The IPHE: Governments of the world united in the work for hydrogen

Professor Thorsteinn I. Sigfusson

CoChair of IPHE Implementation and Liaison Committee

and member of EU Hydrogen and Fuel Cell Advisory Council

- The background for IPHE:

- Around the beginning of the 21st century various governments around the world were working hard on the development of hydrogen as a future energy carrier.

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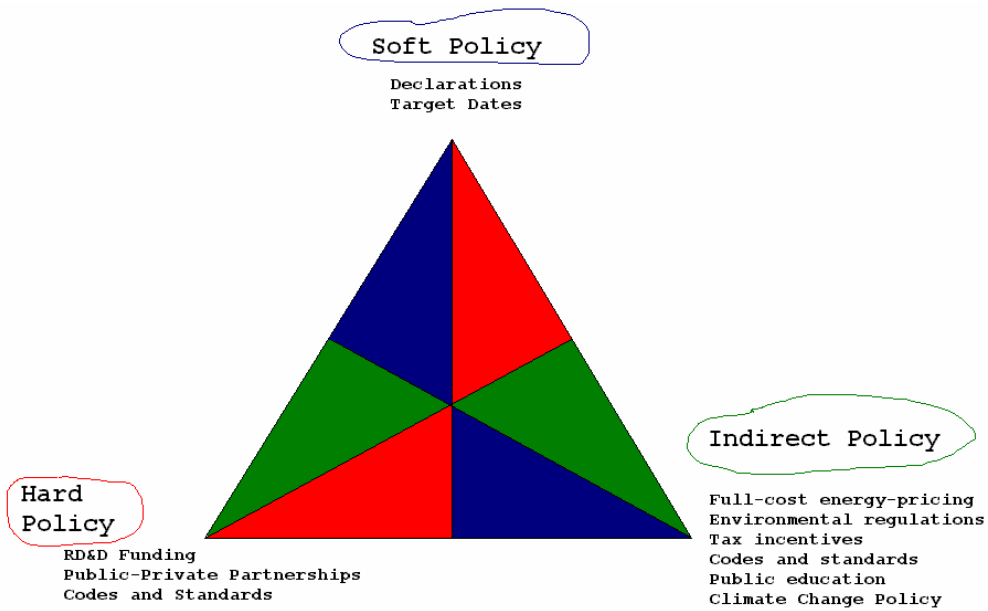
Governments were concentrating on hard policy, soft policy or indirect policy with some impressive results.,….



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- Direct policy was for example seen very clearly in the work of the European Union with the creation of the largest fleet of fuel cell busses ever to be seen on Earth, the CUTE and the ECTOS projects.

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- Direct policy was for example clearly seen in the work of the US Department of Energy "targets" for hydrogen prices, storage capacities and fuel cell prices.
- Or with the public-private cooperation in the California Fuel Cell Partnership – to name a few examples.

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- The Japanese government was instrumental in creating a cluster of hydrogen fuelling stations in the Bay of Tokyo.
- We could go on like that to mention a number of important government and non-government initiatives.
- Fora like the IAHE and the IEA Hydrogen Implementation Agreement brought together specialists from all over the world.
- IPHE recognizes their important work.

In November 2003 following a US initiative, major countries gathered in Washington to start the International Partnership for the Hydrogen Economy

The International Partnership for the Hydrogen Economy (IPHE) Ministerial meeting brought together energy ministers from 15 countries and European Commission to discuss common areas of interest in, and obstacles to, the hydrogen economy in the fields of research, development and demonstration projects, hydrogen policy and regulation, and the commercialization of hydrogen based energy technologies.

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IPHE Goal:

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

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So who are the 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 CO_2 emissions and energy consumption

United Kingdom

France

Germany

Italy

Australia

Brazil

Norway

European Commission

New Zealand

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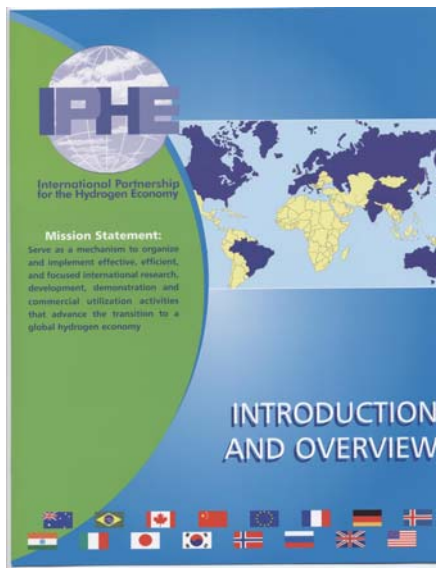
IPHE Products and Deliverables

