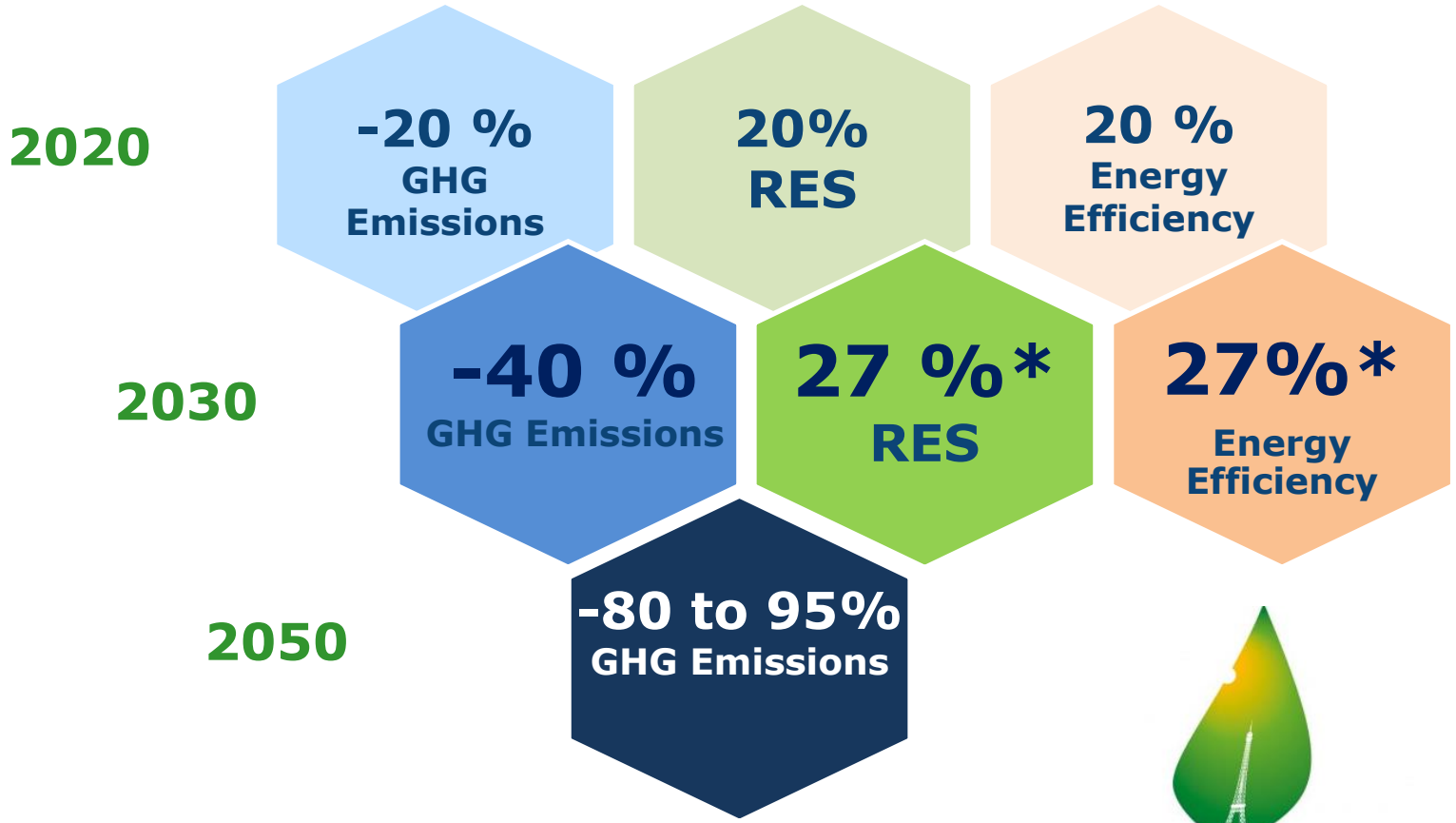
IPHE - 29th Steering Committee meeting – Kobe, Japan – 11/05/2018

