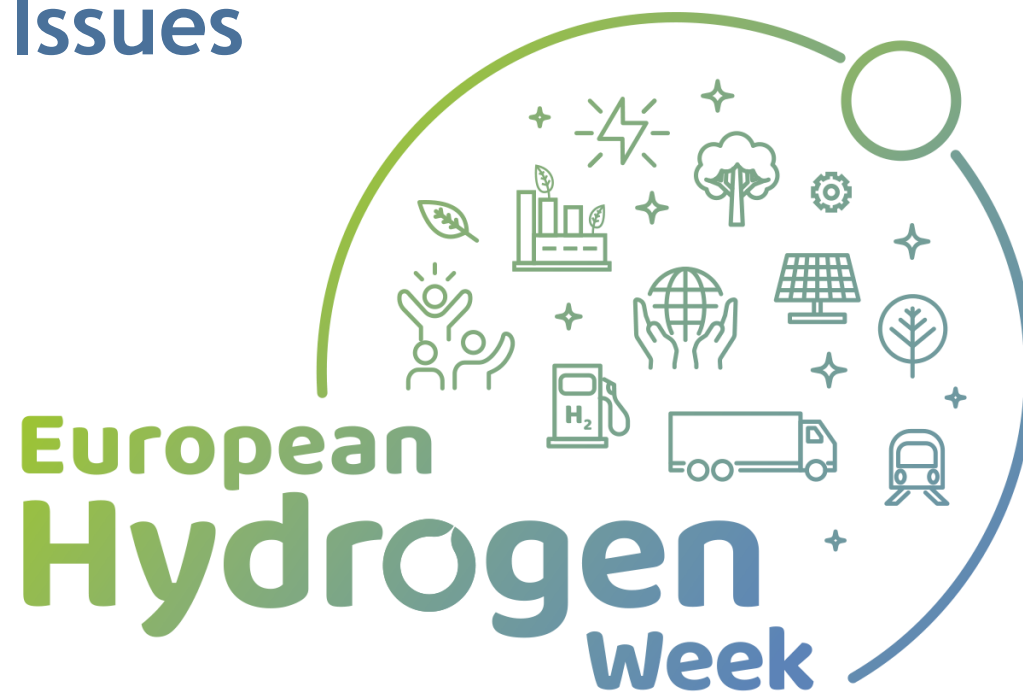


Cross-cutting Issues



Alberto J. Garcia Hombrados
Project Officer

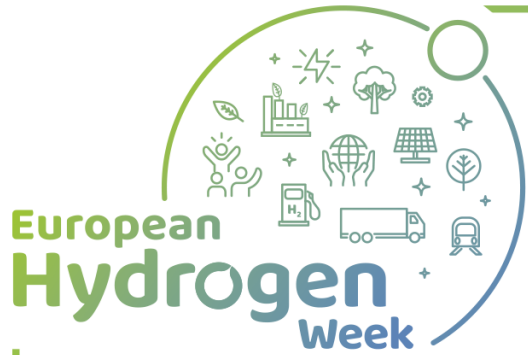


EUROPEAN PARTNERSHIP



Co-funded by
the European Union

#EUResearchDays
#PRD2022
#CleanHydrogen