- Updated Website www.iphe.net
- World Demonstration Atlas
- IPHE Brochure
- Hydrogen Fact Sheets
- Hydrogen Vision and Roadmap (with members)
- APEC Interim Hydrogen Framework
- IPHE Scoping Papers (5)+ Education
- IPHE Project and Events Guidelines
- Concept Paper on Stakeholder Involvement
- International Workshops
- Project Evaluation Team
- Projects already accepted



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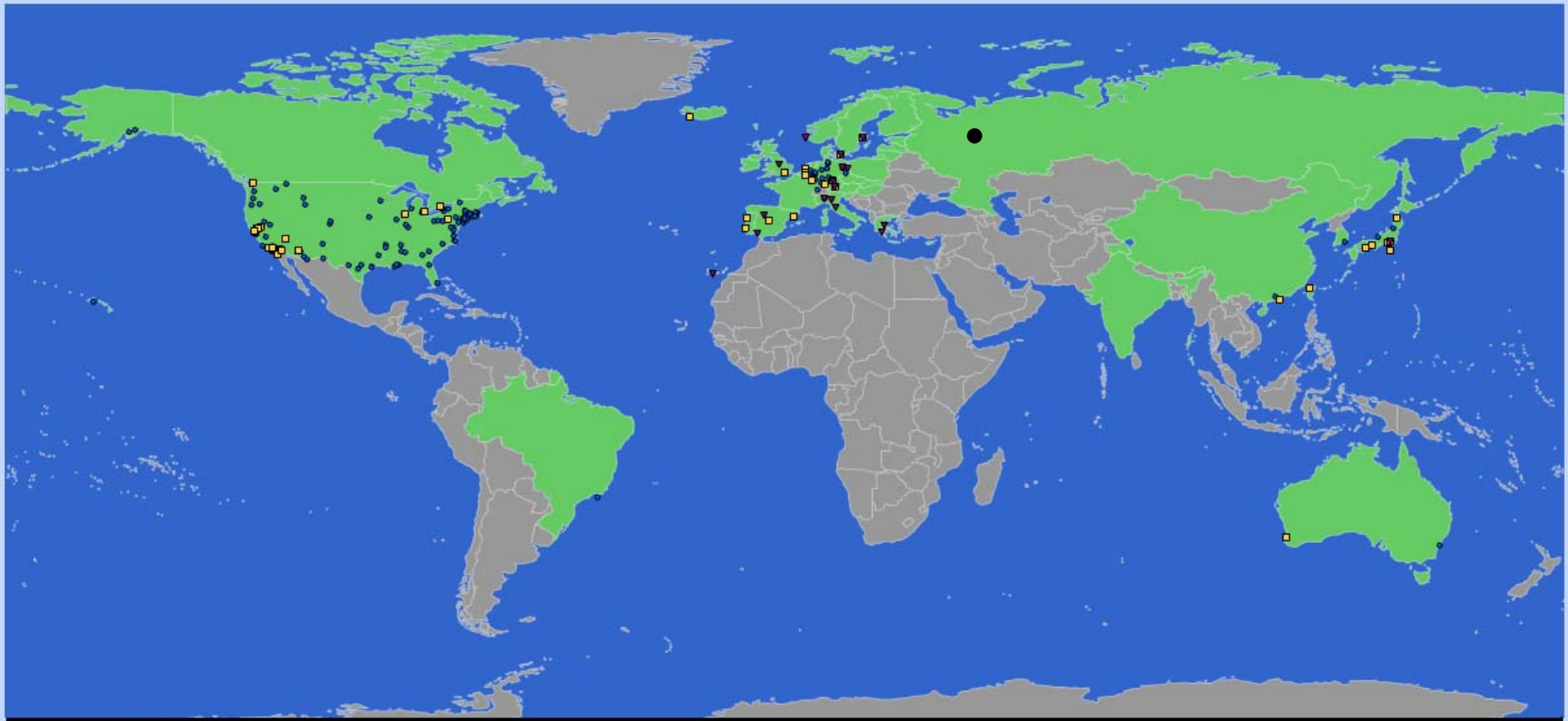
IPHE World Demonstration Projects Atlas