Research and Innovation

European Union's targets for climate & energy

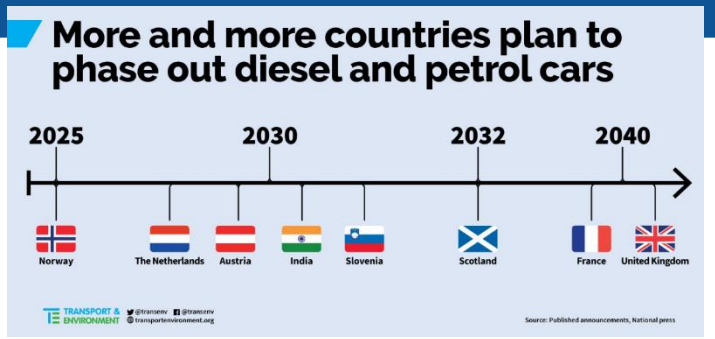


COP21 · CMP11
PARIS 2015
UN CLIMATE CHANGE CONFERENCE

*target under discussion for upward revision

Research and Innovation

Policy update



- 3rd Mobility Package with CO_2 emission standards for heavy-duty vehicles coming soon (May 2018)
- Clean Energy Package, including new Renewable Energy Directive for 2030 – discussions in final stage
- Emission Trading Scheme (ETS) reform concluded on 27/02/2018 ➔ carbon price already doubled since
- High Level Roundtable on Energy Storage & Sectorial Integration on 1st March 2018 – hydrogen took center stage

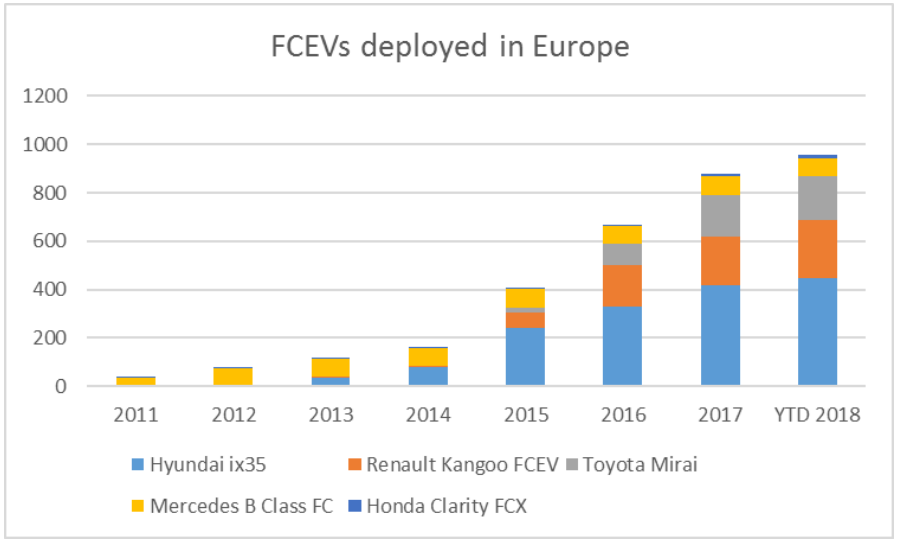
" Energy storage is a key enabling technology for the efficient and secure integration of renewable energy. It therefore will play an important role in the future energy system. Moreover, a cost-efficient energy transition will also increasingly require linking the different sectors of the economy in an intelligent manner, with strong implications for energy storage. "

M. Arias-Canete, EU Commissioner for Energy & Climate @ the High Level Roundtable on Storage & Sector Coupling, 1/03/2018

Deployment status: transport (EU & FCH JU)

European Commission

Europe strong on HRS but lags on FCEVs



Source: EAFO 2018

~ 1000 vehicles on EU roads today, out of which ~380 deployed via FCH JU.

