MINISTÈRE
DE L'ENSEIGNEMENT
SUPÉRIEUR
ET DE LA RECHERCHE
Liberté
Égalité
Fraternité

horizon europepcn Climat & Énergie

horizon europepcn Transport

Questions - Réponses
Commission européenne

Table des matières

Dernière mise à jour le 28/09/2023

BRIDGE initiative

Question: clarification on the sentence: "*The selected projects are expected to contribute to the BRIDGE initiative , actively participate to its activities and allocate up to 2% of their budgets to that end. Additional contributions to the 'Alliance for Internet of Things Innovation' (AIOTI) and other relevant activities (e.g. clusters of digital projects and coordinating actions) might be considered, when relevant.*"

➔ **Reply:** The aim of the Bridge initiative is to increase the impact of projects in 2 ways: 1) to exchange experiences and best practices among projects so that they can build on each other's work and cooperate across projects; 2) to provide input to EU-level policy discussions based on coordinated and aggregated feedback from projects so that policy actions benefit from project experience and evidence. Projects are expected to support the provision of advice and evidence for EU policy making by taking an active role in at least one of the Bridge working groups, by contributing to its annual work programme and related reports, by participating in the Bridge annual general assembly and, more generally, by sharing experiences and best practices with the other Bridge member projects. Applicants could already specify in their application, the activities and the fields of interests for the cooperation with the Bridge initiative. Applicants not expected to contact the Bridge secretariat during the proposal preparation but only when the project has been awarded.

New European Bauhaus

Request to clarify the standard sentence "*Projects are expected to contribute to the New European Bauhaus (NEB) initiative by interacting with the NEB Community, NEBLab and other relevant actions of the NEB initiative through sharing information, best practice, and, where relevant, results"* that appears in several topics.

Question: What type of contribution is expected?

➔ **Reply:** Topics include this statement because the project results could be useful for the development and implementation of the NEB initiative.
Projects should firstly check whether it is feasible to become an official Partner[2] (any entity, except for-profit organisations and public authorities) or Friend[3] (companies and public actors [regions, villages and cities]) of the NEB. Joining the NEB Community will make it easier to share information, best practice and/or results when the project is properly underway (and producing results).
Projects should also inform their relevant NEB National Contact Point[4] (separate to the R&I Framework Programme NCP) of their activities.
The project may also wish to explore whether they are eligible to participate in the NEB Festival[6] (next edition in 2024) and/or apply for NEB Prizes[5] (annual).

[1] https://europa.eu/new-european-bauhaus/index_en

[2] https://new-european-bauhaus.europa.eu/get-involved/call-partners_en
[3] https://new-european-bauhaus.europa.eu/get-involved/call-friends_en
[4] https://new-european-bauhaus.europa.eu/about/national-contact-points_en
[5] https://new-european-bauhaus.europa.eu/get-involved/festival_en
[6] https://new-european-bauhaus.europa.eu/get-involved/2023-prizes_en

Question: How/ where is this reflected in the evaluation?

➔ **Reply**: It is up to the applicant to decide the appropriate level of interaction with / contribution to the NEB Community and initiative. This contribution will be evaluated by independent expert evaluators, who will assess whether the proposals credibly and appropriately include such a contribution.

HORIZON-CL5-2023-D1-02-01 EU-China international cooperation on data and model development for pathways to carbon neutrality: focusing on decarbonisation, energy efficiency and socio-economic implications of the transition.

The topic specifies, among other things, that actions should: "*Consider different geographical scales and the role of cities in the transition pathways.*"

Question: Could you give further interpretation of the "role of cities"? This could mean several things. On the one hand it could be interpreted as including city governments as stakeholders in the process of developing models and/or policy recommendations, on the other hand this could be interpreted to mean focusing on urban areas as such in the modelling. Or both of those things.

➔ **Reply:** Both interpretations are indeed applicable in this case. This issue was left open intentionally so that consortia could see what the best way would be to include and cover this particular aspect. This can happen e.g. through modelling that considers the city scale, but it could also be tackled in different ways, such as doing a case study or involving stakeholders that work on the city (rather than the national) level.

HORIZON-CL5-2024-D1-01-03: Paleoclimate science for a better understanding of the short- to long-term evolution of the Earth system

Question 1 : The 1st expected outcome recites "*Better process understanding of past climate changes, their variability and interactions with ecosystems, leading to improved Earth system models based on paleoclimate data*". What is intended with variability and interactions with ecosystems? What is the temporal scale of reference? Is it referred to a variability from an interannual scale to a multidecadal scale (comparable with the climatic models) or is it referred to a generic variability included in the glacial/interglacial cycles?

➔ **Reply:** The temporal scale is not fixed, but should be appropriate to the scope of the topic, which is paleoclimate. Typically, paleoclimatic records have a (much) lower temporal resolution than annual, but some records may allow reconstructions of a high temporal resolution. Projects are likely to use multiple lines of evidence, which are likely to differ in many respects, including their temporal scale (period covered) and resolution. This also relates to interactions with ecosystems, which can vary in temporal scale and resolution from annual (e.g., in the case of dendrochronology or pollen deposits) to multiple millennia (e.g., in the case of biome shifts associated with glacial cycles).

Question 2 : Concerning the 2nd expected outcome "*Assessment of driving and feedback mechanisms (e.g., the carbon cycle evolution and water cycle process), and precise timing and dynamics of deglaciation and glaciation*.", if Earth System Models have to be used, it is unlikely that an organisation may realize a simulation that is as long as to cover glacial and interglacial cycles at a resolution sufficiently high to allow the variability study at high frequency and with ecosystemic impacts (as requested in the other bullet points). Given the current technological state of the art, these simulations are impossible to carry out due to limited computational capacity. How can this be solved?

➔ **Reply:** As in the case of the first point, it should be interpreted in context. The research should contribute to the improvement of Earth system models (as mentioned in the first bullet), but that does not mean that the outcome mentioned in the second bullet should be chieved via Earth system models, let alone that it should be done only through those. Multiple methods and lines of evidence can be used, which can contribute through various ways, such as better data or better process understanding.

HORIZON-CL5-2023-D2-01-05: Hybrid electric energy storage solutions for grid support and charging infrastructure (Batt4EU Partnership)

In relation to the sentence from the topic text: "*The objective is to design and demonstrate in at least three different use cases a Hybrid Energy Storage System (HESS)…*"

Question 1: Is it meant that one prototype/design of HESS solution is developed within the project and the same solution is demonstrated in three different use cases or is it expected to develop three different systems? Can all use cases be demonstrated in the same demo (location)?

