



FUEL CELLS AND HYDROGEN
JOINT UNDERTAKING

***Support for
market uptake***

**Alberto J.
Garcia Hombrados**

PRD 2018
14 November 2018



Agenda

PROGRAMME REVIEW DAYS 2018
FUEL CELLS AND HYDROGEN JOINT UNDERTAKING
 14 - 15 NOVEMBER, BRUSSELS



	TRIALS AND DEPLOYMENT OF FUEL CELL APPLICATION - TRANSPORT	NEXT GENERATION OF PRODUCTS - TRANSPORT	TRIALS AND DEPLOYMENT OF FUEL CELL APPLICATION - ENERGY	NEXT GENERATION OF PRODUCTS - ENERGY	HYDROGEN FOR SECTORIAL INTEGRATION	SUPPORT FOR MARKET UPTAKE
14:30 - 14:50	H2ME	AUTO-STACK CORE	ALKAMMONIA	Cell3Ditor	BIONICO	HYACINTH
14:50 - 15:10	HAWL	COBRA	AUTORE	DIAMOND	BIOROBURplus	HYCORA
15:10 - 15:30	HYFIVE	COSMHYC	CH2P	ENDURANCE	Demo4Grid	HyLAW
15:30 - 15:50	HYLIFT-EUROPE	DIGIMAN	CLEARGEN DEMO	FLUIDCELL	DON QUICHOTE	HYPACTOR
15:50 - 16:10	HYTRANSIT	Fit-4-AMandA	D2SERVICE	HEALTH-CODE	Eco	HySEA
16:10 - 16:30	JIVE	H2REF	DEMCOPEM-2MW	HEATSTACK	ELECTRA	HYTECHCYCLING
16:30 - 16:50	SWARM	HYCARUS	DEMOSOFC	INSIGHT	ELY40FF	KNOWHY
	H2ME 2	INLINE	ENE.FIELD	MATISSE	ELYntegration	NET-Tools
		INN-BALANCE	ONSITE	NELLHI	GrInHy	SOCTESQA
		INSPIRE	PACE	PROSOFC	H2Future	
		MARANDA	PEMBEYOND	qSOFC	HELMETH	
		NANO-CAT	POWER-UP	SCORED 2:0	HPEM2GAS	
		SMARTCAT	STAGE-SOFC	SECOND ACT	HyBalance	
		VOLUMETRIO		SOSLeM	HYDROSOL-PLANT	
		COMPASS		INNO-SOFC	HyGrid	
		Giantleap			INSIDE	
					MEGASTACK	
					PECDEMO	
					PECSYS	
					QualyGridS	
					SElySOs	
					SOPHIA	
					BIG HIT	
					MEMPHYS	

o Fuel Cell
 advocacy towards
 in and fuel cells
 e-normative
 related to Hydrogen
 guarantees of origin



Cross-cutting Activity Area

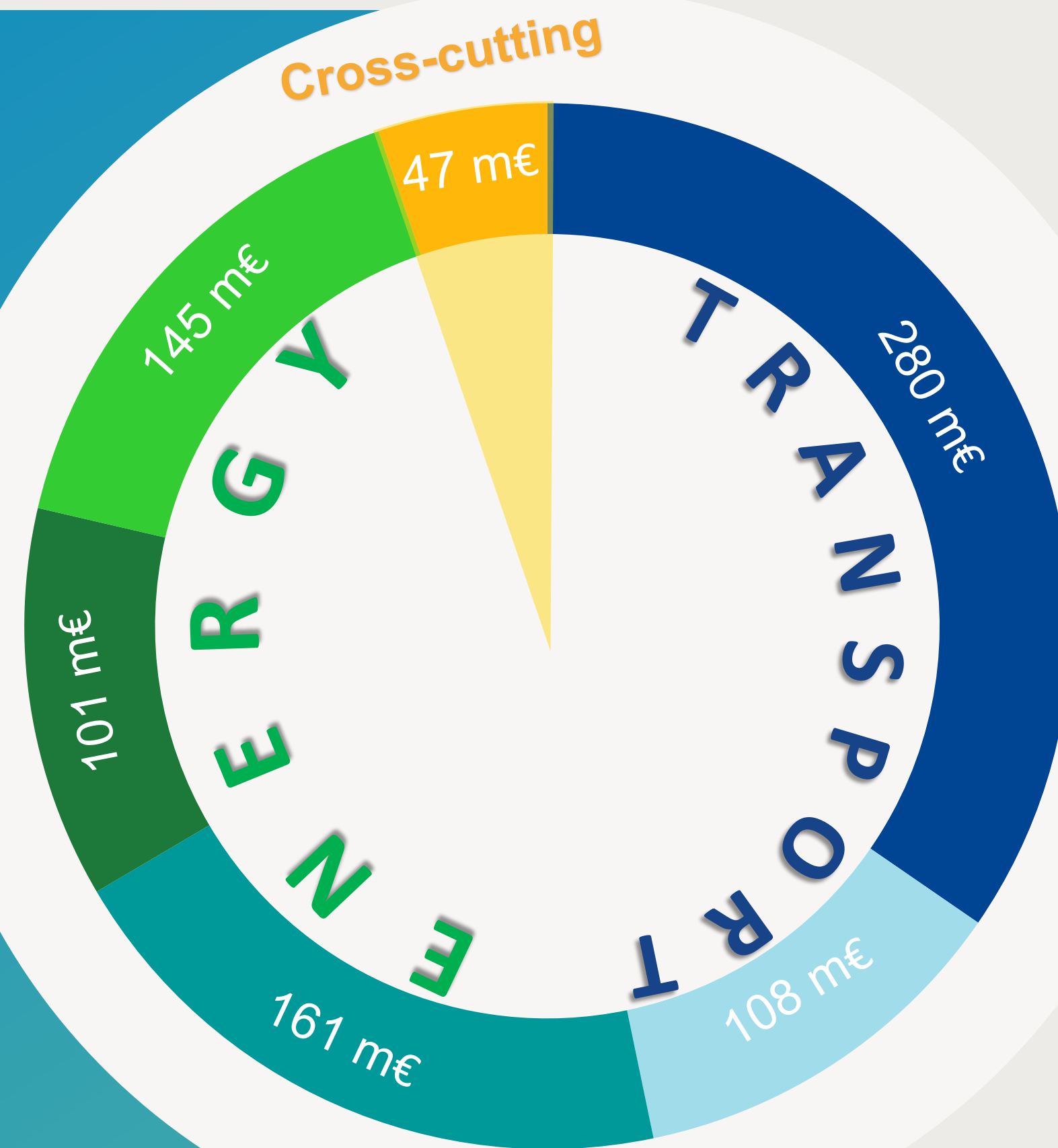
Coordinating market support activities



FCH JU Objectives

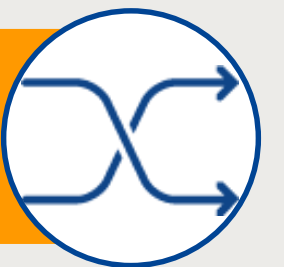


- H₂ storage for grid balancing
- Green hydrogen production
- Heat & electricity production
 - Minimal use of critical raw materials
- Clean Transport