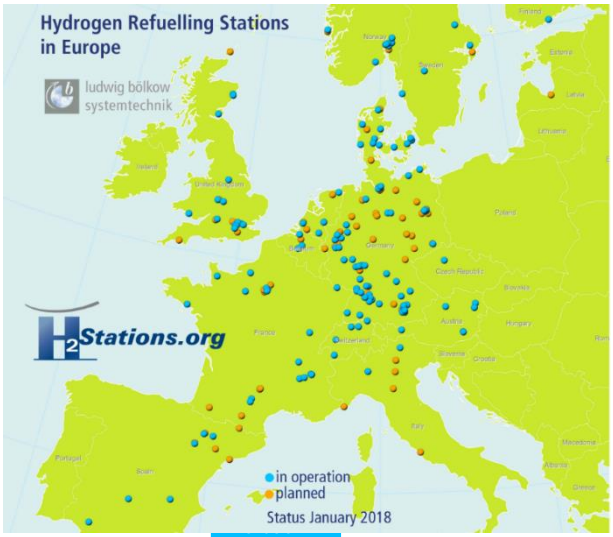
Hydrogen Mobility Europe

49 stations	€67m funding
>1400 cars and vans	>40 organisations
€170m total cost	

A major European activity!

FCH JU WILL DEPLOY:

90	HRS
1,900	cars
360	buses
280	MHV



Source: LBST 2018

Europe has about 140 hydrogen refuelling stations, of which 32 financed by FCH 2 JU

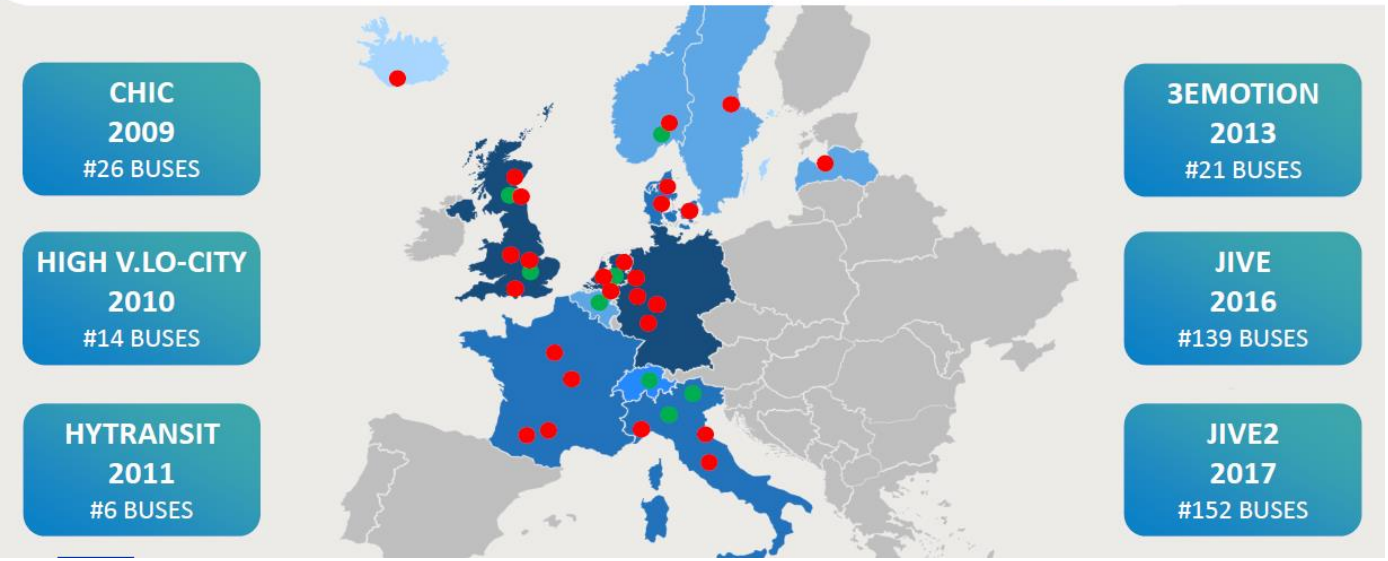
Deployment status: buses (FCH JU)