➔ **Reply:** There is no hard restrictions on where or how the demos take place, the emphasis is more on the relevance and efficiency of the demonstrations. The choice will need to be justified, and will be taken into account in the evaluation procedure.

Question 2: In relation to the storage system: is hydrogen storage considered as one of the possible storage systems?

➔ **Reply:** Hydrogen is indeed eligible as one of the electrochemical storage systems. However, it should be underlined that, as the focus of the topic is on electrical storage, only solutions combining hydrogen with fuel cells will be taken into account. Any other uses of hydrogen storage are outside the scope of the topic.

HORIZON-CL5-2023-D3-01-01: Renewable Energy Valleys to increase energy security while accelerating the green transition in Europe

Question 1: How much energy /heat is expected to be generated within the REV living lab?

➔ **Reply:** The RE valley must demonstrate in real life conditions the sustainable and cost-effective production and storage of renewable energy in a local, peri-urban or regional community. Thus the energy (power, heat and fuel) to be produced should satisfy such needs annually, which vary depending on the size of the community and no exact amount can be defined a-priori.

Question 2: Does the REV living lab needs to be one flagship site or be composed of several sites to demonstrate different "geography and climate" across several usage cases (e.g., "buildings, mobility, industry, industrial parks")?

➔ **Reply:** The RE valley can be either distinct but combined systems or unique poly-generation systems (i.e., in the same infrastructure) to deliver multiple energy carriers from combined renewable energy resources and technologies in order to serve the local community for its different energy end uses. Consideration of different potentials in terms of geography, climate and natural resources in the concept design means that the RE valley concept design should be customized on the local conditions.

Question 3: If we want to set up a REV living lab in a large city, we could supply energy, heat, and cooling for a part of that city; however, we cannot fully cover the local energy needs on an annual basis of the entire city. Does this requirement prevents from setting up a REV living lab in a large city?

➔ **Reply:** According to the call text, 'peri-urban settings' are in the scope. Therefore, the living lab is not necessarily expected to cover fully the energy needs of an entire city, but of part of it. Indeed, as it is not reasonable to set up a demonstration project such as the RE valley in a scale which falls beyond demonstration. A large city will be the next step in up-scaling the RE valley concepts from a small community to a bigger one.

Question 4: With regards to the definition of living labs, what is the size/scale expected and can they include existing infrastructure or not?

➔ **Reply:** The definition of living lab itself is well known (Wikipedia: The Living Lab is a methodology where citizens, residents and users are considered key players in the research and innovation process.) The topic itself does not specify a size but it should be relevant to be able to demonstrate the concept of REV.
From the topic scope:

Renewable energy valleys (REV) are understood as decentralised renewable energy systems that offer a viable and efficient solution to the challenges of ramping up the production of green energy, diversify our energy supplies, and reduce our demand for fossil gas, coal and oil. ***REV are fully covering the local energy needs on an annual basis.*** *For example, local production*

and consumption, reduced transmission and distribution losses thanks to the reliance on local networks for energy needs, greater operational flexibility and reduced dependence on expensive fuel imports all contribute to a higher energy autonomy, a more secure supply, and lower, more stable overall energy costs, including for individual citizens. In addition, REV can alleviate a part of the load on the centralised grid and avoids blockages by the capacity of the grid.

Therefore the size is linked to what can be achieved, fulfilling the bold sentence.

HORIZON-CL5-2023-D3-01-04: Solar Systems for Industrial Process Heat and Power

Question 1: The sentence "International cooperation with the Mediterranean Region is encouraged." Does it mean EUROPEAN Mediterranean countries or do they have to be ASIAN or AFRICAN Mediterranean countries?

➔ **Reply:** International cooperation implies the inclusion of non-EU (and non-associated) countries in the consortium. Thus the inclusion of African and/or Asian countries located in the Mediterranean basin is encouraged.

Question 2: Is the call requesting hybrid PV and ST design on system level integrating solar thermal and photovoltaic subunits on system level, or requesting integration of both technologies on separate device level? (There seems to be two options: merge 2 independent systems PV and ST and assemble them into one consolidated system OR develop one single device called CPVT in which concentration of light applied to PV and to ST subparts). Could you clarify the definition of hybrid system?

➔ **Reply:** The call is requesting **hybrid PV and ST design** on system level integrating solar thermal and photovoltaic subunits. It is not looking on CPVT. Otherwise it would have been clearly mentioned, as CPVT is a different technology.

HORIZON-CL5-2023-D3-01-05: Critical technologies for the offshore wind farm of the Future

Part of the topic text: *The objective is to bring major innovations in the design and manufacturing of large offshore wind farms, aiming at >15 MW for fixed bottom offshore applications and >12 MW for floating offshore installations*

Question: Is it mandatory to address both types, fixed bottom and floating in the same proposal?

➔ **Reply:** It is not mandatory to address both fixed bottom and floating offshore wind technologies in the same proposal. One of the two technologies only or both can be addressed.

HORIZON-CL5-2023-D3-01-08: demonstration of sustainable tidal energy farms

Question: The call text states that the project should "operate the farm at least 2 years in the lifetime of the project". Does that mean that the complete 4MW should be operated for 2 full years, or is it acceptable that the farm is launched incrementally, and that the 2 years of farm operation can be counted from the moment that 2 systems are grid connected?

➔ **Reply:** The call text indicates that the project is expected to deploy a tidal energy farm with a minimum capacity of 4 MW and to operate this farm (minimum 4 MW) at least 2 years in the lifetime of the project. A minimum of 4 MW should be operated for 2 full years and after the project it is expected that the farm will continue to be operated for at least 8 years.

HORIZON-CL5-2023-D3-01-15 Supporting the green and digital transformation of the energy ecosystem and enhancing its resilience through the development and piloting of AI-IoT Edge-cloud and platform solutions

Question: This topic allows for "Financial Support to Third Parties" and access to this support requires to upload a separate document (Annex with information on financial support to third parties) in part B, in the Submission System. However, there is no Annex in the Submission System for this topic.

➔ **Reply**: This issue is being considered by the Commission services and we will get back to you shortly to confirm whether data for "Financial Support to Third Parties" can be added to the Submission Portal. Draft applicants will be informed as well.

