



Mission Innovation Clean Hydrogen Mission
9th Plenary Meeting - 16 May 2023
13:00 – 14:30 CET in WebEx

Present:

Co-leads:

Matthijs Soede (EC) (CH Mission Director), Eirik Lonning (EC); Vendula Jirouskova (EC); Pete Devlin (DoE US), Lorena Steinle (NOW GmbH, Germany), Trevor Rapson (CSIRO, Australia), Loreta Lancellotti (Ministry of Energy, Chile); Karla Chase (Ministry of Energy, Chile); Bianca Lewis (Department of Climate Change, Energy, the Environment and Water, Australia)

Members:

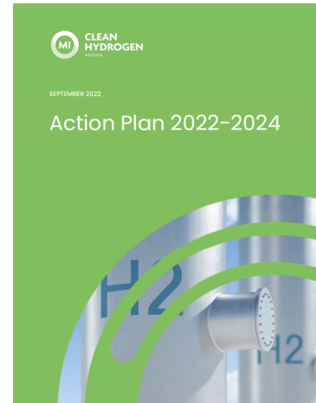
Africa Castro, Spain
Alberto Giaconia, Italy
Andrew Pease, UK
David Barratt-Due, Norway
Eva González, Spain
Faisal Qurooni, Saudi Arabia
Félix Tellez, Spain
Heejung Cho, South Korea
Hongxian Han, China
Jin-Nam Park, Korea
Kate Powe, Canada
Lourdes Vega, UAE
Marcello Capra, Italy
Nawal Alhanaee, UAE
Nikos Lymperopoulos, EU (Clean Hydrogen JU)
Per Arne Karlsen, Norway
Trond Moengen, Norway
Yejin Lee, South Korea
Yuko Kono, Japan
Horst Steinmüller, Austria

1. Mission direction and vision:

a. Workplan 2023

Action plan

- 4 Actions in Pillar 1 R&I
 - **Action 1: Analysis of global hydrogen RD&D opportunities**
 - **Action 2: Assessment of best-practice case studies**
 - **Action 3: Working Groups**
 - **Action 4: Clean Hydrogen Partnership Coalition**
- 2 Actions in Pillar 2 Hydrogen Valleys
 - **Sprint 1: Hydrogen Valleys**
 - **Sprint 2: Support non MI countries to develop Hydrogen Valleys**
- 3 Actions in Pillar 3 Knowledge centre
 - **Action 1: National Strategies and Regulations**
 - **Action 2: Codes and Standards**
 - **Action 3: Finance and investment knowledge group / Funding schemes**



- All actions from the Action Plan shall start in 2023
- Work Plan 2023 was introduced with concrete deliverables and responsibilities, Plan was very well received by the MI Steering Committee, CHM will have to report the accomplishment and introduced Work Plan for 2024 by the end of 2023, Work Plan will be shared again – your comments are welcome
- Synergies with CEM and MI Missions: potential for close collaboration with Net Zero Industry Mission and Shipping Mission

b. From Rio to Goa

- Members and collaborating organisations are asked to inform the MI Secretariat of their planned announcements and deliverables to be launched at MI-8.
- There are three themes:
 - **Theme 1:** Advancing the continuum of R&D towards pilot demonstration on clean energy technologies
 - **Theme 2:** Extending the reach of MI to make clean energy accessible and affordable energy for all
 - **Theme 3:** Supporting the next cohort of innovative companies

⇒ Please let us know if you would have plans for any announcements
- Side Events: CHM is involved in three applications that have been submitted to the Indian organizers:
 - Clean Hydrogen for ports and maritime sector (**MI CHM, MI shipping, CEM Global Ports Hydrogen Coalition**)
 - Storage and Distribution – developing the hydrogen supply chain (**Australia DCCEEW, MI CHM**)
 - Hydrogen – the Nordic rally to the valley (**Nordic Energy Research, MI CHM, MI shipping**)

⇒ Please let us know if you plan any side events
- Ministerial round table with private stakeholders representatives on hydrogen

2. From Action to Implementation - Pillar updates

a. R&I pillar Update working groups

i. Production working group

- Slightly delayed, kick-off of the WG foreseen in June/July

ii. Distribution and Storage working group (Aus/Trevor Rapson of CSIRO)

