



International Partnership *for the* Hydrogen Economy



Introduction to IPHE



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Questions I Hope To Answer

- What is IPHE?
- What is its goal?
- How is IPHE structured?
- What has it accomplished?
- What role do stakeholders play?
- What is the difference between IPHE/IEA?
- What are IPHE's future plans?



What is IPHE?

- IPHE is an organization composed of 17 members: 16 nations plus the European Commission
- IPHE was established at a Ministerial Meeting in Washington, DC in November 2003
- Members have been chosen on the basis of
 - substantial, long-term resource commitments to hydrogen and fuel cell technology research and development activities;
 - a well-defined vision and national strategy to advance technology deployment and infrastructure development;
 - and a commitment reflected in policies and strategies that effectively advance private sector development of a hydrogen economy.



IPHE Partners



Russian Federation



USA



Canada



Iceland



Japan



Republic of Korea



China



India

IPHE Partners' Economy:

- Over \$35 Trillion in GDP, 85% of world GDP
- Nearly 3.5 billion people
- Over 75% of electricity used worldwide;
- > 2/3 of CO₂ emissions and energy consumption

United Kingdom



France



Germany



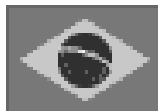
Italy



Australia



Brazil



Norway



European Commission



New Zealand





IPHE Goal

Efficiently organize and coordinate multinational research, development and deployment programs that advance the transition to a global hydrogen economy.



IPHE Structure

- IPHE is structured to focus on two levels
 - A strategic level, embodied by a Steering Committee (SC)
 - The SC is chaired by the U.S. (Under Secretary of Energy David Garman and Assistant Secretary of Transportation Tyler Duvall)
 - An implementation level, embodied by the Implementation-Liaison Committee (ILC)
 - The ILC is co-chaired by Germany and Iceland (Dr. Hanns-Joachim Neef and Prof. Thorsteinn Sigfusson)
- The committees are supported by a Secretariat
 - U.S. Dept. of Energy houses Secretariat
 - Graham Pugh, Exec. Director; Mike Mills, Assoc. Director; contract support



IPHE Structure

Steering Committee

- Governs the overall framework, policies and procedures of the IPHE
- Periodically reviews the program of collaborative activities
- Provides direction to the Secretariat

Implementation – Liaison Committee

- Coordinates collaborative projects
- Identifies promising directions for R,D,&D, and commercial use
- Maintain communications with the private sector and other stakeholders.

Secretariat

- Coordinates communications with regard to IPHE activities
- Organizes meetings for the IPHE, its committees and subgroups
- Acts as a clearinghouse of information for the IPHE.



Steering Committee Meetings

- Since the Ministerial, the SC has met four times
 - Beijing, China (May 2004)
 - Paris, France (January 2005)
 - Kyoto, Japan (September 2005)
 - Vancouver, Canada (28 – 29 March 2006)
- Upcoming meetings:
 - Reykjavik, Iceland (September 2006)
 - Sao Paulo, Brazil (April 2007)



Steering Committee Accomplishments

- Identified Codes and Standards work as an IPHE priority
- Identified means for stakeholder participation (Liaison Group of Stakeholder Organizations)
- Directed ILC to hold international workshops on selected topics
- Endorsed the first 10 IPHE collaborative projects
- Approved creation of the IPHE Priority Scorecard and Activities Matrix
- Approved the IPHE Awards Program – an annual Special Recognition award for an individual and an annual Technical Award for an individual/organization/institution



Implementation-Liaison Committee

- Since the Ministerial, the ILC has met four times
 - Reisenburg, Germany (March 2004)
 - Reykjavik, Iceland (September 2004)
 - Rio de Janeiro, Brazil (March 2005)
 - Shanghai, China (January 2006)
- Upcoming Meetings:
 - Lyon, France (12 June 2006)
 - United Kingdom (January/February 2007)



ILC Accomplishments

- Publication of Scoping Papers on high priority activities
 - Hydrogen production, storage, fuel cells, codes and standards, socio-economics
- Established working groups
 - Codes and Standards; Education; Demonstration
- Created World Atlas on Hydrogen and Fuel Cell Demonstration Projects (on website)
- Conducted international technical workshops on high priority topics



IPHE Workshops

- Joint IEA-IPHE SOFC Fuel Cell Workshop - May 2005
Quebec City, Canada
- Joint IEA-IPHE PEM Fuel Cell Workshop - June 2005
Mol, Belgium
- IPHE International Conference on Hydrogen Storage -
June 2005 - Lucca, Italy
- IPHE Socio-Economic Workshop - June 2005
- Paris, France
- International Conference on Hydrogen Safety -
September 2005 - Pisa, Italy
- **Hydrogen from Renewable Energy Sources – October
2005 - Seville, Spain**



IPHE Endorsed Projects

- ILC created a Project Evaluation Team to evaluate IPHE project proposals
 - IPHE endorsement of high value collaborative activities
- Project Working Principles
 - Supported by more than one IPHE member
 - Funding source already established
 - National environmental, safety, and health concerns addressed
 - Project partners willing to share non-proprietary project information with other IPHE Members