HORIZON-CL5-2023-D3-02-01 Development of near zero-emission biomass heat and/or CHP including carbon capture

Question 1: Is carbon capture a specific research topic of the project or should just be investigated how existing carbon capture technologies can be coupled with the heating/CHP technology developed?

➔ **Reply:** The scope explains that technological interfaces for carbon capture, but not carbon capture technology itself, are to be included.

Question 2: Is a process producing biochar, heat and electricity within the scope of the topic?

➔ **Reply:** The focus of the topic is not on biochar production, but on biobased heat and/or CHP technologies. While this does not per se exclude biochar, the requested carbon capture interface refers to the carbon produced by heat and/or CHP production.

Question 3: Does sewage sludge count as "sustainable biomass residue" in this topic?

➔ **Reply:** Sewage sludge is covered by the topic, but only in solid form, as the topic requires the use of sustainable solid biomass residues.

Question 4: To what extent must the exhaust gas values for sewage sludge-specific pollutants (e.g. dioxins, heavy metals, special hydrocarbons) be measured or monitored?

➔ **Reply:** The topic requires development of close to zero-emission technologies for all relevant solid or gaseous pollutants, therefore including also those mentioned in the question. These emissions have to be assessed for the running system at pilot scale.

Question 5: Is compliance with the legal limits for the specific pollutants in the waste gas critical in the project at TRL5?

➔ **Reply:** The net-zero-emission technologies are expected to be in any condition at emission levels below already existing legal emission limits, therefore full compliance with them is expected.

HORIZON-CL5-2023-D3-02-04- Innovative components and configurations for heat pumps

Question: Is this topic mainly focused on relatively low-capacity (0-100 kW) heat pumps for domestic or light commercial use, or are higher capacities and temperatures for industrial use also covered by the topic?

➔ **Reply:** All capacities are in the scope

HORIZON-CL5-2023-D3-02-05: Advanced exploration technologies for geothermal resources in a wide range of geological settings

Question: The scope of the topic mentions both pre-drill risk assessment and high-resolution reservoir characterisation, does this mean that the proposed technology must focus on the exploration phase (i.e. before the drilling of the first well in the field) or should it cover the exploitation (i.e. when many wells will be drilled in the field) as well ?

➔ **Reply:** The topic focuses on exploration and leaves out the exploitation phase.

HORIZON-CL5-2023-D3-02-07: Development of next generation advanced biofuel technologies

With regards to the sentence: "*The new technologies should also address specifically uses in fuel cells for all transport modes for electricity generation from biofuels used as renewable energy carriers with high conversion efficiency and low pollution*."

Question 1: What is the purpose of "*electricity generation*"?

➔ **Reply:** The purpose is to use biofuel in the fuel cell

Question 2: What is the expected use of the electricity generated?

➔ **Reply:** Powering any transport powertrain based on fuel cells

Question 3: Is it required to address uses in one type of fuel cell or in several types of fuel cells?

➔ **Reply:** This is not specified as a requirement but at least one type is expected to be tested

Question 4: What does "*for all transport modes*" refer to?

➔ **Reply:** Road, aviation, maritime (fuel cells types)

Question 5: Must the biofuel be for all transport modes?

➔ **Reply:** No, but all transport modes are included – the choice is for the proposal developer

In relation to the sentence: "*Development of next generation technologies for the production of novel advanced liquid and gaseous biofuels from biogenic residues and wastes including CO2 and organic part of wastewater or micro-algae (including cyanobacteria), through chemical, electrochemical, biochemical, biological and thermochemical pathways, or a combination of them."*

Question 1: Does this include the use of 2G biomass streams?

➔ **Reply:** The topic lays out the biomass feedstock streams which include 2nd generation and advanced biofuel feedstocks

In relation to the sentence: "*the production of novel advanced liquid and gaseous biofuels from biogenic residues and wastes including CO2 and organic part of wastewater or micro-algae*".

Question 1: 1) What exactly is meant be the "organic part of wastewater"?; 2) Does it include sewage sludge?

➔ **Reply:** 1) Organic part of wastewater" is the organic matter that is dissolved in the wastewater; 2) Sewage sludge is one type of wastewaters

HORIZON-CL5-2023-D3-02-11: Advanced concepts for crystalline Silicon technology

Question: In the Scope of the Call it is required that proposals develop architectures approaching the theoretical efficiency limit of c-Si cells with the use of 5 technologies. It is not clear if ALL of them should be addressed, or if the applicant should focus on ONE (or some) of them.

➔ **Reply:** Proposers are expected to address the best combination of/ as many as possible options from those mentioned or additional ones.

HORIZON-CL5-2023-D3-02-12: Large Area Perovskite Solar Cells and Modules

Question : Within the scope of the call, it is stated that "*In addition to improving the efficiency for commercial development of Perovskite PV, lifetime is another challenge that urgently needs to be addressed also in tandem architectures.*" Hence, we seek clarification on whether the projects submitted for this call must also focus on Large Area Perovskite Solar Cells with tandem architecture or if tandem architecture is optional rather than mandatory for the large area Perovskite solar cells and modules.

➔ **Reply:** Tandem architecture are optional for the two bullet points that follow the phrase *"In addition to improving the efficiency for commercial development of Perovskite PV, lifetime is another challenge that urgently needs to be addressed also in tandem architectures." :*

- Identify and tackle complex stability issues at the device and module level (related to the processes involved in the fabrication).
- Develop updated test protocols and perform outdoor field performance testing of the perovskite modules.

HORIZON-CL5-2023-D3-02-13: Operation, Performance and Maintenance of PV Systems

Question: May PVT and/or PV + battery systems be included into the application, and in this way fall into the scope of the topic?

➔ **Reply:** The scope of the topic is not on the PV system itself, but rather on **the monitoring, processes and models which increase a PV system's operational performance, stability and reliability.**

- multi-aspect **sensing** (optical, thermal, electrical) into PV modules to suppress degradation, detect unwanted operating conditions and avoid failures
- **smart control/tracking systems** (e.g. coupled with real-time monitoring data, forecasting, EMS, etc.) for performance optimisation
- **hybrid or integrated monitoring-diagnostic imagery solutions** for maximum spatiotemporal granularity and diagnostic resolution.
- **edge AI and Big Data** to improve the energy yield (advanced module control, self-reconfigurable topologies, etc.), module and plant models, monitoring and yield forecasting considering user behaviour and modelling of the entire electricity system including storage

- large, wide and possibly publicly available **datasets** to enable, foster and empower AI for Digital PV at European scale
- **automated and predictive PV asset management software** based on sensor-data-image fusion and/or AI / Machine learning techniques to reduce human effort
- **AI-based energy trading** at plant level, taking care of specific climates /applications / conditions.

