



EUROPEAN PARTNERSHIP

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## Questions and Answers

27 March 2024

<b>Call:</b>	HORIZON-JTI-CLEANH2-2024
<b>Topics:</b>	All topics
<b>Types of action:</b>	RIA, IA and CSA
<b>Service:</b>	CleanH2
<b>Call deadline:</b>	17/04/2024

All questions regarding the call and the topics published can be addressed to: [project@clean-hydrogen.europa.eu](mailto:project@clean-hydrogen.europa.eu).

**Update from earlier version of 07 March 2024 are highlighted in red:**

- Programme / practical – eligibility for participation and funding
- Hydrogen Valleys – e-fuel

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## ADMINISTRATIVE QUESTIONS

### 1. Programme / practical

#		Question and answer
1	<b>Q</b>	<p>Can you provide me with more information about the programme's requirements and application process?</p> <p>Are there any deadlines or specific criteria that we must meet in order to qualify for participation?</p> <p>Additionally, are there any resources or contacts that you could recommend for further information and guidance?</p>
	A	<p>All information about the requirements, application process, deadline, etc. is available on the Funding and Tender Opportunities Portal here: <a href="https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/opportunities/topic-search?tenders=false&amp;callIdentifier=HORIZON-JTI-CLEANH2-2024">https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/opportunities/topic-search?tenders=false&amp;callIdentifier=HORIZON-JTI-CLEANH2-2024</a></p> <p>In addition, we refer to the presentations from the Info Day on the call for proposals 2024, available after 26th January 2024 on: <a href="https://www.clean-hydrogen.europa.eu/apply-funding/info-days-0/info-day-2024-presentation-call_en">https://www.clean-hydrogen.europa.eu/apply-funding/info-days-0/info-day-2024-presentation-call_en</a></p>
2	<b>Q</b>	<p>My company / entity is developing XXX technology, YYY products, is there a topic to which we can apply?</p> <p>What are the possibilities to get a grant to start my spin off from the EU?</p>
	A	<p>All information about the topics of the call 2024 is available on the Funding and Tender Opportunities portal here: <a href="https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/opportunities/topic-search?tenders=false&amp;callIdentifier=HORIZON-JTI-CLEANH2-2024">https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/opportunities/topic-search?tenders=false&amp;callIdentifier=HORIZON-JTI-CLEANH2-2024</a></p>
3	<b>Q</b>	<p>How should the following topic requirement be interpreted "<i>This topic is expected to contribute to EU competitiveness and industrial leadership by supporting a European value chain for hydrogen and fuel cell systems and components</i>"?</p>
	A	<p>The call conditions applicable <b>to all the topics</b> state:</p> <ul style="list-style-type: none"> <li>- <i>The Clean Hydrogen JU will continue to work to reinforce the EU supply chain of critical key components by e.g. a higher range of common/standardised parts to be produced in EU and Horizon Europe Associated Countries and to enable start investments in production facilities for further ramp-up in these markets.</i></li> <li>- <b><i>All topics included in the Call 2024</i></b> are expected to contribute to EU competitiveness and EU industrial leadership by supporting a European value chain for hydrogen and fuel cell systems and components.</li> </ul> <p>With this in mind, <b>for all topics</b>, proposals should demonstrate how the proposed activities (including planned procurement for the purchase of equipment/infrastructure) will contribute to this requirement.</p>
4	<b>Q</b>	<p><b>My company is established in Mexico / India / country X, can we apply? Are we eligible for funding?</b></p>
	A	<p>To answer your question we kindly direct you to the general annexes of Horizon Europe which outline the eligibility rules that apply to our call. In particular please have a look at section B.</p> <p><a href="https://ec.europa.eu/info/funding-tenders/opportunities/docs/2021-2027/horizon/wp-call/2023-2024/wp-13-general-annexes_horizon-2023-2024_en.pdf">https://ec.europa.eu/info/funding-tenders/opportunities/docs/2021-2027/horizon/wp-call/2023-2024/wp-13-general-annexes_horizon-2023-2024_en.pdf</a></p>



