



FUEL CELLS AND HYDROGEN
JOINT UNDERTAKING

***Support for
market uptake***

**Alberto J.
Garcia Hombrados**

PRD 2019
20 November 2019



Cross-cutting Activity Area

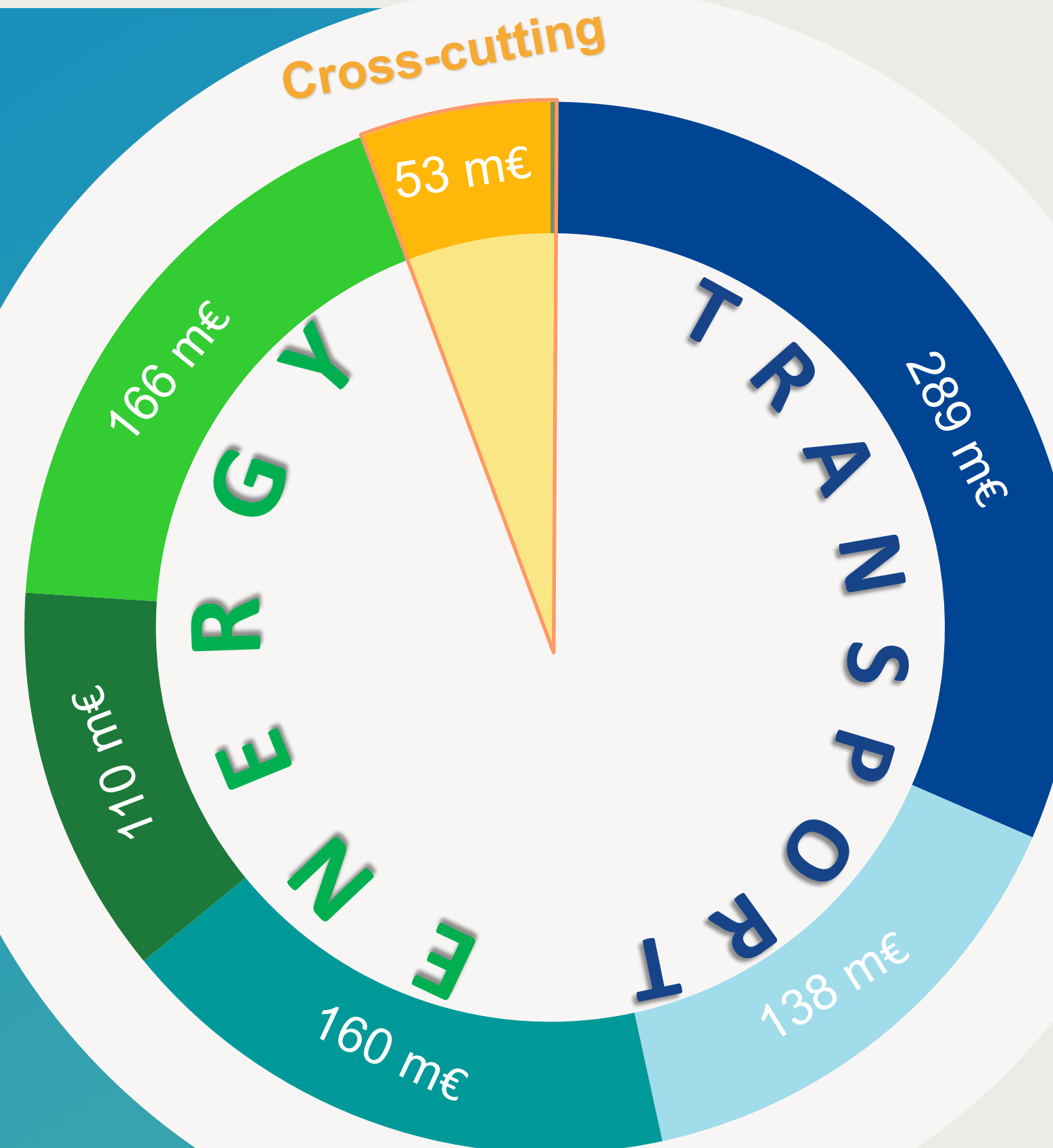
Coordinating market support activities



FCH JU Objectives

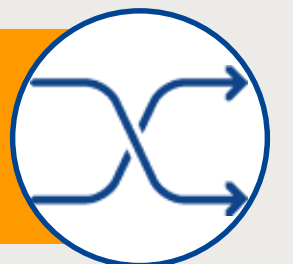


- H₂ storage for grid balancing
- Green hydrogen production
- Heat & electricity production
- Minimal use of critical raw materials
- Clean Transport



Cross-cutting Activity Area

6 %



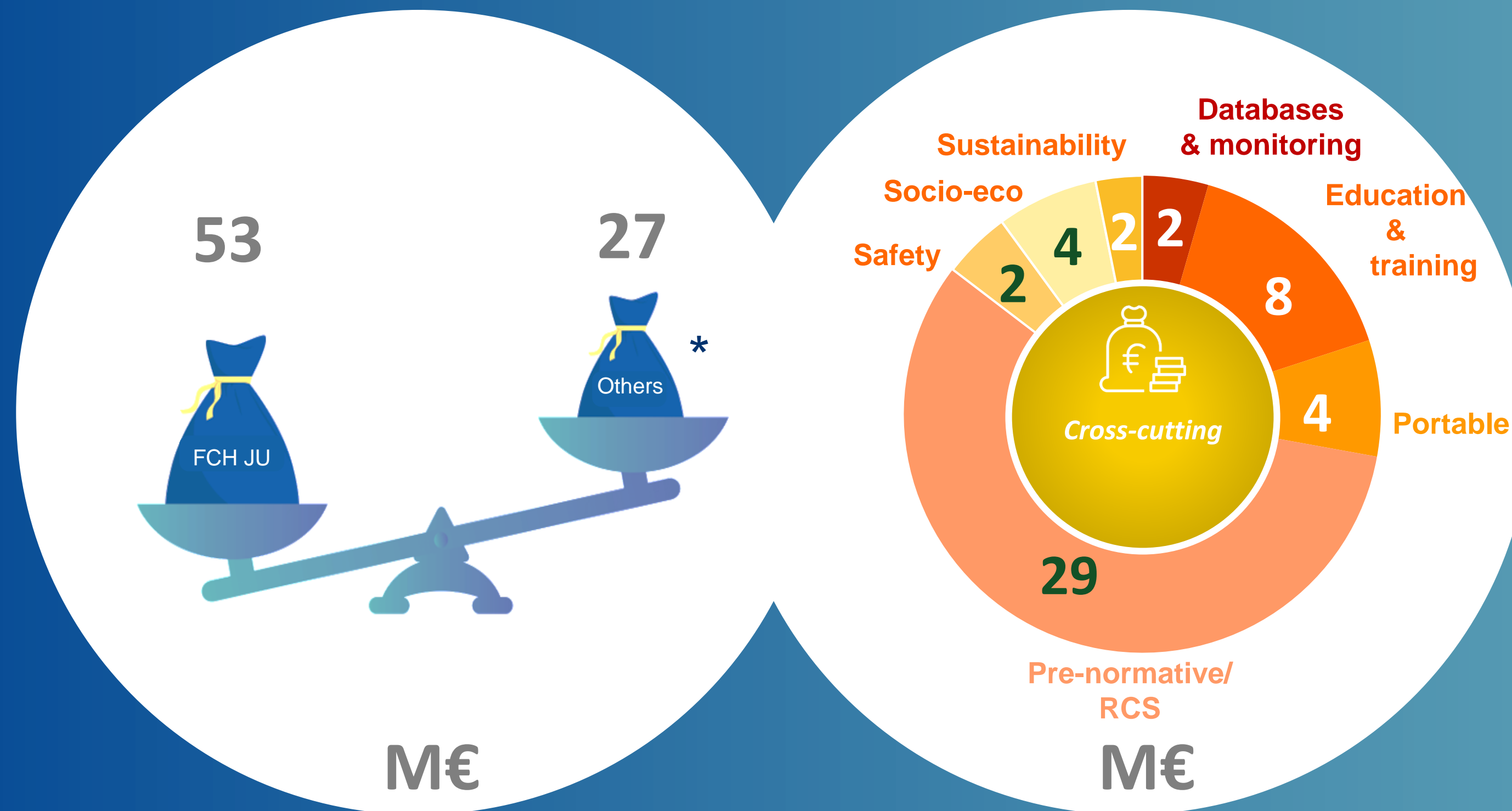
53 M€

40 Projects



Cross-cutting Activity Area

40 projects – 80 M€



Supporting and facilitating the market uptake



Strengthening the European FCH sector



Fostering the commercialization in Europe

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



Supporting activities for market uptake - Overview

Cross-cutting projects and complementary actions



Cross-cutting Areas



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)

Collaboration with the Joint Research Center (JRC)

European Hydrogen Safety Panel (EHSP)

Initiatives: FCH Regions, FCH Value Chain, ...

