



FUEL CELLS AND HYDROGEN
JOINT UNDERTAKING

Cross-cutting Activity Area

Topics in the 2020 call

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27/01/2020



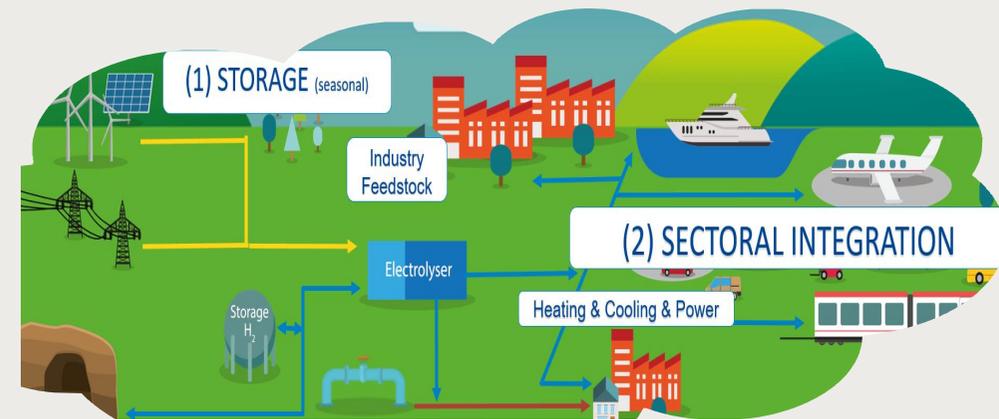
Cross-cutting Activity Area Overview

Activity Area facilitating the market uptake



Main Focus

- **Regulations, Codes and Standards (RCS)**, providing science-based information for a more suitable regulatory framework
 - Multi-fuel Refuelling Stations
 - Waterborne applications
- **Sustainability**
 - Life Cycle Sustainability Assessment (LCSA)
 - Eco-design guidelines
 - Recycling



What is new

- Focus on tech. & **administrative barriers**; PNR for ships
- **LCSA**: addressing also **economic and social dimensions**
- **Eco-design** -> Integration of the environmental dimension into the design phase
- Validate existing and develop novel **recycling technologies**



Cross-cutting Activity Area

5 Topics - 9 M€



<i>Topic</i>	<i>Type of Action</i>	<i>Ind. Budget (M€)</i>
<i>FCH-04-1-2020: Overcoming technical and administrative barriers to deployment of multi-fuel hydrogen refuelling stations (HRS)</i>	<i>RIA</i>	<i>2</i>
<i>FCH-04-2-2020: PNR on hydrogen-based fuels solutions for passenger ships</i>	<i>RIA</i>	<i>2.5</i>
<i>FCH-04-3-2020: Development of eco-design guidelines for FCH products</i>	<i>RIA</i>	<i>1</i>
<i>FCH-04-4-2020: Development and validation of existing and novel recycling technologies for key FCH products</i>	<i>RIA</i>	<i>1.5</i>
<i>FCH-04-5-2020: Guidelines for Life Cycle Sustainability Assessment (LCSA) of fuel cell and hydrogen systems</i>	<i>CSA</i>	<i>2</i>



Cross-cutting Activity Area Topics Overview

Research and Innovation Action – RIA



FCH-04-1-2020: Overcoming technical and administrative barriers to deployment of multi-fuel hydrogen refuelling stations (HRS)



To provide guidance to assist the deployment of H₂ dispensing in a multi-fuel environment across EU



Work scope:

- **Detailed investigation of current status in EU** for light and heavy duty road vehicles
- **Practical research/ Experimental campaign(s) to address gaps** in current understanding
- **Generate best practice guidance that can be applied throughout EU** -> Common approach
- Engage with permitting authorities and Standards Developing Organisations (SDOs) -> knowledge sharing

Clear impact-focused topic -> greater degree of harmonisation of requirements for the permitting

Strong international dimension: EEA (EU + EFTA) countries...



