FUEL CELLS AND HYDROGEN
JOINT UNDERTAKING

Cross-cutting: pre-normative research, safety issues, education & training, socio-economic & benchmarking

Alberto Garcia Hombrados

PRD 2017

24 November 2017

Agenda

PROGRAMME REVIEW DAYS 2017
FUEL CELLS AND HYDROGEN: FROM TECHNOLOGY TO MARKET
23-24 NOVEMBER, BRUSSELS

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FUEL CELLS AND HYDROGEN: FROM TECHNOLOGY TO MARKET
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PANEL 6

CROSS-CUTTING: Pre-normative research, safety issues, education & training, socio-economic & benchmarking

11:30 - 11:50	Portfolio overview by **Alberto Garcia Hombrados**, FCH JU
11:50 - 12:10	HYPACTOR: Pre-normative research on resistance to mechanical impact of composite overwrapped pressure vessels
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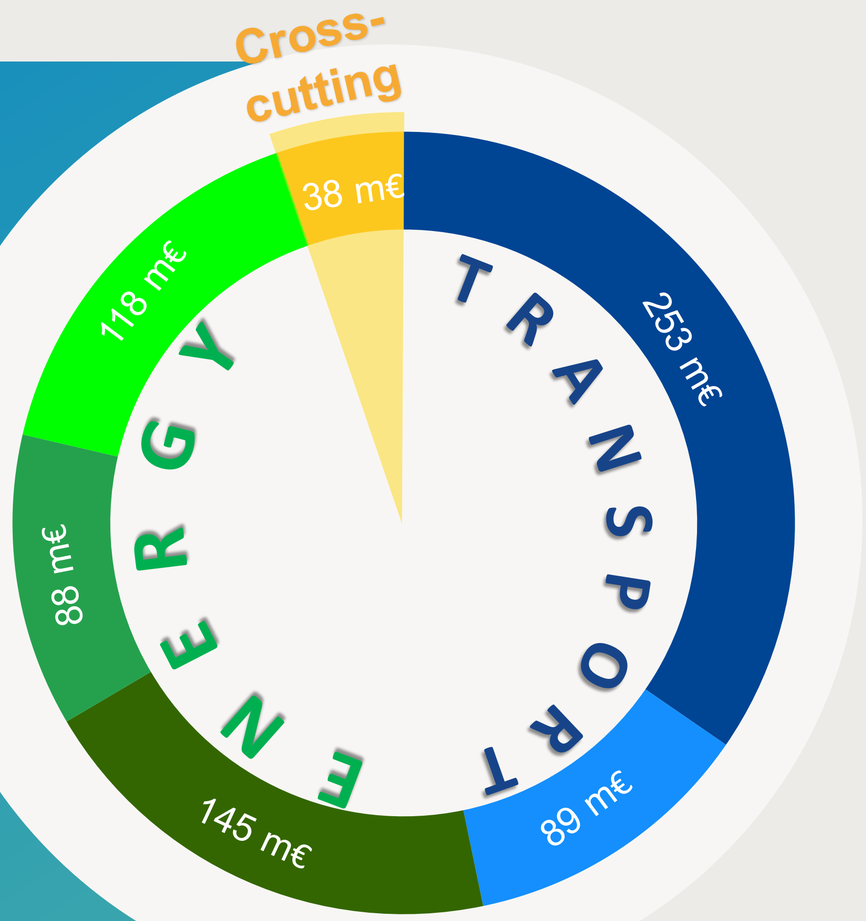
13:10 - 13:30	CERTIFHY and Guarantees of Origin: Developing a European Framework for the generation of guarantees of origin for green hydrogen

CROSS-CUTTING ACTIVITY AREA

FCH JU Objectives

- H_2 storage for grid balancing
- Green hydrogen production
- Heat & electricity production
- Minimal use of critical raw materials
- Clean Transport