Funding and financing support services

Studies, ..., ... ,...



Cross-cutting Activity Area

Activity Areas



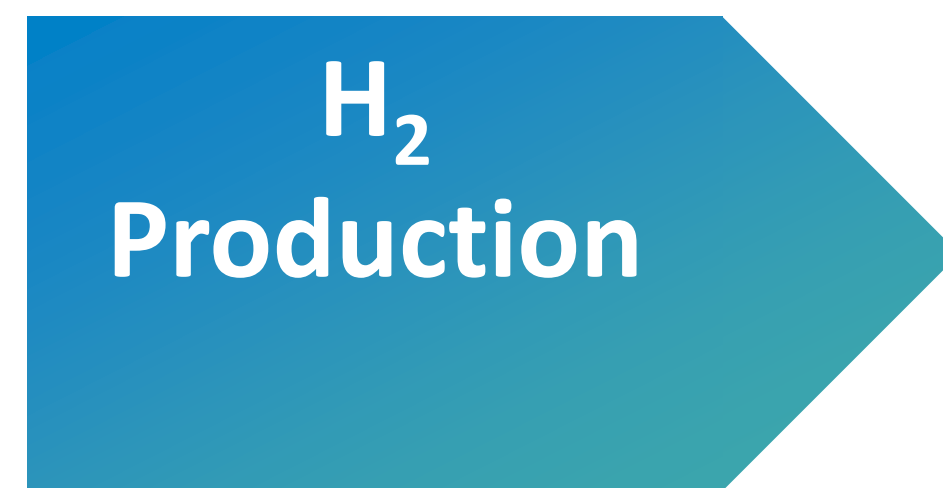
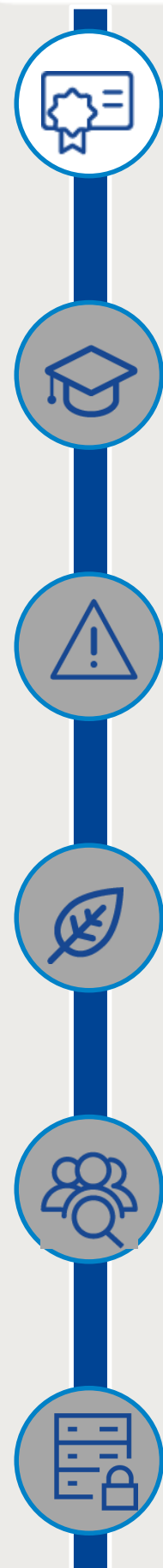
Developing suitable environments for FCH technologies in Europe

Supporting and facilitating adequate frameworks for market uptake

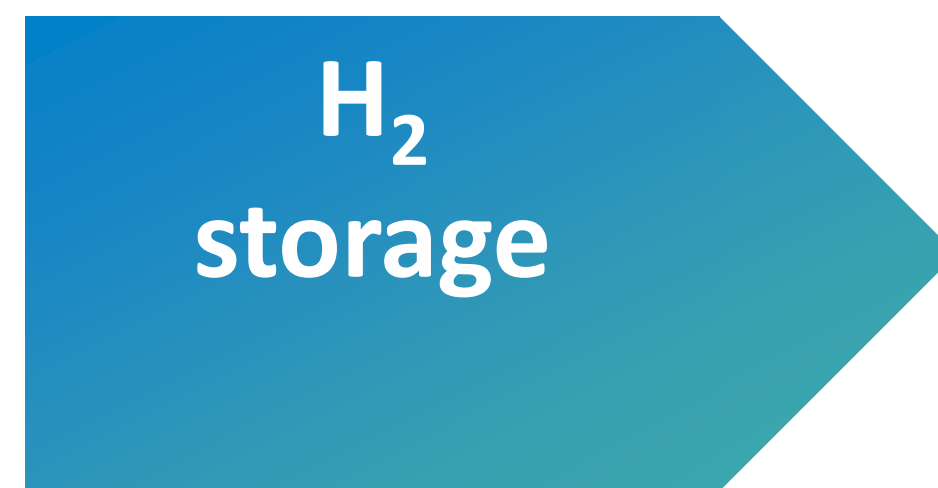


Pre-normative projects address the entire hydrogen chain

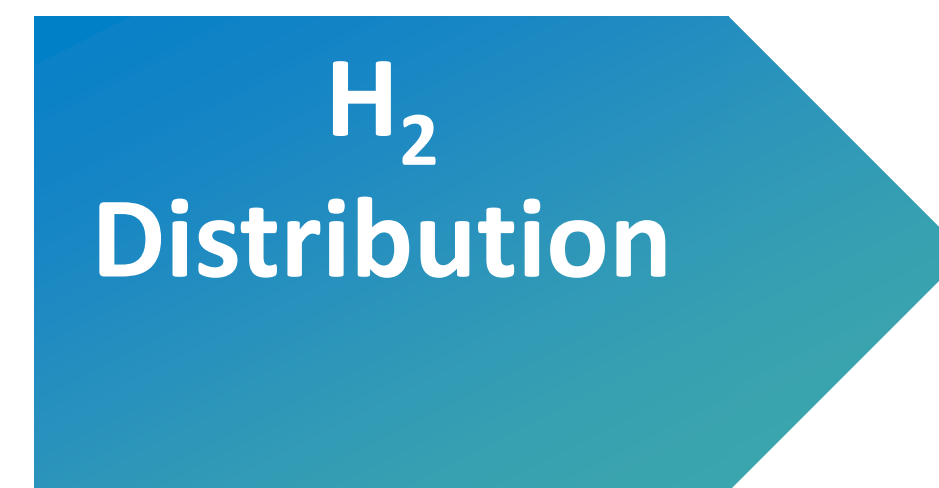
Providing science-based information to create and further develop standards