European Commission

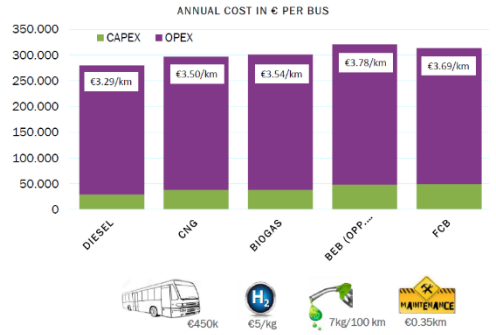
The momentum for hydrogen buses continues in Europe: 67 buses in operation, another 300+ planned

Deployment of 360 buses

From testing the technology to widespread deployment



NEL, Solaris, Ballard cost targets for orders exceeding 100units (Sept. 2017):



Source: HYDROGEN VALLEY

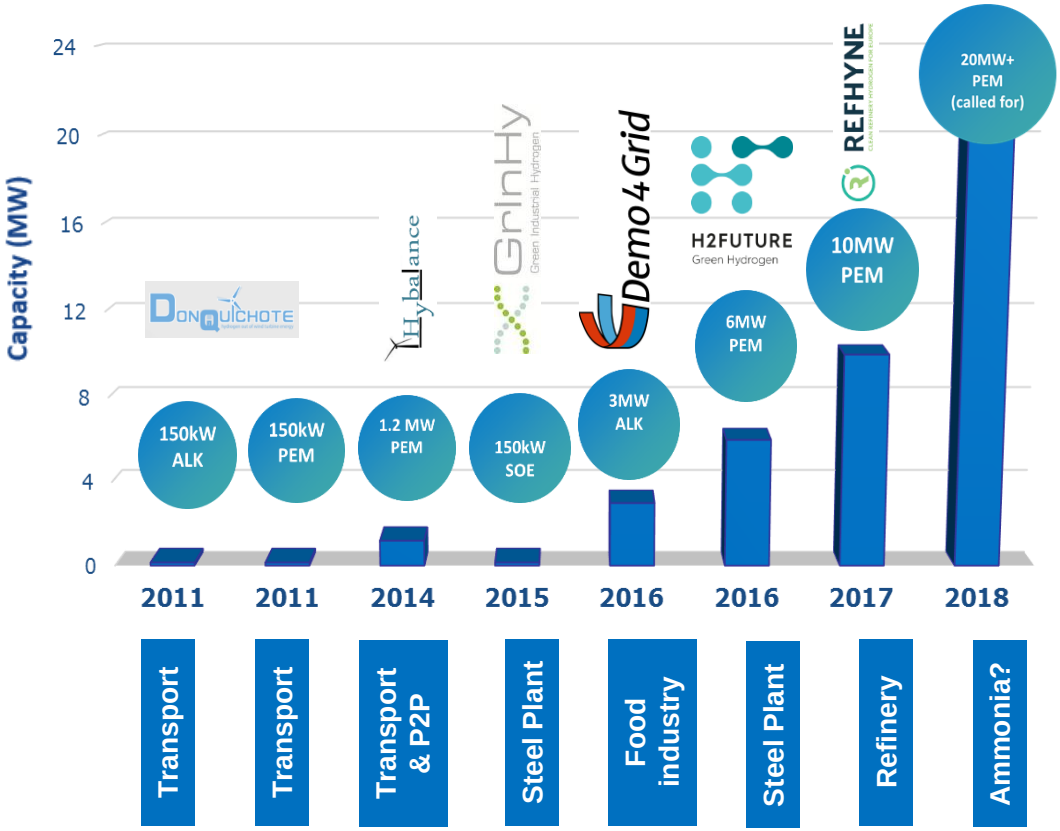
Belgium's Van Hool bags large German order for hydrogen buses
https://www.reuters.com/...buses/belgiums-van-hool-bags-large-german-order-for-hyd...
Feb 28, 2018 - Belgian **bus** maker **Van Hool** said on Wednesday it had agreed to sell **40 hydrogen**-powered vehicles to the German cities of Cologne and Wuppertal, saying it was the largest such order in Europe to date.