Cross-cutting

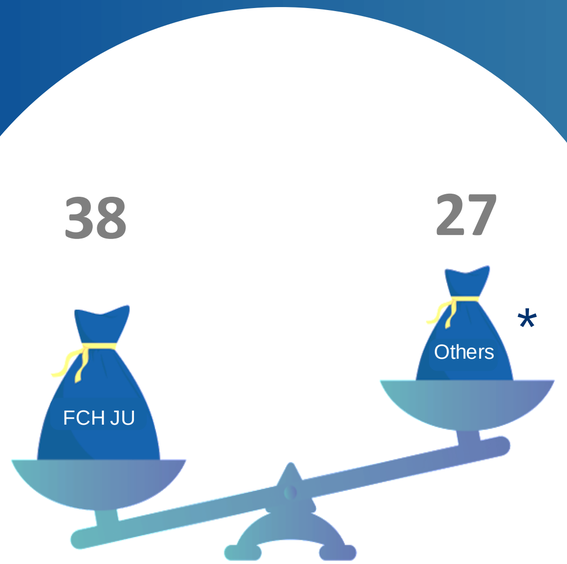
5 %

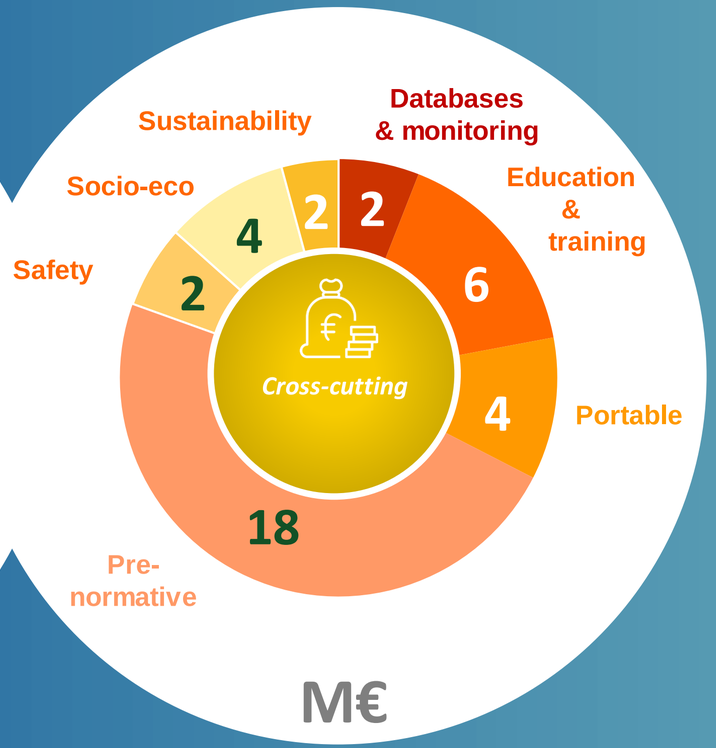
38 M€

33 Projects

Coordinating support activities

33 projects – 65 M€





Supporting and facilitating the market take up

Strengthening the European FCH sector

Fostering the commercialization in Europe

** Other resources including private and national/regional funding*

Cross-cutting Activity Area

Addressing topics in the industrial field and the societal domain

At a glance

Cross-cutting activities comprise projects and complementary actions

Projects

- **Legal, administrative and regulatory framework**
- **Education and training**
- **Safety**
- **Social awareness & public acceptance**
- **Sustainability**
- **Databases & Monitoring**

Complementary Actions

- **Regulations, Codes and Standards Strategy Coordination Group (RCS SCG)**
- **European Hydrogen Safety Panel**
- **Collaboration with JRC**
- **Additional initiatives, studies …**

Cross-cutting Activity Area

Actions Areas

Developing suitable environments for FCH technologies in Europe

Supporting and facilitating adequate frameworks for market take up

Projects

Pre-normative research

Addressing knowledge gaps to support science-based standards

Legal and administrative processes

Identifying barriers and sharing best practices across Europe

Guarantees of origin framework

Providing truthful information about the origin of hydrogen

Pre-normative projects address the entire hydrogen chain

Providing science-based information to improve and develop standards

H_2 Production

HyCoRA

H_2 storage

HyCOMP

FireCOMP

HyPACTOR

H_2 Distribution

HyTransfer

MATHRYCE

HyCoRA

Hy-AC.eu

H_2 Consumption

SOCTES QA

Targeting standards at European and International level

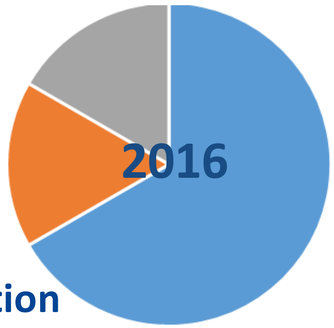
International Electrotechnical Commission