## 2. Administration and finance

#		Question and answer
1	Q	<p>In the past 2023 call, a “project contribution” was foreseen by each partner, corresponding to 3.5% of the total budget, and I assume it is the same for this call, too.</p> <p>If I understood well, this amount should be paid when setting up the consortium agreement. Should it be a cost item of the budget? And which category, in such case?</p>
	A	<p>First of all, we would like to clarify that the contribution that you are referring to, which is being requested by Hydrogen Europe aisbl, is not a JU or a call requirement, but a request made by one of the private members of the JU.</p> <p>The grant agreement does not include nor rely on external factors such as a “project contribution” payment to Hydrogen Europe. In this regard, please note that the contribution is neither requested nor to be paid to the Clean Hydrogen Joint Undertaking, but to another legal entity - Hydrogen Europe - who is a part of the JU Members, but has its own legal capacity and is a separate legal entity altogether.</p> <p>We would also like to add that any contribution or fee is not an eligible cost in the projects.</p> <p>We take this opportunity to inform you of one article of the Financial Rules of the JU, that is relevant, which states that the private members of the JU (i.e. Hydrogen Europe and Hydrogen Europe Research) may invite /request such contribution only from their members/constituent entities, while in the case of non-members this is not allowed.</p> <p>For questions on this issue please contact Hydrogen Europe Research and/or Hydrogen Europe.</p> <p>As the project contribution is a membership requirement, members of Hydrogen Europe Research or Hydrogen Europe should contact the respective private associations secretariats for further details and instructions before preparing their proposals:</p> <ul style="list-style-type: none"> <li>▪ For Hydrogen Europe: <a href="mailto:n.saric@hydrogeneurope.eu">n.saric@hydrogeneurope.eu</a></li> <li>▪ For Hydrogen Europe Research: <a href="mailto:l.mazurkiewicz@hydrogeneuroperesearch.eu">l.mazurkiewicz@hydrogeneuroperesearch.eu</a></li> </ul>

### 3. Legal

#		Question and answer
1	<b>Q</b>	<b>Do affiliated entities count to satisfy the consortium composition requirements?</b>
	A	<p>The consortium composition follows the Annex B of the General Annexes to the Horizon Europe Work Programme 2023–2024, where you would read for IA and RIA actions "<i>Consortium composition</i>:"</p> <p><i>Unless otherwise provided for in the specific call conditions, only legal entities forming a consortium are eligible to participate in actions provided that the consortium includes, as beneficiaries, three legal entities independent from each other and each established in a different country as follows:</i></p> <ul style="list-style-type: none"> <li>- <i>at least one independent legal entity established in a Member State; and</i></li> <li>- <i>at least two other independent legal entities, each established in different Member States or Associated Countries</i>".</li> </ul> <p>As affiliated entities do not sign the grant agreement, they do not count towards the minimum eligibility criteria for consortium composition (if any).</p>
2	<b>Q</b>	<b>Could a Canadian company take part in the 2024 Clean Hydrogen Partnership call?</b>
	A	<p>Following the conclusion of the negotiation between the EU and Canada in November 2023 it has been agreed that entities based in Canada can apply and be evaluated as "beneficiaries" in Horizon Europe (HE) proposals for all calls implementing Pillar II (to which our programme belongs). See: <a href="https://research-and-innovation.ec.europa.eu/strategy/strategy-2020-2024/europe-world/international-cooperation/bilateral-cooperation-science-and-technology-agreements-non-eu-countries/canada_en">https://research-and-innovation.ec.europa.eu/strategy/strategy-2020-2024/europe-world/international-cooperation/bilateral-cooperation-science-and-technology-agreements-non-eu-countries/canada_en</a></p> <p>To put it simply in our 2024 call, Canadian applicants will be treated as if they are from an Associated Country and can request funding.</p> <p><a href="https://ised-isde.canada.ca/site/ised/en/horizon-europe-how-apply">https://ised-isde.canada.ca/site/ised/en/horizon-europe-how-apply</a></p>