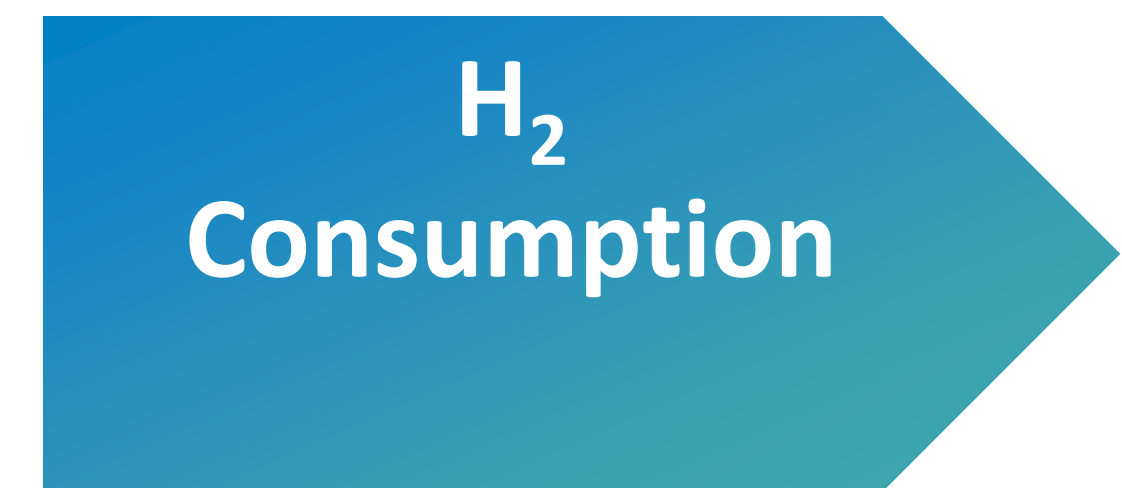
HyCoRA
QualyGridS



HyCOMP fire COMP
HYPACTOR PRESLHY



HyTransfer MATHRYCE
HyCoRA Hy-AC.eu



STACK-TEST ID-FAST
SOCTES QA
tunnel AD ASTRA

HYSEA, HYINDOOR

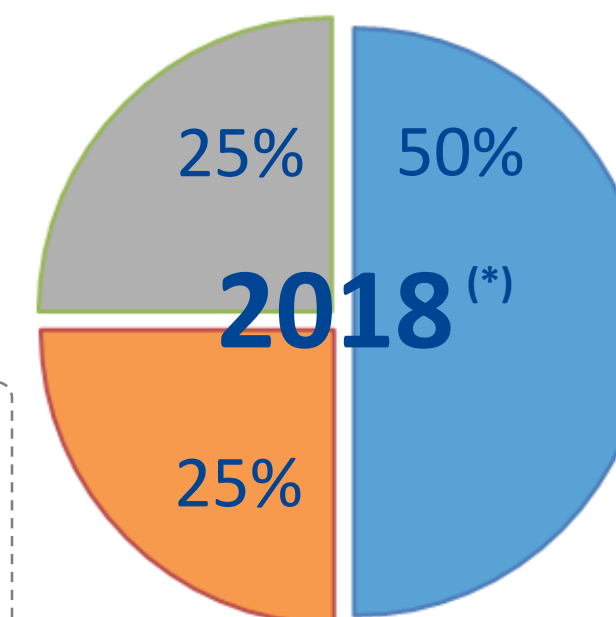
Targeting standards at European and International level

International Electrotechnical Commission



CENELEC

European Committee for Standardization
European Committee for Electrotechnical Standardization



International Standardization Organization

** 4 projects on-going over 2018*



An example of PNR-type project outcomes

HYSEA Project – 3 years - 1.5 m€ of FCH JU funding



Improving Hydrogen Safety for Energy Applications through pre-normative research on vented deflagrations

*Safer FCH
technologies in
confined spaces*

Real-life enclosures with
industry representative
obstacles

Main objective:

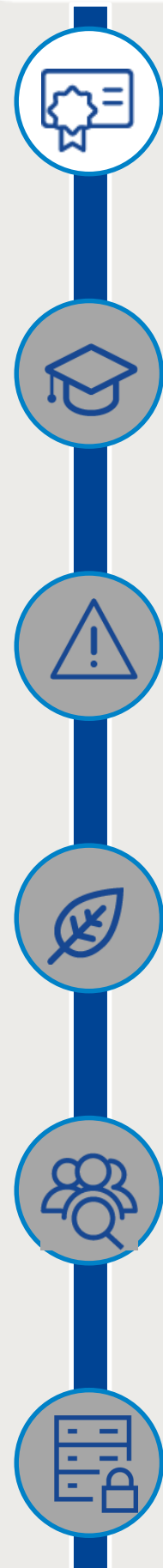
To provide recommendations for standards on hydrogen explosion venting mitigation systems and to develop models

- Experimental campaigns
- Engineering models
- CFD & FE models
- Blind-prediction benchmark studies



An example of PNR-type project outcomes

HYSEA Project—achievements at a glance



Achievements

> 200 experiments 20-foot ISO container and Small-Size enclosures

Engineering models, CFD-based & FE-based tools

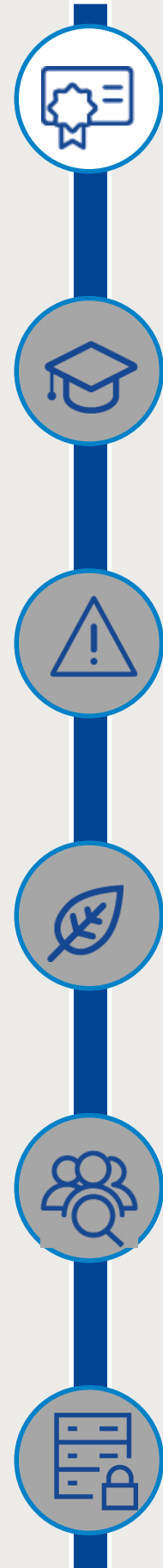
Recommendations for standards (EN 14994, NFPA 68)



At the CEN/TC305/WG3/ahGE meeting in Vienna on 14-15 June 2019, the committee decided to include the model developed in HYSEA in the next revised version of EN 14994

SLIDO Question

Hydrogen purity



Q: Just one year ago... how many laboratories in Europe were capable to measure the hydrogen purity against the specs. laid down in current standards (ISO 14687, EN 17124)?

A1: None

A2: 1 – 5 laboratories

A3: 6 – 10 laboratories

A4: >10 laboratories



Use your smartphone; go to www.sli.do and insert the code **#PRD19**

Regulations, Codes and Standards (RCS) Strategy Coordination Group

Industry-led working group coordinating RCS needs of strategic importance for Europe



Coordinating RCS needs of strategic importance for Europe



Working activities

Identification of strategic themes for RCS development

Tailoring of FCH 2 JU AWP to best address RCS needs

Proposals of standardization towards the AUWP

Transfer of PNR projects results in RCS development

Enhance European participation and influence in RCS fora



Collaboration with Commission's Joint Research Center (JRC)

