International Partnership
for Hydrogen and Fuel Cells
in the Economy

Fuel Cells and Hydrogen Deployment: Progress Through Global Collaboration

Tim Karlsson – Executive Director IPHE Secretariat

Mission Innovation "Hydrogen Valleys" Workshop

Antwerp, Belgium

27 March 2019

The IPHE

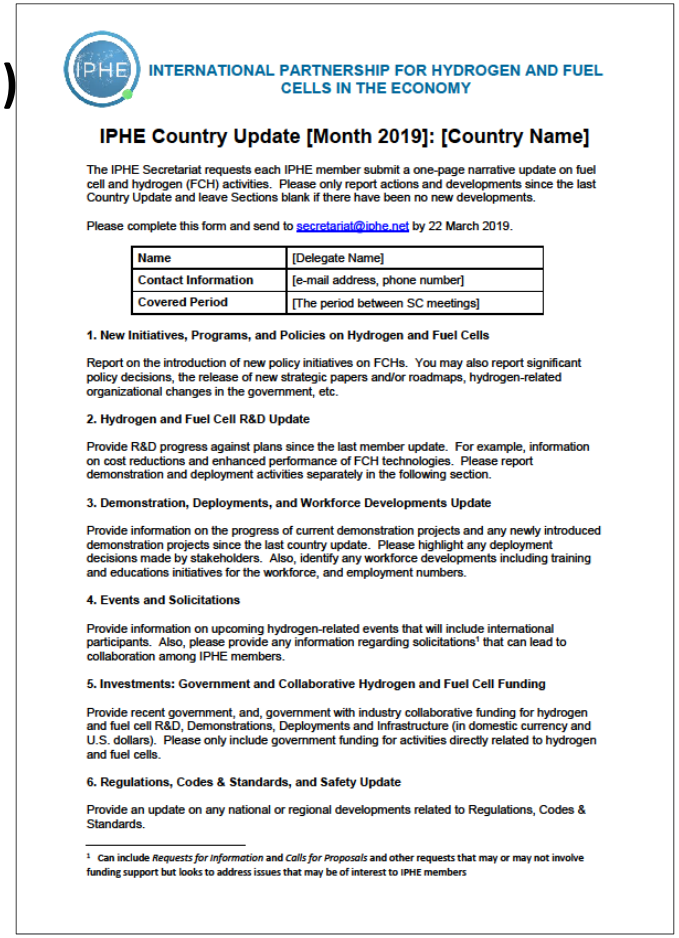
- International **government-to-government partnership,** 18 member countries and the European Commission **formed in 2003.**
- **Objective:** Increase global collaboration to accelerate and enable widespread deployment of fuel cells and hydrogen in the economy.
- **Focus:** sharing information on market framework issues - Policies, Government Initiatives, Regulations, C&S, Safety, Public Engagement

IPHE Activities

- **Working Groups**
  - **Regulations, Codes, Standards and Safety (RCSS)**
    - Foster RCSS harmonization
    - Share safety info, best practices, lessons learned
  - **Education and Outreach**
    - Create factual communication materials
    - Increase stakeholder engagement – workshops, policy forums, education events

Leverage partnerships to accelerate progress

- Ministerial Meetings, Industry (e.g. H2 Council), IEA, Mission Innovation with a view to address Ministerial priorities



INTERNATIONAL PARTNERSHIP FOR HYDROGEN AND FUEL CELLS IN THE ECONOMY

IPHE Country Update [Month 2019]: [Country Name]

The IPHE Secretariat requests each IPHE member submit a one-page narrative update on fuel cell and hydrogen (FCH) activities. Please only report actions and developments since the last Country Update and leave Sections blank if there have been no new developments.

Please complete this form and send to secretariat@iphe.net by 22 March 2019.

Name	[Delegate Name]
Contact Information	[e-mail address, phone number]
Covered Period	[The period between SC meetings]

1. New Initiatives, Programs, and Policies on Hydrogen and Fuel Cells

Report on the introduction of new policy initiatives on FCHs. You may also report significant policy decisions, the release of new strategic papers and/or roadmaps, hydrogen-related organizational changes in the government, etc.

2. Hydrogen and Fuel Cell R&D Update

Provide R&D progress against plans since the last member update. For example, information on cost reductions and enhanced performance of FCH technologies. Please report demonstration and deployment activities separately in the following section.

3. Demonstration, Deployments, and Workforce Developments Update

Provide information on the progress of current demonstration projects and any newly introduced demonstration projects since the last country update. Please highlight any deployment decisions made by stakeholders. Also, identify any workforce developments including training and educations initiatives for the workforce, and employment numbers.

4. Events and Solicitations

Provide information on upcoming hydrogen-related events that will include international participants. Also, please provide any information regarding solicitations[1] that can lead to collaboration among IPHE members.

5. Investments: Government and Collaborative Hydrogen and Fuel Cell Funding

Provide recent government, and, government with industry collaborative funding for hydrogen and fuel cell R&D, Demonstrations, Deployments and Infrastructure (in domestic currency and U.S. dollars). Please only include government funding for activities directly related to hydrogen and fuel cells.