HORIZON-CL5-2023-D3-02-14: Digital twin for forecasting of power production to wind energy demand

Question: What is the meaning of "End user location" (bullet nr. 5 under Scope relates to "*End user location and needs"*) in the context of a digital twin?

➔ **Reply:** The digital twin to be developed under this topic should include accurate simulations that take into account simultaneously predictions on renewable energy production, energy consumption and price predictions. Such a digital twin is expected to integrate at least three of the elements listed in the topic description. One of the elements listed is "End user location and needs", which are elements characterising the energy consumption. Therefore, if "End user location and needs" is one of the elements integrated, it should be part of the digital twin developed.

HORIZON-CL5-2023-D3-02-15: Critical technologies to improve the lifetime, efficient decommissioning and increase the circularity of offshore and onshore wind energy systems

Question 1: Can you please specify the expectations of the topic with regards to the content of the 'scope' and 'expected outcomes' sections, as it seems that they address different issues?

➔ **Reply:** The points listed as scope of the project are given as examples; as clarified in the call text, it is not excluded to consider other solutions. Therefore, the list should not be considered as exhaustive nor exclusive. The proposals will be considered as acceptable as long as the project results are expected to contribute to at least two of the expected outcomes listed in the call text.

Question 2: In the scope section, it is mentioned that: "Project can address one of the following points:.. (9 bullets). We would like to clarify whether this means that each proposal must address exactly or at least one of the points listed. / Moreover, do you expect that the three funded projects will cover all bullets being mentioned under the scope?

➔ **Reply:** As stated in the call text, the list of points that can be addressed is not exclusive and other solutions can be considered as well. Projects can address one of the points listed in the call text. / The three funded projects are not necessarily expected to cover all bullets mentioned under scope.

***

The first outcome specifies *"Improved overall lifetime, reliability, recyclability, sustainability, operability and maintainability of onshore and offshore wind turbines and foundations/ substructures"*

Question 1: Is it obligatory to address both wind turbines AND foundations/substructures in the same proposal?

➔ **Reply:** No, it is also possible to address only one of the two. In the scope it is stated that projects can address one of the points listed and, overseeing the points, it is clear that some of them are not relevant for both turbines and foundations/substructures

Question 2: Is it obligatory to improve ALL the six aspects mentioned (lifetime, reliability, recyclability, sustainability, operability and maintainability)?

➔ **Reply:** No, it is also possible to improve only some of the six aspects mentioned, but it is advised to consider all aspects because a change might have a positive impact on one aspect of the wind turbine, but it can have a negative impact on another aspect.

Question 3: Is it obligatory to address both onshore and offshore in the same proposal?

➔ **Reply:** No, it is also possible to address only one of the two

In addition, the fourth bullet point within the scope specifies "*The development of bio-based fibres and resins with improved mechanical properties"*

Question 4: Do both fibres and resins have to be bio-based? Or only fibres have to be bio-based?

➔ **Reply:** No, it is also possible to address only one of the two

The topic text states, in the sentence introducing the bullet points of the scope: "*Project can address one of the following points:*". Moreover, after the bullet points of the scope, it is stated that "*it is not excluded to consider other solutions.*" Therefore, the topic is very open and other possible solutions can be proposed, as long as they fulfil the requirements defined for the expected outcome.

HORIZON-CL5-2023-D3-02-16: Accelerating the green transition and energy access in Africa

Question: The text states: "*The proposal may address development of renewable energy sources, including solutions for off- grid communities, and their integration into the existing energy system*" and later: "*Actions should design, construct, commission and operate the demonstration installation*"; Should the project specifically address the construction of new renewable energy generation sources (e.g. solutions that foresee the construction of new PV systems) in Africa? Are measures that would make existing plants more efficient and less prone to outages also in scope?

➔ **Reply:** The topic calls for the demonstration for renewable energy solution. The sentence "*The proposal may address development of renewable energy sources, including solutions for off-grid communities, and their integration into the existing energy system*" gives examples of what "problems" the energy solution can address, but as the sentence "*Actions should design, construct, commission and operate the demonstration installation*" indicates, it is expected to be a new installation.
Upgrading an existing renewable energy system with more up to date equipment, like updated control system, is not always a new solution system. In the case of demonstrating a new innovative renewable energy system within an existing system, like for example new innovative PV modules, the experts will have to evaluate if this upgrading is a real technology demonstration and not a simple commercial refurbishment.

HORIZON-CL5-2023-D3-03-01: Increasing the efficiency of innovative static energy conversion devices for electricity and heat/cold generation

Question 1: Which and how many outcomes should be the focus of the research project? Is it correct to choose (at least) three outcomes from the bullet-pointed list made of A plus B?

➔ **Reply:** The text specifies: "*The results are expected to contribute to at least three of the outcomes in A and B*", i.e.: at least 1A & 2B or 2A & 1 B.

Question 2: **W**hich and how many pilots should be developed during the research project? / how can we develop three pilots in three different EU Member States/Associated Countries?

➔ **Reply**: Validation/demonstration of the activities developed in (1) with at least one pilot for each technology in different EU Member States/Associated Countries.

Question 3: As for the pilot(s): Since the topic text says „in different Member States ...", we understand that while we could combine different technologies in one pilot, at the same time we would have to cover at least two MS / AC = at least two pilots – is that right?

➔ **Reply:** Two pilots would be the absolute minimum. As the text says "*Development of at least three of the above-mentioned technologies*" and "*Validation/demonstration of the activities developed in (1) with at least one pilot for each technology*", three pilots (covering one or more technologies) in three MS/AC is the standard.

Question 4: What is the contextual meaning of Expected Outcome, sentence 2: "The results are expected to contribute to at least three of the outcomes in A and B". For one project, does it mean that we have to cover at least three different technologies from the A list? (E.g. Thermoelectric, Thermovoltaic, and Thermionic.) Or could we combine three bullet points ("technologies") from A and B? (E.g. Thermoelectric, heat recovery, heat/cold generation from electricity.)

➔ **Reply**: The text specifies: "The results are expected to contribute to at least three of the outcomes in A and B", i.e.: at least 1A & 2B or 2A & 1 B.