#### 4. Lump Sums

#		Question and answer
1	<b>Q</b>	<b>Where can I get more info about lump sums?</b>
	A	Comprehensive information on lump sum funding in Horizon Europe is available on the Funding & Tenders Portal: <a href="https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/programmes/horizon/lump-sum/guidance">https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/programmes/horizon/lump-sum/guidance</a>
2	<b>Q</b>	<b>About lumps sums, I would like to have more details on XXX</b>
	A	Check if your question about lump sums is already answered here: <a href="https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/support/faq;keyword=lump%20sum-FAQs;status=0,1">https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/support/faq;keyword=lump%20sum-FAQs;status=0,1</a>
3	<b>Q</b>	<b>How should I treat the income obtained as a result of the proposed activities, e.g one partner receives income from selling hydrogen to an entity outside the consortium?</b>
	A	In all Horizon Europe proposals, the budget must be in balance (total expenditure must equal total income). Specifically, the total project eligible costs on the one hand must equal the requested grant amount plus any 'own resources', 'financial contributions' and 'income generated' by the action'. There is a detailed answer on the subject here: <a href="#">How to handle own resources in lump sum proposals?</a>

5. Other

#		Question and answer
1	Q	<p><b>Our research group / company / entity is looking for a consortium to join the topic XXX, how can we do this?</b></p> <p><b>We are interested in topic “XXX“ and searching for partners, how can we do this?</b></p>
	A	<p>Use the partner search functionality of the Funding and Tender Portal: <a href="https://webgate.ec.europa.eu/funding-tenders-opportunities/display/IT/Find+partners">https://webgate.ec.europa.eu/funding-tenders-opportunities/display/IT/Find+partners</a></p> <p>Additionally, you can express your interest in a specific topic, and see companies interested to team up for project proposal in that topic.</p> <p>Finally, you can have a look at existing projects supported by the Clean Hydrogen JU in the area and contact the consortium. See our webpage on projects here: <a href="https://www.clean-hydrogen.europa.eu/projects-repository_en">https://www.clean-hydrogen.europa.eu/projects-repository_en</a></p>
2	Q	<p><b>Is there a maximum duration of IAs funded via the Clean Hydrogen JU work programme?</b></p> <p><b>What is the maximum duration of the projects in this call, 36 or 48 months?</b></p> <p><b>Under topics 06-01 and 06-02, there is a reference to plan minimum 2 years of operation. Will these two years of operation be eligible, in addition to the general IA action duration? What is the eligible duration of projects?</b></p>
	A	<p>Unless specified in the topic text, there is no general requirement for the project's duration. Yet, some topics include a minimum duration for the demonstration phase.</p> <p>Please read carefully the description of the topic and provide all necessary explanations on your interpretation of the topic and planned duration of your project while writing the proposal.</p> <p>The evaluators will then have all information to judge and to consider if the explanations are relevant. Indeed, proposals are evaluated by external experts and it is up to applicants to demonstrate how they plan to achieve the expected outcomes and the requirements included in the description of the topic scope.</p>
3	Q	<p><b>What are the requirements as to “hydrogen safety planning and management” draft ? What information must be included in the draft at the stage of submitting the application?</b></p>
	A	<p>At proposal stage the idea is that applicants demonstrate how they will ensure that hydrogen will be handled in a safe manner in the project (leaving the details of the plan to be developed during project implementation).</p>



## TECHNICAL QUESTIONS

Questions and answers in this document of 17/01/2024, are based on questions received for last year call HORIZON-JTI-CLEANH2-2023 and still pertinent for this year call HORIZON-JTI-CLEANH2-2024 for recurrent topics on Hydrogen Valleys.