Supporting FCH technologies along the entire FCH 2 JU programme and beyond



Overarching support activities

Support to formulation and implementation of RCS strategy

Contribution to safety dimension and safety awareness

Contribution to programme monitoring and assessment

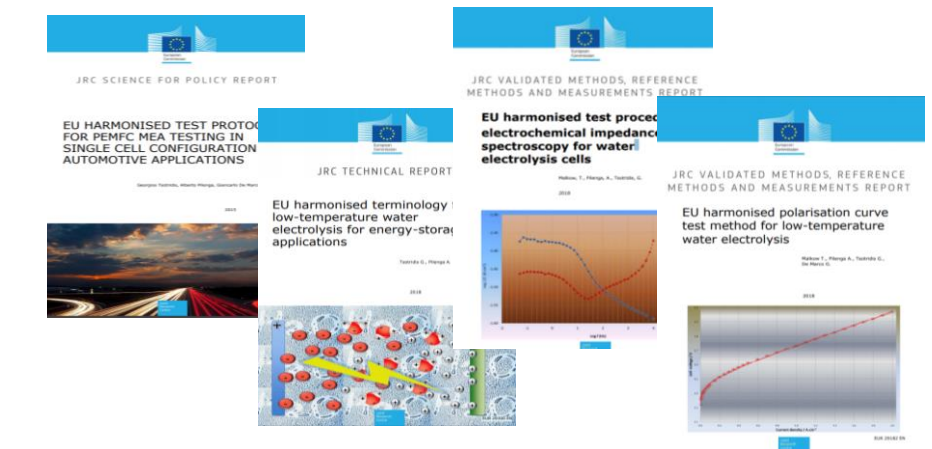
Support to FCH Smart Specialization

Support to specific activities of the FCH2JU

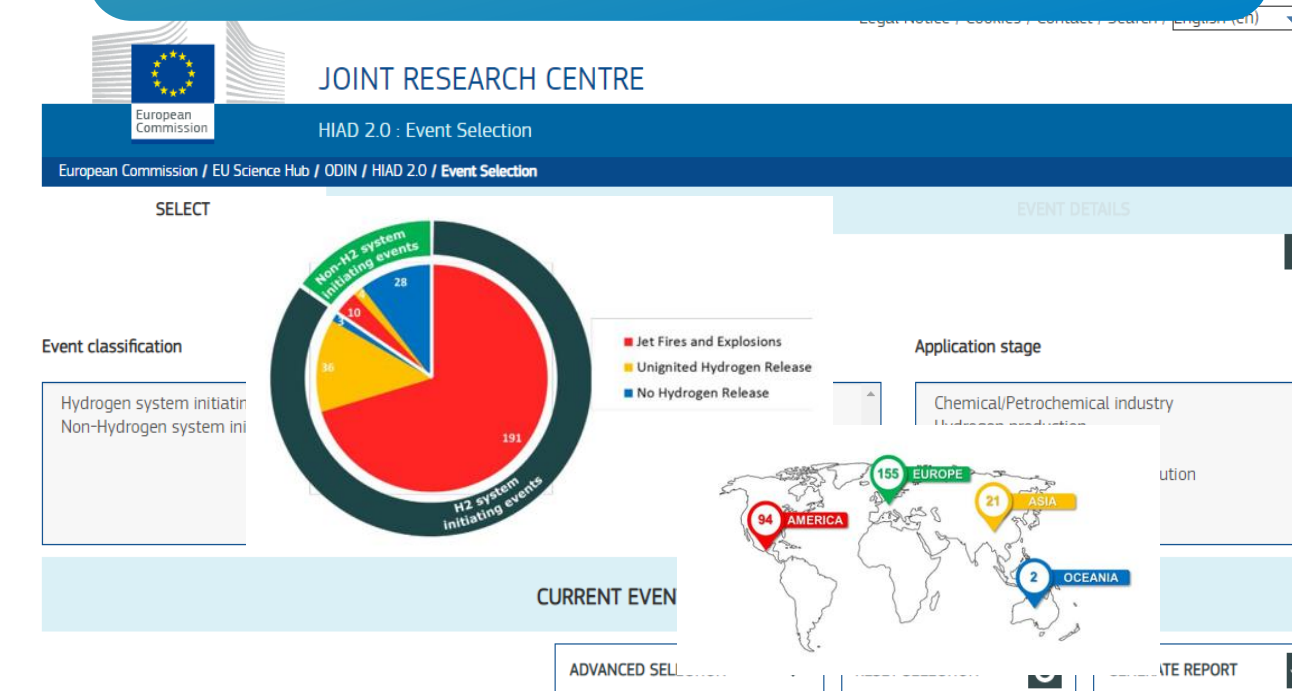
Testing protocols harmonisation for FCH technologies

Automotive fuel cells

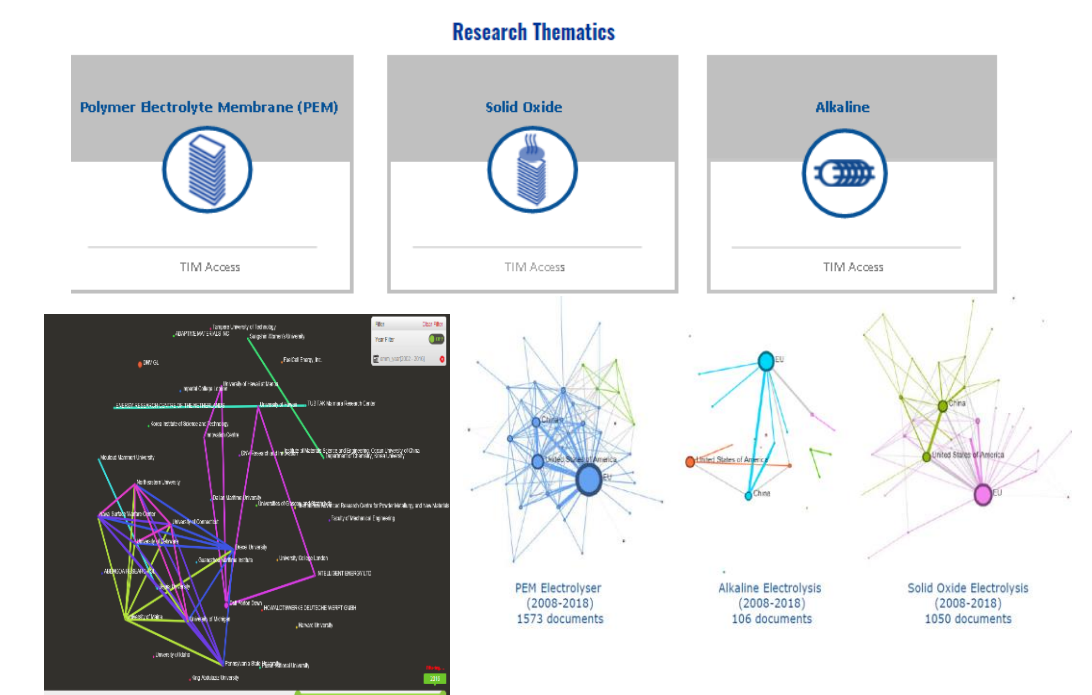
LT Electrolysers - HT Electrolysers



Hydrogen Incidents and Accidents Database (HIAD 2.0)



Tools for Innovation Monitoring (TIM)
Europe Media Monitoring (EMM)