Cross-cutting Activity Area

5.5 %



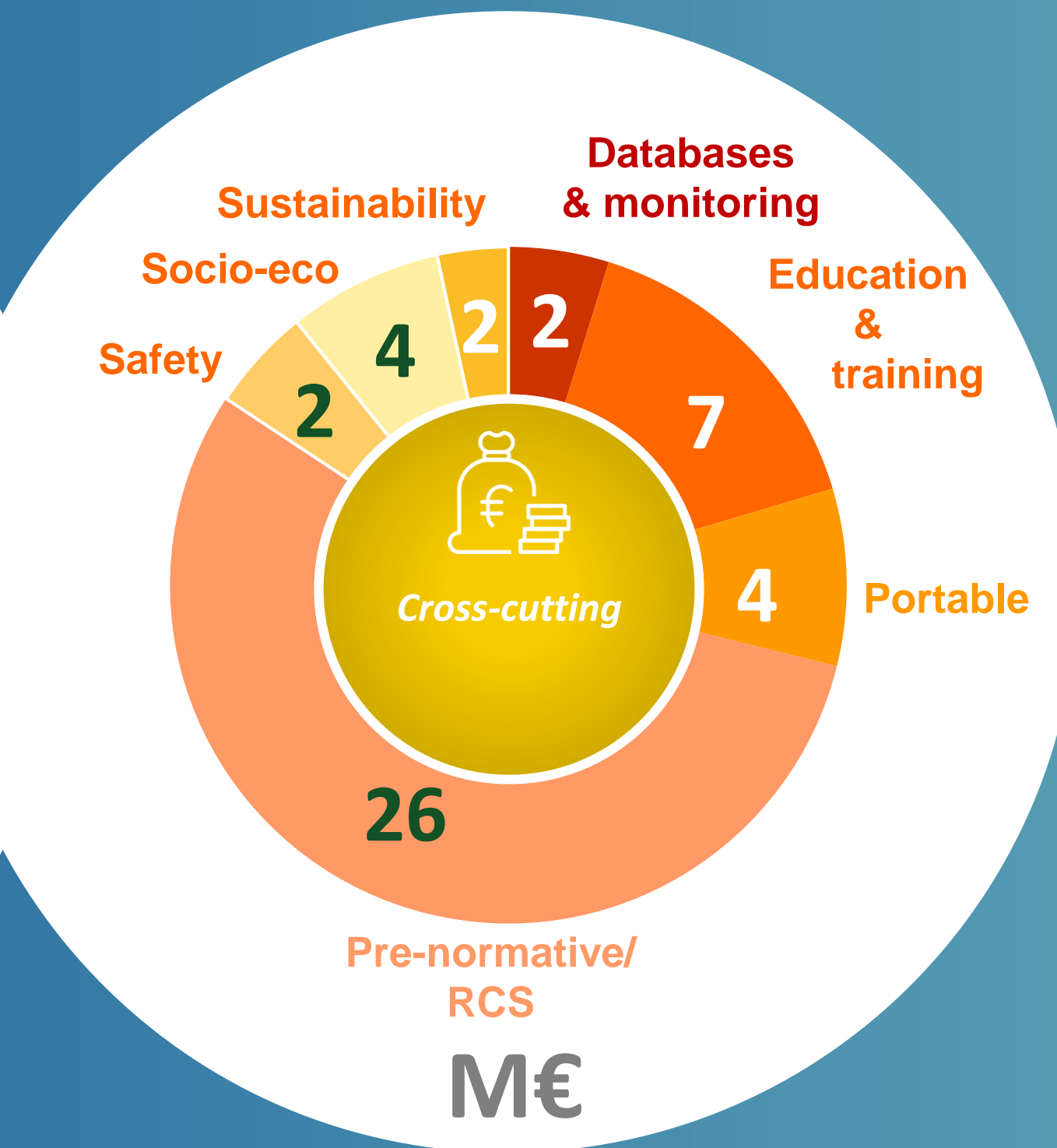
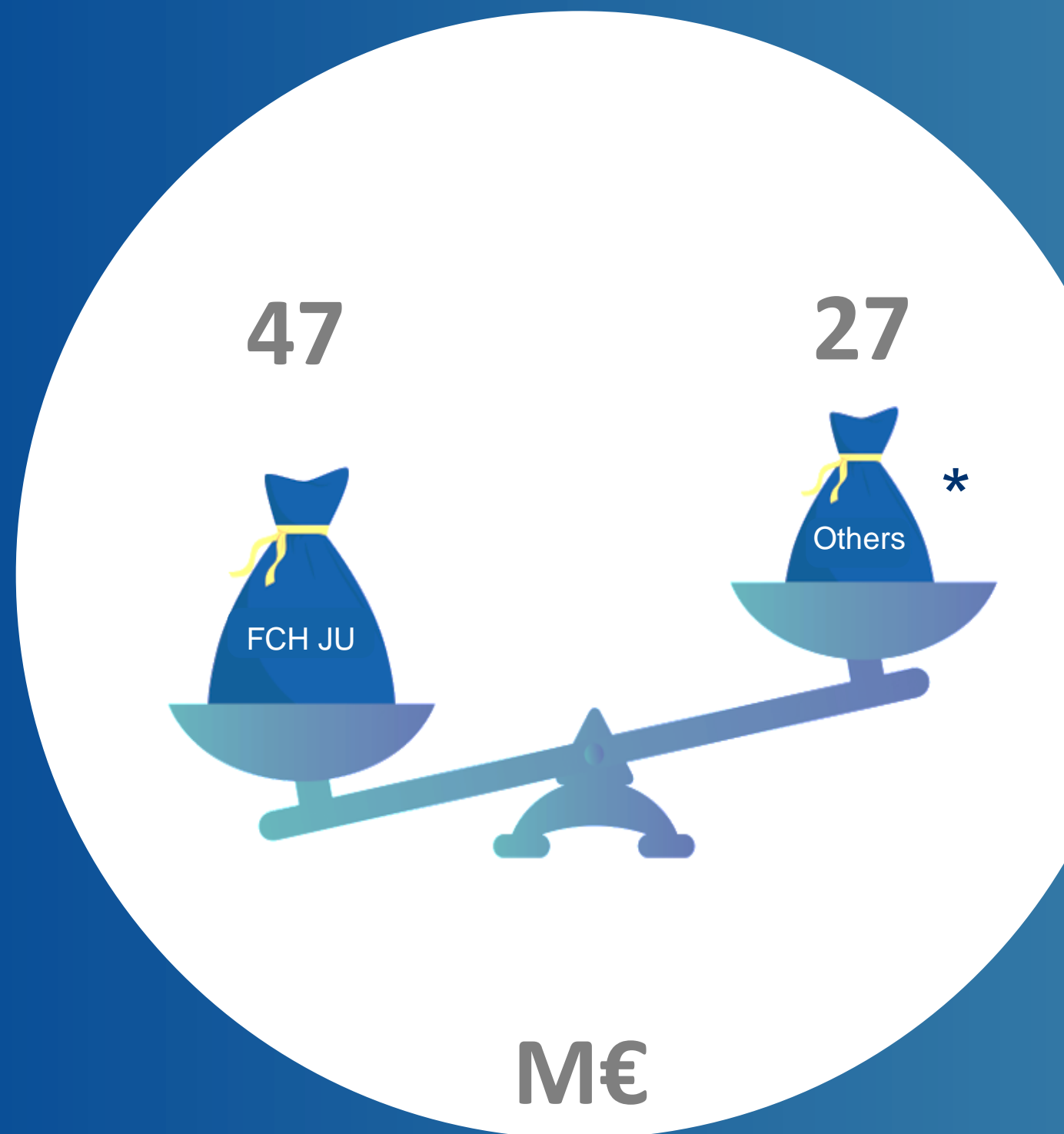
47 M€

37 Projects



Cross-cutting Activity Area

37 projects – 74 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)

European Hydrogen Safety Panel (EHSP)

Collaboration with the Joint Research Center (JRC)