### **Read before asking a technical question:**

**The topic descriptions are built as clear and with self-standing requirements, and give ample freedom to consortia to tackle them.**

**Unfortunately, we cannot go beyond what is written in the text and interpret what was the purpose of a specific requirement as proposals are evaluated by a panel of independent experts.**

**Please read carefully the description of the topic and provide all necessary explanations on your interpretation of the topic while writing the proposal.**

**The evaluators will then have all information to judge and to consider if the explanations are relevant. Indeed, proposals are evaluated by external experts, and it is up to applicants to demonstrate how they plan to achieve the expected impacts and the requirements included in the description of the topic scope.**

**1. Renewable Hydrogen Production**

Topic(s)	#	Question and answer
HORIZON-JTI-CLEANH2-2024-01-03: Development of innovative technologies for direct seawater electrolysis		
1	<u>Q</u>	<p><b>Does the seawater need to be put directly into the electrolyser itself for the process to be qualified as direct seawater electrolysis?</b></p> <p><b>Can the seawater be purified / evaporised / treated before entering the electrolyser?</b></p>
	A	<p>The topic description does not specify/restrict how sea water is going to be treated in the electrolyser or its BoP.</p> <p>Unfortunately, we cannot go beyond what is written in the text and interpret what was the purpose of a specific requirement as proposals are evaluated by a panel of independent experts.</p> <p>Please read carefully the description of the topic and provide all necessary explanations on your interpretation of the topic while writing the proposal.</p> <p>The evaluators will then have all information to judge and to consider if the explanations are relevant. Indeed, proposals are evaluated by external experts, and it is up to applicants to demonstrate how they plan to achieve the expected impacts and the requirements included in the description of the topic scope.</p>

**2. Hydrogen Storage and Distribution**

Topic(s)	#	Question and answer
HORIZON-JTI-CLEANH2-2024-02-05: Demonstration and deployment of multi-purpose Hydrogen Refuelling Stations combining road and airport, railway, and/or harbour applications		
1	<b><u>Q</u></b>	<b><u>Is this topic only for fixed position refuelling sites or mobile (eg truck-mounted) refuelling would be relevant as well?</u></b>
	A	<p>There is no restriction for mobile solutions stemming from the topic description.</p> <p>Unfortunately, we cannot go beyond what is written in the text and interpret what was the purpose of a specific requirement as proposals are evaluated by a panel of independent experts.</p> <p>Please read carefully the description of the topic and provide all necessary explanations on your interpretation of the topic while writing the proposal.</p> <p>The evaluators will then have all information to judge and to consider if the explanations are relevant. Indeed, proposals are evaluated by external experts, and it is up to applicants to demonstrate how they plan to achieve the expected impacts and the requirements included in the description of the topic scope.</p>

