

PURPOSE

To undertake hydrogen analysis that represents the expertise of the Hydrogen Implementing Agreement with respect to future hydrogen supply, demand and utilization.

FRAMEWORK SUMMARY

Subtask A: Global Hydrogen Resources: Detailed Modeling

Subtask B: Updating and Harmonization of Hydrogen Database

Subtask C: Collaboration with IEA Analysis Section in Paris:

Subtask D: Hydrogen Energy Storage Analysis to Support the Smart Grid

MEMBERS

Task Member and Expert Table

COUNTRY	EXPERT	INSTITUTION
Country	Name	Affiliation
France	Alain le Duigou; Marie-Marguerite Quemere	CEA; EdF
Sweden	Bengt Ridell	Grontmij AB / E.ON
Canada	Lynda Palombo	National Resources Canada
Germany	Jochen Linssen; Clemens Trudewind	Forschungszentrum Jülich
USA	Susan Schoenung; Thomas Drennen	Longitude 122 West; Sandia National Laboratories
Greece	Eli Varkaraki	CRES
Japan	Isamu Yasuda	Tokyo Gas Co., Ltd.
Spain	Javier Dufour/ Diego Iribarren	IMDEA Energy
United Kingdom	Rupert Gammon	DeMontfort University
Norway	Kari Espegren	Institute for Energy Technology
Italy	Marco Brocco, Eugenio Calo	ENEA
Spain	Maria del Pilar Argumosa	INTA

Expert participation is encouraged from all HIA members. Denmark, Korea, Turkey, Australia and New Zealand have provided data for Subtask A. As an IPHE member, China has also provided some data for Subtask A.

During 2012, Canada left Task 30. The UK joined Task 30. Greece participated through mid-year, but after the expert from CRES left, no new expert has joined Task 30.

TASK 30

GLOBAL HYDROGEN SYSTEMS ANALYSIS

Dr. Susan Schoenung
Longitude 122 West, Inc.
885 Oak Grove Avenue, STE
304 Menlo Park, CA 94025
USA

susan.schoenung@sbcglobal.net

+1 650 329 0845

Operating Agent for USA

Mr. Jochen Linssen
Forschungszentrum Jülich
GmbH

in der Helmholtz
Gemeinschaft, 52425 Juelich,
Germany

j.linssen@fz-juelich.de

+49 2461 61 3581

Operating Agent for Germany

VITAL STATISTICS

Term: 2010 - 2013

Members

Canada
France
Germany
Greece
Italy
Japan
Norway
Spain
Sweden
United Kingdom
United States



ACTIVITIES AND RESULTS IN 2012

PROGRESS AND ACCOMPLISHMENTS

The Spring 2012 experts meeting of Task 30 took place in Paris. CEA again hosted this meeting. In addition to the Task 30 working meeting, experts of the analysis section of the IEA responsible for the publications “World Energy Outlook” and “Energy Technology Perspectives” joined the meeting. Progress was made on all three subtasks underway at that time. Experts invested a significant effort in review of the hydrogen chapter for the ETP 2012. Input on the status and plans for hydrogen fuel cell vehicles and hydrogen fueling stations was also gathered and provided.

The Fall 2012 experts meeting of Task 30 took place in Norway, hosted by IFE. In addition to the working sessions, experts toured the HyNor station in Lillestrom, rode a public hydrogen bus, and toured the city hydrogen filling facility. A joint session with the new “local hydrogen production” task also took place.

Accomplishments during 2012 included major progress on the Subtask A resource study, in which the analysis looks at potential hydrogen resources in each country to meet potential long term demand for hydrogen vehicles. Some successful outcomes from this study include:

- Completion of the model, which runs in PowerSim
- A preliminary dataset from each participating country
- Results that show adequate supply of hydrogen for the participating countries and some opportunities for trade
- Sensitivities to cost assumptions, green house gas policies and other mandates
- Lessons learned with respect to competing uses of resources and assumptions about long term trends and policies.