- Collecting international case studies on storage and distribution – based on this collection a Map will be published (CEM/MI in Goa, July)
- Draft map is already available with examples of Canada and Australia: to give an idea of possible projects and the level of info: <https://www.csiro.au/en/maps/Hydrogen-storage-and-distribution>
- Also promising research projects can be shared in various stages (also in planning or construction stage)
- Submitting via on-line form (ideally by the end of May): <https://www.csiro.au/en/research/technology-space/energy/International-hydrogen-storage-distribution>
- For support, questions or to join the Working group please contact Trevor: trevor.rapson@csiro.au
- Analysis papers to be published in December
- Update from Bianca Lewis of DCCEEW:
 - The Australian Government announced the establishment of the \$2 billion to support the development of hydrogen industry in Australia
 - The Australian Government's investment in hydrogen hubs/ hydrogen valleys is now more than \$500 million, link to learn more: https://www.dcceew.gov.au/energy/hydrogen#toc_5
 - International research collaboration programmes with the main goals of strengthening relations, knowledge sharing, that will potentially result in pilot programmes and commercial programmes; three visits planned for 2023: Singapore, South Korea and India <https://research.csiro.au/hyresource/>
 - Placement programme for Australian researcher
 - ⇒ any questions for Australian funding or research programs please contact bianca.lewis@dcceew.gov.au

iii. Offroad working group (USA/Pete Devlin of DoE)

- Start of this WG at the joint workshop between US, EU, Australia, Chilly in 2021 since then monthly meetings
- Global participation from >40 organizations – 130+ active members – monthly Group & Team meetings
- Three different task teams: *Fuel Cells / Powertrain Team*; *Hydrogen Task Team* and *Hydrogen Safety Team*
- Very good industry participation, some of the companies have launched jointly with support of different countries number of projects to tackle the challenges
- If interested to participate, contact: peter.devlin@ee.doe.gov

iv. Joint R&I call – CET Partnership

- Running under the MI support
- 4th Public Funders Dialog organized on 9 May 2023 to explain the mechanism and to show the link between different missions
- New annual Call for 2023 on Hydrogen and renewable fuels: prelaunch June – launch September; Hydrogen research areas 2023 in line with MI R&I focus areas
- For questions and calls please contact: TRI3@CETPartnership.eu and Aage Stangeland ast@forskningsradet.no

b. Demonstration/Hydrogen Valleys – progress so far

i. Identification of Hydrogen Valleys

- Re-launch event of www.h2v.eu on 8 May 2023 (presentations can be found at https://www.clean-hydrogen.europa.eu/hydrogen-valleys-0_en)
- Currently more than 80 H2V identified under development around the world
- Clean Hydrogen Partnership has received additional investment of €200 million under REPowerEU Plan, parts of this are assigned in the 2023 Call for Proposals for hydrogen valleys in the EU, possibly support of hydrogen valley in Africa
- European Commission is currently developing a Roadmap on Hydrogen Valleys (covering PDS, finance, regulatory issues, standards, skills, global reach out and the connection of different hydrogen valleys) likely to be published in autumn
- Total investment in hydrogen valleys are growing, the average price has declined to 6EUR/kg and the commercial confidence is growing

ii. Hydrogen Exchange (Germany/Lorena Steinle, Lorena.Steinle@now-gmbh.de)

Sprint 2: Hydrogen Exchange Program

- Support of non-MI countries to identify the tools for the development of Hydrogen Projects
- Transfer and sharing of knowledge with and between countries
- Contact and access to relevant stakeholders in a global network
- The following topics will be covered: ***Regulatory Framework & Certification, Project Financing & Investment, Human Capital, Technological components and Transport of Hydrogen***
- Pilar 2 & Pilar 3 will jointly prepare a series of workshops with support to Spain
- The first regional focus is Latin America, workshop will be conducted with the support of OLADE (Latin America Energy Organization)
- Next regional focus: MENA region. Idea to kick off of workshop series during the MENA Climate Week. UAE offered support.
- The first workshop took place during the Annual Gathering in Rio (March 2023)
- The next workshop's topic will be "Regulatory Framework & Certification" with Presentation National Regulations and Current H2V Certification Schemes.
- Potential presenters: Chile/Colombia/Spain, Target audience: non-MI countries, LAC and Members MI.

c. Enabling Measures – (Chile/Loreta Lancellotti-Angel Caviedes)

See the above the update on Hydrogen Exchange

i. Financing working group – (EC/Eirik Lonning)