**3. Hydrogen End uses: Transport applications**

Topic(s)	#	Question and answer

**4. Hydrogen End uses: Clean Heat and Power**

Topic(s)	#	Question and answer
1	<u>Q</u>	
	A	

**5. Cross-Cutting**

Topic(s)	#	Question and answer
1	<u>Q</u>	
	A	

## 6. Hydrogen Valleys

Topic(s)	#	Question and answer
HORIZON-JTI-CLEANH2-2024-06-01: Large-scale Hydrogen Valley HORIZON-JTI-CLEANH2-2024-06-02: Small-scale Hydrogen Valley		
1	<b>Q</b>	<p><b>How many Hydrogen Valleys projects can be supported in the Call 2024?</b></p> <p><b>Section 2.2.3.1 of the AWP2024 mentions that “an additional budget of EUR 60 million is added to support Hydrogen Valleys in the reserve list”. What does this mean?</b></p>
	A	<p>The European Commission in its communication “REPowerEU Plan” announced an additional investment of EUR 200 million available for the Clean Hydrogen JU for doubling the Hydrogen Valleys in the EU by 2025. In that respect, for the Call for Proposals 2024, up to 60 MEUR additional budget is available to top-up the allocated budget for hydrogen valleys under the Call for Proposals 2024 (EUR 20 million for HORIZON-JTI-CLEANH2-2024-06-01, EUR 9 million for HORIZON-JTI-CLEANH2-2024-06-02). This means that more than one (Hydrogen Valley) project per topic will be funded, according to the final ranking at the end of the evaluation process.</p>
2	<b>Q</b>	<p><b>Does planned hydrogen production capacity count towards the topic requirements of “new hydrogen production capacity”?</b></p> <p><b>I have already secured national funding for a hydrogen production plant that is already planned, can this count towards the hydrogen production requirements of the topic?</b></p>
	A	<p>Planned hydrogen production capacity can be considered as “new production capacity” for the purpose of this topic.</p> <p>In addition, proposals can include hydrogen production plants, for the purpose of the topic requirements, for which funding has been secured elsewhere as long as they constitute new hydrogen production capacity.</p>
3	<b>Q</b>	<p><b>Do I need to provide details for the parts of the Hydrogen Valley that are exclusively funded by sources other than the Clean Hydrogen JU, e.g buses fully funded by a national funding programme?</b></p> <p><b>How to present costs in the proposal for Hydrogen Valleys that are being financed/funded using a combination of funding sources including Clean Hydrogen JU funding?</b></p>
	A	<p>Proposals are evaluated against the topic requirements by an independent panel of experts on the basis of the information submitted. Therefore, proposals are expected to describe how all the different elements of the Hydrogen Valley, necessary to fulfil the topic requirements will be implemented and funded even if some of these elements are not directly supported with JU funding. This should include the technical aspects as well as the investments required.</p> <p>For example, if a proposal includes hydrogen production plant that will be exclusively funded using national programmes, proposals still need to explain how the hydrogen production plant will be implemented and funded/financed. Accordingly, proposals are expected to present a credible work plan (tasks, timing, responsibilities, etc), a preliminary funding strategy and demonstrate the commitment of the necessary stakeholders concerning all elements of the Hydrogen Valley (irrespective of whether they are supported with JU funding).</p>

		<p>This is necessary to allow expert evaluators to assess the credibility of proposals and related risks in relation to the topic requirements.</p> <p>For additional information on the funding plan to be provided at proposal stage, please refer to the topic description which reads, "proposals should provide a funding plan to ensure implementation of the project in synergies with other sources of funding. If no other sources of funding will be required, this should be stated clearly in the proposal....."</p>
4	<b>Q</b>	<b>As for the income generated by the action - should we indicate here revenues from the sale of hydrogen from production hubs that will be created in the project?</b>
	A	This information should be included in the funding plan that applicants are expected to provide.
5	<b>Q</b>	<b>What is the timeframe that the target of a new H2 production annually (500 or 4,000 tonnes) and its application in 2 sectors must be achieved?</b>
	A	<p>The topic description reads: "Produce at least 500 (small-scale) or 4,000 (large-scale) tonnes of clean hydrogen per year using new hydrogen production capacity".</p> <p>This refers to the amounts of hydrogen that the project should deliver over a year (e.g. 500 or 4,000 tonnes H2 per year) once it is fully implemented. We understand it may take time to get to this level of hydrogen production and that some proposals may require a phased approach to deliver this level of hydrogen production. Accordingly, it is up to proposals to explain how they will get to the targeted production capacity within the duration of the project. To this end proposals are expected to include a clear project implementation plan with a clear calendar, defining the key phases (i.e., preparation of the specifications of equipment, manufacturing, permitting, deployment, and operation) and their duration.</p> <p>Note that proposals are expected to accommodate "monitoring and assessment activities including at least two years of operations" within the duration of the project.</p>
6	<b>Q</b>	<b>Are (dual fuel) combustion engines eligible for funding under call topics 06-01 and 06-02 (Hydrogen valleys)?</b>
	A	The topic does not prescribe the end-use (hydrogen) applications that could be included in the Hydrogen Valley. In relation to this, please note that the topic description asks proposals to demonstrate a "reduction of the carbon emissions and impact on air quality related to the end-uses compared to incumbent technologies". To this end it will be up to applicants to demonstrate how the use of (dual fuel) combustion engines is a suitable option to achieve this (as well as any other requirements of the topic).
7	<b>Q</b>	<b>What does the topic mean by clean hydrogen?</b>
	A	<p>The focus of the topic is on renewable or clean hydrogen (two terms to refer to the same). To provide further explanation, the topic description includes a number of footnotes which are also included below:</p> <ul style="list-style-type: none"> <li>i. As defined in the SRIA of the Clean Hydrogen JU, clean hydrogen refers to renewable hydrogen. For the purpose of the demonstration addressed in the proposal it can be foreseen that in the early stages low carbon hydrogen could be used. However, the objective is to move to renewable or clean hydrogen as an ultimate objective in the project.</li> </ul>