IEC

CEN CENELEC

European Committee for Standardization

European Committee for Electrotechnical Standardization



ISO

International Standardization Organization

Coordinating RCS needs of strategic importance for Europe

Lack of harmonized RCS is one of the major barriers for the commercialization of FCH technologies in Europe

Regulations, Codes and Standards Strategy Coordination Group (RCS SCG)

- Identification and prioritization of RCS needs
- Definition of the strategy to achieve the RCS priorities
- Identification of PNR activities to support the RCS priorities

- Definition of 4 main action areas and priorities
- Definition of implementation strategy
- Topics proposed for annual calls for proposals

Interest in participating?
Membership open!!

10

Cross-cutting Activity Area

Actions Areas

Preparing the European workforce

Promoting excellence in Europe

Increasing expertise across Europe and contributing to prepare the European workforce

FCH JU supports

Post graduates and Young Professionals

Technician and workers

Technical professionals

Regulators and Public Safety Officials

First Responders

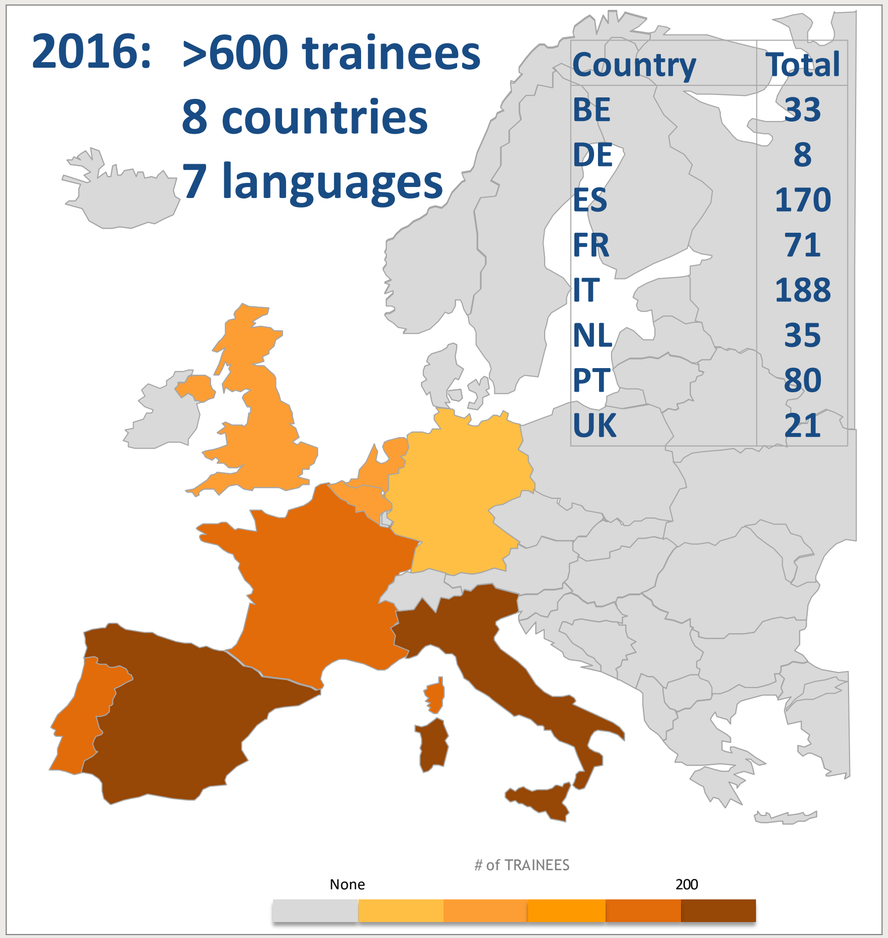
Covering… *Vocational* *undergraduate* *Graduate*

Preparing the European workforce

Projects running over 2016 include training packs in different languages, formats, means, etc.