IPHE Endorsed Projects

- First 10 IPHE endorsed projects approved in Sept. 2005
 - Preparing For The Hydrogen Economy By Using The Existing Natural Gas System As A Catalyst
 - **Solar Driven High Temperature Thermochemical Production Of Hydrogen**
 - Reversible Solid State Hydrogen Storage For Fuel Cell Power Supply System
 - Advanced Membranes
 - Fuel Cell Testing, Safety And Quality Assurance (FCTESTQA)



IPHE Endorsed Projects

- First projects (continued)
 - Application Of Gradient Porous Composite MEAs For Different Types Of Fuel Cells
 - HyWays - The Development And Detailed Evaluation Of A Harmonised "European Hydrogen Energy Roadmap"
 - HySafe - Safety Of Hydrogen As An Energy Carrier
 - **Solar Hydrogen From Reforming Of Methane**
 - Clean Urban Transport for Europe (CUTE), Ecological City Transport System (ECTOS), Sustainable Transport Energy for Perth (STEP)
- Next round of project proposal received and under evaluation for selection at June ILC meeting



Outreach & Education

- IPHE Representation at International Workshops
- IPHE Newsletter
 - First edition in September 2005
 - Hard copy and web based
 - Second edition at end of March 2006
 - Available here
- IPHE Endorsement of Events
 - Event planners provide information to Secretariat



Stakeholders

- Secretariat maintains a mailing list of over 1,000 names
 - Registration through website
 - Open to individuals from IPHE & Non-IPHE members
 - Receive IPHE announcements, newsletters, reports, etc.
- Liaison Group of Stakeholder Associations (LGSA)
 - Open to associations supporting IPHE goals
 - IPHE members recommend LGSA members to Secretariat
 - Secretariat establishes contact and creates link on IPHE website
 - LGSA members receive additional material, such as meeting announcements, and commit to circulate this to stakeholders



U.S. LGSA Members

- **Alliance to Save Energy**
- **American Council on Renewable Energy**
- **American Hydrogen Association**
- **California Fuel Cell Partnership**
- **California Hydrogen Business Council**
- **Edison Electric Institute**
- **National Hydrogen Association**
- **National Mining Association**
- **Nuclear Energy Institute**
- **Partnership for Advancing the Transition to Hydrogen [PATH]**
- **U.S. Fuel Cell Council**
- **World Environment Center**



International LGSA Members

- **Australian Institute of Energy,
Hydrogen Division**
- **Tasmania Hydrogen Stakeholder
Network (Australia)**
- **Canadian Hydrogen Association**
- **Fuel Cells Canada**
- **European Hydrogen &
Fuel Cell Technology
Platform (EC)**
- **National Coordination
Office for Hydrogen and
Fuel Cells [NKJ] (Germany)**



Stakeholder Involvement Options

- The IPHE website:
 - Special section for stakeholders
- IPHE Ministerial, SC, and ILC Meetings:
 - Meetings are open to any who wish to attend
 - Stakeholders frequently give presentations on activities in line with theme of meeting
 - Some sessions expressly intended to facilitate an exchange of views and ideas on issues of substance where stakeholders could weigh in



IPHE and IEA Implementing Agreements

- A frequently asked question: “why do we need IPHE if the IEA Hydrogen and Fuel Cell Implementing Agreements are successful?”
 - IPHE view is that development of a successful hydrogen economy will depend on governments and industry as well as researchers
 - In the research area, IPHE wants to have a comprehensive view of global activities, including those outside of IEA
 - But, we have no desire to duplicate or exercise control over the excellent work done by the IAs
 - Our goal is to maintain links to them while avoiding duplication of resources



Next Steps

- IPHE is developing a list of critical objectives for the hydrogen economy
 - What are the key objectives required to support the goal of hydrogen and fuel cell technologies which are affordable, convenient, clean, safe, and contribute to energy security?
- We will hold a workshop to prioritize these critical objectives in June 2006
- The critical objectives will be ranked according to a risk assessment score
 - The impact of failing to achieve a critical objective multiplied by the difficulty of achieving that objective
- The result will be the IPHE Priority Scorecard



Priority Scorecard / Activity Matrix

- Breakout sessions will be held in the technical areas which support the critical objectives in the Priority Scorecard
 - These sessions will determine their research priorities
- Following the workshop, a comprehensive list global activities in the priority areas will be developed: the Activity Matrix
- The Matrix will be compared against the Priority Scorecard to determine research gaps
- IPHE will prioritize activities which address these gaps



Why the Scorecard / Matrix?

- To achieve consensus on common goals for hydrogen research, development, demonstration and deployment
 - IPHE experienced early difficulty getting agreement on the concept of a global hydrogen roadmap
 - This Scorecard process is less prescriptive than a roadmap but accomplishes much the same thing through a bottom-up process



Summary

- IPHE is making progress toward achieving its goal of “efficiently organizing and coordinating multinational research, development and deployment programs that advance the transition to a global hydrogen economy”
- Though many countries may produce hydrogen from conventional sources, the long-term goal of IPHE is for clean production from renewables
- Iceland has had a major role in IPHE’s success, and is in a leadership position for hydrogen production from its renewable resources



Contacts

Please feel free to contact the Secretariat for further information

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