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

Funding and financing support services

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



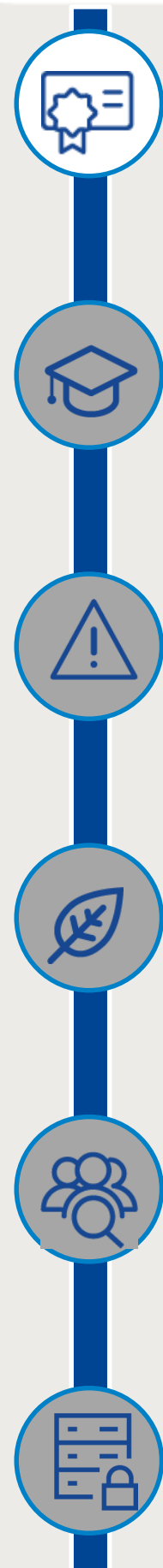
Cross-cutting Activity Area

Activity Areas



Developing suitable environments for FCH technologies in Europe

Supporting and facilitating adequate frameworks for market uptake



Projects

Pre-normative research

Addressing knowledge gaps to support science-based standards

Legal and administrative processes

Identifying barriers and sharing best practices across Europe

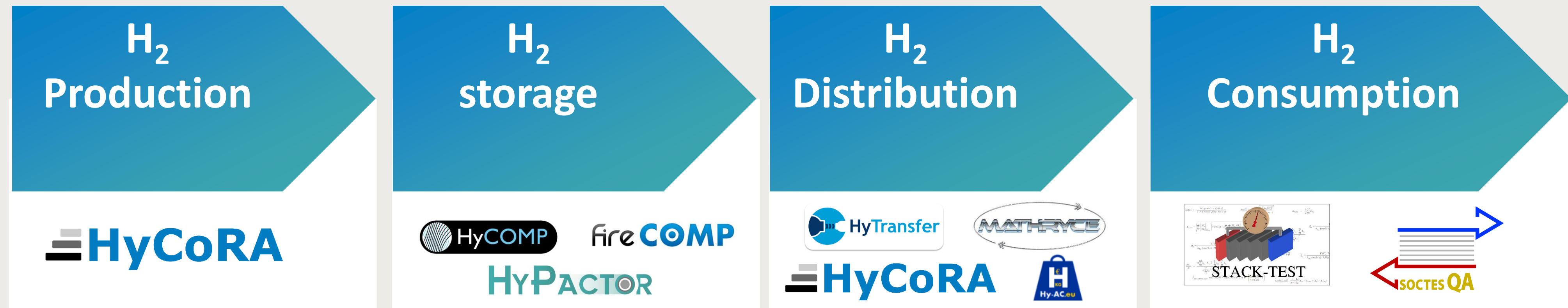
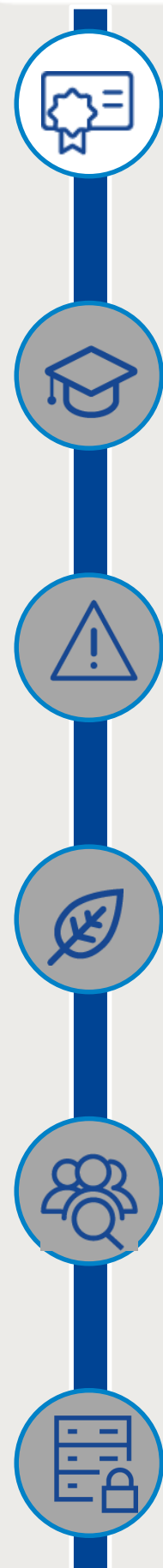
Guarantees of origin framework

Providing truthful information about the origin of hydrogen

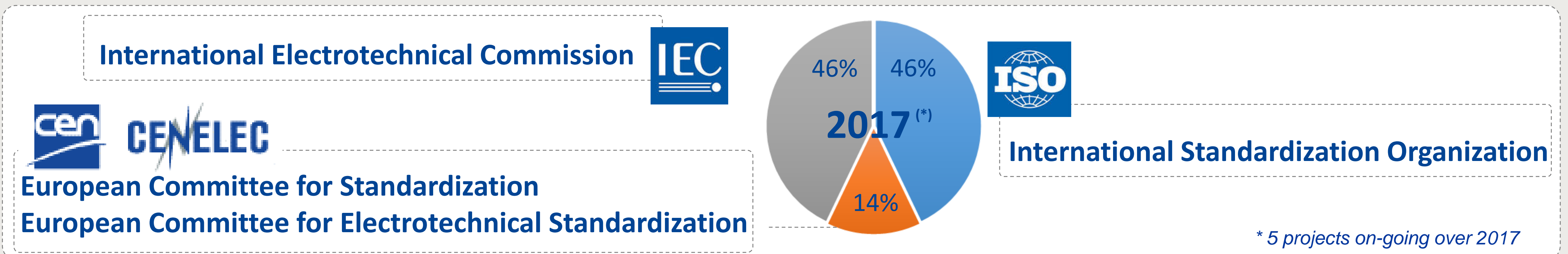


Pre-normative projects address the entire hydrogen chain

Providing science-based information to create and further develop standards



Targeting standards at European and International level



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)

Identifying "win-win" opportunities for collaboration in the benefit of the European FCH sector



