iea hydrogen

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With a 40 year operating history and significant accomplishments to its credit, the International Energy Agency (IEA) Hydrogen Technology Collaboration Programme (TCP) -- IEA Hydrogen -- is a unique leader in the conduct of coordinated hydrogen research, development and demonstration (R, D&D) activities on a global basis. Through the creation and conduct of nearly forty tasks or annexes, IEA Hydrogen has facilitated and managed a comprehensive range of R, D&D and analysis programs among its members. In September 2004, IEA Hydrogen released its anniversary report entitled In Pursuit of the Future: 25 Years of IEA Research toward the Realisation of Hydrogen Energy Systems. IEA Hydrogen continues to pride itself on collaboratively addressing many key innovative, longer-term, pre-competitive R, D&D issues related to hydrogen (H2) production, storage, conversion, safety, integrated systems, economics and markets. It is further committed to analysis and outreach in support of its R, D&D activities. See the IEA HIA End of Term Report 2009-2015 for more information about progress over the past five years, and the IEA HIA Strategic Plan 2015-2020 for an overview of the current five year period.

IEA Hydrogen Strategic Framework

VISION **A hydrogen future based on a clean sustainable energy supply of global proportions** that plays a key role in all sectors of the economy

MISSION **Accelerate hydrogen implementation and widespread utilization** to optimize environmental protection, improve energy security and promote economic development internationally, while establishing IEA Hydrogen as a global reference

STRATEGY **Facilitate, coordinate and maintain innovative research, development and demonstration** activities through international cooperation and information exchange

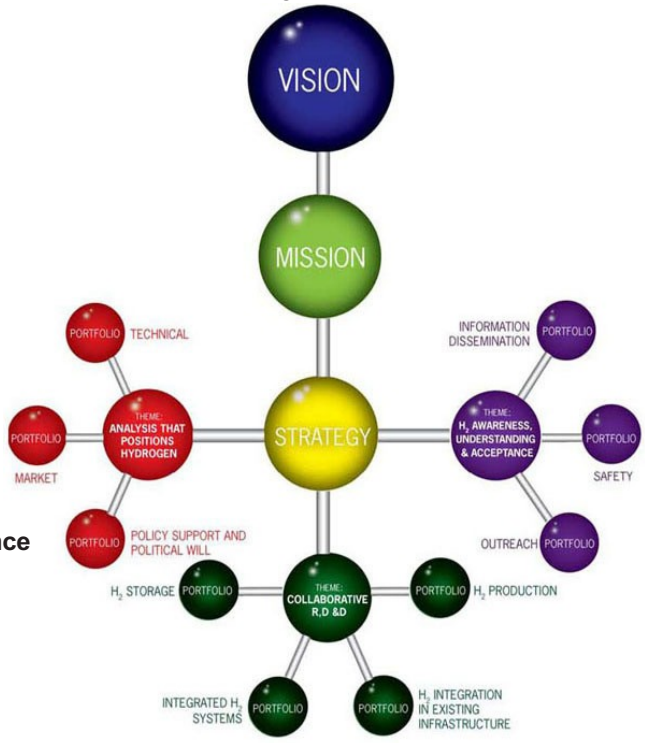
IEA Hydrogen 5-Year Plan (2015-2020)

THEMES & PORTFOLIOS

Collaborative R,D&D
That advances hydrogen science and technology
- Hydrogen Production
- Hydrogen Storage
- Integrated Hydrogen Systems
- Hydrogen Integration in Existing Infrastructure

Analysis that positions Hydrogen
- Technical
- Market
- Support for Political Decision-Making

Hydrogen Awareness, Understanding and Acceptance
- Information Dissemination
- Safety
- Outreach



Current IEA Hydrogen Members

Contracting Party Members: Australia, Austria, Belgium, China, Denmark, Finland, France, Germany, Greece, Israel, Italy, Japan, Korea, Lithuania, the Netherlands, New Zealand, Norway, Spain, Sweden, Switzerland, United Kingdom, the Commission of the European Union and the United Nations Industrial Development Organization (UNIDO) **Sponsor Members:** Hychico, Hydrogen Council, Nationale Organisation Wasserstoff und Brennstoffzellentechnologie (NOW), Reliance Industries Limited (Ltd.), Shell Global Solutions International BV and Southern Company

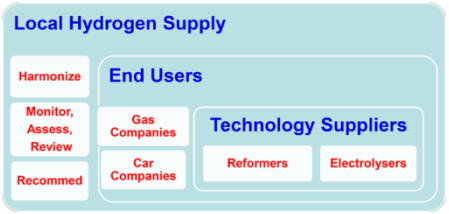
IEA HYDROGEN TASKS

Task 29 Distributed and Community Hydrogen (DISCO H2) (2010-2015)
• Scope - H2 applications in energy communities integrating H2 with electricity and other energy and mobility networks and distributed systems • Community size – 1000 and installed H2 capacity NTE 500 kW • Community Types: Urban, Rural and Island, Distributed Industrial applications • Subtask 1 – Project Management • Subtask 2 – Analysis and Selection HRS • Subtask 3 – Model Concept Development • Subtask 4 – Concept Replicability • Dissemination **FINAL REPORT PLUS SUBTASK 3 AND 4 REPORTS AVAILABLE** at ieahydrogen.org