ECTOS Bus Demo.
Reykjavik, Iceland
Date of Operation: Opened April 2003
Fuel: Compress. H2
Production / Size: Shell Hydrogen/Iceland On site Geothermal and Hydro Powered Electrolyzer.
Notes: World's 1st Commercial Hydrogen Station.
Link: www.ectos.is

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IPHE World Demonstration Projects Atlas

Submit Project Data to the IPHE Demonstration ATLAS
Click Here

Hydrogen Demonstration ATLAS

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- The summer of 2005 was used to further the work which was initiated by the scoping papers.
- Seminars and workshops focusing on the scoping paper subjects. They have been held in various countries and in conjunction with many agencies and societies.
- Scoping papers and the IPHE project procedure have led to 10 IPHE projects – already accepted and initiated.

IPHE Workshops, Conferences and Task Force Meetings 2005

- Joint IEA-IPHE SOFC Workshop - May 14, 2005 - Quebec City, Canada
- Joint IEA-IPHE PEMFC Workshop - June 1-3, 2005 - Mol, Belgium
- IPHE International Conference on Hydrogen Storage – June 20-22, 2005 - Lucca, Italy
- IPHE Socio-Economic Task Force – June 30, 2005 - Paris, France
- IPHE Education Task Force Meeting- 5-6 August 2005 - Iceland
- International Conference on Hydrogen Safety – September 8-10, 2005 - Pisa, Italy
- Hydrogen from Renewable Energy Sources – October 24 -26, 2005 - Sevilla, España.

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- One of the milestones in the IPHE Scoping Papers has to do with exactly hydrogen production:

- The idea is to "promote exchange of knowledge and to synergies between different sectors of research: Low and high temperature chemistry and physics,different energy experts and industrial research sectors" with main emphasis on renewables.
- An expected milestone for IPHE is to "define appropriate demonstration projects possible for 2005; and identify potential demonstration projects for large scale hydrogen production by 2010".

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- PP-002-05-HP
  Preparing for the hydrogen economy by using the existing natural gas system as a catalyst (Norway)
- PP-003-05-HP
  Solar Driven High Temperature Thermochemical Production of Hydrogen (United States)
- PP-006-05-HS
  Reversible Solid State Hydrogen Storage for Fuel Cell Power Supply System (Russia)
- HIGH TEMPERATURE PHYSICS
- PP-007-05-FC
  Advanced Membranes (United States)
- PP-011-05-FC
  Fuel Cell Testing, Safety and Quality Assurance (FCTESQA) (European Commission)
- PP-021-05-FC
  Application of Gradient Porous Composite MEAs for different types of Fuel Cells (Russia) ASPECT
- PP-023-05-CS
  HyWays - The Development and Detailed Evaluation of a Harmonised "European Hydrogen Energy Roadmap" (European Commission)
- PP-024-05-CS
  HySafe - Safety of Hydrogen as an Energy Carrier (European Commission)a
- PP-001-05-HP
  Solar Hydrogen From Reforming Of Methane (Australia)

IPHE selected projects

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- Just a few points to consider before submitting an IPHE proposal:
- Are there two or more IPHE members effectively participating?
- Is the project relevant for the IPHE (Scoping papers)
- Does the project complement existing effort?
- Does it widen the scope of work?
- Does it accelerate progress towards results?
- Other value added?

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- What has to be done in the preparation stage:

* Are objectives, strategic plan and annual work programme in place?
* Are the financial resources identified and financial sources granted?

Make sure the majority of results are non-proprietory and a plan is devised to disseminate information to all IPHE member countries and beyond. The emerging economies will for example always be very important project partners.

