



The 10th IPHE Education & Outreach Event

An Overview of the IPHE

at the

Technische Universität Hamburg-Harburg

by

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April 26, 2017



IPHE Purpose and Mission

An inter-governmental partnership providing a policy oriented forum to share information and ideas to accelerate the cost-effective transition to clean energy, transportation, and industrial sectors through using fuel cell and hydrogen (FCHs).

Member partners are doing R&D, demos, deployments, and/or are implementing policies to increase the use of FCHs in the economy.



Australia



Austria



Brazil



Canada



China



European Commission



France



Germany



Iceland



India



Italy



Japan



Republic of Korea



Netherlands



Norway



Russian Federation



South Africa



United Kingdom



United States



IPHE Priorities and Near-Term Goals

Priorities:

1. **Accelerate market penetration** of FCH technologies
2. **Highlight policy and regulatory actions** supporting widespread deployment;
3. **Raise the profile and potential opportunities** with policy-makers and the public; and,
4. **Monitor hydrogen, fuel cell, and complementary technology** developments.

Near-Term Goals:

1. **Foster momentum** to accelerate the transition to clean systems through use of FCH;
2. **Facilitate collaborative work** across member countries; and,
3. **Encourage broader engagement** and information sharing.



Trends: Technology and Systems

1. Role of Demonstrations

- Market demos are crucial in developing systems & supply chains

2. Early Commercial Deployments

- Sustained global R&D and Demos have led to technology maturity and early market deployment

3. Cost Reductions

- Need more work across the innovation spectrum

4. Market Focus

- Need internationally consistent market framework structures

4. Energy & Transport System Integration – and Beyond

- Recognition of longer-term use of hydrogen as an integrator – an “energy vector”



Drivers: Based on National Circumstances

1. Energy Security

- Security of supply and ability to switch

2. Energy Efficiency

- Effective use of variable generation – at grid and community scale
- Moving from centralized to distributed generation

3. Economic Growth

- New products and supply chains
- Taxpayers return on R,D and D investments

4. Environmental Performance

- Clean Air, Climate Change, Noise



Drivers: Necessary Conditions to Act

- 1. Clear Industry Deployment Plan**
 - Vision on the roll-out of their product lines.
- 2. Perceived Competitive Advantage Over Incumbent Technology**
 - More comfortable, easier to use, quieter, smoother, simpler, cheaper.
- 3. Defined Financial Framework**
 - Trajectory to robust market conditions.
- 4. Economic Impact**
 - Jobs, Taxes, Trade, Supply Chain Development.
- 5. Environmental Impact**
 - Improve Local Air Quality, GHG Reductions, Noise Abatement.
- 6. Efficiency and Security**
 - Complements new clean energy generation, enables ease of energy management, facilitate clean systems integration.



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Operating Approach of the IPHE

Steering Committee:

- **Meets twice a year** in member Countries focusing on high-level policy discussions and provides an opportunity for the Host to highlight their latest developments.
- **Country Updates:** New Policy Initiatives; FCH R&D Activities; Demonstrations & Deployments; Events; and, Investments - Government and Collaborative Mechanisms.
- **Working Groups:** Regulations, Codes, and Standards; Education & Outreach.

Policy Forums:

- **Issues raised in SC meetings, or, of specific interest to the Host country.**
- **Helps all members formulate ideas and engage leading thinkers and industry stakeholders** on how FCH technologies can address government policy objectives.

Outreach:

- **An important component of the IPHE work** at Conferences and Events
- Includes student events held at universities in conjunction with SC meetings

IPHE Secretariat:

- **Executive Director based in Brussels** (office provided by the EC via the FCH JU).
- **Supported by voluntary funding** (and in-kind support) from members through a not-for-profit organization (HFC Global LLC) in the US.



Trends: Early Commercial Deployments

Sustained global research, development, and demonstrations by industry and government have led to a significant level of technology maturity and early market deployment.

Country	# of Cars	# of Buses	# of Fork Lifts	# of Stations	# of <5 kW Stationary Units
United States	331	33	>11,600	>65	-
Germany	103	14	16	22	~1000
Japan	>900	Demo only	4	86	>180,000
France	110	-	60	5	9
United Kingdom	42	18	-	14	Demo only
China	60	40	-	4	-

Source: Member Statements <http://www.iphe.net/partners.html>



Trends: Energy & Transport System Integration

- Recognition of the longer-term opportunity and need for hydrogen as an integrator – an “energy vector”.
- Significant technical research and economic analysis is necessary to understand the efficient and effective integration of the systems and the business cases to make it happen.



Vast promise, huge challenges

IEA outlines critical steps to advance hydrogen and fuel cells.
30 June 2015

“... In a future energy system largely based on renewable energies, hydrogen could play a pivotal role by connecting different layers of infrastructure to link energy supply and demand. **Hydrogen can enable new energy vectors used to supply transport, buildings and industry by bridging surplus renewable power into the energy demand sectors**”

Source: *Key Point: Energy system today and in the future* IEA