Question 5: When defining the technologies in A, the bullet point list is of "energy conversion devices using physical effects **such as**"… Does the wording "such as" mean that other physical effects/technologies than the five ones listed in A could be within the scope? One example could be the magnetocaloric effect, which is very similar to the electrocaloric effect.

➔ **Reply**: Yes, other physical effects/technologies than the five ones listed in A could be within the scope. Other physical effect/technologies addressed should be "in line" with the examples given.

Question 6: The Expected Outcome starts with the following sentence: "Projects are expected to develop further the harvesting of renewable energy in areas/conditions where other conversion systems are less efficient, less convenient or not possible." Does this mean that all the activities should rely on renewable energy, or is it sufficient that only one of the three technologies is based on harvesting of renewable energy?

➔ **Reply**: The focus lays on renewable energy. Though, the text also includes waste/unused excess energy. This should be in line with the expected outcome from section B.

Question 7: The outcomes in B include "heat/cold generation from electricity" and "applications in areas such as industrial, automotive …". Should this be linked to renewable energy? As an example, should the electricity for heating/cooling be provided by renewable energy?

➔ **Reply**: The link to renewable energy is preferable but this is also ok to consider heating/cooling be provided by renewable energy.

Question 8: In Scope (1) first bullet, there is explicit mention of "applications in energy waste recovery (e.g., industry,…)". Does this mean that energy harvesting is really not limited to renewable energy as stated in the first sentence?

➔ **Reply**: Indeed, this is right, energy harvesting is really not limited to renewable energy.

HORIZON-CL5-2023-D3-03-02: Integration of renewable gases other than hydrogen or methane and which have not access to gas grids and interfacing with electricity and heat sectors

The proposal below is about integrating syngas through converting it to synthetic natural gas and use synthetic NG in a SOFC for electricity generation. Although it cannot be strictly excluded, it is a bypass of integrating gases, which are different than methane (natural gas), since it passes through a conversion to (synthetic) natural gas route.

Question 1: Is Synthetic Natural Gas (produced from CO2 emissions + green hydrogen) in scope?

➔ **Reply:** The topic species "Demonstration of decentralized production of renewable gaseous energy carriers other than hydrogen and purified biomethane, namely biogas and syngas for example…" thus intermediate renewable gaseous energy carriers are the aim

Question 2: The topic specifies: "Demonstration of the integration of small and flexible modular gas production units".

2a) what is the threshold as regards the size of these "small" modular production units?

➔ **Reply:** The threshold depends on the technology to produce the renewable gaseous energy carriers

2b) is a biomass plant of 40 Kg/hour enough?

➔ **Reply:** same as 2a)

Question 3: The topic specifies: "Conditions for injection to the grid of renewable unrefined gases should be identified".

In the case of syngas, what is meant by "unrefined" given that in principle there should be a purification stage?

➔ **Reply:** In the example of the topic, both biogas and syngas are not refined but they can still be integrated as such for electricity /heat production

Question 4: The topic specifies: "[…] and its integration in local energy systems and/or energy consuming industries for direct electricity and heat and cooling production".

Is the final use of the renewable gaseous energy carrier with a solid oxide fuel cell in scope?

➔ **Reply:** same as Answer 1

HORIZON-CL5-2023-D3-03-04 Digital tools for enhancing the uptake of digital services in the energy market

The Topic quotes*: "Assessment of the implications for market design (energy and flexibility markets) of a wide uptake of digital tools and propose relevant modifications to flexibility services and related processes to contract, activate, measure and settle flexibility."*

i) the part about "*Assessment of the implications … of a wide uptake of digital tools*": does the EC want innovation in assessment tools in their own right, or is it using off-the-shelf assessment tools for analysing uptake-vs-market correlations? Or possibly a third angle outside those two.

ii) the part about "*...propose relevant modifications to flexibility services*": are we correct in interpreting this are requiring innovation in flexibility services to accommodate wider/larger-scale uptake?

➔ **Reply:** Our opinion is that this is possible – given that the central part of the simulation model (Digital Twin) supports open APIs and is to be developed as open Source.

➔ Data management layer or data brokerage could be "proprietary" – however,

1) Open interfaces should be defined / open APIs for the data management – as they claim they do. Also, preferably the APIs should be from a well known commonly agreed APIs from ESO specifications, etc.
2) If no common open building blocks for the data access management are intended to be used (e.g. from DSSC or GAIA-X), the approach does not build on previous data space initiatives (not mandatory, but maybe critical for the evaluation). The majority of the data available in the future would be through the data space so it only makes sense to make their solution compatible with it.

HORIZON-CL5-2023-D3-03-06: Components and interfacing for AC & DC side protection system – AC & DC grid: components and systems for grid optimisation

Question 1: The topic makes reference in six occasions to "MVDC/HVDC". Does the symbol "/" mean that both MV AND HV should be covered? Or does it mean MV OR HV? Is it necessary to include pilots that cover both MV AND HV?

➔ **Reply:** The symbol "/" should be understood as option (MVDC or HVDC)

Question 2: Considering that:

- Proposals are expected to contribute to "all of the following outcomes" and to cover "at least two of the subtopics in A (a, b or c)".
- The four bullet points in expected outcome "A. Protection" are connected to the three subtopics A)a, A)b and A)c.

Therefore, if proposals are expected to cover only "at least two of the subtopics in A (a, b or c)", how can they contribute to all the four bullet points in expected outcome "A. Protection"? May there be an inconsistency here? Could you please clarify this?

➔ **Reply:** Indeed, during the revision process, the text "*Project results are expected to contribute to all the following outcomes*" was not changed accordingly with "*Development of R&I activities, methodologies and tools for at least two of the sub-topics in A (a, b or c) and B.*" Therefore, the expected outcomes needs to be rectified for all the proposers to: "*Project results are expected to contribute to at least two of the following outcomes in A (a, b or c) and B.*"

Question 3: In each sub-topic (Aa, Ab and Ac), do proposals have to address ALL the bullets?

➔ **Reply:** The topics in the bullets are not reported as mandatory, but as examples. Proposers can chose to develop one or more of them.

Question 4: In scope B) Congestion in AC or DC grids, Is it enough to address only AC grids?

➔ **Reply:** The "or" conjunction indicates that either one can be developed: AC can be chosen in option of DC or vice versa.

HORIZON-CL5-2024-D3-01-05: Development of carbon fixation technologies for biogenic flue gases

Question: Is the use of biogenic C02 emissions resulting from the upgrading of biogas in scope of this topic?