		<p>Please refer to the paragraph Rationale for support of the section 3.7 of the SRIA of the Clean Hydrogen JU.</p> <p>ii. Renewable hydrogen is hydrogen produced using renewable energy (Renewable Energy Directive 2018/2001/EU)</p>
8	<b>Q</b>	<b>We are in the process of gathering Letters of Intent (LOI) for the project. We are wondering if the LOI count towards to page limit? Or is there another way to attach them to the application, where they do not count in the page limit?</b>
	A	<p>In the part B template for submission on page 23 you will see written: "ANNEXES TO PROPOSAL PART B"</p> <p>For topics HORIZON-JTI-CLEANH2-2024-06-01: Large-scale Hydrogen Valley and HORIZON-JTI-CLEANH2-2024-06-02: Small-scale Hydrogen Valley, applicants are asked to an upload annex to proposal part B. The annex must be uploaded as a separate document in the submission system "<i>Evidence of the commitments: Annex with evidence of commitment in the project of public authorities (Member States, Regions and Cities) and of any other necessary stakeholders, e.g. via Letters of Intent (LOI)</i>"</p> <p>Upon preparation of your submission through the portal you will be allowed to upload this annex that does not count towards the page limit. This Annex should be used exclusively for the purpose of evidencing the commitment of stakeholders. Any other information included in this Annex will be disregarded.</p>
9	<b>Q</b>	<b>Which are the costs related to the hydrogen production plant for which the Clean Hydrogen JU can provide funding support?</b>
	A	<p>The CAPEX related to the hydrogen production plant (e.g. electrolyser) may be funded by the JU contribution. In addition, as mentioned in the topic description, the costs for the construction and commissioning phase of the hydrogen production technologies including connection (e.g connection to the electricity grid and electricity costs associated to the commissioning) may be funded, while costs (CAPEX) of renewable energy plants (e.g., PV or wind plant) or related costs for the operation of the Hydrogen Valley (e.g., electricity needed for the electrolysers) will not be be funded.</p>
10	<b>Q</b>	<b>What do you mean by " Proposals should demonstrate how financial viability is expected to be reached after two years of operation"?</b>
	A	<p>Hydrogen Valley projects are expected to be in operation beyond the end of the project. With this in mind, proposals are expected to explain how this will be achieved by including a business model that gives consideration to the operation of the Hydrogen Valley in the longer term and beyond the duration of the grant with the Clean Hydrogen JU. It is up to applicants to address this in the proposal.</p>
11	<b>Q</b>	<b>Regarding e-fuels such as methanol, and in the context of Hydrogen Valleys topics, is it a valid production/carrier method and could it contribute to the end use requirements of the topic if, for instance, was used in transport applications as a replacement to fossil fuels? And can e-fuel production plants be funded by the Clean Hydrogen Partnership?</b>
	A	<p>Hydrogen Valleys topics requires a minimum amount of hydrogen used and consumed. With this in mind, the use of hydrogen for producing e-fuels could be considered as an industry end-use (hydrogen used as a feedstock), and could therefore contribute to the end-use requirements included in the topic;</p>

