



# European Commission research and innovation initiatives on hydrogen

Wednesday 7 December 2022  
Acceleration hydrogen ecosystem event

14:40 – 16:00

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# An ambitious strategy for Europe

The path towards a European hydrogen eco-system step by step :



Today - 2024

From now to 2024, we will support the **installation of at least 6GW of renewable hydrogen electrolyzers in the EU**, and the production of **up to 1 million tonnes** of renewable hydrogen.

2025 - 2030

From 2025 to 2030, hydrogen needs to **become an intrinsic part of our integrated energy system**, with at least 40GW of renewable hydrogen electrolyzers and the production of **up to 10 million tonnes** of renewable hydrogen in the EU.

2030 -

From 2030 onwards, **renewable hydrogen will be deployed at a large scale** across all hard-to-decarbonise sectors.

# REPowerEU plan

Target of 10 million tonnes of domestic renewable hydrogen production and 10 million tonnes of renewable hydrogen imports by 2030.

The Commission:

- will top-up Horizon Europe investments on the Hydrogen Joint Undertaking (EUR 200 million) to double the number of Hydrogen Valleys;
- publishes for public feedback two Delegated Acts on the definition and production of renewable hydrogen;
- intends to complete the assessment of the first Important Projects of Common European Interest on hydrogen by the summer;
- calls on industry to accelerate the work on missing hydrogen standards, in particular for hydrogen production, infrastructure and end-use appliances
- will regularly report, in close cooperation with the Member States, starting in 2025, on hydrogen uptake, and the use of renewable hydrogen in hard-to-abate appliances in industry and transport.

# R&I support to hydrogen policy

- Horizon Europe:
  - *Public / private partnerships: CH JU, transport and industry partnerships*
  - *Public / public partnership: Clean Energy Transition Partnership*
  - *Cluster 5 and 4 collaborative projects*
  - *EIC*
  - *EIT KIC InnoEnergy*
- REPowerEU
- H2020: Green Deal call
- European Research Area (ERA): Pilot on Green Hydrogen and SET Plan revamping
- Mission Innovation – *Mission on clean hydrogen*

# Hydrogen in HE cluster 5 WP 2022

- Clean Hydrogen Partnership budget of around EUR 200 million per year.
- Open Innovation Test Bed (OITB) on Hydrogen Production Technologies.
  - Contribution to European Hydrogen strategy + Green Deal.
  - Services for testing innovative hydrogen production technology in industrial environment for mass production, last step before access to market.
  - Testing regulatory compliance and life cycle assessment, for reducing technology risk and facilitating investment decisions.
- As soon as having a link to hydrogen, the cluster 5 project includes a mandatory clause for data reporting to the Clean Hydrogen Observatory (no budget involved).

# European Research Area (ERA) on hydrogen & Strategic Energy Technology (SET) Plan

- Council Conclusions on the New ERA Dec. 2020 invited MS + Commission to start a pilot initiative on green hydrogen.
- Cooperation with MS strengthened through ERA Action 11
- Action 11 includes an ERA thematic pilot on green hydrogen (action 11.1) + the revamping of the SET Plan (Action 11.2)

# ERA Action 11.1 ERA Pilot on Green Hydrogen

- Joint work of MS and Commission in the agenda process for the ERA Pilot
- Task force produced a Strategic Research and Innovation Agenda (SRIA), now to be developed into an implementation Plan. SRIA presented at a big Conference on 16 May 2022.
- *Work organised in thematic workshops, public consultations & final conference part of the agenda process*
- *Central thematic blocks:*
  1. *transport / infrastructure (coordinator: Germany)*
  2. *production (coordinators: Bulgaria and Italy)*
  3. *market stimulation (coordinator: Austria)*

# ERA Action 11.1 ERA Pilot on Green Hydrogen

For the part at EU level, the Commission issued a Staff Working Document on “Building a European Research Area for clean hydrogen - role of EU R&I investments to deliver on EU’s Hydrogen Strategy” (2022 /15 final). Objectives:

- Getting an overview on related EU R&I initiatives
- Identifying improvements needed
- Developing synergies with Member States’ part of the agenda process on R&I pilot on Hydrogen



# SWD domains of action

- An ERA for uptake to market: Open Innovation Test Beds

## Open Innovation Test Bed (OITB) on Hydrogen Production Technologies:

- Cluster 4 WP 2022 → CLEANHYPRO; HORIZON-CL4-2022-RESILIENCE-01-20
  - Cluster 5 WP 2023-2024, as Commission proposal (WP not yet adopted – [pre-published](#) on 29 November 2022)
- An ERA of data: the EU Clean Hydrogen Observatory
    - Clean Hydrogen JU call for tenders → evaluation ongoing
  - An ERA for skills: the new project under ERASMUS + (Skills4H2)
    - Project started in July 2022; 34 partners in 14 countries (include Pilot curriculum, Pilot trainings, ...)
  - Hydrogen valleys
  - Reinforced connection with international frame
    - Mission Innovation, intensified cooperation with Africa and the Mediterranean Union, and support large-scale demonstrators through the EU-Catalyst Partnership