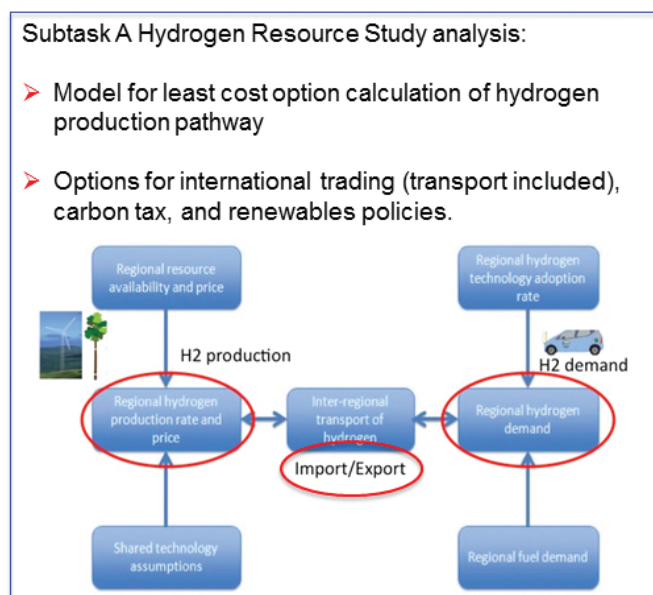


Figure 1: The structure of the Global Hydrogen Resource Study

For Subtask B, the data structure of the hydrogen technology database was completed and initial data submitted from each country. The production and end-use sections are being populated. The delivery sections will depend in part on the work of Task 28 on Infrastructure. The Handbook to accompany the database was outlined.

A new Subtask D on hydrogen energy storage was added to Task 30 late in 2012. The bulk of the work will take place in 2013, as likely preparation for a new HIA task.

The private website is used for exchanging working materials and preparing for expert meetings and web conference calls. To support collaboration, 7 web conferences took place over the year 2012. An exchange of knowledge and data with Task 28 also took place. Numerous one-on-one web conferences also occurred.

OUTREACH AND COMMUNICATION

Under the umbrella of Hydrogen Implementing Agreement, Task 30 was involved in the review process of the IEA ETP 2012. The hydrogen technology database will be available for countries participating in Task 30. The results of Subtask A resource study have been circulated with Task 30 and will be published externally in 2013.

The reporting to the HIA ExCo will be done by semi-annual reports and presentations and annual reports.

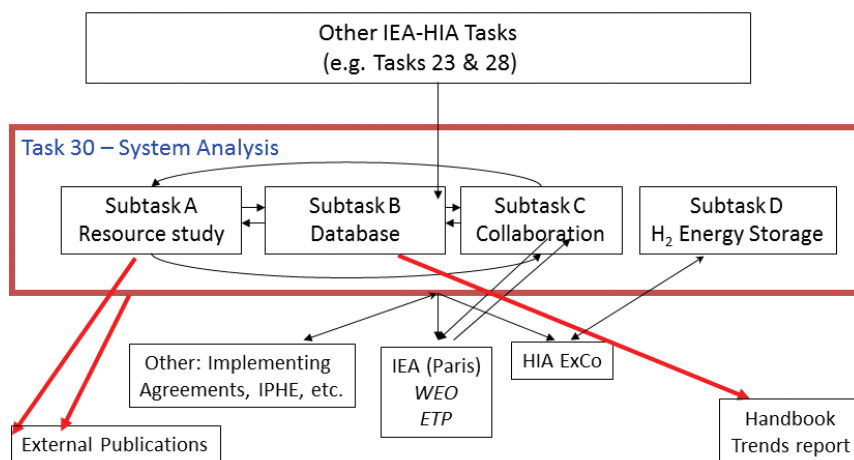


Figure 2: Communication pathways of Task 30



FUTURE WORK

Activities and /or Targets for 2013

The Spring 2013 experts meeting of Task 30 will take place in Paris, and will include a half-day session with IEA analysts from “World Energy Outlook” and “Energy Technology Perspectives,” along with representatives of the HIA.

The Fall 2013 experts meeting will take place in Madrid, hosted by IMDEA.

The products/activities planned for 2013 included:

- Presentation of Task 30 work at 2013 DOE annual merit review
- Publication of Subtask A resource study results in reports and conference presentations
- Completion of the Subtask B database
- Handbook for data management and analysis, accompanying the database.
- Initial trend assessment based on database findings
- Review of 2013 World Energy Outlook
- Initial output from Subtask D hydrogen energy storage analysis
- Possible preliminary task definition of new hydrogen energy storage Task

ACTIVITIES AND/OR TARGETS BEYOND 2013

Beyond 2013, Subtask D on hydrogen energy storage will likely transition to an independent HIA Task. New analysis in Task 30 could include life cycle assessment of materials and energy inputs and emissions.

R&D CHALLENGES

Challenges include finding consistent data for performance coefficients, resources, costs, and scaling projections.

OTHER

REFERENCES

Selected key publications:

AUTHOR(S)	TYPE	TITLE	JOURNAL/ CONFERENCE/ ETC.
S. Schoenung et al.	Presentation and publication	IEA HIA Annex 30 Global Hydrogen Systems Analysis	World Hydrogen Conference 2012, 3–7 June 2012 Toronto, Canada