➔ **Reply:** CO2 from upgrading of biogas to biomethane is not in scope, as no prior combustion of the biogas takes place and the use of effluent gases from bioenergy combustion systems is required.

HORIZON-CL5-2024-D3-01-10: Next generation of renewable energy technologies

The Topic text states that*: "The following areas are excluded from the scope of the topic as they fall within the scope of partnerships or other calls:*

- *Material research is covered under cluster 4 topics."*

Question: What are the limitations with regards to the inclusion (or no inclusion) of material research in a given project?

➔ **Reply:** The first paragraph of the scope describes the possibilities focused on renewable energy technologies, not an overall material research development. Pure material research, i.e. developing a new material, is excluded. What is obviously included is tuning material for energy purpose like dedicated catalyst for energy conversion, like carbon reductio and water oxidation, or improved photovoltaic cells. The results of the projects are a game-changer renewable energy technology.

HORIZON-CL5-2024-D3-01-12: Energy Management Systems for flexibility services

Question 1: What is the definition of definition of an energy management system (EMS)?

➔ **Reply:** According to ISO 50001, an energy management system is "the set of interrelated or interacting elements for establishing an energy policy and strategic energy objectives, as well as processes and procedures for achieving those strategic objectives".

Question 2: Does the definition of EMS include only systems intended for end users or aggregation systems that allow to manage production, such as virtual power plants?

➔ **Reply:** Both are valid

Question 3: Should the project consider only systems dedicated to low voltage or also medium and high voltage?

➔ **Reply:** The text does not specify. In case EMS for industry is chosen, high-voltage can also be considered.

Question 4: Do proposals have to include both smart buildings **AND** smart industrial sites?

➔ **Reply:** No, this is not a compulsory condition to include both elements.

Question 5: Can a proposal include both smart buildings and smart industrial sites if they so wish?

➔ **Reply:** Yes, It is possible to combine both smart buildings and smart industrial sites.

HORIZON-CL5-2024-D3-01-13: DC and AC/DC hybrid transmission and distribution systems

Question: Do proposals have to address all the bullets in subtopic A)a, plus subtopic A)b, plus subtopic A)c, plus all the bullets in subtopic B) and all the bullets in subtopic C)?

➔ **Reply:** Yes, the proposals have to address ALL the subtopics and ALL the bullets and EACH subtopic will have one demonstrator.

Additional information: The topic stems from three topics put all together in one bigger. In fact, the budget is around 6 M€ (2 projects for total of 13 M€); each subtopic (A, B, C) would be one project for ~ 2 M€, which is feasible for 3 studies (the bullets in the subtopics) and one demonstrator in lab or industrial setting (TRL is 4,5).)

HORIZON-CL5-2024-D3-01-14: Condition & Health Monitoring in Power Electronics (PE) - Wide Band Gap PE for the energy sector

Question: As this topic seems to be divided into 2 thematic sub-projects (one combining A+B to achieve the outcome a, the other one addressing B to achieve the outcome b) and also demonstrated in at least 2 pilots is it possible to put a focus on one sub-project? / Does a project need to cover all the indicated requirements equally?

➔ **Reply:** Both have to be addressed, it is up to the applicants if they want to focus more on one as long as they can convince the evaluators that this effort distribution is the best way to address the topic.

Question: Indicative number of grants is 3: why not asking for complementary proposals with limited requirements more suitable for the proposed budget OR offer a higher budget/project to sufficiently cover all aspects of the topic?

➔ **Reply:** No, an amendment of this is not foreseen, so the text is applicable as published.

Question: Is it possible to extensively overshoot the indicative budget in duly justified cases?

➔ **Reply:** Theoretically yes, but practically this is not advisable as it might lower selection success probability.

HORIZON-CL5-2024-D3-02-09: Demonstrations of innovative floating wind concepts

Question: The third bullet point of the scope reads: "*Develop and implement pilot projects for floating wind by identifying the best existing practices and the remaining knowledge gaps*." Do the pilot projects correspond to parts of the overall demonstrator, or to separate research and development projects carried out in parallel with or downstream from the main demonstrator?

➔ **Reply:** The pilot projects to which reference is made are part of the overall demonstrator

HORIZON-CL5-2023-D4-01-01: Innovative cost-efficient solutions for zero-emission buildings

Question 1: The topic states "*Demonstrations that include at least three REAL-LIFE new construction projects*"

1.1 What does "real-life" mean?

➔ **Reply**: "Real-life" means not virtual. We want to see physical construction projects. This is in line with the TRL levels 6 – 8. Please refer to ANNEX G of the Horizon Europe Work Programme General Annexes for a definition of the TRL levels.

1.2 Is it necessary that the construction of the buildings takes place during the project lifetime?

➔ **Reply**: Yes (see remark above on "real-life").

Question 2: The topic states "*of which one at least should target public buildings*". Is a social-residential building to be built by the "Housing and Rehabilitation Agency" of a regional government considered to be a public building?

➔ **Reply**: There is no one-size fits all definition of a public building.
The Energy Performance of Buildings Directive (EPBD) includes a number of provisions related to public buildings. It does not, however, define the term public buildings. Instead the Directive gives flexibility to Member States on how they apply the term in their territory.

In the Energy Efficiency Directive (EED), the provisions in Article 5 apply to the entities (i.e. public body) rather than the public building itself. Article 2 of the EED indicates that "public bodies" means contracting authorities as defined in Directive 2004/18/EC of the European

Parliament and of the Council of 31 March 2004 on the coordination of procedures for the award of public works contracts, public supply contracts and public service contracts (2).

Based upon these two elements, under this topic a public building can be considered as a building owned or occupied by a public body. Additionally, if Member States have a legal definition of a public building in their legislation, this could also be applied.

HORIZON-CL5-2023-D4-01-03: Interoperable solutions for positive energy districts (PEDs)

Question: Can you please specify if the costs related to the purchase of photovoltaic panels and of charging stations for EVs is fully admissible? Such components would be necessary for the development and demonstration of the proposal concept.

➔ **Reply:** The costs of innovation in processes and technologies that directly address the topic would be eligible for funding, including all those elements taken from previous research that can still be considered innovative at the time of proposal submission.
Components that would be necessary for the development and demonstration of the proposal concept (i.e. used to analyse the interaction between energy and mobility) would therefore be admissible at proposal stage. The extent of the innovation and appropriateness of the budget, which has to be demonstrated by the applicants, will be assessed by the independent evaluators using the standard evaluation criteria as part of the evaluation process.