<https://odin.jrc.ec.europa.eu/giada/Main.jsp>

www.fch.europa.eu/page/tools-innovation-monitoring-tim

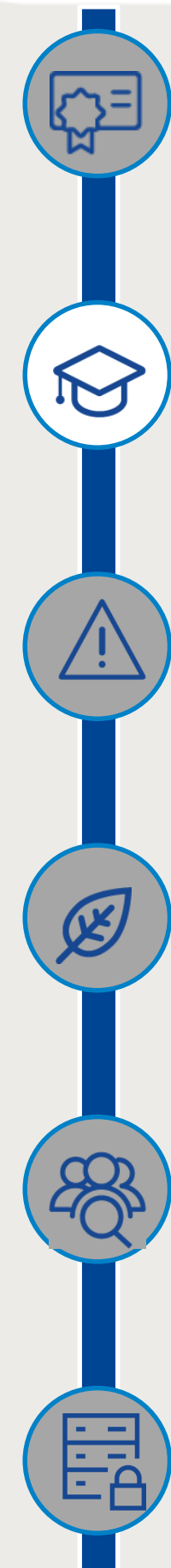
Cross-cutting Activity Area

Activity Areas

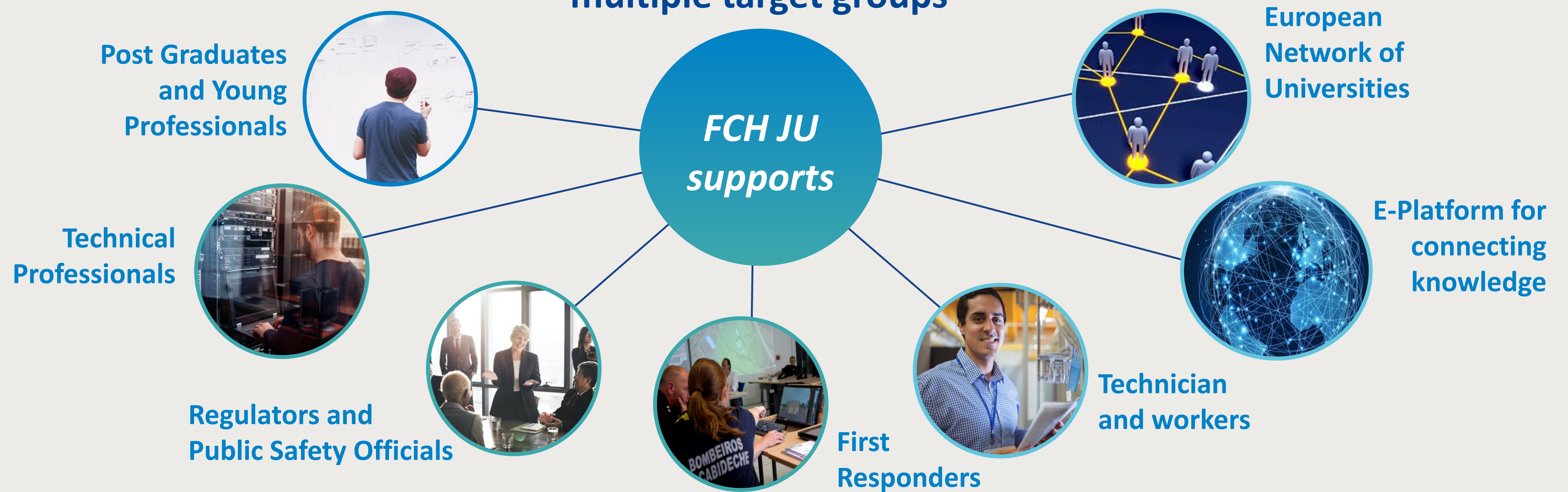


Increasing expertise across Europe

Promoting the excellence in education and training, preparing the European workforce



Educational and training programs tailored to multiple target groups



Multiple levels and types of education, learning formats, features...

Graduate Undergraduate ... In person training ... Serious games Mock-up installations
Vocational Compulsory ... e-learning blended ... Virtual reality



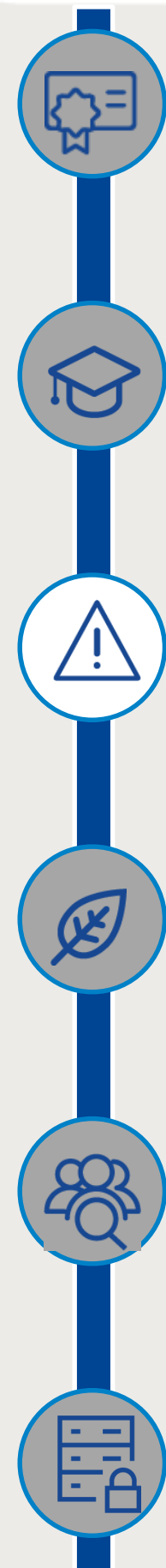
Cross-cutting Activity Area

Activity Areas



Multidisciplinary approach to key safety-related issues

Addressing key safety-related issues



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 Action

HIAD 2.0: European Hydrogen Safety Reference Database

JOINT RESEARCH CENTRE
HIAD - Hydrogen Incidents and Accidents Database

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European Commission / EU Science Hub / ODIN / HIAD

DATA RETRIEVAL

DATA ENTRY

Disclaimer
JRC Petten and the ODIN site admin of this data. However, only acknowledge an additional check is performed by

Login: Not logged in yet

JOINT RESEARCH CENTRE
HIAD - Event Selection

European Commission / EU Science Hub / ODIN / HIAD / Event Selection

SELECT

Event classification

Physical Consequences

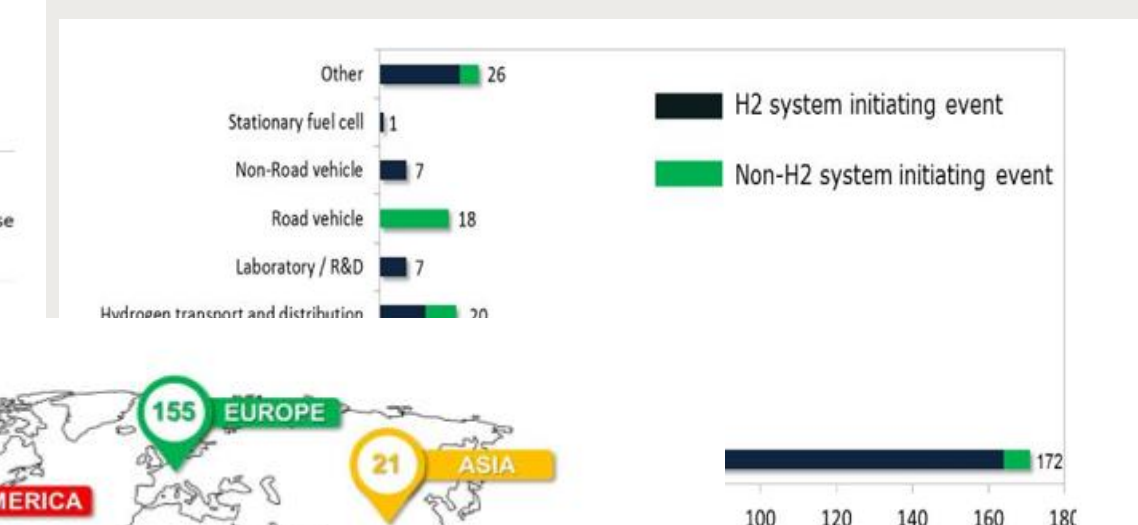
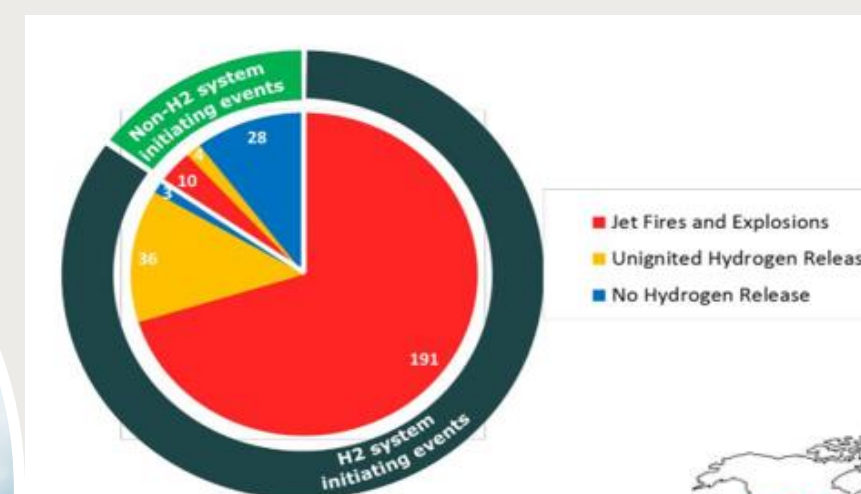
Application

CURRENT EVENT COUNT: 272

ADVANCED SELECTION

RESET SELECTION

GENERATE REPORT



European Hydrogen Safety Panel (EHSP)

Expert group on hydrogen safety assisting the FCH 2 JU at project and programme level