Cross-cutting Activity Area Topics Overview

Research and Innovation Action – RIA



FCH-04-2-2020: PNR on hydrogen-based fuels solutions for passenger ships

 Pre-Normative Research (PNR) **to facilitate and speed up the development of a goal-based regulatory framework applicable to hydrogen-fuelled ships** (GH2, LH2 and hydrogen-based alternative fuels) in the International Maritime Organization (IMO)



Work scope:

- **To review of the current regulatory framework:** needs, challenges, obstacles/ barriers...
- **To generate technical knowledge** for the development of a regulatory framework
- **To provide a roadmap to add GH2, LH2 and H2-based alternative fuels into the IGF Code**

Strong partnership with all stakeholders: shipbuilders & designers, tech. providers, R&D Centers, local authorities

Cooperation with IMO, SDOs, etc. -> dedicated **chapter of the IGF Code dedicated to H2**

Strong international dimension

Mission Innovation



Cross-cutting Activity Area Topics Overview

Research and Innovation Action – RIA



FCH-04-3-2020: Development of eco-design guidelines for FCH products

 **Eco-design guidelines** including well-defined solutions for FCH products focused on the minimisation of the environmental impacts along their life cycle

-  **Work scope:**
- **At least two FCH products:** PEMFC, PEMWE, SOC, AWE...
 - **Set of prioritised eco-design actions** in the product design methodology, **emphasis in design for recycling**, frameworks from more mature sectors
 - **EU Taxonomy framework**, methodology of **eco-efficiency assessment** -> solutions' **impact assessment**, **benefits for actors** in the products' lifecycle (including EoL recovery and recycling)

Cross-collaboration with FCH-04-5-2020 on Life Cycle Sustainability Assessment (LCSA)

Strong international dimension



Cross-cutting Activity Area Topics Overview

Research and Innovation Action – RIA



FCH-04-4-2020: Development and validation of existing and novel recycling technologies for key FCH products



Materials recovery and recycling technologies for key FCH products



Work scope:

- **Physical, chemical and thermal processes** for materials recovery should be identified, assessed and ranked
- **Adaptation & validation** for FCH products of **existing processes in conventional recycling/ recovery centres**
- **At least two** (existing) **recycling processes for two different FCH products' materials**
- **At least two novel recycling techniques**, particular focus on precious metals
- **Validation of the suitability of the materials recovered** for their reuse (open/close-loop recycling)
- Environmental-economic analysis of the EoL strategy

Multidisciplinary partnership: OEMS, recovery and recycling companies, experts in life-cycle assessment...

Strong international dimension



Cross-cutting Activity Area Topics Overview

Coordination and Support Action – CSA



FCH-04-5-2020: Guidelines for Life Cycle Sustainability Assessment (LCSA) of fuel cell and hydrogen systems



Methodological framework and guidance for the LCSA of FCH systems



Work scope:

- **Identification of development needs** concerning the FC-HyGuide guidance document
- **Update FC-HyGuide guidance documents**
- Widen the assessment framework to **include social and economic indicators**
- Collect **life cycle inventory data** for FCH systems and competing solutions - > **publicly available!**
- At least one **test application case** for FCs and one for H2 production systems

Strong international dimension

Mission Innovation



Additional requirements across the entire call



Technology monitoring and progress against State-of-the-Art

- Obligation to provide every year technical information in the online data collection platform (TRUST)



Safety reporting - Incidents, accidents and near-misses

- Any safety-related event shall be reported to JRC which manages the HIAD 2.0 and the HELLEN database



EU-wide harmonisation and validation activities

- Testing activities should adopt the already published FCH 2 JU harmonized testing protocols



CertifHy Green H2 guarantees of origin

- “CertifHy Green H2” guarantees of origin should be used through the CertifHy platform



Safety planning - Innovation actions (IA) only

- A ‘draft safety plan’ should be proposed at the proposal level, to be further developed at the project level





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FCH JU

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