Clean Hydrogen Partnership

Cross-cutting Issues - Parallel Session

October 27th. 16:00 - 17:45



Pre-Normative Research
for Standards



EUROPEAN PARTNERSHIP

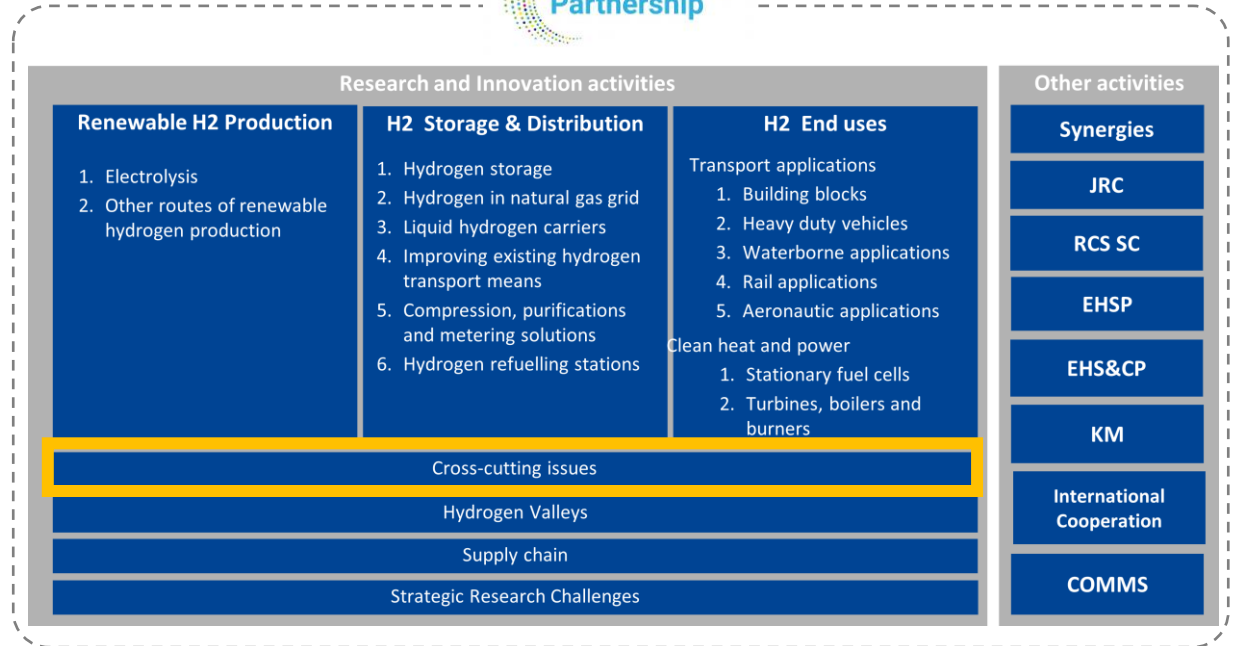
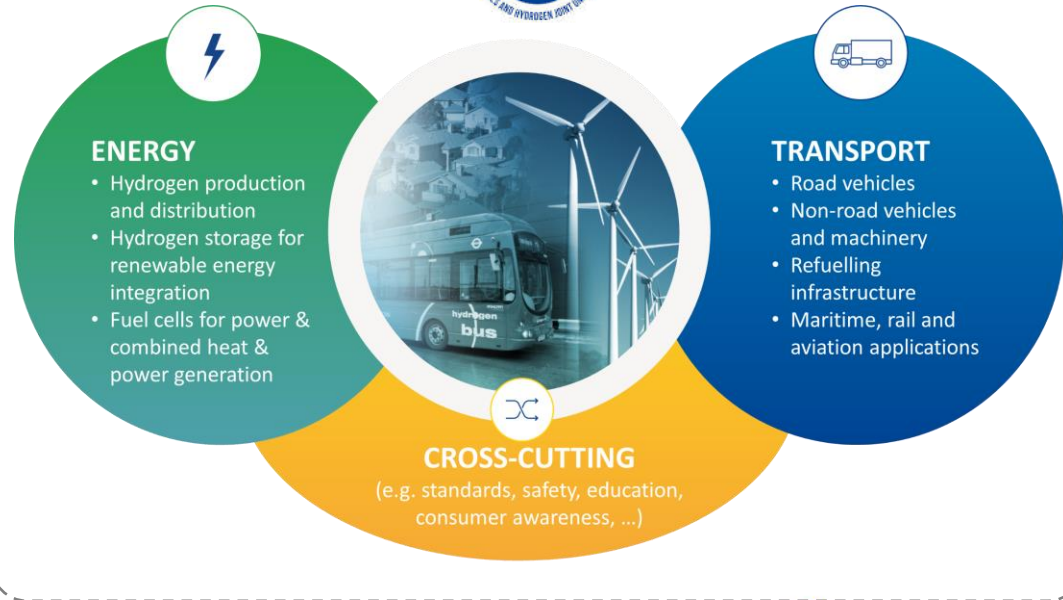