Another good example of public and private collaboration



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



Cross-cutting Activity Area

Activity Areas

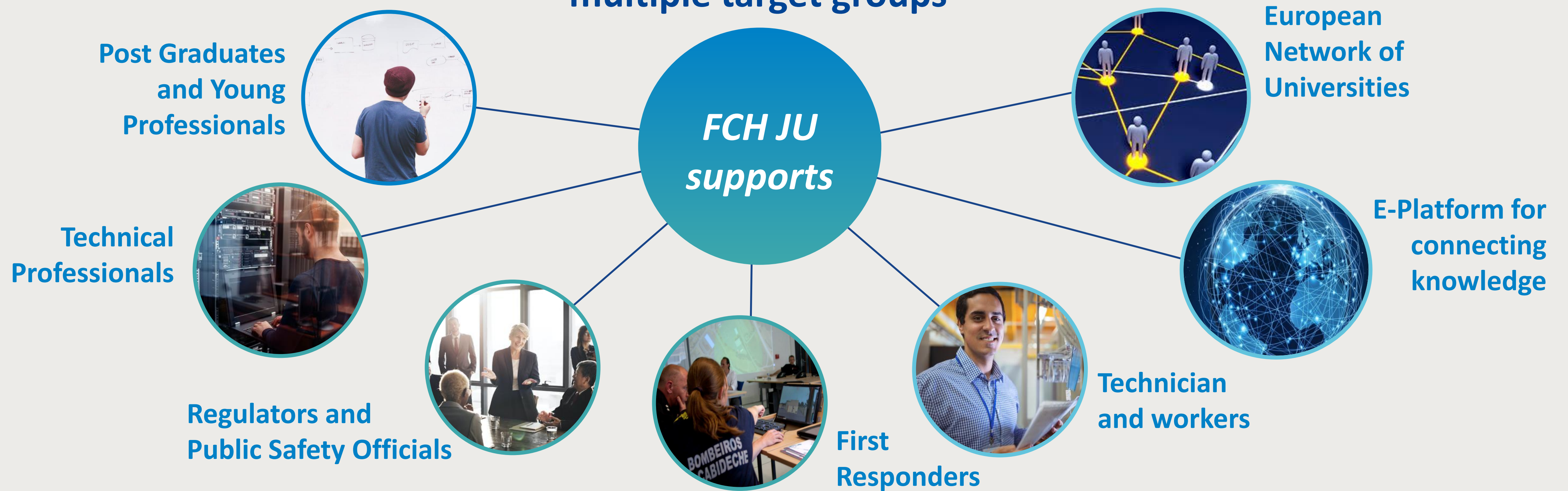


Increasing expertise across Europe

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

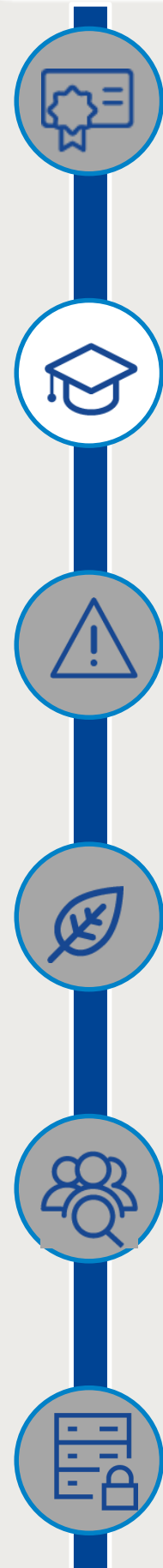


Educational and training programs tailored to multiple target groups



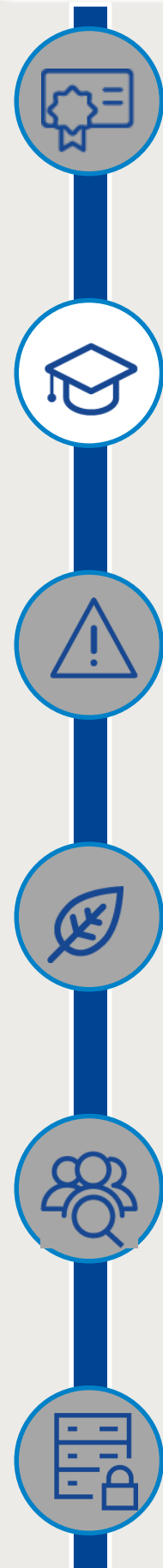

Multiple levels and types of education, learning formats, features...

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



An example of impact - KNOWHY project

Increasing knowledge in Europe, preparing the European workforce

Improving the Knowledge in Hydrogen and Fuel Cell Technology for Technicians

STUDIES OFFERED

- Six courses: one common module + specializations
- 7 languages
- E-learning format for active technicians
- Tutoring, serious games and practical training ...
- Joint venture to continue after end of the project

Register NOW for the first courses for Fuel Cells and Hydrogen applications

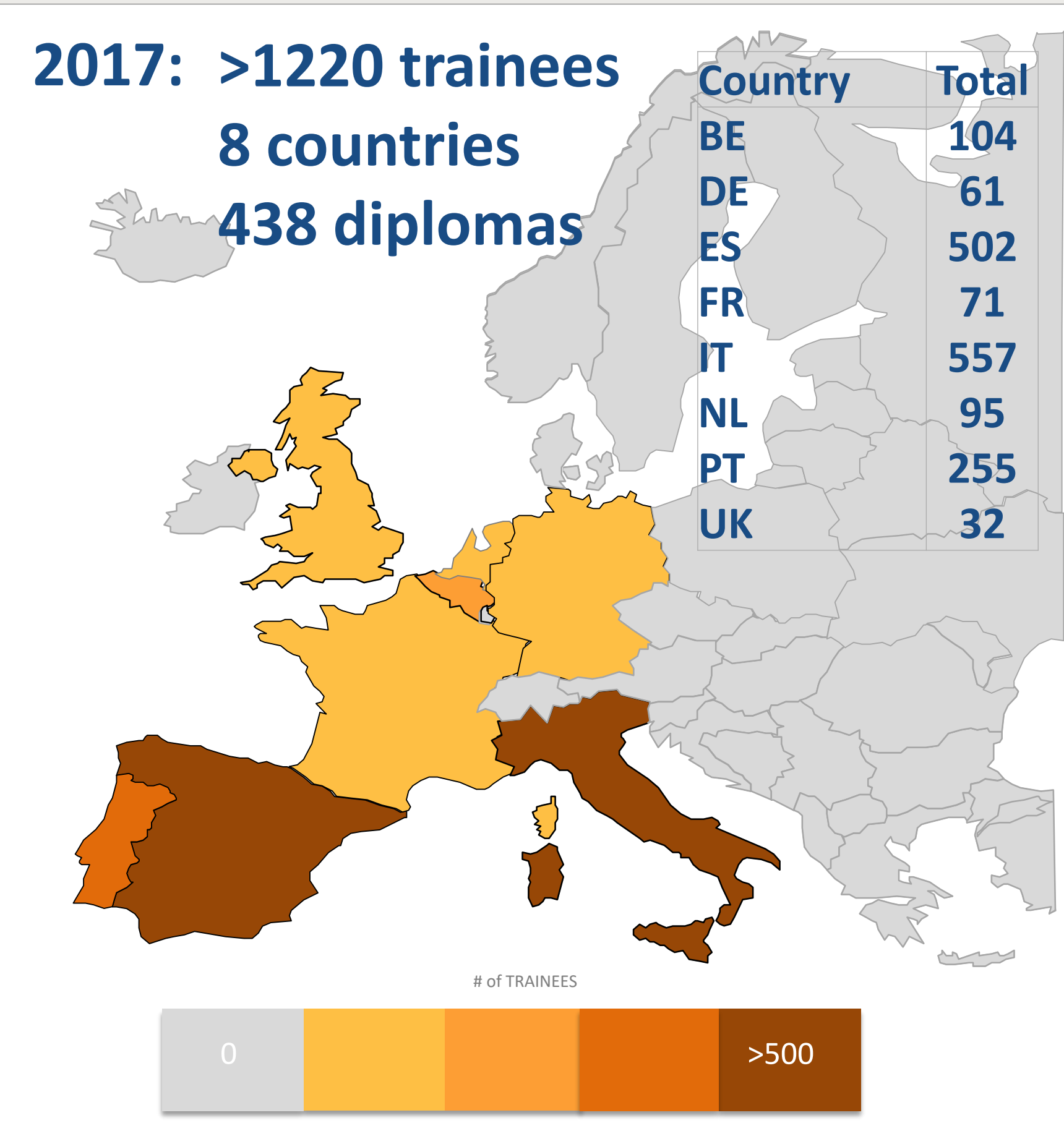
The second call for courses are open now in the following countries: THE NETHERLANDS ITALY SPAIN UNITED KINGDOM GERMANY PORTUGAL BELGIUM FRANCE . [READ MORE](#)

1 FEB 2017

Plan of the next KnowHy courses on FC&H2 Copy

The plan of the upcoming courses in Belgium, Germany, Portugal, France, Italy, The Netherlands, Spain and UK is downloadable knowhy-courses_runnings-plan Please, visit the registration page to register. [READ MORE](#)

