

# **EUROPEAN HYDROGEN SAFETY PANEL (EHSP)**

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## **ABSTRACT**

The FCH 2 JU launched the European Hydrogen Safety Panel (EHSP) initiative in 2017. The mission of the EHSP is to assist the FCH 2 JU both at programme and at project level in assuring that hydrogen safety is adequately managed, and to promote and disseminate H2 safety culture within and outside of the FCH 2 JU programme.

The EHSP is composed of a multidisciplinary pool of safety experts grouped in ad-hoc working groups (task forces) according to the tasks to be performed and to expertise. The scope and activities of the EHSP are structured around four main areas:

### **TF.1. Support at project level**

The EHSP task under this category includes the development of measures to avoid any accident by integrating safety learnings, expertise and planning into FCH 2 JU funded projects and by ensuring that all projects address and incorporate the state-of-the-art in hydrogen safety appropriately. To this end, a Safety guidance document for hydrogen and fuel cell projects will be produced.

### **TF.2. Support at programme level**

Activities under this category include answering questions related to hydrogen safety in an independent, coordinated and consolidated way, via hotline-support or if necessary, via physical presence of safety representative at the FCH 2 JU. It could also include a short introduction to hydrogen safety, and the provision of specific guidelines for the handling, storage and use of hydrogen in the public domain. As a start, a clear strategy on this should be developed and therefore related Multi-annual work plan 2018-2020.

### **TF.3. Data collection and assessment**

The EHSP tasks include the analysis of existing events already introduced in the European Hydrogen Safety Reference Database (HIAD) and of new information from relevant mishaps, incidents or accidents. The EHSP should therefore derive lessons learned and provide together with the involved parties further general recommendations to all stakeholders, based on these data. For 2018, the following deliverables should be produced: methodology to collect inputs from projects and to provide lessons learned and guidelines, assessment and lessons learned from HIAD and a report on research progress in the field of hydrogen safety.

### **TF.4. Public outreach**

Framed within the context of the intended broad information exchange, the EHSP tasks under this category include the development of a regularly updated webpage hosted on the FCH 2 JU website.

## 1.0 INTRODUCTION

The Fuel Cells and Hydrogen Joint Undertaking (FCH 2 JU) is a public-private partnership supporting research, technological development and demonstration (RTD) activities in fuel cell and hydrogen energy technologies in Europe. It aims to accelerate the market introduction of these technologies, realising their potential as an instrument in achieving a carbon-clean energy system. Figure 1 summarises the objectives of FCH 2 JU.

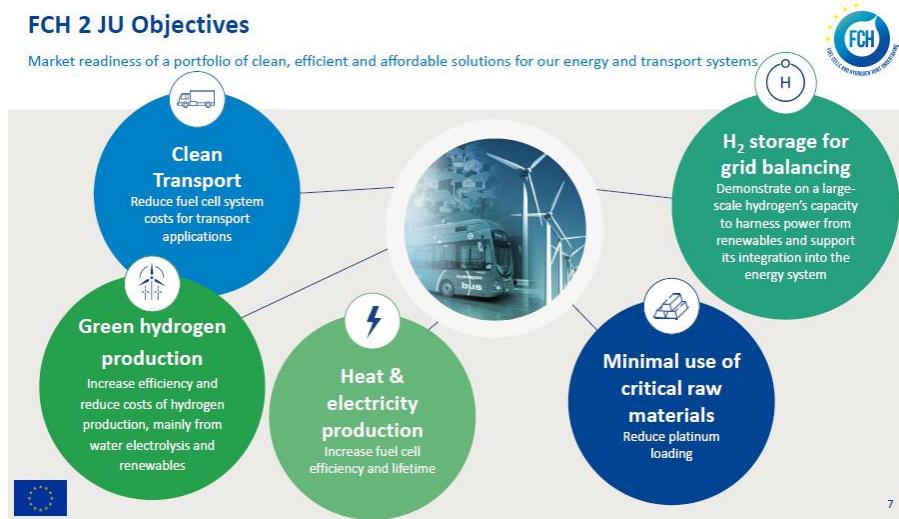


Figure 1. FCH 2 JU objectives.

The activities of FCH 2 JU are organised in three Pillars: Transport, Energy and Cross-Cutting. The Cross-Cutting Pillar is promoting supporting activities for the market uptake also with respect to safety.

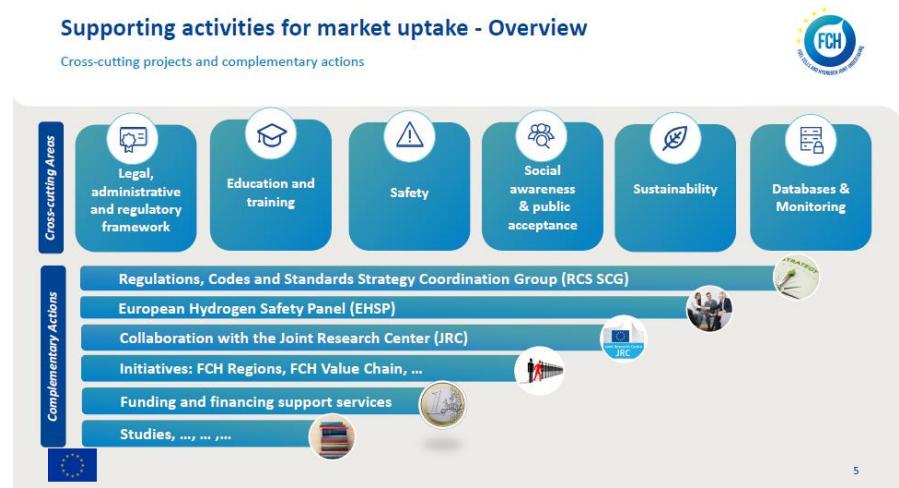


Figure 2. Supporting activities in the Cross-cutting Pillar.