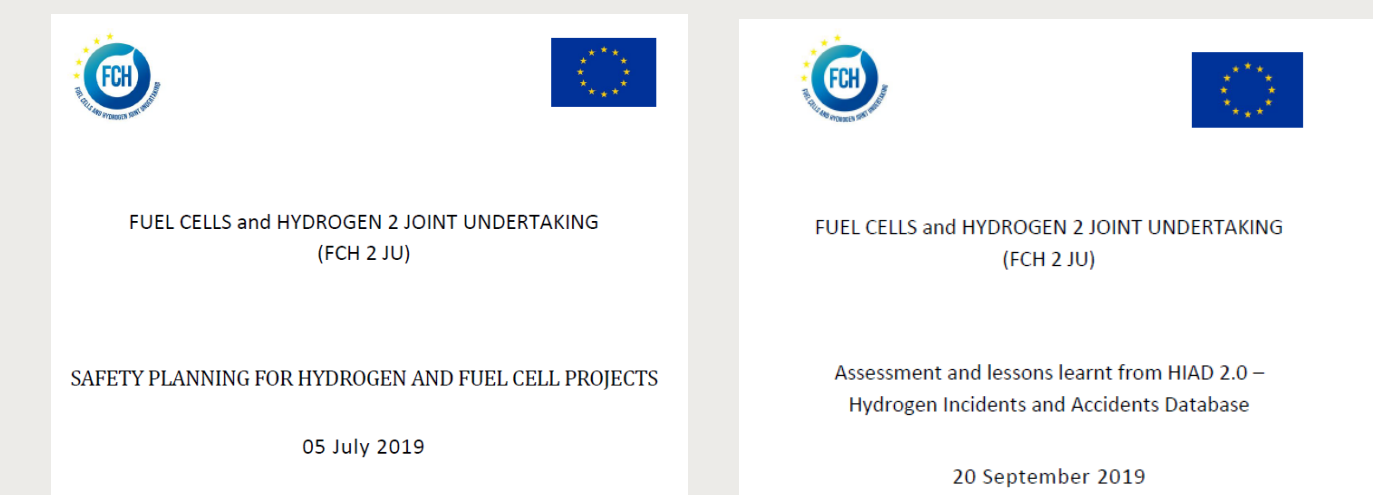


- Assuring that hydrogen safety is adequately handled
- Promoting and disseminating H2 safety culture

Task forces



First outcomes online!



<https://www.fch.europa.eu/page/european-hydrogen-safety-panel>

Cross-cutting Activity Area

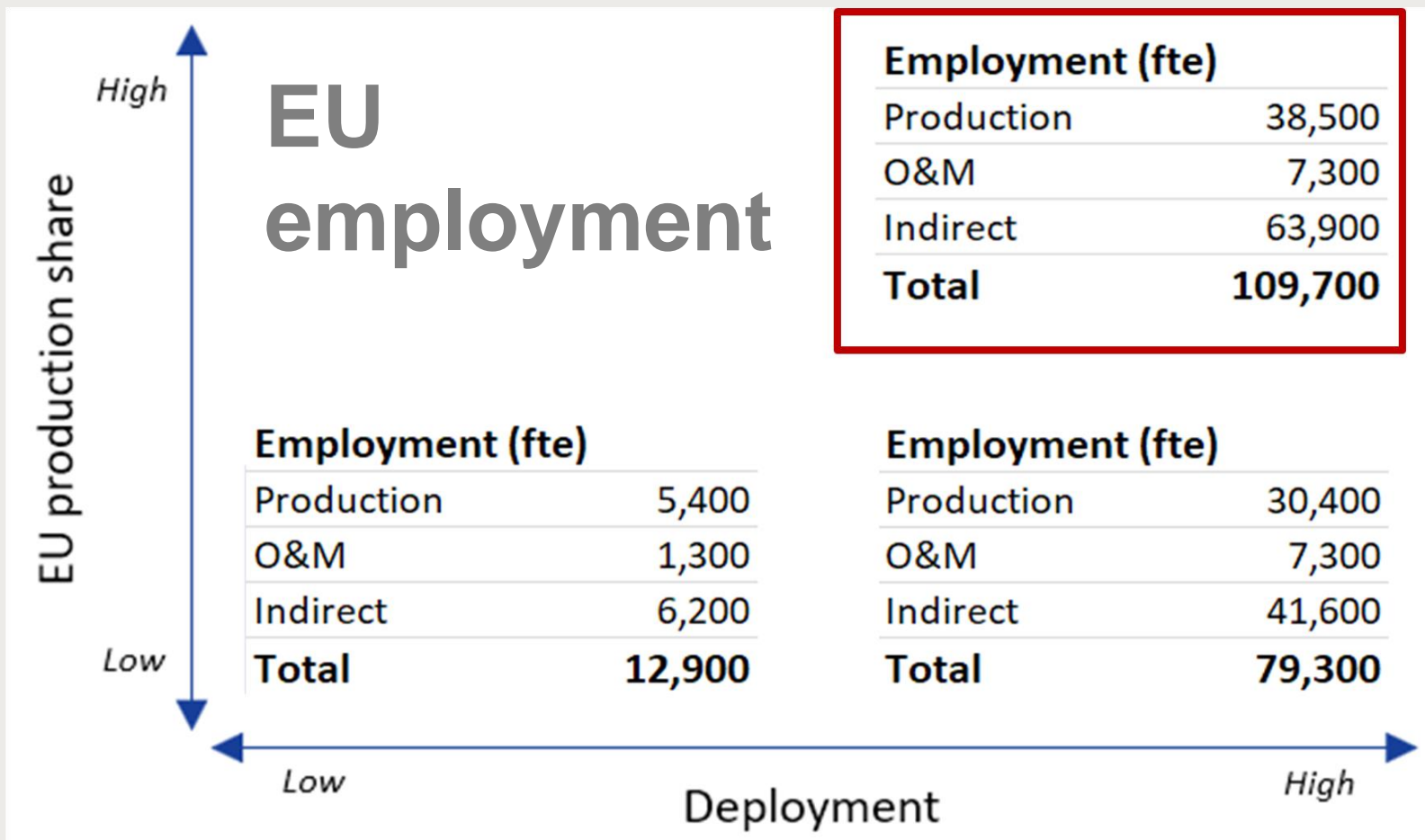
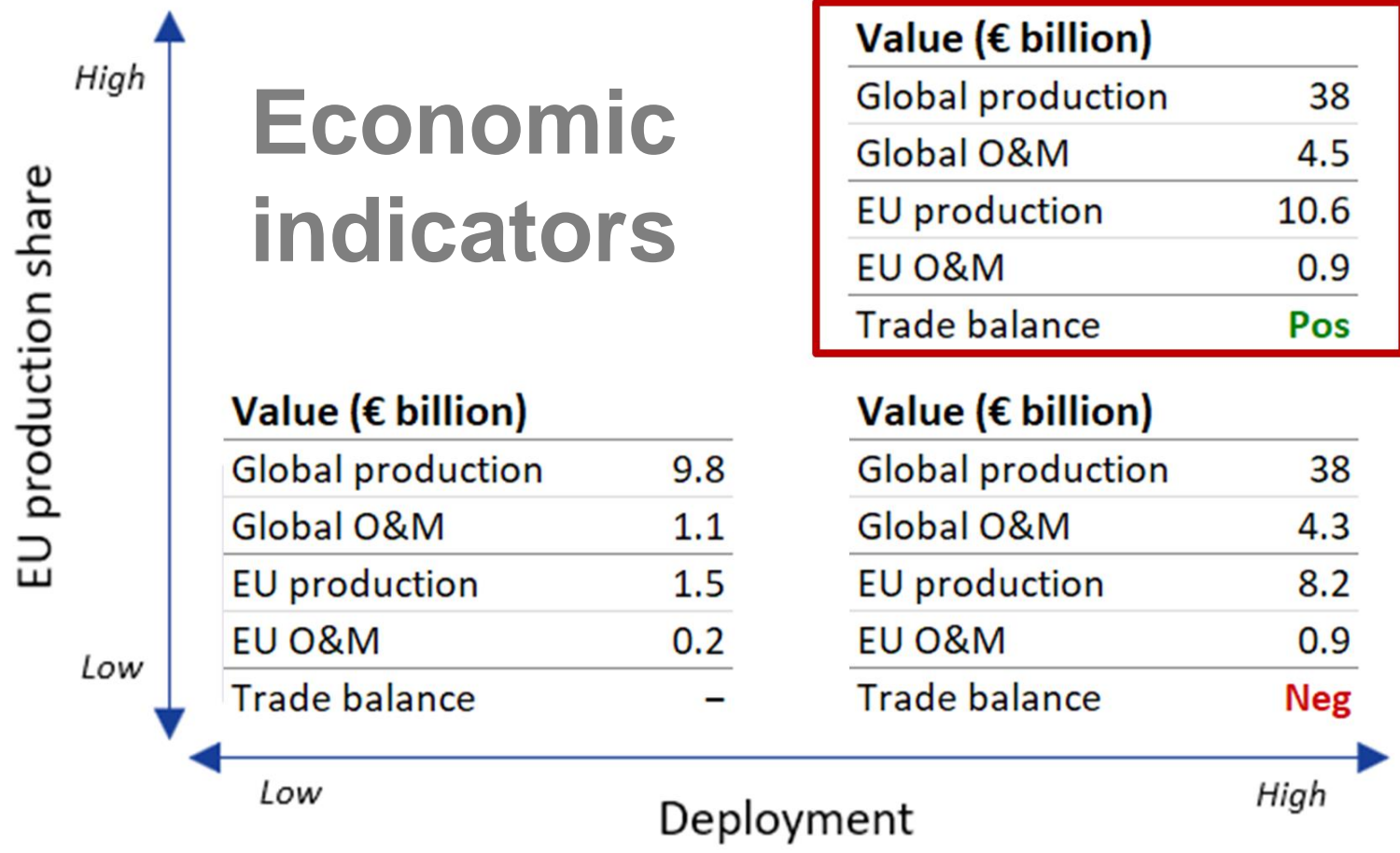
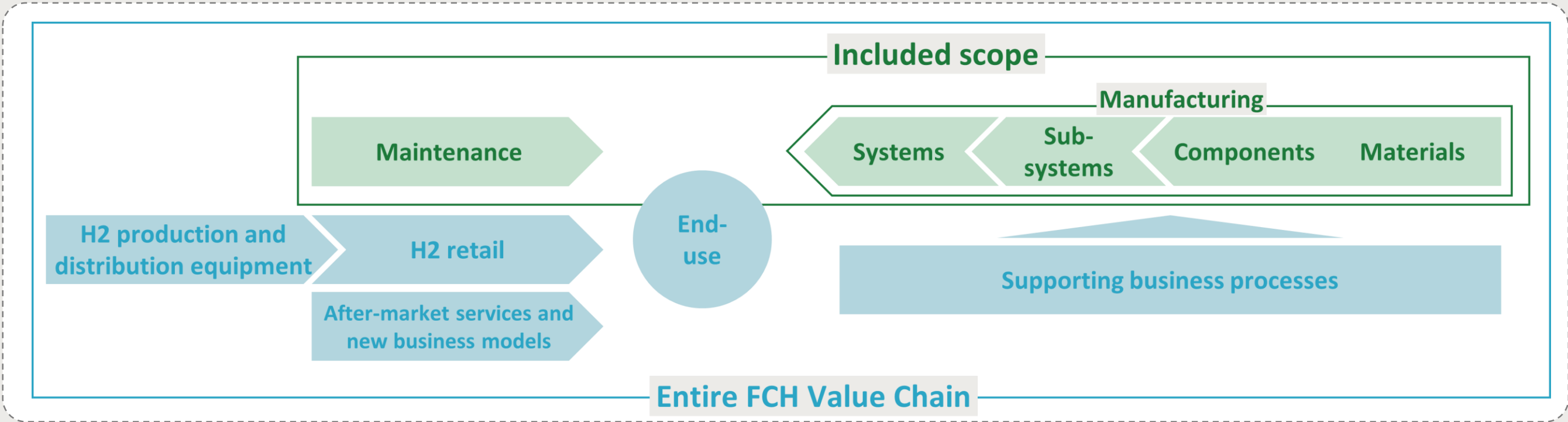
Activity Areas