Co-funded by
the European Union

Cross-cutting Issues

Continuous support over the years

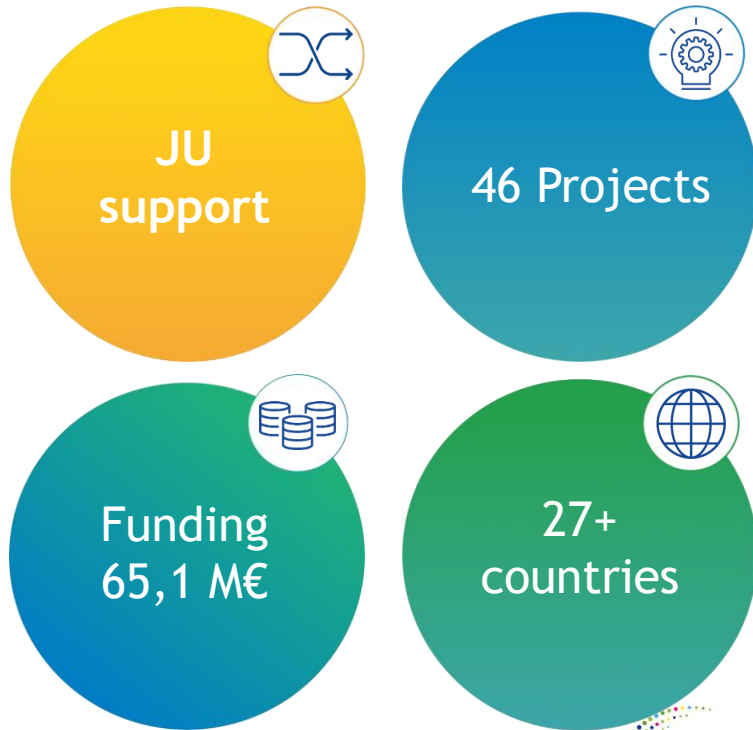
“Addressing systemic (or horizontal) challenges to effectively kick-start a hydrogen ecosystem throughout the EU”



Cross-cutting Issues

Continuous support over the years

“Supporting R&I activities (projects) on horizontal nature topics”
“Strong links with the other JU Programme activities”



R&I activities and main links with other activities

Sustainability and circularity

Ensuring hydrogen technologies are sustainable and circular

JU
support

6 Projects

Funding
5,76 M€

10 countries
involved

Cross-cutting
Projects

Life Cycle
Assessment

Developing guidance for LCA
application to FCH
technologies



Recycling
& dismantling

Developing tech. and
strategies for recycling
and dismantling



Guarantees of origin
framework

Providing truthful
information about the
origin of hydrogen



Sustainability and circularity

Projects ongoing in 2021 and links with other activities

Cross-cutting Projects



Life Cycle Sustainability Assessment (LCSA)

Assessing the environmental, social and economic impacts



Eco-design guidelines for FCH products

The 1st milestone in the eco-design criteria in the European sector



Recycling technologies dev. and validation

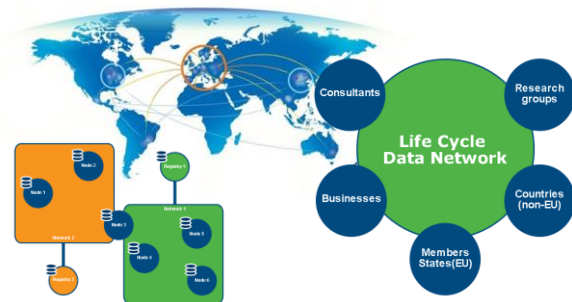
Development of novel and existing technology for recycling



Other activities



European Platform on Life Cycle Assessment



Expert workshop on Environmental Impacts of H2

With the support of:

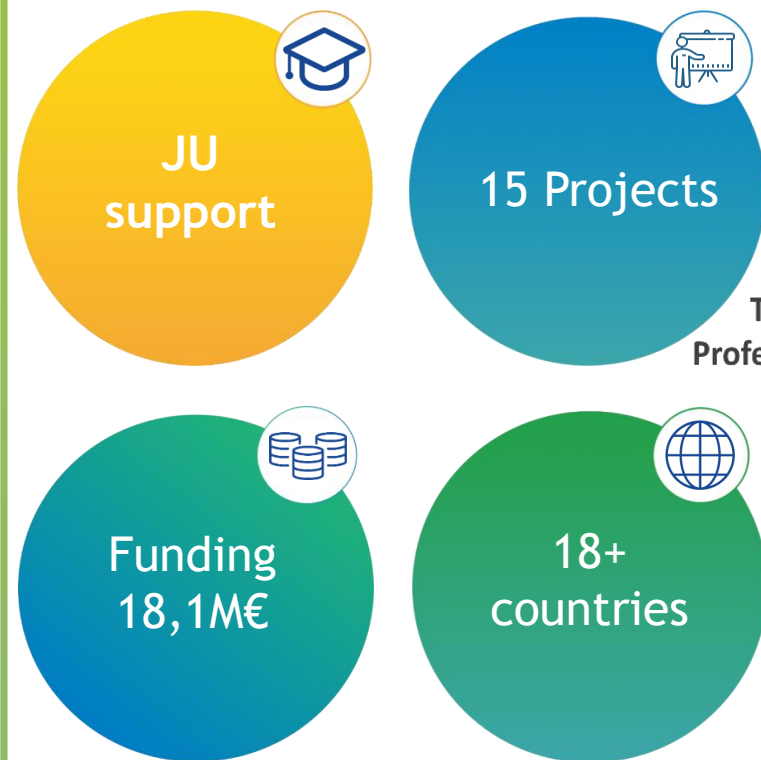


Better understanding and knowledge of the environmental impacts of hydrogen and hydrogen releases

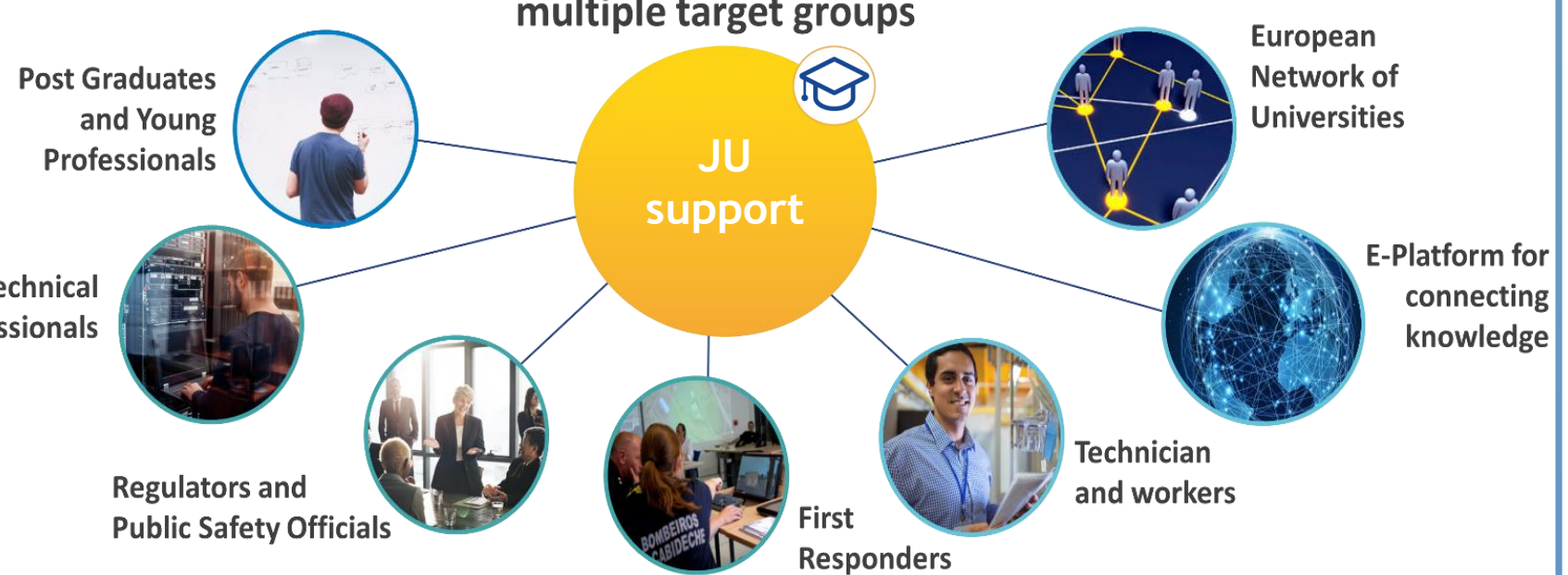


Education and public Awareness

Promoting excellence in education and training and preparing the European workforce while increasing trust