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Template for Proposal Content

- Project Title
- Description
- Goal
- Location
- Partners
- Timeframe
- Challenges/Barriers
- Contact Info

Maximum of 3 pages

See: www.iphe.net

IPHE Evaluation Process

- Multi-step process **to select the initial set of project proposals.**
- **The** evaluation **of projects is performed by a** Team **nominated by the partners and confirmed by the ILC; headed by two co-chairs; has support of the IPHE Secretariat.**
- **IPHE "recognised" projects focus on** *pre-competitive* **collaborative research, development and demonstration activities**
- **The IPHE doesn't have any budget to fund projects. However, projects can leverage** *existing funds* **from IPHE countries in terms of required budgets and research infrastructures**

funding mechanisms different for each country

explore any existing agreements (bi-lateral, multi-lateral, other).

- Next Round - pre-proposal **submission and evaluation:**

~ February-March 2006;

formal proposal **submission and evaluation: ~ June 2006.**

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SEPTEMBER 2005

IPHE Update

Update on the activities of the International Partnership for the Hydrogen Economy

INTERNATIONAL PARTNERSHIP FOR THE HYDROGEN ECONOMY

September 2005

Dear IPHE Update Reader:

Welcome to the inaugural issue of IPHE Update, a semi-annual newsletter chronicling the activities of the International Partnership for the Hydrogen Economy.

The IPHE was created in November 2003 to serve as a mechanism to organize and implement effective, efficient, and focused international research, development, demonstration and commercial activities related to hydrogen and fuel cell technologies. It also provides a forum for advancing policies, and common codes and standards that can accelerate the cost-effective transition to a global hydrogen economy to enhance energy security and environmental protection. The members of IPHE are Australia, Brazil, Canada, China, European Commission, France, Germany, Iceland, India, Italy, Japan, Korea, New Zealand, Norway, Russia, United Kingdom, and the United States.

Since its inception, the IPHE has actively encouraged international collaborative hydrogen and fuel cell research and information exchange. IPHE has published a series of scoping papers outlining priorities for collaboration among its members, organized and is currently planning a number of international technical workshops to encourage information exchange among leading researchers, developed an interactive atlas of global hydrogen and fuel cell demonstration projects, and developed a protocol for communication with the stakeholder community.

The IPHE website address is www.iphe.net. There you will find IPHE literature including reports, hydrogen and fuel cell fact sheets, and presentations delivered at IPHE workshops and committee meetings. The website also contains country specific pages for IPHE members containing policy papers, hydrogen roadmaps, and news articles, in addition to a useful calendar of IPHE and industry sponsored conferences, workshops and seminars.

We hope that you enjoy reading this issue of IPHE Update and welcome your suggestions for future issues.

Sincerely,

IPHE Steering Committee Co-Chairs

David K. Garman
Under Secretary
U.S. Department of Energy

Tyler Duvall
Acting Assistant Secretary
for Transportation Policy
U.S. Department of Transportation

IN THIS ISSUE...

U.S. PRESIDENT BUSH TOURS SHELL HYDROGEN STATION, CITES IPHE INITIATIVE

On May 25, U.S. President George W. Bush toured the new Shell Benning Road hydrogen service station in Washington, DC. In his remarks to the media, the President emphasized the importance of hydrogen research in diversifying the United State's long-term energy mix and improving overall energy security.

"We're too dependent on foreign sources of energy today, and one way to diversify away from hydrocarbons is to use hydrogen, the byproduct of which will be water and not

"Bush" continued on page 2

INDIAN PRESIDENT KALAM BRIEFED ON IPHE ACTIVITIES

As part of an official state visit hosted by President Grimsson of Iceland on May 31, 2005, President of India, Dr. A.P.J. Abdul Kalam, visited the Reykjavik Energy Center, where he was provided with an overview of the International Partnership for the Hydrogen Economy by Dr. Thorsteinn Sigfusson, Co-chair of the IPHE Implementation-Liaison Committee. India, along with 14 other nations and the European Union, signed the Terms of Reference creating the IPHE in Washington, DC in November 2003. Dr. Sigfusson shared the goals, objectives and activities of the IPHE with President Kalam and encouraged India's active participation in its committees and their evolving task forces.

"Kalam" continued on page 3

For more information on IPHE

Website
www.iphe.net

Email
iphe@ee.doe.gov

Herning

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- I would be interested in connecting the work here in the Herning project with IPHE for example to use Work package on improving FC system performance

- And create an advanced study institute on stationary fuel cell system or an advanced study institute on water electrolysis in association with our work.

- I would expect inputs from most of our partners here and open access to IPHE countries.