Training for first responders

Courses for professionals/ general public



in person training, e-learning, blended learning…virtual reality, serious games…
…mock-up installations…

Cross-cutting Activity Area

Actions Areas

Multidisciplinary approach to key safety-related issues

Addressing safety-related issues from multiple perspectives

Projects

Hydrogen Sensors

Guidelines to select and use the best sensor for a particular application

CFD for safety analysis

Development of best practices, HYMEP evaluation protocol

Safety expert groups

Development of H2 safety expert groups

Complementary Actions

European Hydrogen Safety Panel initiative

- **Project level**
- **Program level**
- **Data Collection**
- **Public Outreach**

European Hydrogen Safety Panel

Interest in participating?
Call for expression of interest on line!

Cross-cutting Activity Area

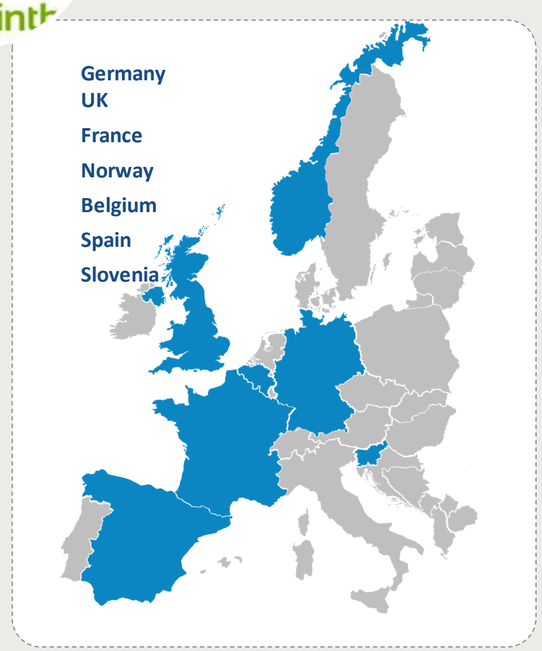
Actions Areas

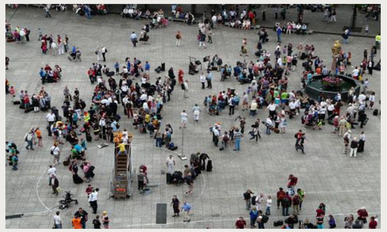
Raising social acceptance and public awareness

Providing a deeper knowledge on social and economic factors around FCH technologies

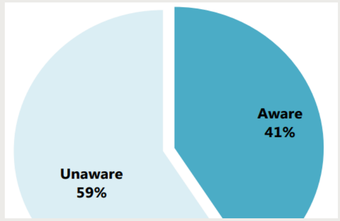
Biggest exercise ever on social research around FCH in Europe !

Understand awareness and acceptance across Europe
Identify the main drivers of social awareness and acceptance -> recommendations





Survey
1000 participants
7 European countries



Survey
333 participants
5 European countries

Semi-structured interviews
145 participants
5 European countries

Study 1. Public awareness and acceptance
Study 2. Stakeholder acceptance

Toolbox to help stakeholders to integrate issues related to social acceptance

Cross-cutting Activity Area

Actions Areas

Bringing sustainability to FCH technologies

Ensuring FCH technologies are environmentally friendly

Projects

Life Cycle Assessment

Developing guidance for LCA application to FCH technologies

Recycling & dismantling

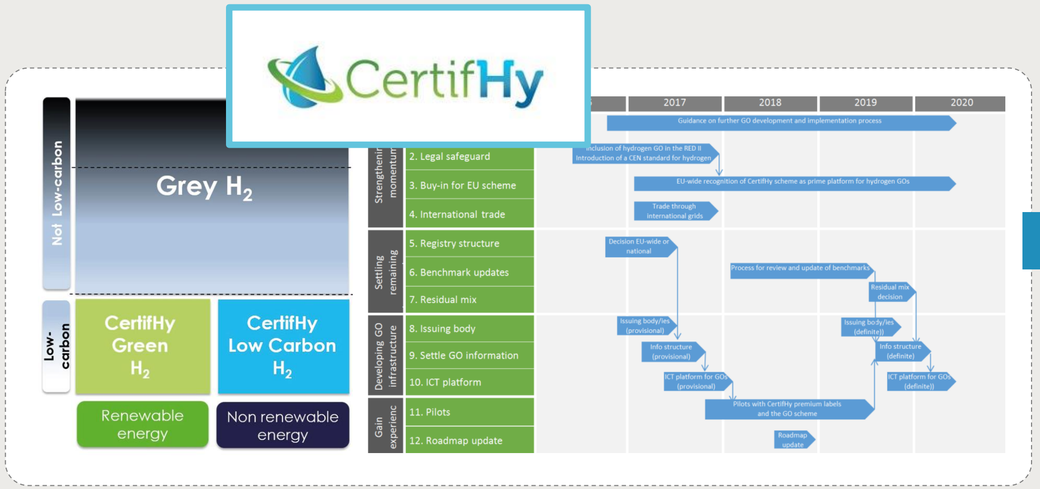
Developing technologies and strategies for recycling and dismantling