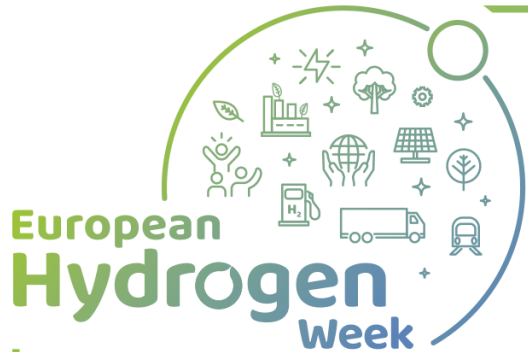


Educational and training programs tailored to multiple target groups



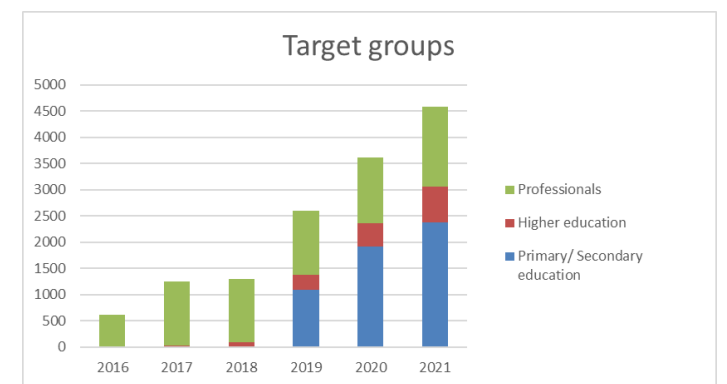
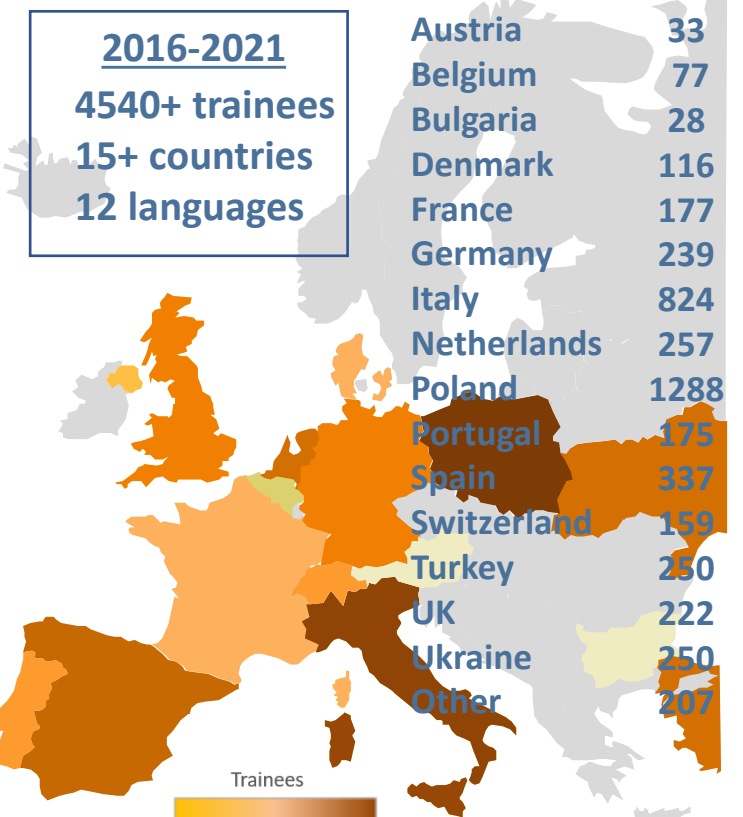
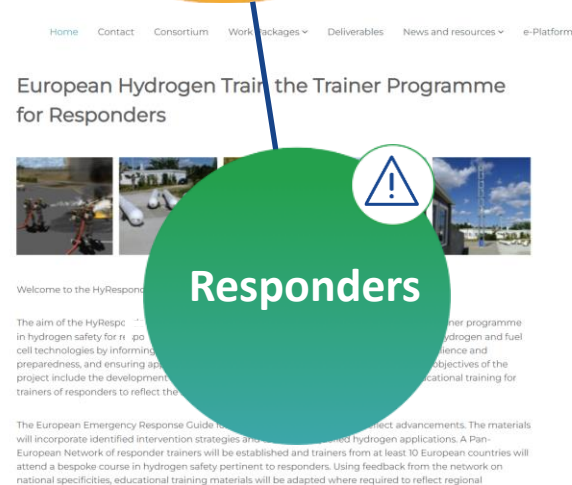
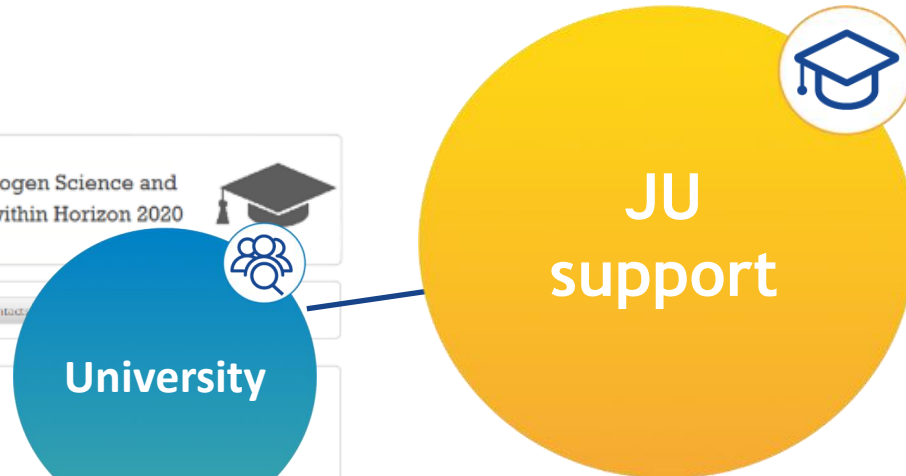
Multiple levels and types of education, learning formats, features...