# ERA Action 11.2 REVAMPING of the SET Plan

## SET plan – what is it?

- Technology pillar of the EU's energy and climate policy
- 10 priority actions covering areas of sustainable energy + nuclear safety
- EU Member States + Associated Countries (Iceland, Norway and Turkey)

## ERA Forum

- Members are EU Member States plus EEA/EFTA countries

# Revamping the SET Plan

- SET Plan: “strategic policy framework enhancing MS cooperation in energy transition”
- Powerful and successful, however SET Plan needs revision in order to:
  - Adjust to the new policy landscape - support the Green Deal policies and strategies (**incl. hydrogen**)
  - Support the ERA Policy Agenda and reinforce synergies with national / regional levels in the R&I landscape
  - Accelerate innovation and deployment
  - Further address environmental and societal aspects
  - Increase the ambition and visibility of the SET Plan for a higher impact
  - Enhance monitoring of SET Plan progress

# SET plan contribution to ERA approach

- **Clean Energy Transition Partnership (CETP)** is a multilateral and strategic **funding** partnership of national and regional RDI programmes in European Member States to contribute to the implementation of the SET plan; **CETP will enable MS and EU to align RDI**
- **CETP** builds on SET plan implementation working groups which brings together States, industrial initiatives, stakeholders and researchers as well as energy relevant ERA-NETs (**experienced and effective transnational programmes**)
- Importance of ERA 11.2 to **urgently intensify R&I collaboration between Member States and Commission** in the area of sustainable low carbon energy technologies, as solar, ocean, wind, geothermal and bio energy
- Enhance the use of EERA

# Hydrogen valleys: Key points

- Different H2Vs archetypes to be considered (avoid “one size fit all” approach) – all size and scales are possible depending on the nature of the area/scope/needs
- Integrated approach across the entire value chain from R&I to deployment – for H2 RE production to final use
- Could cover industrial nodes but much more: transport nodes with other applications, mixed uses (housing, industry, transport, etc..) – full flexibility as long as it covers more than one single domain of application and more than one part of the value chain
- Rolling out the hydrogen valley concept (from small scale to large scale) will put pressure on the production capacity of electrolysers
- REPowerEU now asking to increase budget for Hydrogen Valleys in the EU
- Mission Innovation supporting developing Hydrogen valleys worldwide
- Further support at Member States and regional level needed, also through other EU funding (e.g. European Regional Development Fund – ERDF). Hydrogen Valleys should be developed across the EU – in all MS, and fit to local situation


# Hydrogen Valleys

**1** Project Development Assistance (PDA)



Great opportunity to bring on-board and share learnings with 'less FCH ready' but highly interested central and eastern European regions

**2** EU H<sub>2</sub> Valleys Partnership



Partnership led by:  
 North of Netherlands (NL)  
 Auvergne-Rhône Alpes (FR)  
 Le Normandy (FR)  
 Aragon (ES)  
**56 regions** joined