14 OCT 2016



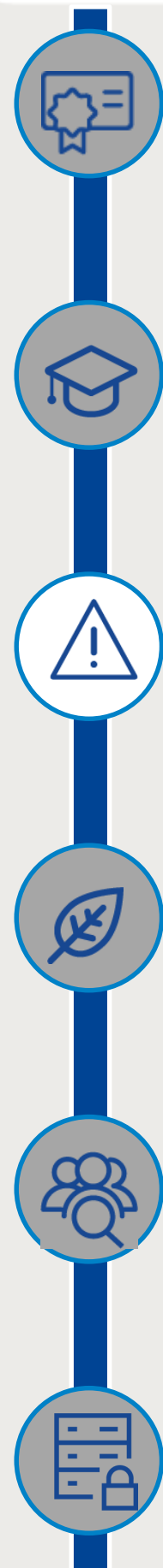
Cross-cutting Activity Area

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

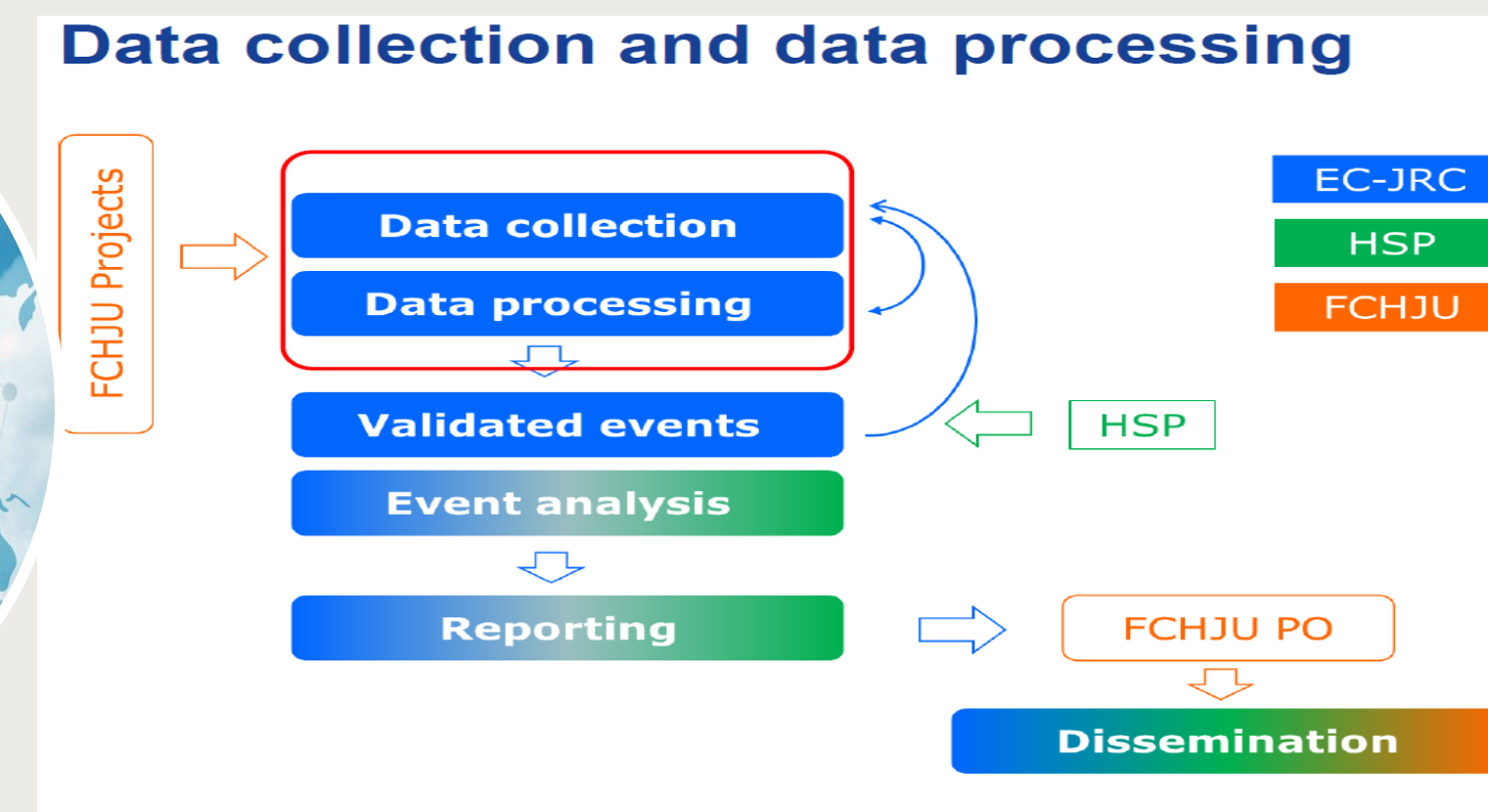
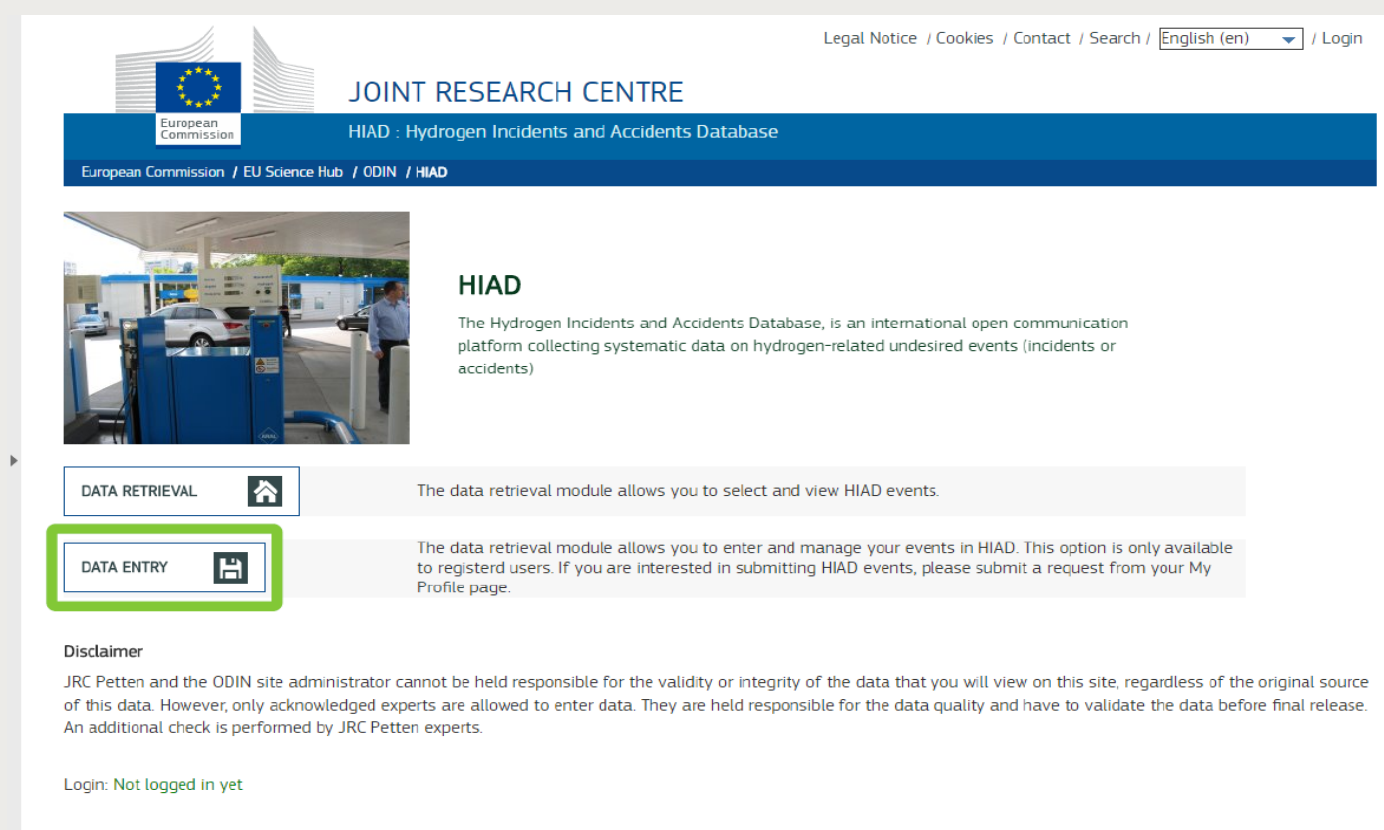