€106M JIVE 2 project launches in Europe; 152 fuel cell buses across ...
www.greencarcongress.com/2018/01/20180126-jive2.html
Jan 26, 2018 - In Europe, the **JIVE 2** project (Second Joint Initiative for hydrogen Vehicles across Europe) launched this week. Coordinated by Element Energy, and supported by a €25-million (US$31.2-million) grant from the Fuel Cells and Hydrogen Joint Undertaking (FCH JU), the **JIVE 2** project will deploy 152 fuel cell ...

Deployment status: energy (FCH JU)

European Commission

Evolution of FCH JU's electrolyser projects



Stationary FC:

Micro CHP:
3780 contracted
1130 deployed

Medium CHP:
58 contracted
25 deployed

Industrial FC:
3 contracted
1 deployed

Refhyne project launched in January 2018:

FINANCIAL TIMES

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Company Announcements

ITM Power PLC

Largest Hydrogen Electrolysis in Shell Refinery

JANUARY 18, 2018 Source: RNS

REFHYNE

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Funding update FCH JU

European Commission

Call 2018:

- ✓ Publication date: mid-January 2018 ➔ Deadline: 24 April
- ✓ Total budget: 70+ M€
- ✓ 20 topics called:
  - ✓ Transport – 7
  - ✓ Energy – 8
  - ✓ Cross-cutting – 4
  - ✓ Overarching - 1
- ✓ Highlights: heavy-duty applications (trucks, ships, high-capacity HRS…), upscaling electrolysers (20 MW+ PEM, steam demo), solar H2, H2 carriers, port applications, safety in tunnels, admixture to NG …
- ✓ International collaboration with IPHE countries is encouraged for all topics; in some cases specifically recommended

Call 2019:

- ✓ Under elaboration
- ✓ Indicative budget: ~80M+ €
- ✓ Publication date: mid-January 2019 ➔ Deadline: April 2019

Hydrogen in Mission Innovation

European Commission

A new "Hydrogen Innovation Challenge (IC-8)" to be announced at Clean energy Ministerial (May 2018) in Malmo/Copenhagen

Main (DRAFT) features:

- Objective: *"To accelerate the development of a **global hydrogen market** by identifying & overcoming key technology barriers to the **production, distribution, storage, and use** of hydrogen at **gigawatt scale**"*
- Scope:
  - Focused multinational research & large scale demonstration efforts
  - from both public & private sectors
  - on industry-directed breakthroughs within the next 5 years
  - on renewable & clean hydrogen
  - 4 activity streams: making, sharing, using hydrogen and cross-cutting issues
- Collaborations with other MI challenges involving hydrogen, **IPHE,** IEA TCP. Hydrogen Council are envisaged
- Australia, EU & Germany to co-lead

CEM9/MI-3

COPENHAGEN MALMÖ

Events/Solicitations

- ✓ 2018 Stakeholders Forum & Programme Review Days, November 14-16, Brussels
- ✓ European Hydrogen Safety Panel launched in March 2018
- ✓ Procurements:
  - ✓ "Establishment of a Stakeholders Platform & implementation of a pilot operation for a Guarantee of Origin Scheme for Green & Low Carbon Hydrogen (CertifHy2)"
  - ✓ "Fuel cells for Railway"
  - ✓ "EU Hydrogen roadmap, impacts and added value"

More info on:

http://www.fch-ju.eu/