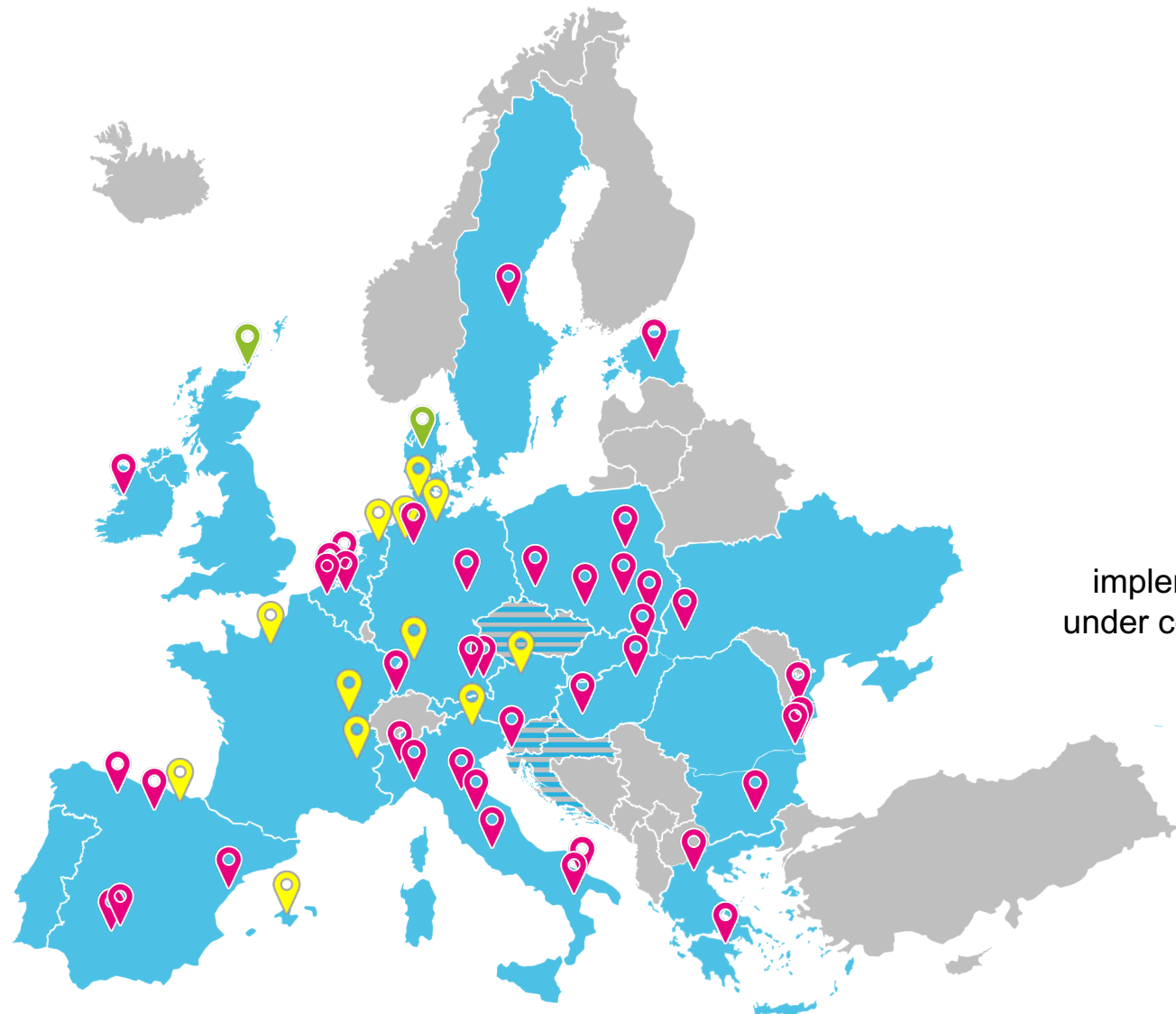
<http://s3platform.jrc.ec.europa.eu/hydrogen-valleys>

**3** Creation of H<sub>2</sub> Valleys

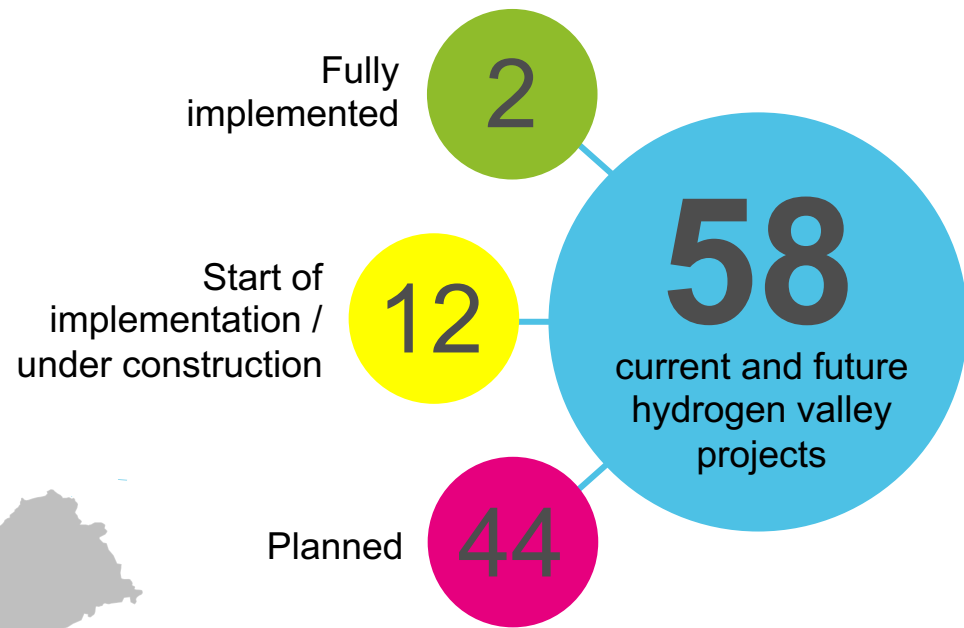


*"I want Next Generation EU to create new European Hydrogen Valleys to modernise our industries, power our vehicles and bring new life to rural areas."*

**4** EUR 200M top-up from **RePowerEU**



● Hydrogen valley located    ■ Member of the crossborder hydrogen valley    ● No hydrogen valley located



# Thank you!

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