



Hydrogen TCP, the key to international R&D collaboration

Hydrogen in the Energy System Decarbonization, EGRD

24th November 2021

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The Hydrogen TCP in a nutshell

Established in **1977** under the auspices of the **IEA** to pursue international collaborative research in hydrogen



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Members

24 Member Countries
6 Sponsors
European Commission + UNIDO

40+

Tasks

3 Ongoing
38 Finished
≈ 10 in definition

250+

Experts involved

In collaborative research on hydrogen and hydrogen technologies

Hydrogen TCP activities - 2021

Task 37 Hydrogen Safety

Successor Task in 2022!

Challenges:

- H₂ Safety Concerns

Task Goals:

- Develop H₂ safety integration models and tools
- Management strategies to ensure safe deployment
- Quantitative Risk Assessment
- Consequence analysis

Task 38 Power-to-Hydrogen and Hydrogen-to-X

Closed in July 2021

Joint Workshop with IEA

[Check our Blog!](#)

Challenges:

- Increasing interest on PtX,
lack of consistent
information

Task Goals:

- Techno-economic analysis of PtX pathways
- Database of demonstration projects
- Assessment of existing legal frameworks
- Guidelines and recommendations for business
developers and policy makers



Final Report released in
October in the Final Workshop

[Check our Blog!](#)



Challenges:

- Need for greener
shipping
- Lack of information on
the use of H₂ for marine
applications

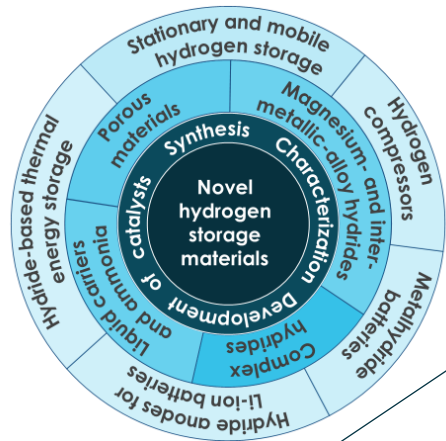
Task Goals:

- Provide knowhow on the use of H₂ in
different marine vessels
- Monitor, review and contribute to
new concepts, technologies and
components
- Network of international experts

Task 39 Hydrogen in Marine Applications

Hydrogen TCP activities – 2021 (ongoing)

Task 40 Energy storage and conversion based on hydrogen



Challenges:

- Energy storage
- H₂ storage Optimization of materials (solid and liquid)

Task Goals:

- Develop materials and systems for energy storage and conversion based on H₂
- Develop reversible or regenerative H₂ storage materials



New papers to be published in Spring 2022 ("Progress in Energy" Journal, IOP Publishing)



New paper "A taxonomy of models for investigating hydrogen energy systems" to be published on "Renewable and Sustainable Energy Reviews" Journal

Challenges:

- Lack of consensus on H₂ data and how to represent H₂ in Energy models

Task Goals:

- Data consolidation by developing a robust and updatable database on H₂ parameters
- Develop knowledge of how to best model H₂ in the value chain

Task 41 Data and Modelling

Hydrogen TCP activities – planned

- New challenges
- New topics of interests for our members
- Need to store H₂ in large quantities/for long periods of time
- Update SoA and compare different methods for renewable H₂ production
- How would offshore conditions and direct coupling with intermittent renewables affect H₂ production
- Alternative pathways for low-carbon H₂ production
- Continuation of a key topic of interest. Reconcile diverse interests of many stakeholders
- International H₂ trade
- Use of H₂ in specific hard to abate sectors



Tasks in Definition

- Underground Hydrogen Storage
- Renewable Hydrogen Production
- Offshore Hydrogen Value Chains
- Hydrogen from Nuclear Energy
- Safety and RCS of Large-Scale Hydrogen Energy Applications
- Hydrogen Export Value Chains
- Hydrogen in the Mining, Mineral Processing, and Resource Sectors

Did you know...?

Experts from member and non-member countries are welcomed to participate in the definition process

Why the Hydrogen TCP will play a key role?

- ✓ 40+ years of delivering high-value technical results to the hydrogen community
- ✓ >40 successful Tasks
- ✓ Historical focus on R&D needs
- ✓ Results and findings publicly available on the Hydrogen TCP website
- ✓ Capability to mobilize hundreds of experts from around the world for a permanent effort over 3-4 years at a time
- ✓ The Hydrogen TCP covers the whole hydrogen value chain, when not alone in collaboration with...



- ✓ 2022 strategic activity on TRL Assessment
- ✓ The Hydrogen TCP can be the technical/operational branch to other international initiatives who could propose new topics for Tasks for ExCo consideration

Thank You!

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