Task 30 Global Hydrogen Systems Analysis (2010-2014)
• **FINAL SUBTASK A REPORT AVAILABLE at (*Global Hydrogen Resources*)**
• Subtask B – Updated and harmonized H2 data set • Subtask C – Collaboration with IEA Analysis • Subtask D – Hydrogen for the Smart Grid

Task 32 Hydrogen-based Energy Storage (2013-2018) *Successor to Task 22*
• Project based: further research on new and improved compounds and demonstration of solid storage systems for both stationary and mobile applications • 600 publications plus special issue IJHE "Hydrogen-based energy storage" **FINAL REPORT COMING SOON**

Task 33 Local Hydrogen Supply for Energy Applications (2013-2016) *Successor to Task 23*
• Provide a platform for evaluation and harmonization of the various technologies for local H2 supply in order to reduce costs and increase efficiency • Harmonize technological and economic assessments of available on-site supply technologies • Monitor upcoming technologies • Generate meeting for reformer and electrolyzer suppliers as well as end-users. **FINAL REPORT PENDING REVIEW**

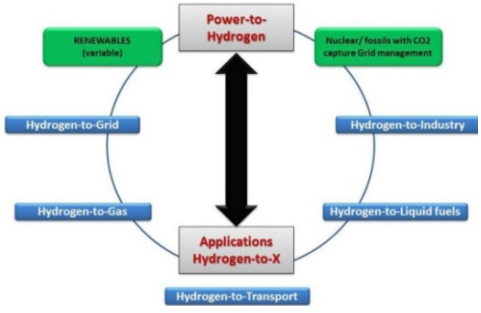


Task 34 Biological Hydrogen for Energy and Environment (2014-2017) *Successor to Task 21*
• Subtask 1 – Basic Research on BioHydrogen production (dark fermentation and bioelectrolysis; light-drive BioHydrogen production; Enzymatic and Bio-inspired Molecular Systems) • Subtask 2 – Applied Research on Biohydrogen Production (Integration of BioHydrogen Fermentation systems; system feasibility; eco/energy systems)

Task 35 Renewable Hydrogen Production (2014-2017) *Super Task!*
• Subtask 1 – Renewable Electrolysis • Subtask 2 – Photoelectrochemical Water Splitting
• Subtask 3 – Solar-Thermochemical Water Splitting FINAL REPORT IMMINENT

Task 36 Life Cycle Sustainability Assessment (2014-2017) *Successor to Task 30*
• Subtask A – Addressing Environmental Challenges in LCA of H2 Energy Systems
• Subtask B – Economic Analysis of H2 Energy Systems
• Subtask C – Social Indicators for Assessment of H2 energy systems and integrative LCSA approaches • Subtask D – Collaboration with IEA HQ analysts
FINAL REPORT AVAILABLE at ieahydrogen.org

Power-to-Hydrogen and Hydrogen-to-X



Task 37 Safety (2015-2021) *Successor to Task 31*
• Subtask A – Tool Kit Integration • Subtask B – Accident Scenarios Development
• Subtask C – Physical Effects • Subtask D – Human Reliability Analysis (HRA)
• Subtask E – Materials Compatibility (**HYDROGEN SAFETY JOURNAL**)

Task 38 Power-To-Hydrogen and Hydrogen-To-X (2015-2019) *Successor to Task 30*
• Subtask A – Management and Communication • Subtask B – Mapping and analysis of existing demo projects • Subtask C – Review/analyze the existing economic studies on Power to Hydrogen & the different existing legal frameworks & policy measures • Subtask D – Systemic approach and macroeconomic impact analysis • Subtask E –case studies

Task 39 Hydrogen in Maritime Transport (2016 – 2019)
• Subtask 1 – Technology Overview: Investigating possibilities for maritime hydrogen
• Subtask 2 – New Concepts: concepts, technologies and components • Subtask 3: Demonstration: support, evaluate and link international demonstration projects

Task 40 Energy Storage and Conversion Based on Hydrogen (2019-2021)
Successor to Task 32 Porous materials • Magnesium and intermetallic alloys-based Hydrides for energy storage • Complex hydrides Ammonia and reversible liquid hydrogen carriers • Catalysis • Electrochemical storage of energy • Hydride-based thermal energy storage • Research and development for hydrogen storage and compression

Task 41 Data and Modeling (2019-2021) *Successor to Task 30*
• Subtask C – IEA Hydrogen and ETSAP collaboration; other subtasks pending approval

Visit us at www.ieahydrogen.org
IEA Hydrogen welcomes liaison with interested groups in public and private sectors.
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