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



Education and public awareness

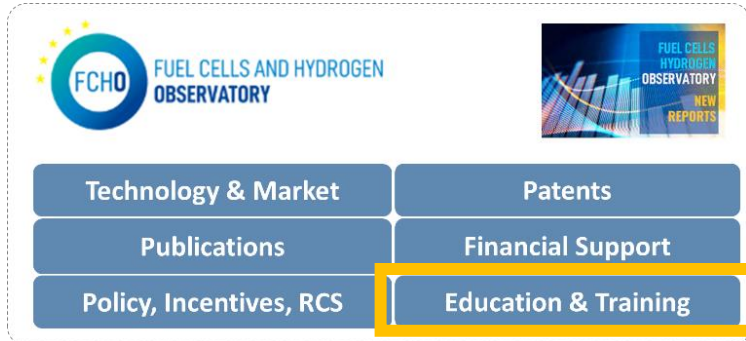
Projects ongoing in 2021



Education and public awareness

Fuel Cells & Hydrogen Observatory (FCHO)

- Education and training chapter – ca. 300 different training courses
- Education materials publicly accessible for learners and students interested in the field of FCH



- FCHO reports on Education and training!

Chapter 6
2022 Education & Training
March 2022



Education materials

- Thanks to different selectors, materials can be retrieved:
 - by ISCED level
 - by course focus
 - by language

ISCED is the reference international classification for organising education programmes and related qualifications by levels and fields

Education materials

Education materials publicly accessible online can be found in this subsection. Materials can be retrieved by 'level', as classified by the International Standard Classification of Education (**ISCED**), by course focus, by language or by source of material. You can use the different selectors to refine your search.

Free search (e.g. course title, type of materials, etc.)

