Topics in the call 2022

Cross-cutting Issues, Hydrogen Valleys, Strategic Research Challenges

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Cross-cutting Issues - Overview

Main Focus

- Raise public awareness and trust towards FCH technologies
- Safety-related aspects of (i) Cryogenic H_2 transfers for mobile applications, (ii) H_2 injection management at network-wide level
- Test methods and requirements for measuring devices in the gas network
- Support cooperation with the African continent

What is new

- Guidance for raising awareness and trust in the public and key stakeholders in Europe
- Addressing safety aspects on (i) new distribution applications, and (ii) network management
- Test methods and limits and tolerances for currently used devices
- Shape future cooperation with African countries on renewable H_2 tech.

Cross-cutting Issues Overview

Topic	Type of Action	Ind. Budget (M€)	Deadline
HORIZON-JTI-CLEANH2-2022-05-01: Public understanding of hydrogen and fuel cell technologies	CSA	1	20/09/2022
HORIZON-JTI-CLEANH2-2022-05-02: Safety of cryogenic hydrogen transfer technologies in public areas for mobile applications	RIA	2	31/05/2022
HORIZON-JTI-CLEANH2-2022-05-03: Safe hydrogen injection management at network-wide level: towards European gas sector transition	RIA	3	20/09/2022
HORIZON-JTI-CLEANH2-2022-05-04: Development of validated test methods and requirements for measuring devices intended for measuring NG/H2 mixtures	RIA	2	31/05/2022
HORIZON-JTI-CLEANH2-2022-05-05: Research & Innovation co-operation with Africa on hydrogen	CSA	1	31/05/2022

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Cross-cutting Issues - Topics

HORIZON-JTI-CLEANH2-2022-05-01: Public understanding of hydrogen and fuel cell technologies

Raise public awareness and trust towards FCH technologies and their benefits

- Further understanding of public perceptions and attitudes, building on the learnings from past/ ongoing initiatives, projects, etc.
- Develop guidelines/ good practices (and materials) for raising awareness and trust, set up engagement activities
- Focus on FCH tech. in general; Target: public and stakeholders from key sectors/territories
- Activities: comprehensive coverage/ EU-13 countries, metrics/ indicators for impact quantification

HORIZON-JTI-CLEANH2-2022-05-02: Safety of cryogenic hydrogen transfer technologies in public areas for mobile applications

Address safety-related aspects of LH_2/ cryogenic transfers in new distribution applications

- Address ≥ 3 applications on hydrogen mobility (e.g., transferring operations for ships, trucks, stationary tanks fillings)
- Practical and science-based outputs: risk analysis, safety barriers, set-back distances, loading procedures, etc.
- Recommendations, guidelines and procedures to industry concerned, authorities, standardization committees, etc.
- Provide guidance and support the development of standards

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Cross-cutting Issues - Topics

HORIZON-JTI-CLEANH2-2022-05-03: Safe hydrogen injection management at network-wide level: towards European gas sector transition

Development of technical documentation for a safe multi-gas network management

- Develop methods, tools, technologies, guidelines, etc. for EU (T&D) network management and gas quality tracking
- Address injection of H_2: open modelling tools for network simulation, key technologies for quality tracking, and mitigation of variations
- Analyse: gas quality impacts on repurposed/new pipelines, inspection of components behaviour (database, protocols, etc.)
- Provide guidance and support the development of EU standards

HORIZON-JTI-CLEANH2-2022-05-04: Development of validated test methods and requirements for measuring devices intended for measuring NG/H2 mixtures

Development and validation of test methods and requirements for measuring devices in the (T&D) gas network

- Develop and validate test methods, evaluate impacts on the devices, etc. & define limits and tolerances for currently used devices
- %H_2: 0 – 100 % vol. Measuring devices: flow meters, pressure transmitters, quality analysers, etc.
- Recommendations to European and National gases and metrology associations, standardization committees, etc.
- Provide guidance and support the development of EU standards

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Cross-cutting Issues - Topics