HORIZON-CL5-2023-D4-01-05: Innovative solutions for cost-effective decarbonisation of buildings through energy efficiency and electrification

In reference to the sentence part: *"… is supplemented by an ambitious 5-year replication strategy for the solutions demonstrated, which will be implemented within the duration of, and after, the project."*

Question: Does it mean that the project duration MUST be 5 years? / Can the project duration be less than 5 years?

➔ **Reply:** The duration of the project is not specified. It is for the applicants to decide the optimal duration based on their proposed approach. The period of 5-years refers to the replication strategy which will be implemented within the duration of, and after, the project. This means that the replication strategy should be launched within the duration of the project, with commitment to continue its implementation until the full 5-year period of the strategy has been completed at a corresponding date after the end of the project. The period of implementation of the 5-year strategy that takes place within the duration of the project will depend on the work plan of the proposal. / The project duration can be less than 5 years.

HORIZON-CL5-2024-D4-01-03 Alternative heating systems for efficient, flexible and electrified heat generation in industry

In the scope of the call, a note provides the following restriction : "*Note: the electrification of furnaces to heat large volumes at very high temperatures is not in the scope of this topic, because it is covered in Cluster4 work programme*".

Question 1: What does "heat large volumes" exactly refer to? What does very "high temperatures" exactly refer to?

- ➔ **Reply:** In the note in the Cluster5 topic HORIZON-CL5-2024-D4-01-03 "*Note: the electrification of furnaces to heat large volumes at very high temperatures is not in the scope of this topic, because it is covered in Cluster4 work programme*.", the topic referred to in Cluster 4 is "HORIZON-CL4-2023-TWIN-TRANSITION-01-33: Electrification of high temperature heating systems (Processes4Planet Partnership) (IA)"
- ➔ There is no precise definition of "very high temperature" or "high volumes", but the Cluster 5 topic scope focusses on "*Alternative forms of energy such as for example ultrasound, microwaves, plasma, infrared, visible and ultraviolet radiations … are unconventional and contactless heat sources, that create the possibility of new, efficient and flexible processes, in that they are **applied precisely where they are needed** and with shortened reaction times*", while in the Cluster 4 topic, the scope mentioned: "*The topic focuses on the sustainable electrification of high temperature heating systems, for example, **industrial furnaces, kilns and crackers** among others*" and was covered in 2023.

Question 2: Is the electrification of furnaces to heat low volumes at low temperatures in the scope of this topic? Or is the electrification of furnaces totally out of the scope?

- ➔ **Reply:** The heating system will be in scope if it complies with the topic text calling for: "*Alternative forms of energy such as for example ultrasound, microwaves, plasma, infrared, visible and ultraviolet radiations … are unconventional and contactless heat sources, that create the possibility of new, efficient and flexible processes, in that they are **applied precisely where they are needed** and with shortened reaction times"*

Question 3: If there is no precise definition of "very high temperatures" or "high volumes", how will evaluators assess whether a proposal is or not in scope of this topic?

- ➔ **Reply:** In the note of the Cluster5 topic HORIZON-CL5-2024-D4-01-03 "*Note: the electrification of furnaces to heat large volumes at very high temperatures is not in the scope of this topic, because it is covered in Cluster4 work programme*", ***'very high temperature'* for process heating shall be considered as the temperature range above 500°C**, corresponding to the highest of the 4 temperature categories defined in the study report (table 21, p62) entitled "*Mapping and analyses of the current and future (2020 - 2030) heating/cooling fuel deployment (fossil/renewables)*", Fraunhofer. 2017, commissioned by European Commission under contract N°ENER/C2/2014-641. Accessible via the following link: https://energy.ec.europa.eu/system/files/2017-03/mapping-hc-final_report-wp3-wp4_0.pdf
  The topic referred to in Cluster 4 is "HORIZON-CL4-2023-TWIN-TRANSITION-01-33: Electrification of high temperature heating systems (Processes4Planet Partnership) (IA)".

➔ There is no precise definition of **'High volumes', the criterion will be whether they comply with the call text**: *"Alternative forms of energy such as for example ultrasound, microwaves, plasma, infrared, visible and ultraviolet radiations … are unconventional and contactless heat sources, that create the possibility of new, efficient and flexible processes, in that they are **applied precisely where they are needed** and with shortened reaction times*",

HORIZON-CL5-2023-D5-01-02: Innovative battery management systems for next generation vehicles (2ZERO & Batt4EU Partnership)

Question: Does the topic require a BMS belonging to a battery mounted on a vehicle, tested in the appropriate environment of relevance? For example, if using a car from a car sharing fleet as use case, is the test to be carried out on a urban route ? Alternatively, can the test be carried out in a simulated environment that reproduces real conditions?

➔ **Reply:** HORIZON-CL5-2023-D5-01-02 is a joint topic between 2Zero and BATT4EU partnership, with main aim to advances the design, functioning and data accessibility of an efficient battery management system (BMS), expected to achieve at least TRL 6 by the end of the project. Validation is to be done 'under real driving conditions', thus solution(s) are expected to be demonstrated in a car (which has the most demanding requirements in the expected impacts) in the appropriate environment, and not only by simulation.

HORIZON-CL5-2023-D5-01-07: Hydrogen Powered Aviation

Question 1: In the topic description, there is a clear focus on the 'liquid hydrogen' (e.g. refuelling and supply systems for liquid hydrogen at Expected Outcome # 1; liquid hydrogen demand and supply-matching models at Expected Outcome # 4). However, in the expected outcome #2, it is put forward that 'Vertical Take Off and Landing aircraft (VTOL) and Unmanned Air Vehicles (UAV)' need to be included in the various aircraft concepts, for which 'transformative aircraft-based hydrogen refuelling technologies' are used. My client asserts that VTOL en UAV's require 'hydrogen in gas form' while liquid hydrogen (main focus of the topic) is meant for bigger type aircrafts. In the light of this, we are curious about the rationale behind the inclusion of VTOL en UAV's in the expected outcomes. Because this would mean a larger scope in a proposal, not only focusing on liquid hydrogen but also hydrogen in gas form.