ISCED Technology Language

Apply

COURSE TITLE ^	TYPE OF MATERIALS	FCH PROJECT	
Accumulo energetico	slides	HySchools	view
Activité d'apprentissage - Distribution de l'hydrogène	Exercise	HySchools	view
Alternative Fahrzeugkonzepte	Slides	H2 Training	view
Alternative fuels	Slides	H2 Training	view

Safety, PNR, RCS


Supporting a frictionless roll out and enabling frameworks



JU support



26 Projects



Funding
45,76 M€



21+
countries

Safety

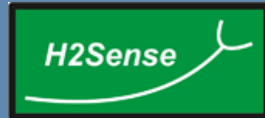
Addressing key safety-related aspects

Cross-cutting 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 group

Development of H₂ safety expert group



Other activities

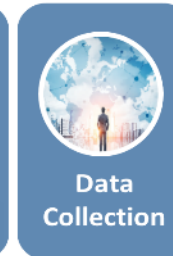


Collaboration with the Joint Research Center (JRC)

Hydrogen Incidents and Accidents Database (HIAD 2.0)

Tools for Innovation Monitoring (TIM)

European Hydrogen Safety Panel (EHSP)



European Hydrogen Safety Panel

Expert group supporting the JU in safety-related issues



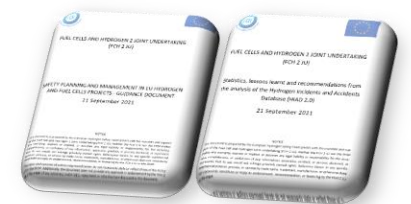
Assuring that hydrogen safety is adequately managed
Promoting and disseminating a high-level hydrogen safety culture

EHSP Working Groups



2022 Outcomes

- ✓ Projects' safety plans reviews
- ✓ Webinar on Safety planning
- ✓ EHSP reports
 - Safety Planning guidance
 - Lessons learnt from past events
 - CFD models, risk assessments, etc.



Pre-normative research (PNR), Regulations, Codes, and Standards (RCS)