HORIZON-JTI-CLEANH2-2022-05-05: Research & Innovation co-operation with Africa on hydrogen

Shape future cooperation with African partner countries on renewable hydrogen technologies

- Multidisciplinary research to identify measures, enabling conditions, etc. to dev. H_2 tech. and market in the African continent
- Address potential R&I and technological options for production, storage, transportation, distribution and usage of renewable H_2
- Emphasis on environmental impacts, business models, techno-economic aspects, industrial implications, market opportunities, etc.
- Identify potential geographical and thematic areas for EU - African countries cooperation. Develop ≥ 2 areas in detail
- Develop a Strategic Innovation Roadmap (SIR) highlighting mutual benefits for both African Union and EU
- Propose the creation of a network of the major African actors in areas of renewable H_2 production, transport, use

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Hydrogen Valleys & Strategic Research Challenges Overview

Topic	Type of Action	Ind. Budget (M€)	Deadline
HORIZON-JTI-CLEANH2-2022-06-01: Hydrogen Valleys (large-scale)	IA 🏴	25	20/09/2022
HORIZON-JTI-CLEANH2-2022-06-02: Hydrogen Valleys (small-scale)	IA 🏴	8	20/09/2022

Topic	Type of Action	Ind. Budget (M€)	Deadline
HORIZON-JTI-CLEANH2-2022-07-01: Addressing the sustainability and criticality of electrolyser and fuel cell materials	RIA	10	31/05/2022

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Hydrogen Valleys Overview

Main Focus

- Deploy and demonstrate large and small scale hydrogen valleys that can be sustained and grow with time and replicated elsewhere
- Covers the complete value chain of hydrogen
- Contribute to EU competitiveness by supporting a European value chain
- Hydrogen as an enabler for sector coupling and integration of renewable energy

What is new

- Large-scale: interlinkages beyond the individual H_2 Valley boundaries as a means to contribute towards an EU hydrogen infrastructure backbone
- Smaller-scale: Stimulate Hydrogen Valleys in areas of Europe with no or limited presence

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Hydrogen Valleys - Topics

HORIZON-JTI-CLEANH2-2022-06-01: Hydrogen Valleys (large-scale)

Develop, deploy and demonstrate a large-scale H_2 valley with interlinkages outside its boundaries

- Production of ≥ 5,000 tonnes of renewable H_2 per year using new hydrogen production capacity (GOs)
- ≥ 2 FCH applications from ≥ 2 sectors (energy, industry, transport)
- Demonstrate: existing/new H_2 markets, contribution to economic growth, impact and replicability, commitment of stakeholders
- Financing structure and strategy describing the business model, including envisaged sources of co-funding/co-financing needed

HORIZON-JTI-CLEANH2-2022-06-02: Hydrogen Valleys (small-scale)

Develop, deploy and demonstrate a H_2 valley (particular attention to areas of Europe with no or limited presence of H_2 Valleys)

- Production of ≥ 500 tonnes of renewable H_2 per year (GOs)
- Supply more than one end sector or application (mobility, industry energy) / >20% H_2 produced for each of the 2 main applications
- Demonstrate: existing/new H_2 markets, contribution to economic growth, impact and replicability and commitment of stakeholders
- Financing structure and strategy describing the business model, including envisaged sources of co-funding/ co-financing needed

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Strategic Research Challenges - Topic

HORIZON-JTI-CLEANH2-2022-07-01: Addressing the sustainability and criticality of electrolyser and fuel cell materials

Removing the CRMs and materials of environmental concerns from electrolysers and fuel cells

- Development of low or free-CRM catalysts and poly/perfluoroalkyls-free ionomers according to SRIA's KPIs
- Improvement of CRM and ionomer recycling from scraps, wastes and end-of-life equipment
- Three innovative solutions for each PEM, AEM, AEL, PCC and SOC technologies
- Breakthroughs in electrocatalysts, coatings, electrode architectures and cell designs
- Life cycle analyses

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Clean Hydrogen Partnership

Q&A session

Topics overview

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Questions?
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