- 1st Workshop on Finance and Investment held 15 May 2023 with the focus on hydrogen valleys
- Guest speakers from Canada, US, Chile, Germany and World Bank
- A very good panel discussion
- Targeted events will follow up incl. involvement of private sector
- Suggestions for topics are welcome to: Eirik.Lonning@ec.europa.eu

3. Round table – (all members) – update on individual activities to support the implementation of the Clean Hydrogen Mission Action Plan

South Korea - Jin-Nam Park of KETEP

- Korea presented Hydrogen Roadmap in November 2021
- Production of green hydrogen using electrolyser to reach 250 ton and Blue hydrogen 750 ton by 2030
- Kick-off of a demonstration project to produce clean hydrogen using renewable energy
- Preparatory work on demonstration project using nuclear power plant source

Saudi Arabia, Faisal Qurooni

- MoU signed with The Netherlands
- Will submit case studies for the map that will be developed by Distribution and Storage working group
- A workshop on hydrogen during the MENA Climate Week that will be organized by KAPSARC and possibly with IEF (International Energy Forum), invitation will be shared in due time

Norway, Trond Moengen of RCN

- Three examples of Hydrogen in maritime sector:
- Call 2018 Havila - a solution for hydrogen that can be implemented on Kysturen ships
- Call 2020 Green Bulk - Joint project of AGRI and Heidelberg: cement contracted and emission free bulk cargo
- Call 2020 H2 Carbon Cat – carbon catamaran for emission-free passenger traffic
- Call 2021 Flex-Bulk NH3 Power – zero carbon emission utilizing ammonia as fuel supported by batteries, holistically designed for safety and commercial requirements
- (Floating) Ammonia fuel bunkering system
- Collaboration with Zero Shipping Mission: pilot project Transatlantic Green Ammonia Bulk Carrier pilot between Europe, Houston and Eastern part of Brazil,

Austria – Horst Steinmüller of Wiva

- Establishing the second hydrogen valley located in the Eastern part, hydrogen produced mainly from windpower
- Works on the third hydrogen valley in the western part of Austria together with South Tirol, Italy and Bavaria, Germany
- Next workshop in July and get ready for the next calls of the Clean Hydrogen JU
- Focus is now on hydrogen valleys

Germany – Lorena Steinle of NOW

- The German government has a ‘one-stop shop’ for all matters relating to hydrogen, e.g. the national hydrogen strategy, overview of federal governmental financial instruments at the national, European and international level:
<https://www.bmwk.de/Navigation/EN/hydrogen/home.html>
- The HyLand Program website is now also available in English: <https://www.hy.land/en/>
- H2Scout for Regions: facilitates hydrogen integration into regional energy planning and transition activities. They have developed a software that provides an analysis on what is the potential for supply and demand. Interesting also for other countries, since the platform is replicable.

Canada - Kate Powe of NRCAN

- A Canadian speaker Allison Simmonds at the Workshop 1: Financing Hydrogen Valleys of the Pilar 3 Finance & Investments WG: Budget 2023 launched in March incl. programmes and plans stimulating and supporting the clean hydrogen economy in Canada and internationally, e.g. Canada growth fund of CAD15 billion on crowding and private sector investments to support emerging technologies
- One hydrogen hub/hydrogen valley identified on the www.h2v.eu, more interesting projects are expected to be included in the coming months

Spain – Africa Castro of H2B2 Electrolysis Technologies

- In 2022 competitive calls for projects for the development of the value chain and on deployment, projects were supposed to include the production but also the use, a new round will be launched also in 2023 in the same direction on value chain and also project deployment
- A call specifically devoted to hydrogen valleys is also expected to be launched
- Spain is also participating in the Important Projects of Common European Interest (IPCEI): Technology and also Hydrogen to use

China – Hongxian Han of DICP

- Two new stakeholders, big Chinese PV companies, involving PV companies for electrolysers could be very interesting for demonstration and commercialization in the future
- Innovation Community Platform of MI: Sunlight to X also including hydrogen (China is a co-lead together with EU)
- More update on hydrogen valleys in China will be available in July

4. Any other business

- Communication:
 - CHM has its website: Clean Hydrogen Mission – Mission Innovation (mission-innovation.net)
 - And also LinkedIn: <https://www.linkedin.com/company/clean-hydrogen-mission/?viewAsMember=true>
 - Reports, announcements of workshops, webinars that are linked to the mission can be published here