Supporting and facilitating adequate frameworks for market uptake

Cross-cutting
Projects



Pre-normative Research

Addressing knowledge gaps to
support RCS development



Legal and administrative processes

Identifying barriers and
sharing best practices
across Europe

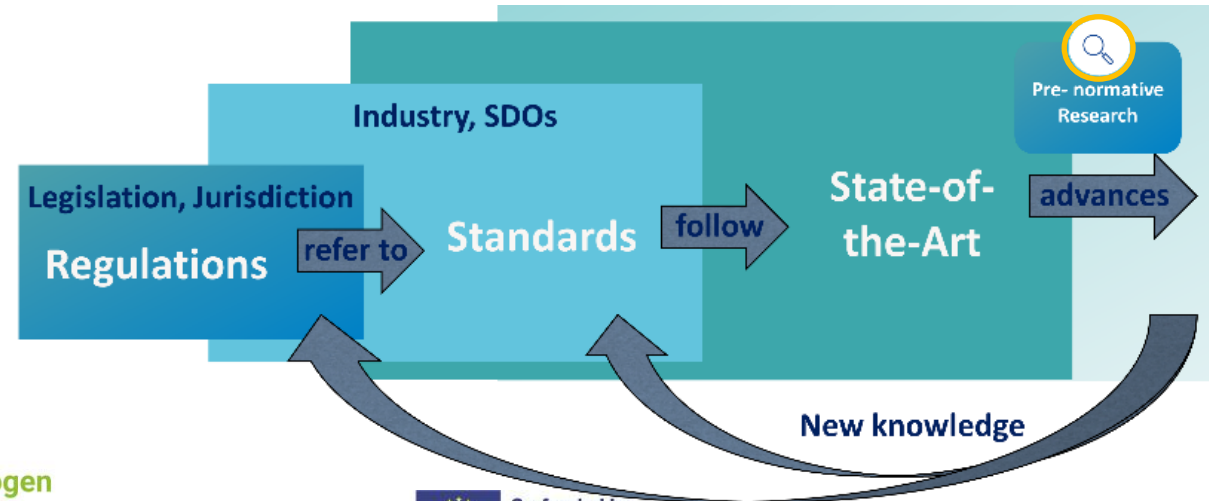


Guarantees of origin framework

Providing truthful
information about the
origin of hydrogen



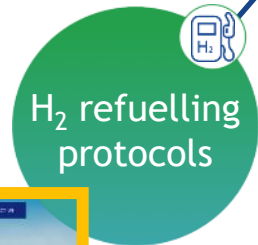
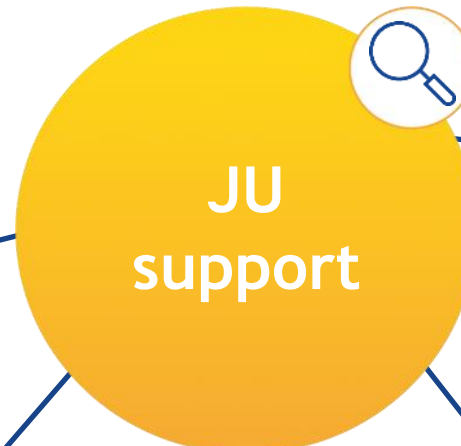
Pre-normative research
(PNR) activities:
An essential step advancing
Regulations, Codes, and
Standards



Pre-normative research (PNR), Regulations, Codes, and Standards (RCS)

Projects ongoing in 2021

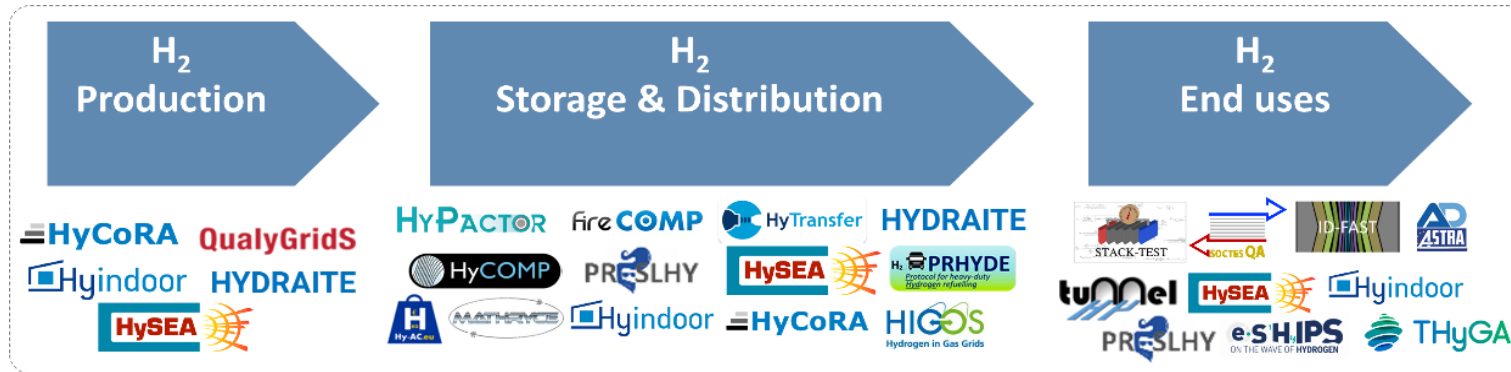
Projects at the
parallel session



Pre-normative research (PNR), Regulations, Codes, and Standards (RCS)

Providing science-based information to create and further develop standards

Covering the entire H₂ chain and targeting standards at European and International level



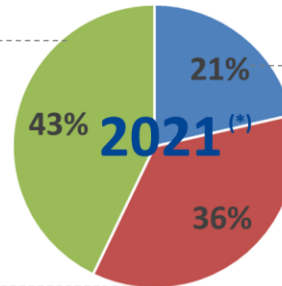
International Electrotechnical Commission



CENELEC

European Committee for Standardization

European Committee for Electrotechnical Standardization



International Standardization Organization

* 9 projects on-going over 2021

Conclusions



Sustainability, circularity, education, public awareness, safety, PNR... are cross-cutting aspects essential for mass-market commercialization



Cross-cutting projects and other activities are contributing to a frictionless deployment of hydrogen technologies



Comprehensive portfolio of activities strengthening the whole hydrogen sector and supporting the market uptake