➔ **Reply:** Indeed, the focus is on liquid hydrogen, in order to be aligned with the Strategic Research and Innovation Agenda, National priorities and maximum potential impact towards climate neutrality by 2050. The UAV/VTOL is not the main priority of the topic (as the expected impact towards climate neutrality by 2050 is marginal). It was proposed at a very late stage of the Member States' consultation process and agreed to be included in order to have a holistic approach to airport infrastructures (refuelling technologies, safety, interoperability, standardisation, scalability, etc). This is the rationale behind the inclusion of VTOL en UAV's in

the scope/expected outcomes. In this sense, it is not expected that this inclusion will enlarge the scope of proposals.

Question 2: Regarding multimodality, in aspect #1 (under scope), 'multimodality issues at airports arising from the use of hydrogen in road and rail transport' need to be considered. While the use of hydrogen in road and rail transport is clear here, in the aspect #2, [… in order to enable zero-emission airport operations along the entire value chain, from multimodal road/rail connections, to ground handling and aircraft ground movements.] zero emission airport operations need to be enabled, among others, from multimodal road/rail connections. Can we assume that aspect # 2 is not limited to hydrogen use but also any other type of energy carrier which would potentially enable 'zero emission' airport operations? If this is the case, how can we link this to aspect #1 where 'use of hydrogen in road and rail transport' is explicitly mentioned?

➔ **Reply:** The emphasis of the first bullet point in the scope is on "assessing and validating potential liquid hydrogen demand models at air transport ground infrastructures in Europe and globally". The multimodality and other concepts (e.g. hydrogen hubs) are indicative boundary conditions to be considered. The same holds true for the second bullet point in the scope – the emphasis is on testing and demonstrating innovative and safe ground-based refuelling, storage and supply systems for liquid hydrogen at air transport ground infrastructures. As indicated in the text, the main expected outcome of the topic is on ground-based refuelling and supply systems for liquid hydrogen at air transport ground infrastructures, with the potential to be up-scaled at system level.

HORIZON-CL5-2023-D5-01-18: Advanced transport emissions monitoring networks

Question 1: Do all 24 monitoring stations have to be able to individually monitor all pollutants (including emerging pollutants such as ammonia) on a real-time basis, providing it with real-time data?

➔ **Reply:** Yes, we expect all stations to include all pollutants with 24/7 hr monitoring given that solutions exist (unless you are thinking of ammonia particulate, we mean gaseous NH3 from car exhausts) and a running project is developing such stations.

Question 2: Some cities/districts already have state of the art measuring infrastructure installed (often linked to previous, similar research projects); does the project allow cooperation with said cities to counter this investment cost?

➔ **Reply:** Yes, provided that the measuring requirements are in accordance to these specified in the call text. Moreover, for new installations , we expect the cost to be amortised with time since the monitoring stations are expected to stay in the cities beyond the duration of the project.

Question 3: Can the chosen measurement configuration vary among cities within the same project, tailored to the cities' characteristics and coordinated as such with city authorities?

➔ **Reply**: We expect that modelling will allow to perform the connection with exposure, and source data are needed to feed such modelling, while allowing to provide data for acute exposure in traffic sites, while the contrary is not straightforward: therefore the exact positioning and configuration of the monitoring system(s) is left up to the consortium, provided it complies with the requirements mentioned in the call.

Question 4: Is the call expecting that projects deliver emissions for all of the 24 locations across the 8 cities in a continuous mode? Or is it sufficient to perform 24/7 monitoring of air pollutant concentrations in at least 24 locations and sporadic measurement of emissions in some locations? According to current cost estimates from different providers, it would basically consume the majority of the budget to do both in a continuous monitoring mode.

➔ **Reply:** Both noise and pollutants should be measured in real time in 8 cities as prescribed in the text. It's up to the applicants to propose the exact number of stations, the sampling rate, and any modelling that might be required to balance the number of measuring locations in order to cover the entire city. Regarding the cost, in general we want that investment to last longer than the duration of the project and that's why the involvement of cities is sought. An amortisation rate should be applied to the project duration.

Question 5: In the scope of the call text, it is mentioned that 'exhaust and non-exhaust sources contribute significantly to total traffic related PM10 emissions, thus it is important to monitor both these categories of pollutant emissions, while differentiating their contribution to PN'. This would seem to imply that source apportionment is expected. Is this true? Is it limited to this case of PM10 exhaust/non-exhaust? Or, following the methodologies applied in ongoing projects listed in the call text, is there an expectation that source apportionment (real-time or in hindsight) be used to connect measured air pollutant concentrations (monitoring) to emissions to provide policy support in a dynamic way? Stated differently, to comply with expected outcomes, will a project work plan have to include real time source apportionment or can other methods be selected to support policy and, for example, facilitate dynamic traffic management strategies?

➔ **Reply:** Monitoring both exhaust and non-exhaust pollutant emissions is needed to reach the expected outcomes of the topic. It's up to the consortium to come up with a strategy to achieve those outcomes -we refrain from prescribing specific methods as non-unique solutions may exist.

HORIZON-CL5-2023-D6-01-09: Climate resilient and safe maritime ports

Question 1: The text states: "*Develop solutions for ensuring the performance and safety of a) seaports, b) connected inland waterways infrastructure c) connected hinterland land infrastructure, during periods of extreme weather events.*" Do all points a), b) and c) need to be addressed or can it be only some of them?

➔ **Reply:** All three points a), b) and c) need to be addressed.

Question 2: The text states: "*Develop standard procedures and methodologies to foster the implementation of measures (structural, operational, institutional and social) to address climate risks and hazards. Include at least three pilot demonstrations of the proposed solutions in operational environment (minimum at TRL7) for three seaports with connected inland waterways infrastructure on CEF corridors. The pilots should select the most effective measures and combinations of measures and determine how and when they can best be implemented over time as conditions change.*" Should the ports that will be used as pilot ports satisfy the conditions that they are both seaports and connected inland waterways infrastructures? Are Norwegian and more specifically Oslo port eligible to be used as a pilot port?

➔ **Reply:** Yes, pilot ports should be seaports with connected inland waterways infrastructure on CEF corridors. The list of sea ports/ inland ports can be found in the TEN-T annex II

HORIZON-CL5-2023-D6-01-11: Aviation safety - Uncertainty quantification for safety and risk management

Question: What is the meaning of "Validation campaigns in challenging test cases"?

➔ **Reply:** Validation of aircraft structures/systems/propulsion/integration is part of the design process that assures that the aircraft system (at large) performs as intended and meets the specifications. "Validation campaigns" means that a series of tests need to be perform (another way to say 'a campaign of tests) rather than only one test. In addition to the validation process, verification trials should also be undertaken. Both are often termed verification and validation (V&V).