Safety expert groups

Development of H2 safety expert groups

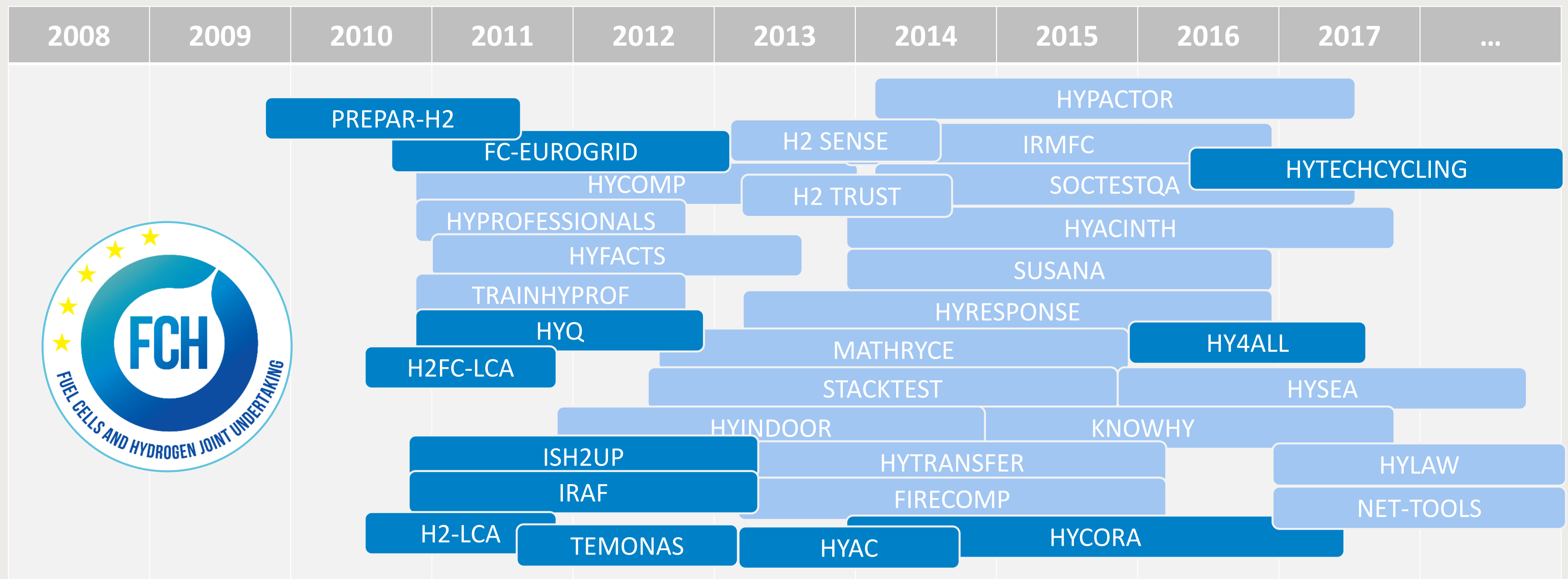
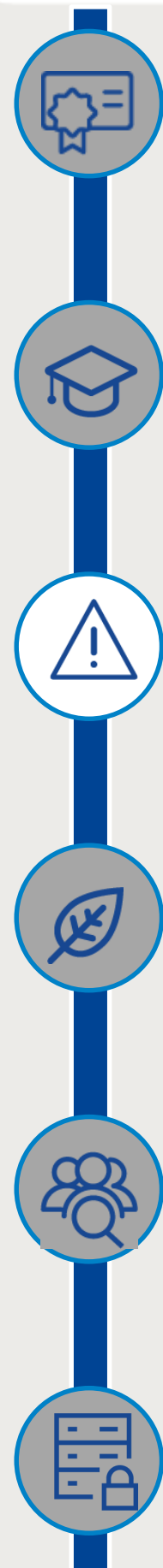
Complementary Action

HIAD 2.0: European Hydrogen Safety Reference Database



Integral part of cross-cutting projects portfolio

Multidisciplinary approach on safety issues



Cross-cutting projects addressing safety directly or indirectly

European Hydrogen Safety Panel (EHSP) initiative

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

Working groups



Safety guidance document for projects
Lessons learned from HIAD2.0 (>250 events reviewed)

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



Cross-cutting Activity Area

Activity Areas



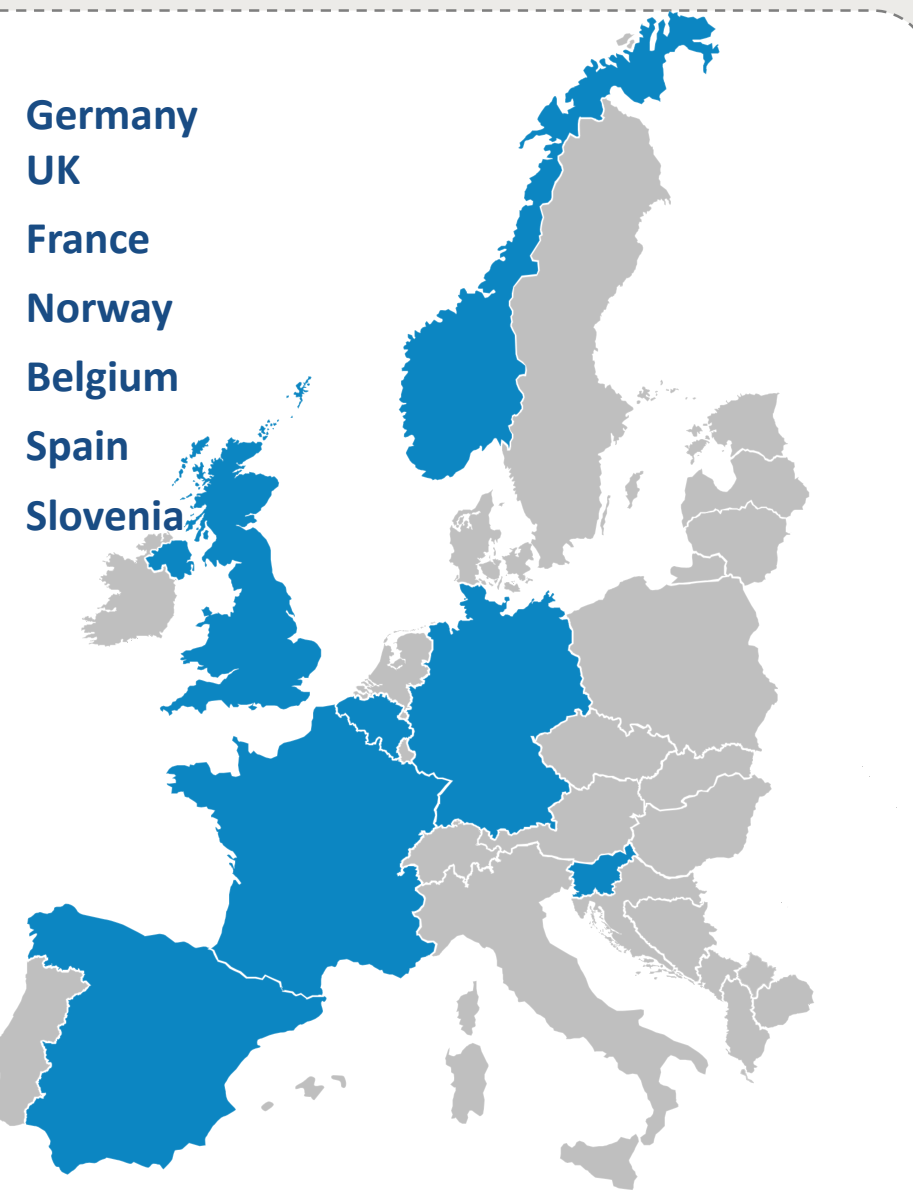
Raising social acceptance and public awareness

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

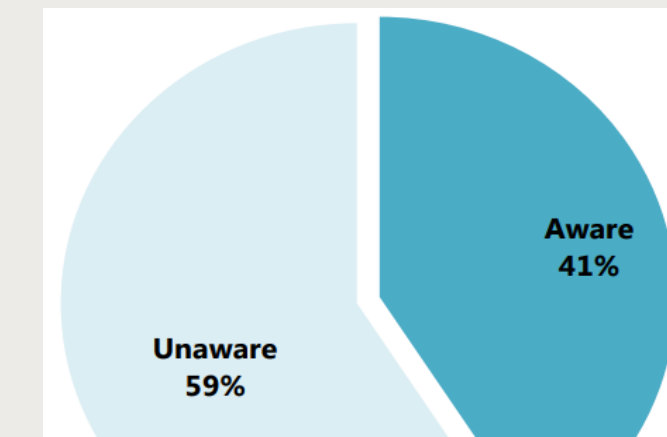


Biggest exercise ever on social research around FCH in Europe !