Guarantees of Origin Framework

Providing truthful information about the origin of green hydrogen

Cross-Cutting Actions

CertifHy



Guarantees of Origin Stakeholder platform

Cross-cutting Activity Area

Actions Areas

Empowering the European FCH sector

Developing advanced databases to find information easily and seamlessly

Projects

Complementary Actions

Legal, administrative processes (LAP)

Compilation of LAPs around FCH technologies across Europe

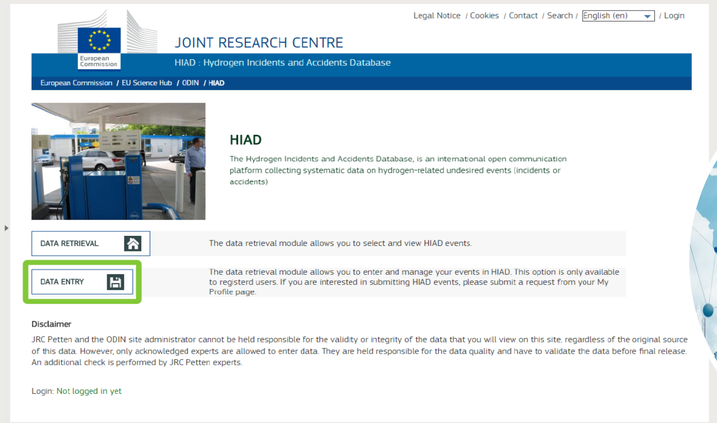
Education and training

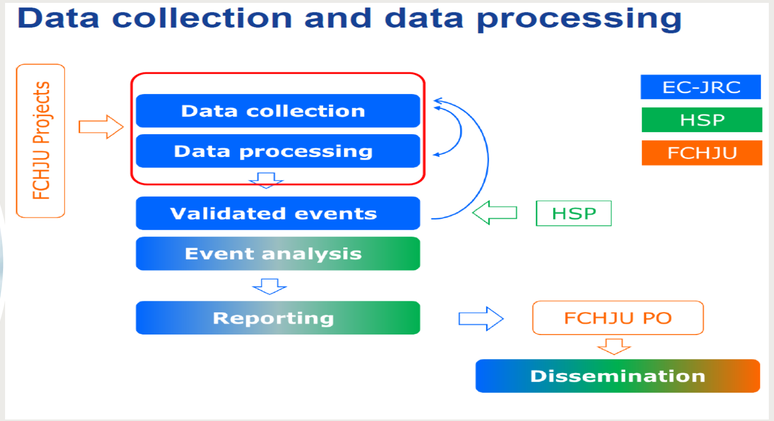
Providing digital tools and services for educational issues and training

Safety

Validation and verification of CFD models, safety experiments…

HIAD: Hydrogen incidents and accidents database





Mapping the European FCH sector

Study on value chain and manufacturing competitiveness analysis for hydrogen and fuel cells technologies

In-depth analysis and mapping of European FCH value chain

European FCH value chain actor database
> 400 entities, geographical distribution, etc.

Interest in participating?
On line form soon!

Cross-cutting Activity Area

Summary

- Successful Cross-cutting projects outcomes bringing multiple benefits and providing tangible legacy
- Complementary activities contribute to FCH sector interests and increasing over time
- Comprehensive portfolio of activities enriching the FCH 2 JU programme and the whole FCH sector

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JOINT UNDERTAKING

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FCH JU

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13:30 - 14:30	**Lunch break**