The FCH 2 JU launched the European Hydrogen Safety Panel (EHSP) initiative in 2017. The mission of the EHSP is to assist the FCH 2 JU both at the programme and at the project level in assuring that hydrogen safety is adequately managed and to promote and disseminate hydrogen safety culture within and outside of the FCH 2 JU programme.

The EHSP is composed of a multidisciplinary pool of 16 experts, grouped in small ad-hoc working groups (task forces). Collectively, the members of the EHSP have the necessary scientific competencies and expertise covering the technical domain of hydrogen safety to provide science-based recommendations to the FCH 2 JU.



Figure 3. EHSP kick-off meeting of first trimester 2018.

During 2018, the EHSP launched four task forces (TFs) and published a safety guidance document for hydrogen and fuel cell projects. Other activities in 2018 included a comprehensive assessment of the data and events contained in the European Hydrogen Safety Reference Database HIAD 2.0, monitoring the progress in the field of hydrogen safety, and general support of the FCH 2 JU in identifying safety issues and research areas. In 2019, the EHSP will continue working in the same four main topical areas.

## **2.0 TF1 Support at project level**

The EHSP activities under this category aim at coordinating measures to avoid accidents by integrating safety learnings, expertise and planning into FCH 2 JU funded projects by ensuring that all projects address and incorporate the state-of-the-art in hydrogen safety.

Building on the safety guidance document for hydrogen and fuel cell projects, the aim is to release a practical fit-for-purpose document tailored for the FCH 2 JU projects. Envisaged as part of an early warning system that will support the FCH 2 JU in identifying projects that potentially might require considerably more than average attention on safety aspects, the ultimate aim of this document is to verify with a specific safety plan, that all funded projects excel in safety-related aspects and follow a set of safety measures and management procedures, which are based on the EHSP expertise and recommendations.

In 2019, a first FCH 2 JU funded project for developing and operating a large fuel cell system was evaluated and assisted in setting up a first version of a safety plan. A simplified template was provided to ease the development and maintenance of such a safety plan with relative little efforts.

## **2.1 TF2 Support at programme level**

In addition to support at project level, which represents a significant share of the FCH 2 JU activities, the EHSP works under this category include a set of activities with a broader and cross-cutting dimension focused on the FCH 2 JU programme itself and how safety aspects can be enhanced within the overall programme. Activities also include support in specific occasions for answering urgent questions related to hydrogen safety, acting as representative of the FCH 2 JU on safety aspects, or the provision of specific guidelines for safe use of hydrogen in the public domain.

Over 2018, the EHSP supported the FCH 2 JU in identifying safety issues and researching those that still might require support within the programme. Based on this first exercise and taking into consideration the expected activities and results coming up from the different task forces, in 2019 with the support of JRC a broader strategy will be developed, paving the way to develop a Multi-annual work plan for the EHSP.

## **2.2 TF3 Data collection and assessment**

In 2018, the EHSP tasks under this category encompassed the analysis of safety data and events contained in the revamped European Hydrogen Safety Reference Database (HIAD 2.0) operated by JRC and supported by the FCH 2 JU. In close collaboration with JRC, members of the EHSP reviewed more than 250 events. The outcome from this assessment will be a report on the status of the Hydrogen Safety Reference Database, including recommendations for future research in this field. Moreover, and related to the activities for the support at programme level, the activities in 2018 also focused on reviewing the contribution of the FCH 2 JU programme on safety aspects, providing as a clear baseline for drafting the envisaged multi-annual work plan.

In 2019, the JRC and EHSP will continue to expand the HIAD 2.0 database with new information from accidents and near misses involving hydrogen. The EHSP will issue recommendations to stakeholders on the lessons learned. Moreover, EHSP will complete a final report on the international progress in the field of hydrogen safety, including the contribution from projects funded by FCH 2 JU.

## **2.3 TF4 Public outreach**

The FCH 2 JU established a web page for the EHSP in 2018:

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

The web page will be the primary communication channel for the EHSP. The activities related to public outreach in 2019 include the development of a communication strategy for the EHSP, presentations at international conferences (including this paper), and updates to the web page. The steps towards the communication strategy will include:

- Identifying suitable methods for engaging stakeholders and partners
- Revisiting the mission statement for the EHSP
- Defining a set of communication goals for the EHSP
- Defining and prioritising target audience groups

- Identifying key arguments that support the communication goals
- Selecting further appropriate communication channels
- Drafting the communication plan
- Identifying risks and risk-reducing measures, including the functionality available for the web page
- Identifying available resources, including establishing a competence matrix for the EHSP
- Adjusting the communication plan in light of the risk analysis and the available resources

The web page will feature news and facts related to hydrogen safety, as well as links to other relevant websites.