Study on European Value Chain and Manufacturing Competitiveness Analysis for Hydrogen and Fuel Cells Technologies



European FCH value chains can generate significant socio-economic benefits



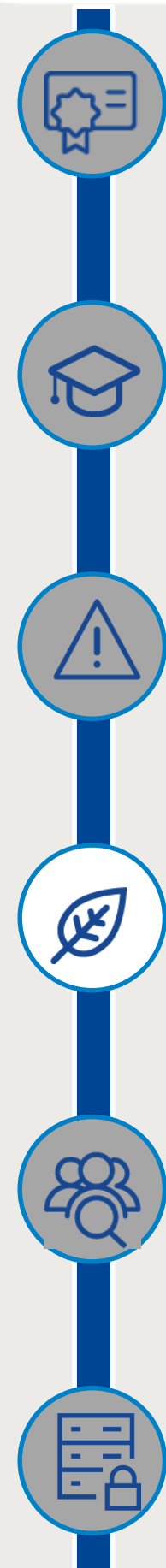
Cross-cutting Activity Area

Activity 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 (GO) Framework

Providing truthful information about the origin of green hydrogen

GO for Hydrogen initiative



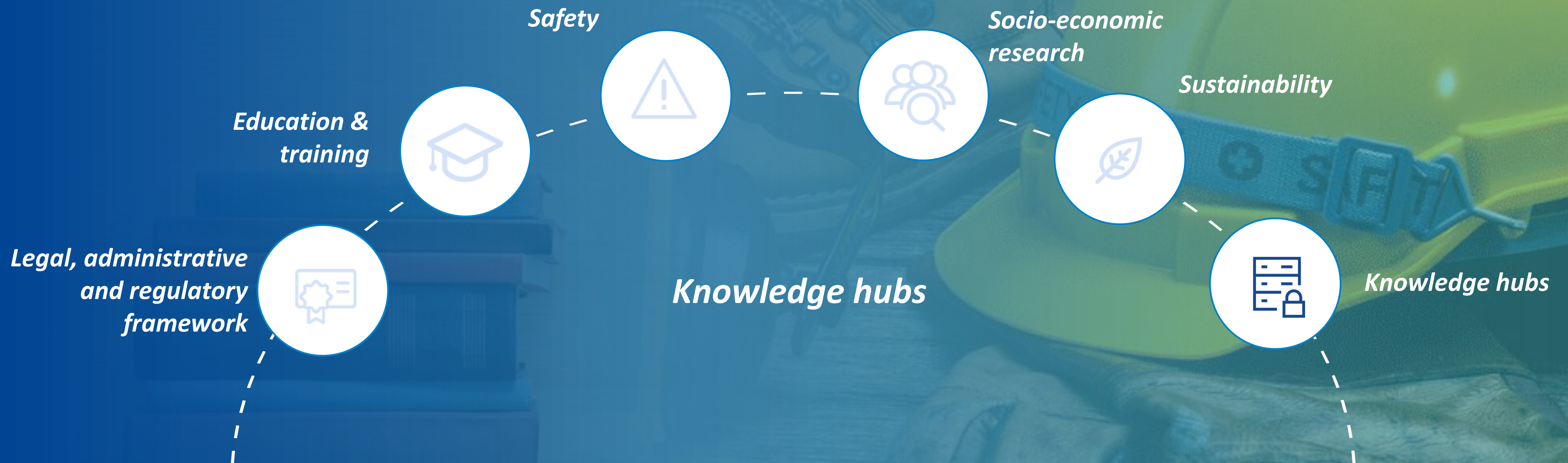
Next steps

Ensuring a harmonized GO scheme to all MS and establishing an EU Certificates scheme



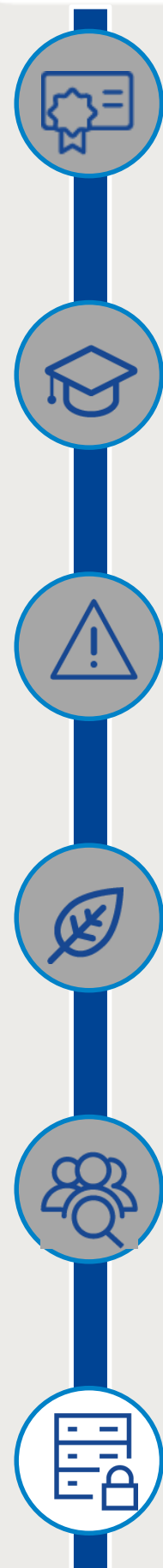
Cross-cutting Activity Area

Activity Areas



Empowering the European FCH sector

Developing advanced databases to find information easily and seamlessly



Projects



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...