		<p>the use of e-fuels, for instance, in transport applications would not count to the end-use requirements in the topic and accordingly related costs cannot be funded. As for the e-fuel production plants, the Clean Hydrogen Partnership can only fund the part related to the hydrogen production and related infrastructure. For other elements of the plant, alternative sources of funding should be used.</p>
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## **List of topics**

### **RENEWABLE HYDROGEN PRODUCTION**

- HORIZON-JTI-CLEANH2-2024-01-01: Innovative proton conducting ceramic electrolysis cells and stacks for intermediate temperature hydrogen production
- HORIZON-JTI-CLEANH2-2024-01-02: Advanced anion exchange membrane electrolyzers for low-cost hydrogen production for high power range applications
- HORIZON-JTI-CLEANH2-2024-01-03: Development of innovative technologies for direct seawater electrolysis
- HORIZON-JTI-CLEANH2-2024-01-04: Development and implementation of online monitoring and diagnostic tools for electrolyzers
- HORIZON-JTI-CLEANH2-2024-01-05: Hydrogen production and integration in energy-intensive or specialty chemical industries in a circular approach to maximise total process efficiency and substance utilisation

### **HYDROGEN STORAGE AND DISTRIBUTION**

- HORIZON-JTI-CLEANH2-2024-02-01: Investigation of microbial interaction for underground hydrogen porous media storage
- HORIZON-JTI-CLEANH2-2024-02-02: Novel large-scale aboveground storage solutions for demand-optimised supply of hydrogen
- HORIZON-JTI-CLEANH2-2024-02-03: Demonstration of hydrogen purification and separation systems for renewable hydrogen-containing streams in industrial applications
- HORIZON-JTI-CLEANH2-2024-02-04: Demonstration of innovative solutions for high-capacity, reliable, flexible, and sustainable hydrogen compression technologies in commercial applications
- HORIZON-JTI-CLEANH2-2024-02-05: Demonstration and deployment of multi-purpose Hydrogen Refuelling Stations combining road and airport, railway, and/or harbour applications

### **HYDROGEN END USES: TRANSPORT APPLICATIONS**

- HORIZON-JTI-CLEANH2-2024-03-01: Balance of plant components, architectures and operation strategies for improved PEMFC system efficiency and lifetime
- HORIZON-JTI-CLEANH2-2024-03-02: Scaling-up Balance of Plant components for efficient high power heavy duty applications
- HORIZON-JTI-CLEANH2-2024-03-03: Next generation on-board storage solutions for hydrogen-powered maritime applications
- HORIZON-JTI-CLEANH2-2024-03-04: Demonstration of hydrogen fuel cell-powered inland or short sea shipping

### **HYDROGEN END USES: CLEAN HEAT AND POWER**

- HORIZON-JTI-CLEANH2-2024-04-01: Portable fuel cells for backup power during natural disasters to power critical infrastructures
- HORIZON-JTI-CLEANH2-2024-04-02: Improved characterisation, prediction and optimisation of flame stabilisation in high-pressure premixed hydrogen combustion at gas-turbine conditions

### **CROSS-CUTTING**

- HORIZON-JTI-CLEANH2-2024-05-01: Guidelines for sustainable-by-design systems across the hydrogen value chain
- HORIZON-JTI-CLEANH2-2024-05-02: Development of non-fluorinated components for fuel cells and electrolyzers

### **HYDROGEN VALLEYS**

- HORIZON-JTI-CLEANH2-2024-06-01: Large-scale Hydrogen Valley
- HORIZON-JTI-CLEANH2-2024-06-02: Small-scale Hydrogen Valley