



H Y D R O G E N I M P L E M E N T I N G A G R E E M E N T

21 January, 2008

To the attention of Mr. Bernard Frois, Directeur, Délégation ANR / NTE
And Mr. Claude Derive, Vice-Président, Association Française de l'Hydrogène

Dear Mr. Frois and Mr. Derive:

The International Energy Agency Hydrogen Implementing Agreement (IEA HIA), the largest and longest lived global collaboration in hydrogen, is very pleased to support the Association Française de l'Hydrogène's effort to focus France's attention on the role of hydrogen in the future energy system. The challenge is great and the stakes are high. According to the *2007 World Energy Outlook* (WEO) analysis, the world's energy needs would be 50% higher in 2030 than they are today if governments continue existing energy policies.

Hydrogen, an energy carrier that can be produced from a wide range of sources -- including fossil, renewable and nuclear energy -- also offers promise as a fuel. Hydrogen's flexibility of use and production is attractive. Emission-free at the tailpipe irrespective of feedstock, or entirely emission free when manufactured from renewable or nuclear energy, hydrogen is good news for the environment: hydrogen can mitigate CO₂ emissions and climate change, promoting sustainable development. The feasibility of distributed as well as central generation underscores hydrogen's flexibility, enhancing its appeal. And as fuel for fuel cells, an important emerging technology, hydrogen enjoys the full benefits of energy efficiency and economy. These advantages have contributed to significant growth in international, national and regional programs in hydrogen research, development and demonstration (R, D&D).

The IEA HIA was created in 1977 to accelerate hydrogen implementation and widespread implementation. It now has 22 members, including the European Community (EC). The core business of the IEA HIA is R&D supported by techno-economic analysis and outreach. With eight annexes in its current portfolio, the IEA HIA is poised for expansion in membership and R&D activities. In late 2007, the IEA HIA entered into a collaboration agreement with the International Partnership for a Hydrogen Economy (IPHE), whose purpose is to promote the transition to hydrogen.

In 2005, the IEA reported public spending on hydrogen and fuel cell R, D&D at the USD 1 billion level. All of the IEA HIA members have a hydrogen program. While it is not possible to review each of these programs, it is instructive to review some of the highlights:

- The EC's Seventh Framework Program (FP7) includes hydrogen activities in the Energy sub-programme under the Cooperation Programme. Apart from fundamental

- research, it is expected that hydrogen and fuel cell activities will be implemented through the proposed Joint Technology Initiative (JTI) on Fuel Cells and Hydrogen.
- Japan's three pronged program of R&D, Demonstration and Standardization & Safety Research received 64 billion ¥ in funding for the last two fiscal years (2006 and 2007).
 - Over the past five years, the U.S. expended a total of USD 1.2 billion on its hydrogen program.
 - In 2006, Korea spent USD 74 million on its hydrogen and fuel cell projects (including USD 34 million from the private sector.)
 - In Germany, there is new emphasis on the hydrogen program whose budget is enjoying robust growth.

At the regional level, the Nordic Energy Research Programme, consisting of nine partners in seven Nordic and Baltic countries, administers a hydrogen collaboration that funded six projects at the €2.3 level in 2004.

This background provides a snapshot of public investment in developed IEA countries. But there are also non-IEA nations with hydrogen research programs in both the developed and developing worlds. In anticipation of their future energy needs and the global demand for energy, the emerging nations of China, India, Brazil, Russia and South Africa have all instituted hydrogen R&D programs. Among the areas of interest is biohydrogen: there is a large and growing biohydrogen consortium in Asia. Energy consumption in China and India alone is expected to double between 2005 and 2030, reinforcing future prospects of a highly competitive energy marketplace in an environmentally challenged world.

For centuries, France has been a leader in world affairs, recognized and respected for its strategic competence. In the recent past, France has clearly been the world leader in deployment of nuclear energy. Today, France is a valued member of the IEA HIA, participating in most of its annexes. It is also a member and leader of the IPHE. The time is right to extend French influence in the hydrogen arena. The five year PAN-H program, launched by France in 2005, was created to increase the public effort in hydrogen. Coupled with the diligent support of the Association Française de l'Hydrogène as well as private investment, the public contribution to hydrogen is expected to accelerate hydrogen R&D and commercialization.

The IEA HIA hopes that France will vigorously pursue the hydrogen R&D and market opportunities. We appreciate the opportunity to support the Association Française and our French colleagues in R&D. And we look forward to continued collaboration with France on R&D that stands to benefit your nation, IEA HIA participants and the world.

Sincerely,

Nick Beck

Nick Beck
Chair

Mary-Rose de Valladares

Mary-Rose de Valladares
Manager