iea hydrogen

www.ieahydrogen.org

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

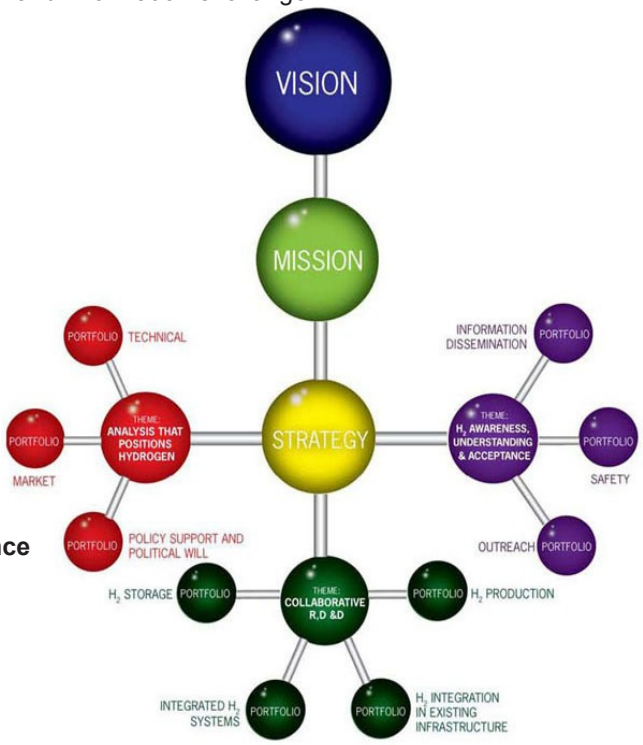
IEA Hydrogen 5-Year Plan (2015-2020)

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, Belgium, China, Denmark, Finland, France, Germany, Greece, Japan, Israel, Italy, 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:** HYSAFE, Nationale Organisation Wasserstoff und Brennstoffzellentechnologie (NOW), 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)

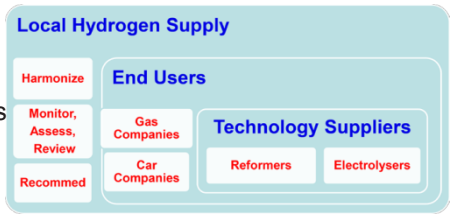
• **FINAL SUBTASK A REPORT NOW AVAILABLE (*Global Hydrogen Resources*)**
• Subtask B – Updated and harmonized H2 data set
• Subtask C – Collaboration with IEA Analysis
• Subtask D – Hydrogen for the Smart Grid

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 • Develop reversible or regenerative H2 storage materials fulfilling relevant technical targets; develop the fundamental and engineering understanding of H2 storage materials and systems with the capacity to fulfill these targets • Develop materials and systems for H2 based energy storage for use in stationary, mobile and portable applications, and electrochemical storage

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

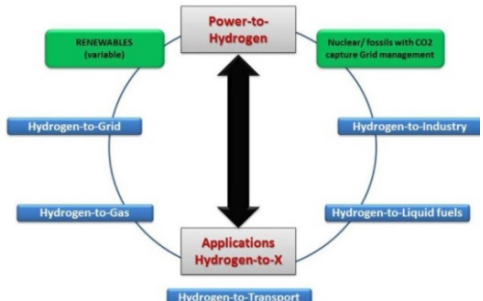
Task 36 Life Cycle Sustainability Assessment (2014-2017) Successor to Task 30

• 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 SOON

Task 37 Safety (2015-2018) *Successor to Task 31*

• Subtask A – Tool Kit Integration • Subtask B – Accident Scenarios Development
• Subtask C – Physical Effects • Subtask D – Human Reliability Analysis
• Subtask E – Materials Compatibility *HYDROGEN SAFETY JOURNAL* LAUNCHES SOON

Power-to-Hydrogen and Hydrogen-to-X



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

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