6. Regulations, Codes & Standards, and Safety Update

Provide an update on any national or regional developments related to Regulations, Codes & Standards.

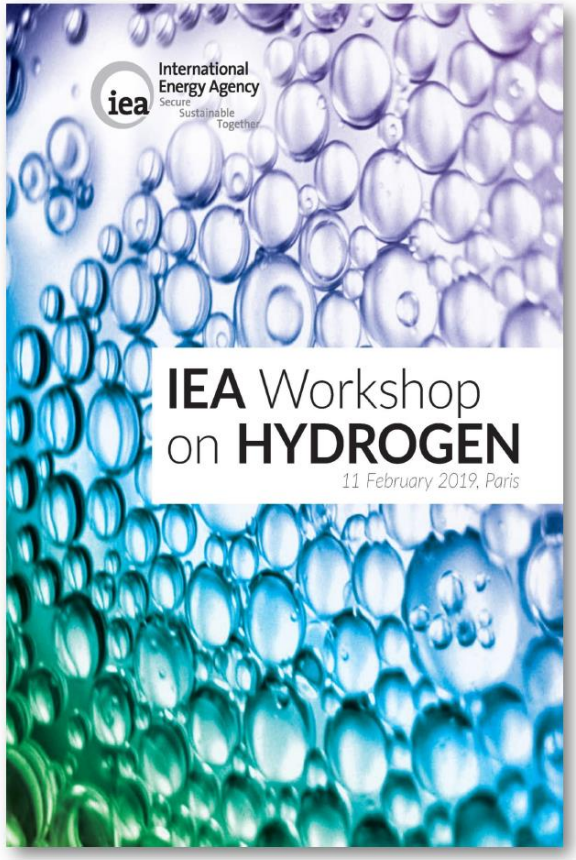
[1] Can include *Requests for Information* and *Calls for Proposals* and other requests that may or may not involve funding support but looks to address issues that may be of interest to IPHE members

Mission Innovation: MI IC-8

- **MI**: Announced 30 November 2015
- **Global Initiative:** 23 Countries and European Union
- **Objective:** Dramatically accelerate global clean energy innovation – double governments' clean energy R&D investment over 5 years
    - 8 Innovation Challenges – **encouraging greater private sector investment** in transformative clean energy technologies
    - ICs **operational for a specific length of time** to tackle defined objective.
- **MI IC-8 approved in 2018**, is "to accelerate the development of a global hydrogen market by **identifying and overcoming key technology barriers** to the production, distribution, storage, and use of hydrogen at gigawatt scale."
- Key to engage private sector by **exchanging information** on clean energy innovation needs; and, **encouraging investment** to enhance the innovation pipeline.

International Energy Agency (IEA)

- **IEA founded in 1974** – in response to the oil crises of the 1970s
- **Global Initiative:** 30 Member Countries
- **Objective:** work to ensure reliable, affordable and clean energy
    - **38 Technology Collaboration Programs** – strong technical R&D focus with researcher-led, technology specific Tasks
    - **2 TCPs related to Fuel Cells and Hydrogen**
- **IEA Hydrogen Study** due in time for the G20 – working with MI IC-8, IPHE, and others



Hydrogen Energy Ministerial: Priorities

Harmonization of Codes and Standards	Information Sharing, Safety, Infr. Supply Chain	Studies and Evaluations of Impact Potential	Communication and Outreach

• Coordinate with industry to enable harmonization of relevant regulations, codes and standards such as those for:
  • refueling stations,
  • heavy duty transportation,
  • energy storage
  • technologies supporting sectoral integration,
  • maritime
  • other
	• Collaborate on relevant infrastructure R&D
	• Share safety lessons learned, best practices on hydrogen safety
	• Collaborate on R&D of risk assessment and mitigation to enable the safe and sustainable use of hydrogen technologies across applications.
		• Collect, analyze and share data and conduct studies
		• Assess impact potential for sustainable production of H2 across pathways
		• Develop business cases and models across value chain and integrated systems analysis across scenarios
			• Work together to promote appropriate outreach and awareness programs and initiatives to educate a broad range of stakeholder groups on H2 and fuel cell technologies
			• Develop ‘train the trainer’ programs, to build awareness of hydrogen solutions, especially on safety

Suite of International Initiatives

IPHE

Officials Gov't-to-Gov't

- On-going
- Information sharing on policies, programs, initiatives, regulations
- E&O, and, RCSS Working Groups
- Forums and Workshops

Mission Innovation

Gov't + Investors

- IC-8: 3 year time frame 2018-20
- Targeted action on technology barriers to get to gigawatt-scale hydrogen production and use

HEM

Ministerial Gov't-to-Gov't

- Ministerial engagement specifically on hydrogen
- Provides linkages across initiatives using the frame of the four themes

Hydrogen Council

Industry-to-Industry

- Studies and Analysis
- Public and Political Engagement
- Business Value Propositions

IEA

Researcher Collaboration

- On-going
- TCP-Pre-Competitive / Collaborative Research Project Specific
- Analytical Studies

Bottom Line: Collaborate and Leverage Partnerships to Accelerate Progress

Thank you

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