

The International Energy Association (IEA) Hydrogen Implementing Agreement (HIA), the world reference collaboration on Hydrogen R, D&D, has a robust portfolio of activities. Its new five year plan has just been approved and will begin 1 July, 2009. For its S4FE presentation, the IEA HIA will provide an overview of the Agreement's activities, highlighting present and prospective future efforts that focus on fossil fuels and also include carbon capture and storage (CCS).

The IEA HIA vision for hydrogen is based on “*a clean, sustainable energy supply of global proportions that plays a key role in all sectors of the economy.*” Our new mission statement contemplates both the advancement of hydrogen and the role of the Agreement in achieving its vision. To fulfill its mission and achieve its vision, the HIA's will continue to employ its existing strategy to “*Facilitate, coordinate and maintain innovative, research, development and demonstration activities through international cooperation and information exchange.*”

Seven current IEA HIA tasks investigate hydrogen production:

Task 21-Biohydrogen

Task 23-Small-Scale Reformers for Hydrogen Production

Task 24-Wind Energy and Hydrogen Integration

Task 25-High Temperature Production from Wind and Solar

Task 26-Advanced Materials for Photoelectrochemical Production

Task 27-Near-Term Market Routes to Hydrogen by Co-Utilization of Biomass with Fossil Fuel.

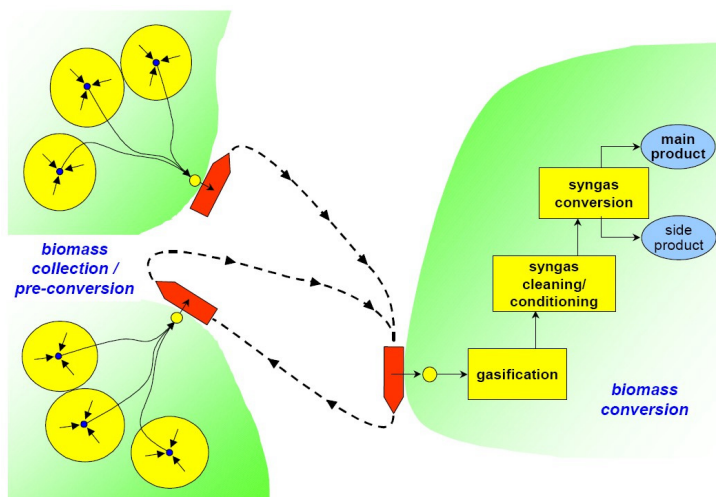
Two of these tasks, Task 23 and Task 27, have particular relevance for S4FE.

Task 23, Small-Scale Reformers for Hydrogen Production, has three subtasks. The first subtask seeks formulation of a harmonized approach to reformer development that provides reformer requirements and parameters in the form of a set of standards for on-site small scale reforming. The second subtask investigates both fuel diversification and on-site emissions. A list of available small scale Carbon Capture Storage technology will be generated. Feedstocks still to be investigated for use in small scale reformers include bioDME, biomethanol and bio FT diesel. A comparison of the various fuel paths will be developed.



Task 27, Near-Market Routes to Hydrogen by Co-Utilization of Biomass as a Renewable Energy Source with Fossil Fuels, seeks to advance the development of hydrogen production based on renewable sources in the market place, focusing on biomass and on opportunities of interest for industrial application. Its specific objectives are to:

- Identify and evaluate the most attractive and realistic process pathways towards a large-scale demonstration of biomass co-gasification with fossil fuels;
- Quantify the potential for a renewable-based H<sub>2</sub> supply chain based on upgrading biomass waste near source into a tradable intermediate (a “biomass carrier”), its commercial transport and use in centralised gasification plants;
- Evaluate the most attractive way of utilising stand-alone biomass gasification technology in near-to-medium term H<sub>2</sub> markets;
- Develop and verify a Roadmap for the market introduction of biomass-based routes to H<sub>2</sub>



Both Task 23 and Task 27 are successors to Task 16, Hydrogen from Carbon-Containing Materials, which began in 2002 and was completed in 2005.

Task 22, Fundamental and Applied Hydrogen Storage Materials Development, is dedicated to hydrogen storage. Our newest task addresses Hydrogen Infrastructure and Mass Storage. The new task is expected to consider geologic storage of hydrogen, akin to geologic storage of CO<sub>2</sub>.

Task 18, Integrated Systems Evaluation, contributes to understanding of hydrogen systems through analysis and modeling. Task 19, Hydrogen Safety, is developing predictive methods, data and other information to increase consumer comfort with hydrogen use.

Further, the IEA HIA now has an analysis group whose cross-cutting function supports all R&D while positioning hydrogen for market adoption. Management of CO<sub>2</sub> emissions based on introduction of hydrogen technology will play a key role in the analysis effort. The new Analysis task is expected to support technical and analysis evaluations as well as providing support for political decision-making.

Within the IEA structure, the IEA HIA falls into the Renewable Energy Working Party (REWP). Hydrogen, of course, can be made from many feedstocks, including fossil fuels. It is anticipated that fossil fuels will be used for market introduction of hydrogen. Their use in hydrogen production may be much expanded with the development and application of CCS technologies. Therefore, the IEA HIA expects to work closely with the IEA's Fossil Fuel Working Party (FFWP) in the coming years.

Fossil fuels have a hydrogen future. We invite you to come and learn more about the IEA HIA's current activities and future plans for sustainable use of fossil fuels in production, storage and use of hydrogen.