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



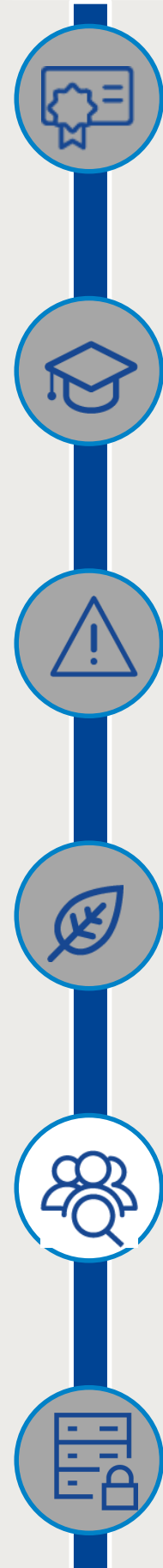
Semi-structured interviews
145 participants
5 European countries



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



Toolbox to help stakeholders to integrate issues related to social acceptance



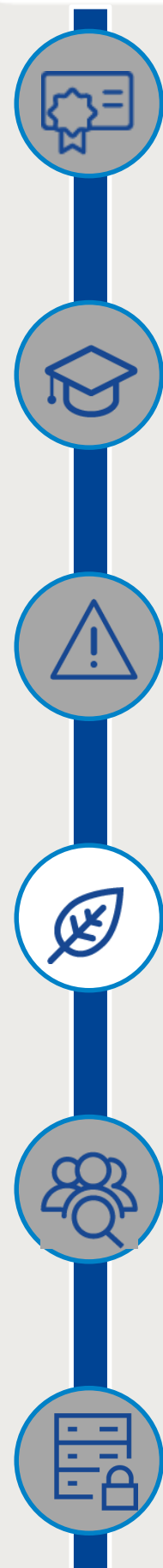
Cross-cutting Activity Area

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

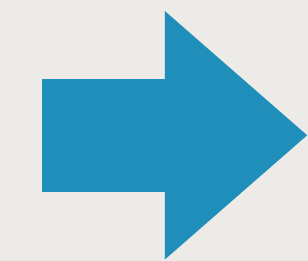
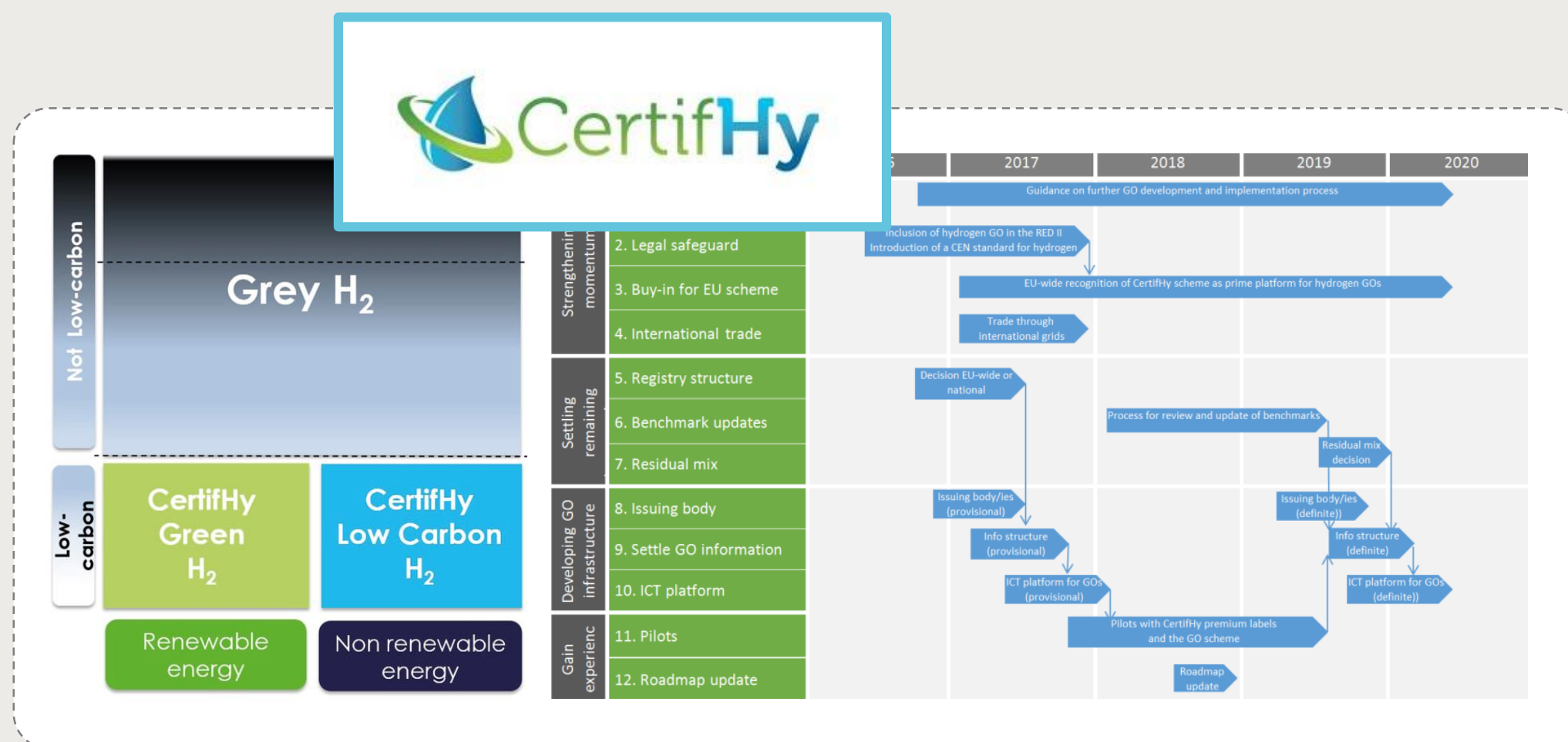
Developing technologies and strategies for recycling and dismantling



Guarantees of Origin Framework

Providing truthful information about the origin of green hydrogen

GO for Hydrogen initiative

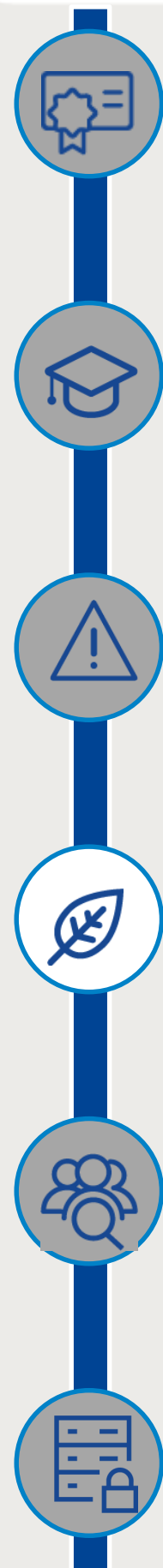


Guarantees of Origin Stakeholder platform



SLIDO Question

Guarantees of Origin Framework



Q: Which region of the world is first in developing a system to ensure the origin of green hydrogen?