Complementary Actions

JOINT RESEARCH CENTRE
HIAD - Hydrogen Incidents and Accidents Database

KNOWLEDGE MANAGEMENT

2018 data collection:

In addition to periodic reports, that can be more or less descriptive, FCH JU projects are required to report on progress and status according to template questionnaires related to the technologies addressed.
Full information on this process can be found [here](#).

Continuing the 2017 exercise, for 2018 (data obtained in 2017), the data will be collected online using the TRUST (Technology Reporting Using Structured Templates) secure data collection tool and are intended for the exclusive use of the FCH JU.
Information labeled confidential in TRUST will not be disclosed by the FCH JU unless it has been duly aggregated with other data of comparable nature in a manner that renders the original data and their source unrecognisable. From 2018, parameters labeled with the prefix **KPI** (Key Performance Indicator) will be considered by default **public** unless justification is provided by the data-provider for the necessity to keep the data confidential. These data will be used only by the FCH JU programme office for the purpose of the Annual Programme Review.

[Link to TRUST](#)



FUEL CELLS AND HYDROGEN
OBSERVATORY

**Release in
April 2020!**

Tech. Market statistics

Societal

Policy/ regulatory/ RCS

Financial support/ incentives



FCH 2 JU Initiatives: Supporting the market deployment and reinforcing the European competitive strengths

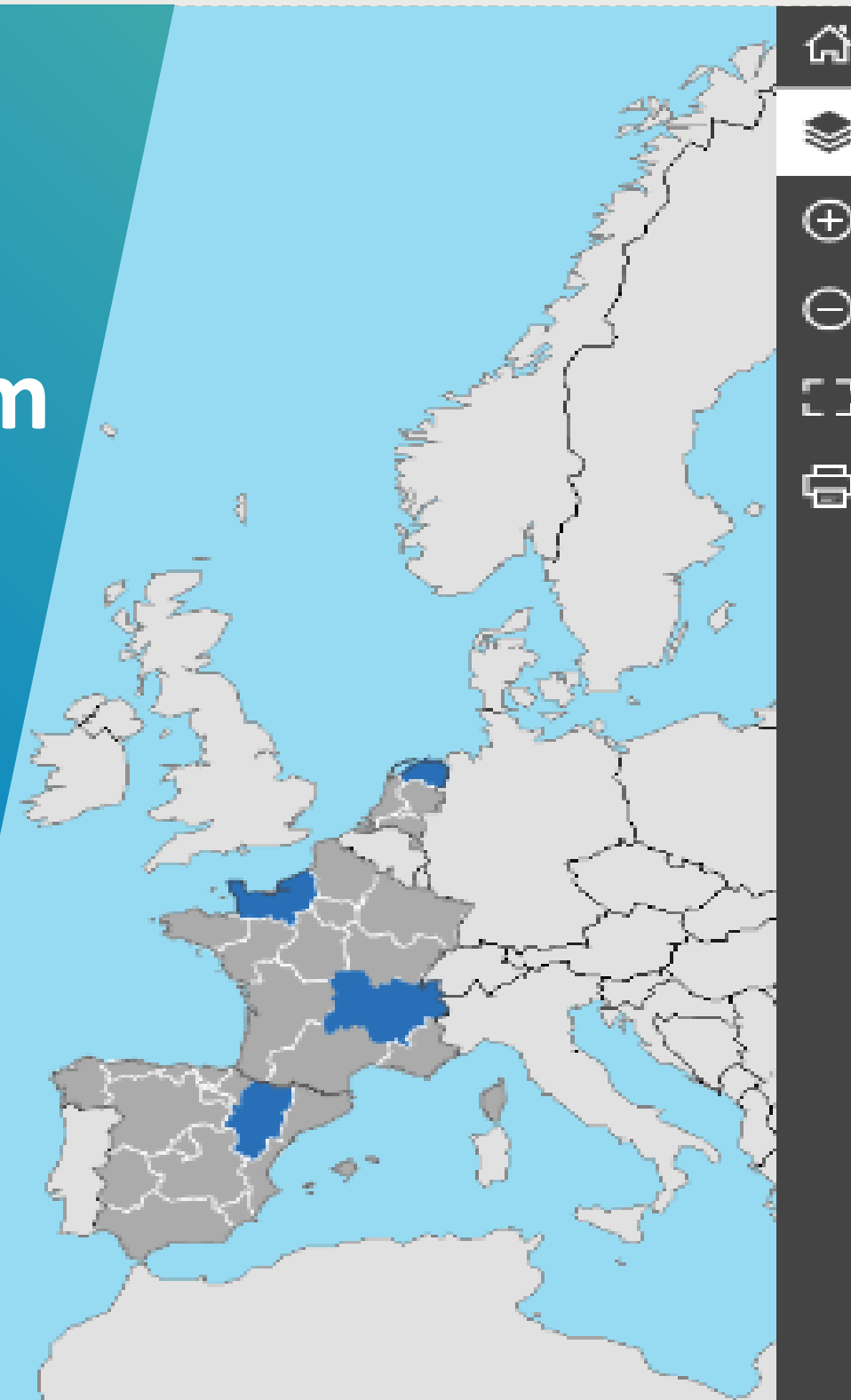


FCH Regions and Cities Initiative followed up by DG GROW

HYDROGEN VALLEYS

Smart Specialisation Platform (Industrial Modernisation)

Supporting
European regions
developments



Legend

- Leading regions:
- Aragon (ES)
- Auvergne-Rhône Alpes (FR)
- Normandy (FR)
- North of Netherlands (NL)

Thematic areas

Sectoral integration (Production of green hydrogen/Storage/Distribution of hydrogen)

Zero emission mobility

Hydrogen for heating and cooling applications

Hydrogen as industry feedstock



Dedicated web page and support



Various types of support services and links to information and tools



Supporting Activities

Combination of funding

Exploitation of results

Advice on complex business models

News concerning funding and financing

Funding and Financing Navigation Tool

Cockpit

Roland Berger

Your Filter

Country*
Portugal

Region*
Other

Project beneficiary

- ☐ Commercial business
- ☐ SME¹⁾
- ☐ Public entity
- ☐ NGO
- ☐ Academic
- ☐ Other

Budget of full project

- < EUR 50 m
- EUR 50 m – EUR 1,000 m
- > EUR 1,000 m

Co-funding

☐ Yes

Get results

Your Results

Name
European Regional Development Fund (ERDF); European Social Fund (ESF); Cohesion Fund

Total programme
€63,041 EUR

Funding programme Fact Sheet

[<< Return to result list](#)

Name of funding programme
Cohesion fund

Responsible entity/institutions
National/Regional Managing Authority

Funding instrument offered
Grants

First instalment
The first instalment will be paid towards a low-carbon economy in all regions.

Website
Please see managing authorities http://ec.europa.eu/regional_development/

Further information

- Beneficiary requirements: Depends on the specific operational programme and managing authority
- Technical assistance

Eligible beneficiaries
Commercial business; Academic institution; SME; Public entity; NGO; Other

Geographic focus
Portugal
Norte; Centro (PT); Alentejo; Região Autónoma dos Açores; Algarve

Regions & Cities with experience



Support for market uptake

Summary



**Cross-cutting projects support market uptake
bringing multiple benefits and providing tangible legacy**



**Complementary supporting activities
contributing to European FCH sector interests**



**Comprehensive portfolio of support activities
enriching the FCH 2 JU programme and the whole FCH sector**





FUEL CELLS AND HYDROGEN
JOINT UNDERTAKING

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