A1: Asia

A2: Europe

A3: America

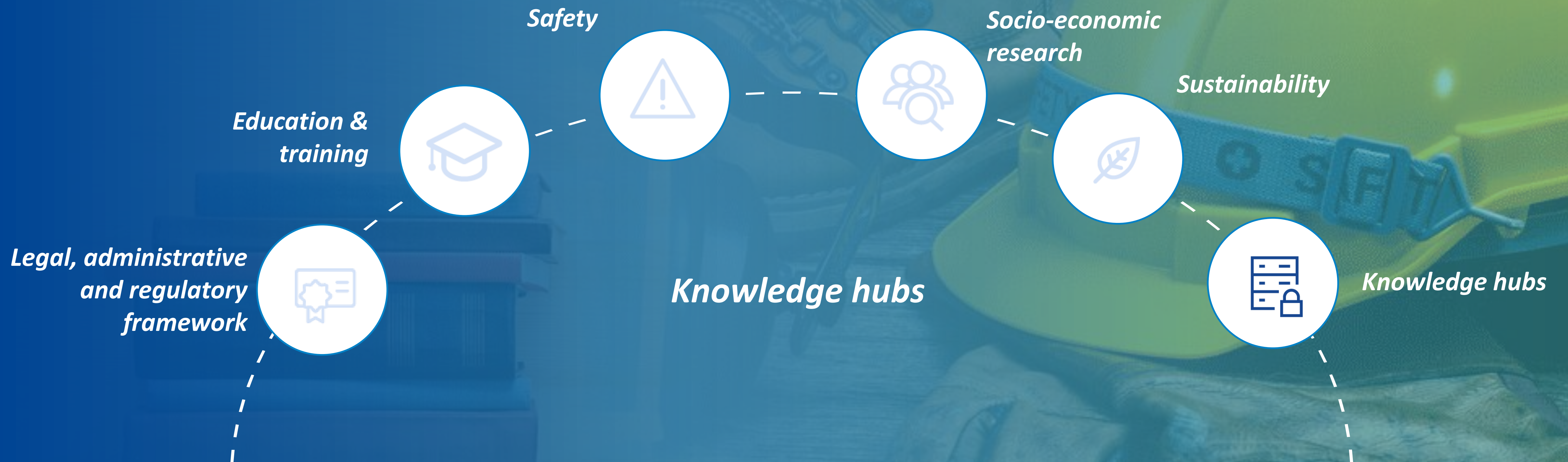
A4: Africa



Use your smartphone; go to www.sli.do and insert the code **#PRD2018**

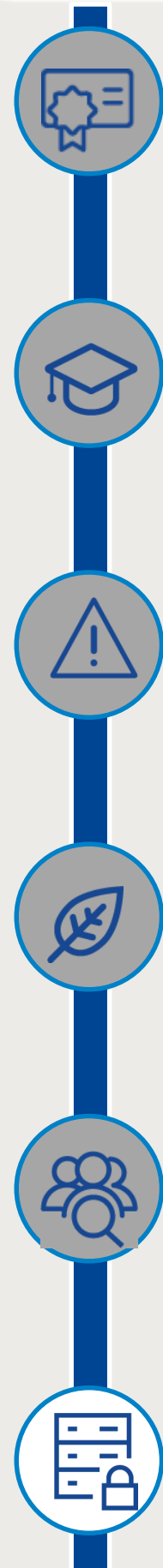
Cross-cutting Activity Area

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
TRUST
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 a 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 compar 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 c These data will be used only by the FCH JU programme office for the purpose of the Annual Programme Review.

CALL FOR TENDERS
N° FCH / OP / Contract 216
TENDER SPECIFICATION
Fuel cells and hydrogen market
Reference number: /

Coming soon!
FCH market and policy observatory



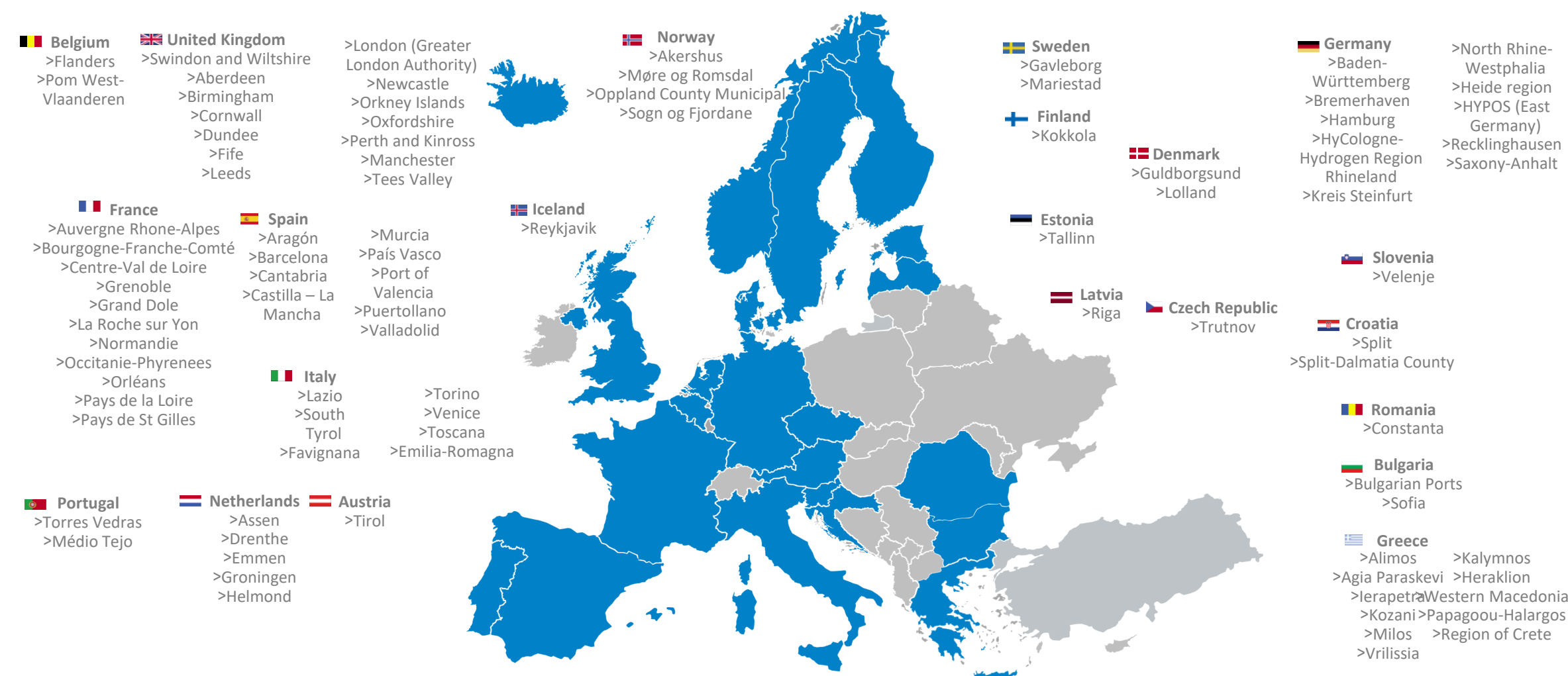
FCH 2 JU Initiatives

Supporting the market deployment and reinforcing the European competitive strengths



FCH Regions Initiative

Supporting regions and cities in assessing various FCH applications



FCH Value chain Initiative

Study on value chain and European competitiveness



Funding and financing support services

Dedicated web page and support



Various types of support services and links to information and tools



Activities areas

Combination of funding

Exploitation of results

Advice on complex business models

News concerning funding and financing



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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FCH JU



SESSION SUPPORT FOR MARKET UPTAKE

Moderators: GARCIA HOMBRADOS ALBERTO, HUBERT A. GASTEIGER

14:30 - 14:50

Portfolio overview by GARCIA HOMBRADOS ALBERTO, FCH JU

14:50 - 15:10

Overview of FCH JU Initiative with Regions and Cities

15:10 - 15:30

HyLAW, Identification of legal rules and administrative processes applicable to Fuel Cell and Hydrogen technologies' deployment, identification of legal barriers and advocacy towards their removal.

15:30 - 15:50

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

15:50 - 16:10

HySEA, Improving Hydrogen Safety for Energy Applications (HySEA) through pre-normative research on vented deflagrations

16:10 - 16:30

NET-TOOLS, Novel Education and Training Tools based on digital applications related to Hydrogen and Fuel Cell

16:30 - 16:50

Guarantees of Origin, Developing a European Framework for the generation of guarantees of origin for green hydrogen